A New Approach to First Responder Communications

Sentry MDU System

Mobile Device User Guide

Ver. 20221101

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Executive Summary

Sentry MDU (Multi-Data Unit) is a commercial grade, Mobile Device / Client-Server based system that provides real-time video streaming integrated with GPS location tracking and remote access / control. The system was designed to be a communications tool for First Responders (Police, Fire, Rescue), Security and Industrial Applications. As commercial software, the App has no advertising and we do not gather and sell your information.

> **Important Note: This is advanced commercial software with features that allow remote access to mobile devices (in your Security Domain) anywhere in the world. Since the App contains features that allow use as remote Wildlife TrailCams, Police Body Cams, Vehicle Dash Cams, Surveillance and GPS Tracking ... the App does NOT conform to Google Play Store Policy (they do not allow apps that can be used for unattended remote surveillance). Therefore, the SentryMDU App is NOT available on Google Play. You must download the App from our website.**

This software turns a standard smartphone into a versatile multi-purpose device. The SentryMDU App is a next generation 5G / 4G-LTE / Wifi enabled communications platform that includes the following features:

1. 5G / 4G-LTE body-worn camera solution for Law Enforcement
2. Live-streaming “dash cam” for a vehicle (live-stream & record)
3. Sports camera, real-time video streaming of events
4. Object Recognition (A.I. Engine) detects people, animals, objects
5. GPS tracking features using satellite image overlays
6. Create “bookmarks” for ready access to Users, places, online resources
7. Notification “alerts” as users move in-out of specified areas (geo-fence)
8. Monitor live audio/video and GPS tracks of multiple devices simultaneously
9. Remote access and control capability via mobile device or desktop
10. Mobile-to-Mobile data transfer between devices
11. Receive live-stream Police radio traffic, Webcast TV, Radio, Custom URLs
12. Global satellite coverage for GPS/GLONASS applications
13. Attach documents, pictures and video to locations and points-of-interest
14. Access Wikipedia data references within displayed map locations
15. Extensive security domain feature set for segregating user access rights
16. Data encryption features for secure communications between devices
17. Includes “standalone” capability for use during natural disaster incidents
18. Built-in communication features include text, live-chat, video-phone, email
19. Customized video recording with time-lapse, motion detection, frame rate
20. Remotely monitor environmental sensors on a mobile device, trigger alerts

A key feature of the Sentry MDU System is the use of high resolution satellite images to locate landmarks, streets, houses and User locations via GPS overlays.

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Notes

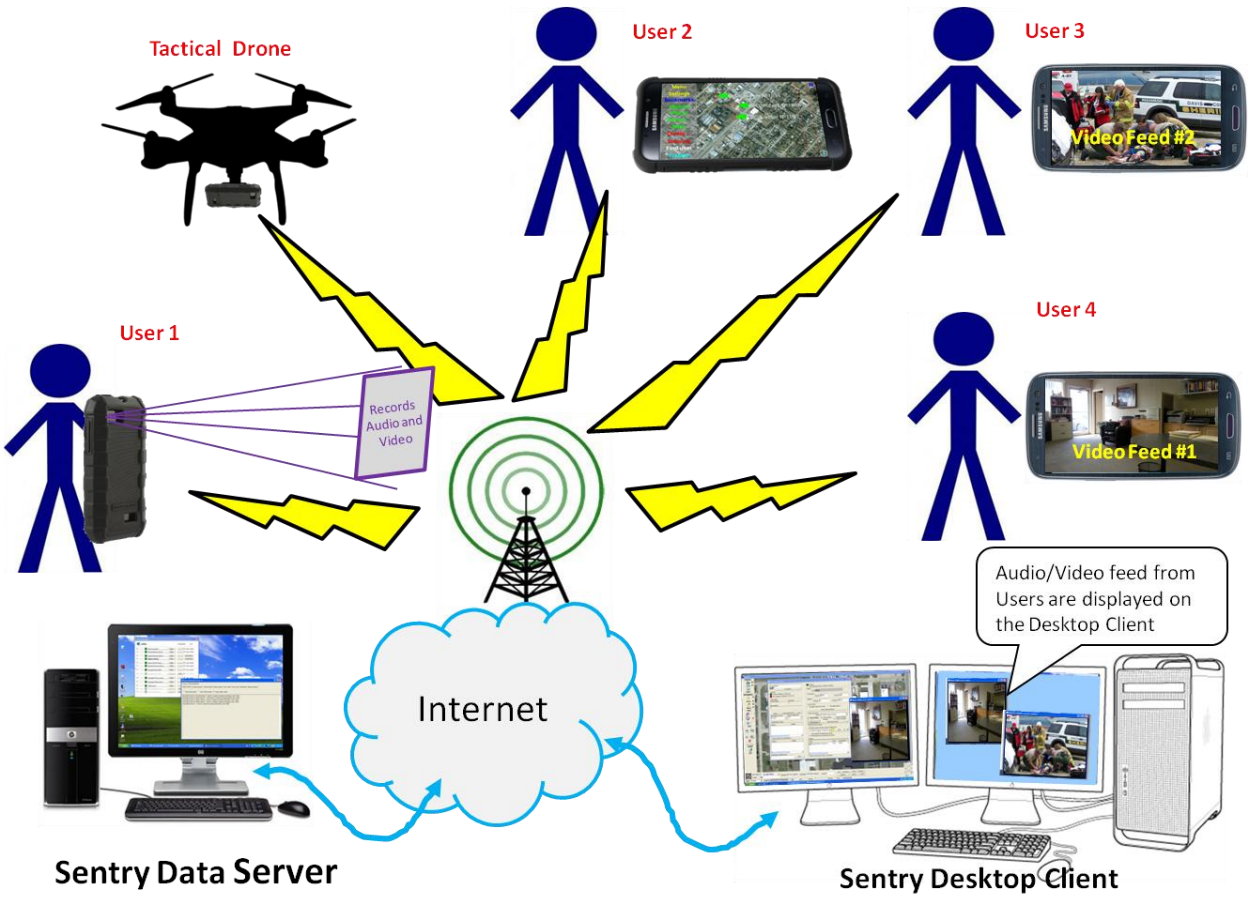
1. Introduction

1.1. Description of the Sentry MDU Application

The Sentry MDU (Multi-Data Unit) is a system that enables real-time communications, object recognition (A.I. Feature), video monitoring and GPS tracking of people, places and things. This software turns a standard smartphone into a versatile multi-purpose device.

For emergency personnel (Police, Fire, EMT's) the Sentry MDU system can become a "dash camera" for the car, or a next generation 5G / 4G-LTE body-worn camera solution that provides real-time video transmission, GPS tracking, automated data upload, and remote access and control capability. Data encryption capability ensures that your communications remain secure.

Further applications allow mounting the devices on UAV / Drones to provide live-stream video to multiple remote observers via cellular networks. This can provide situational and tactical awareness to multiple groups simultaneously over a wide area.



1.2. Project Background and Current Status

Originally conceived in 2012 as a tool for K9 equipped Search & Rescue Teams, the project has further expanded to all forms of First Responders (Police, Fire, Rescue, EMT), private sector use and the general public (via GPS location tracking).

The SentryMDU App is released as Open Source software (GPL - 3.0 License). We encourage a Developer Community to suggest modifications to improve the software.

The product is in continuous development and improvement. We appreciate your comments and feedback. We strive to be responsive to your needs. Feel free to contact us with suggested improvements and features that you would like to see added to the current design.

1.3. Anticipated applications for the Sentry MDU System

The Sentry MDU System is designed as a three component system incorporating a Mobile device, a Desktop Client and a Data Server. Although normally connected to the internet, this configuration can allow for “standalone” operation (Mobile Command Center, internal WiFi LAN) in the event of natural disasters (tornado/earthquake/tsunami) or when internet connectivity may not be available.

<u>The following are a few of the anticipated uses:</u>

- Law Enforcement (Police, Sheriff, Constable, Highway Patrol, etc.)
- Fire Fighters (City and Volunteer)
- Emergency Management Organizations (City/County/Region)
- Object Recognition Features (people, cars, animals, objects)
- Private and Industrial Security
- Search & Rescue Organizations (Professional and Volunteer)
- Emergency Medical Response (EMT’s, Ambulance Drivers)
- Game Wardens, Corps of Engineers, State & National Park Rangers
- School Security, Transportation and Classroom Monitoring
- Neighborhood Watch Groups
- Assisting the elderly and individuals with mental or physical disability
- Tactical and surveillance Drones / UAV’s
- Public Works and Construction Projects
- Sports and Outdoor activities (live stream sport events as they happen)
- Critter Cams, Trail Cams and Wildlife Monitoring
- Solar Panel “Birdhouse” Enclosures (for remote locations without power)
- And more …….

Each Sentry MDU System installation (server instance) is scalable to ten-of-thousands of Users. The system is currently ONLY available in the English language, but is planned as an international release. Other languages will be added as resources are available.

1.4. Digi-Lumen Technologies, Bartlesville, Oklahoma, USA

Digi-Lumen Technologies, LLC is located in Bartlesville, Oklahoma, USA.
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2. Technology Employed

2.1. The Sentry MDU System Technology

The Sentry MDU System is a 3 tier communications and GPS tracking system that is optimized to run on either Cellular or WiFi networks (when coverage is available). In areas of no cellular coverage, the Sentry MDU device may be configured to operate in “standalone” mode. The Sentry MDU System is typically referred to as a Client-Server implementation.

<u>The system incorporates three distinct layers of technology</u>

1. A portable (or mobile) platform which is typically a **smartphone** (cell phone) or Tablet device.
2. A **Desktop Computer** that runs a software “Client” that provides a gateway to the central Data Server (in some configurations, this computer is optional).
3. A high performance **Data Server** that provides the primary internet connection, mapping capability and secure data storage.

<u>The hardware components within the three layers are as follows:</u>

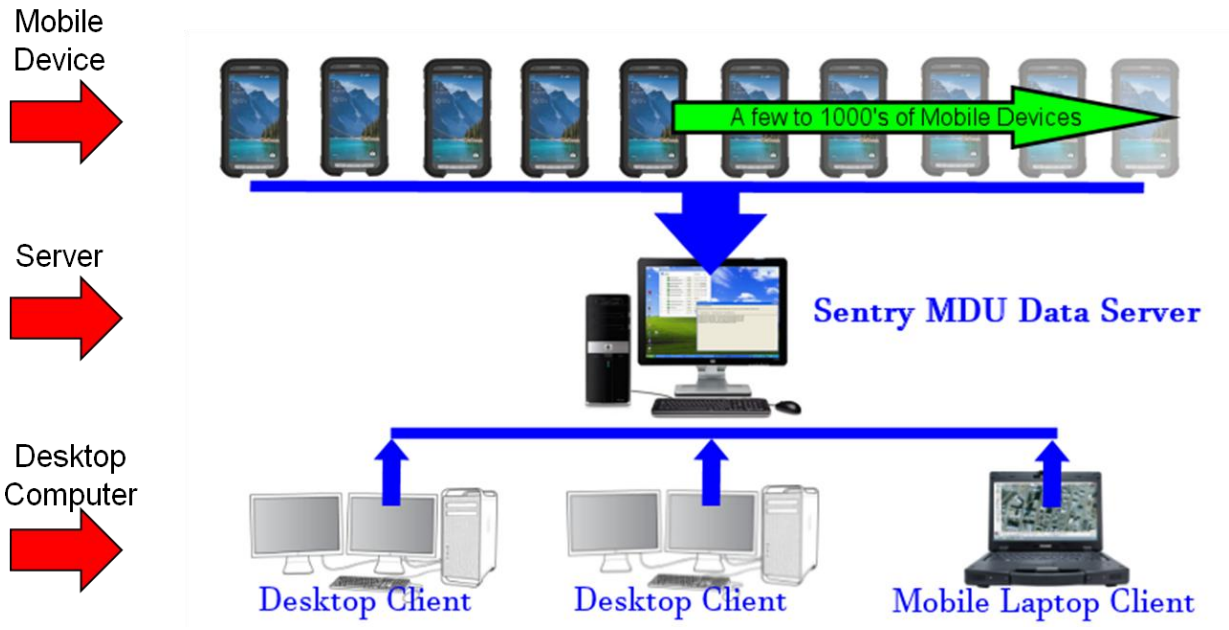
1. Mobile Device - Cell phones, Tablets or other devices that use the Android operating system.
2. Desktop Computer - (or laptop) running the Microsoft Windows operating system (Win 10, 11).
3. Data Server - Typically this should be a high performance, secure, rack mount server with 24/7/365 reliability. The Server will run the Microsoft Windows operating system and should be configured with redundant data storage, redundant power supplies, operating on a UPS system and administered by the local IT Department.

<u>Sentry MDU System software provided by Digi-Lumen Technologies:</u>

1. For Mobile Device - Sentry MDU smartphone App, available on the DLT Website.
2. For Desktop Client - Sentry MDU client application (Users may elect to have one or more SentryMDU Manager Desktop Clients).
3. For Data Server - Sentry MDU Server Application (only one Data Server license is required per organization).

The **Data Server** component of the Sentry MDU System is scalable to tens-of-thousands of users. The primary limitation for large users will be the available internet bandwidth that the Customer has purchased from their internet provider and the policy guidelines that the organization has established on “when” real-time audio/video should be streamed from a remote device to other users on the network.

The following picture shows a typical **NETWORK CONFIGURATION** of a Sentry MDU installation.



<u>Some of the operational features of the SentryMDU System are summarized as follows:</u>

• All registered Users on the system are identified via Username/Password	Each server "instance" is configured for a specific User community (security domains) and number of Users.
• Each SentryMDU Data Server is scalable to thousands of users each.	A typical Licensed Server organization will use a single Data Server, several Desktop Clients (2 – 5) and many mobile devices (50 – 1000). The Sentry MDU Data Server would be located in a Customer's premises and administered by their IT Department.
• Standalone capability	Although the system generally requires an internet connection, the system can be configured for "standalone" operation. This would apply to situations where Mobile Command Centers would be used during major events (natural disasters) where internet access may not be available.
• Managing remote device locations via GPS coordinates	The location of each Mobile Device on the system is tracked and monitored via the SentryMDU System. The GPS location of each device can be monitored and displayed on both the SentryMDU Desktop Client as well as other Mobile Devices on the system.

2.2. The Sentry MDU App (Android App)

The Sentry MDU System starts with a cell phone (smartphone) or Tablet device. The only requirement of the Sentry System is that the mobile device uses Android OS Version 7.1+.

It may be downloaded for FREE from the **DLT Website** (www.digi-lumen.com).

> **Important Note: This is advanced commercial software with features that allow remote access to mobile devices (in your Security Domain) anywhere in the world. Since the App contains features that allow use as remote Wildlife CritterCams, Police Body Cams, Vehicle Dash Cams, Surveillance and GPS Tracking ... the App does NOT conform to Google Play Store Policy (they do not allow apps that can be used for unattended remote surveillance). Therefore, the SentryMDU App is NOT available on Google Play. You must download the App from our website.**

2.3. The Sentry MDU Manager – Desktop Client

The Sentry MDU Manager is a MS Windows based desktop Client that provides a “portal” into the Sentry MDU Data Server. From the desktop client a User can perform the administrative tasks that are necessary for the Sentry MDU System. The desktop client is only available to those organizations that operate a “Licensed” Data Server.

These tasks may include the following:

- Monitor the GPS location of all Users on Satellite or Map views.
- Set security domains and user access permissions (Root User)
- Add and delete Users
- Monitor all remote devices
- Set up and administer geo-fence features and associated alarm settings
- Turn on-off audio/video feeds from remote devices
- Adjust operating parameters for remote devices (video framerate, bitrate, GPS interval read times, device sensors, etc.)
- More ….

An organization would typically have several Desktop Clients.

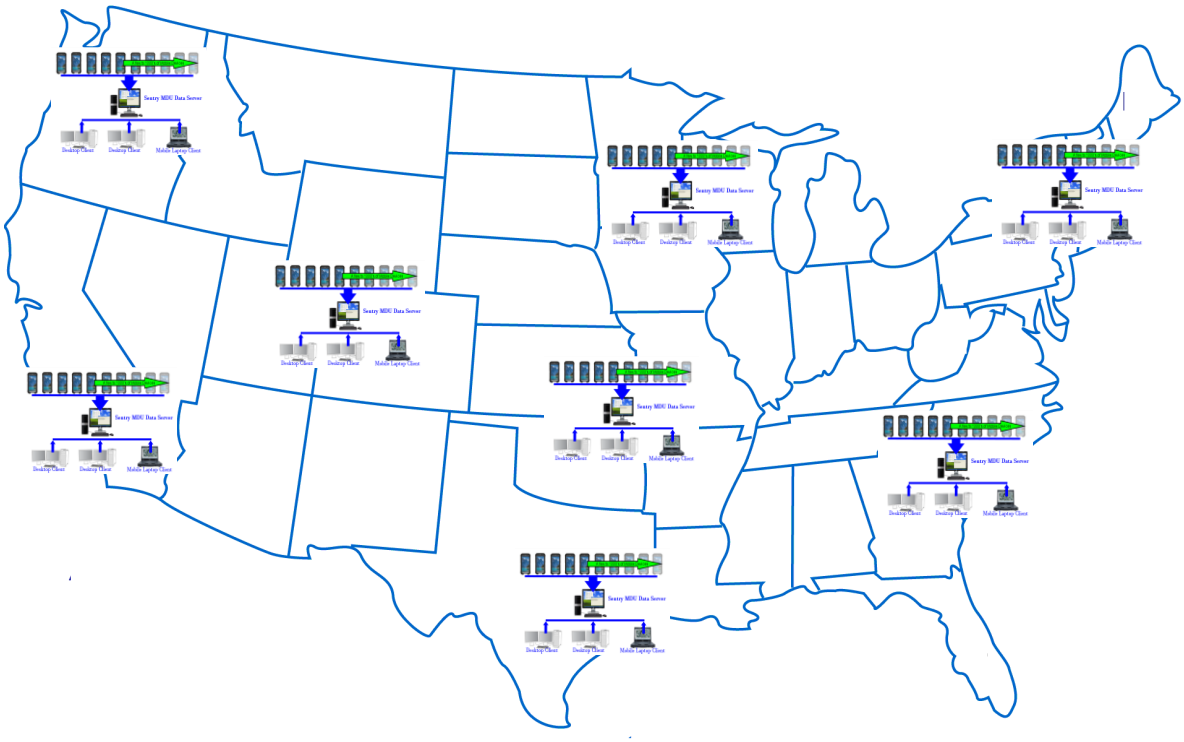
2.4. The Sentry MDU Data Server

The Sentry MDU Data Server is a MS Windows based Server. The Server manages all security functions for all Users (specific instance) on the system, manages data streaming between devices and is used to perform the administrative tasks that are necessary for the Sentry MDU System (for a specific Customer).

<u>The following conditions apply:</u>

- DLT licenses the Sentry Data Server software to a Customer.
- Each Sentry MDU System installation requires a Data Server “instance”.
- Customers may choose to provide their own hardware and OS software.
- Some Customers will operate on a “shared” server provided by DLT.
- The Server maintains all Security Domains and user access permissions.
- Primary repository and interface for data storage (audio/video images).
- Auxiliary “cloud” based storage is available with automated upload/access.

The map below simply illustrates that each Sentry MDU System installation will require the 3-tier network configuration shown previously.



2.5. Handling of Image/Map tiles by the Sentry MDU Application

The Sentry MDU App uses licensed content for the satellite images and maps used in the application. As part of our contract with the satellite image provider we maintain a running total of the image data that is used by our software (see **Section 8.13** for details).

Unlike “online” map providers that require an internet connection to provide map tiles, the SentryMDU System is designed such that map images may be “cached” on the mobile device so that the GPS tracking features, relative to points-of-interest and current location can be made available even if a network connection is NOT available (interrupted or in standalone mode).

<u>Map images are handled in the following manner:</u>

- The first time a user views a satellite/map area on the mobile device, the system will retrieve all map tiles associated with that area.
- These images are now “cached” on the local mobile device such that they are readily available in the event the network connection is interrupted.
- The Sentry MDU System has application in Mobile Command Centers and other isolated situations where internet connectivity may not be available. In these cases, by special arrangement, a subset of map images for the anticipated target area would be retrieved and stored on the Data Server (and/or mobile device) prior to deployment (additional contract required with Satellite image provider).
- Usage statistics of map tile images is reported to the Sentry MDU Data Server on a periodic basis to maintain a running total of usage, by user.
- The Sentry MDU App user license allows for a significant usage of map tiles on a monthly basis (depending on the license/subscription type). In the unlikely event a User exceeds the designated threshold for their user “class” they may be required to upgrade their account if they wish to continue with high usage rates.

The satellite/map images are intellectual property owned by the satellite provider under license to DLT. Any use not associated with the Sentry MDU System will require written permission from both DLT and the Satellite Provider. Contact DLT technical support for more information.

3. Installation of the Sentry MDU Mobile App

3.1. System requirements and compatibility

Hardware:

The SentryMDU System starts with a cell phone (smartphone) or Tablet device. Obviously, newer cell phones will have higher performance than older devices. Since the SentryMDU Application can process and stream multiple threads of audio/video, it is recommended to get the highest performance device your budget will allow. Generally, higher end devices have better CPU's, better cameras, more memory (both RAM and Storage), more accurate sensors (GPS, accelerometers, etc.) and better WiFi and Cellular radios.

In practical terms, most any Android cell phone or tablet manufactured within the last few years should work just fine. It should also be mentioned that if a mobile device is to be used exclusively in an area served via a WiFi network (ie in an office building or manufacturing facility), it is not necessary that the smartphone be equipped with a SIM card for Cellular access. WiFi only capability is acceptable. This allows a variety of Tablets and "extra" older model cell phones to be re-utilized as a SentryMDU mobile device.

Also note that other Android devices such as "wearable" mobile devices (watches) also work. However, they do have very small screens and do not match the performance of smartphones … but they do work.

Software:

The mobile App for the SentryMDU System is designed and has been tested on Android devices with the following Android operating systems:

Android 7.1
Android 8.0
Android 9.0
Android 10.0
Android 11.0
Android 12.0

This means that most any Android cell phone or tablet manufactured within the last few years should work just fine.

The SentryMDU App does NOT run on Apple devices (iPhone, iPad, etc.).

Important

App Blockers:

Some of the later generation Android mobile devices MAY come pre-installed with security software called “App Blockers”. This software is designed to protect you from fraudsters and hackers, which is a good thing. However, in some cases, the default settings of the App Blocker will also block any App Software that is not delivered from the Google Play Store repository.

App Blocker software may allow an App from “Unknown Sources” (not the Google Play Store) to be installed, but it will disable it, so it will not run when selected by a User.

You should determine if your mobile device HAS an App Blocker installed. If so, you will need to make “changes” in your settings after you have installed the SentryMDU App.

App Blocker software may get on your device from the following 5 sources:

1. As a standard feature of the Android OS installed on your device
2. Pre-installed from the mobile device manufacturer (ie Samsung, LG, Xiaomi, etc)
3. Pre-installed from your Cell Phone Carrier (ie AT&T, Verizon, Vodaphone, etc.)
4. Third-Party Apps that you download and install yourself
5. Android OS update that includes App Blocker features (ie a system upgrade)

After installing the SentryMDU App on your device … if everything works fine, then you probably do NOT have any App Blocker software on your device. However, if it does not work, then this will be ONE of the things to check.

Further, if things are working fine … and you do an Android OS update (ie upgrade from Android ver 9 to Android ver 12) and suddenly things are NOT working, then most likely the Android Update included an App Blocker feature.

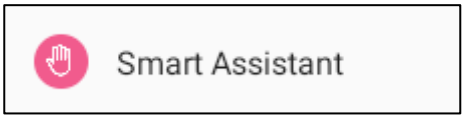
How to change the settings of an App Blocker

In this example, we will illustrate how to change the settings of App Blocker software to allow the SentryMDU App to function as designed.

In this scenario, we are using an **Atom Unihertz** mini cell phone that came pre-installed with Android ver 8.0. Everything worked fine … until one day we got a notification that we could do a “software OS upgrade” from Android ver8 to Android ver9. After the “upgrade”, the SentryMDU App when launched, would run for about 30 seconds and then “stop”. What happened?

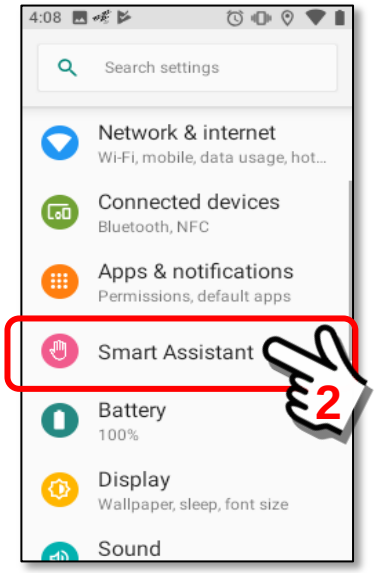
We discovered that the new OS upgrade included a “Smart Assistant” feature that has an App Blocker component. If you have an App Blocker feature on your device it may be called by a different name and under a different section of your “Settings”.

For this example, we will show the **Smart Assistant** and how to disable the App Blocker feature for the SentryMDU App.



Start at the screen panel and locate the “Settings” Icon.

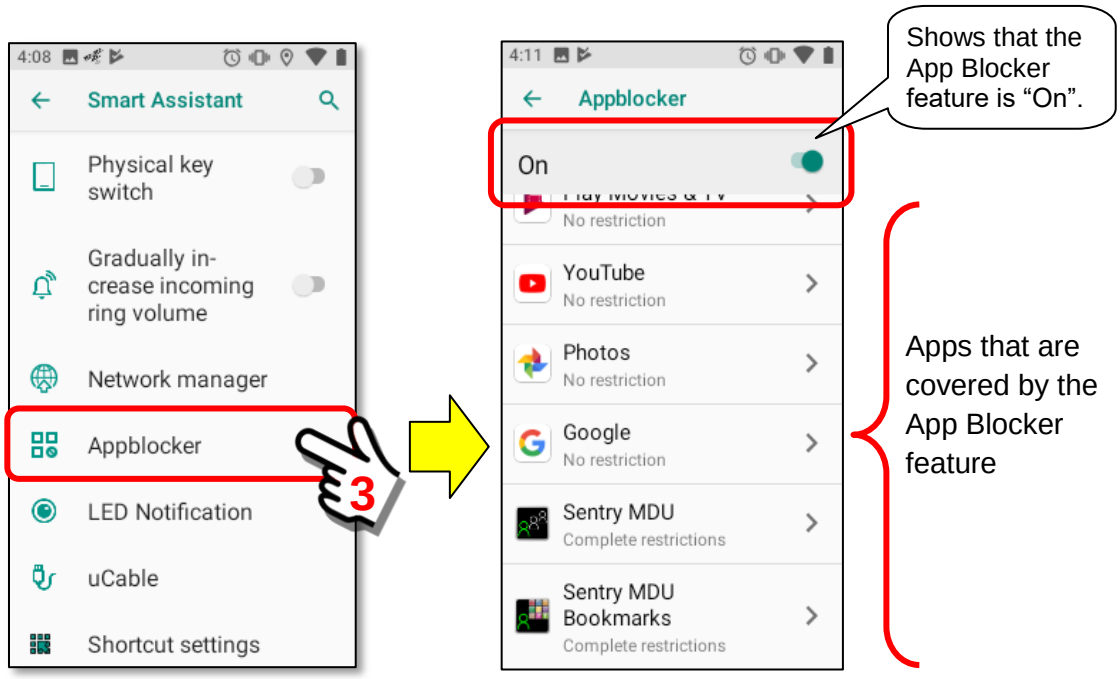
Select the **Smart Assistant** category from the Settings List.



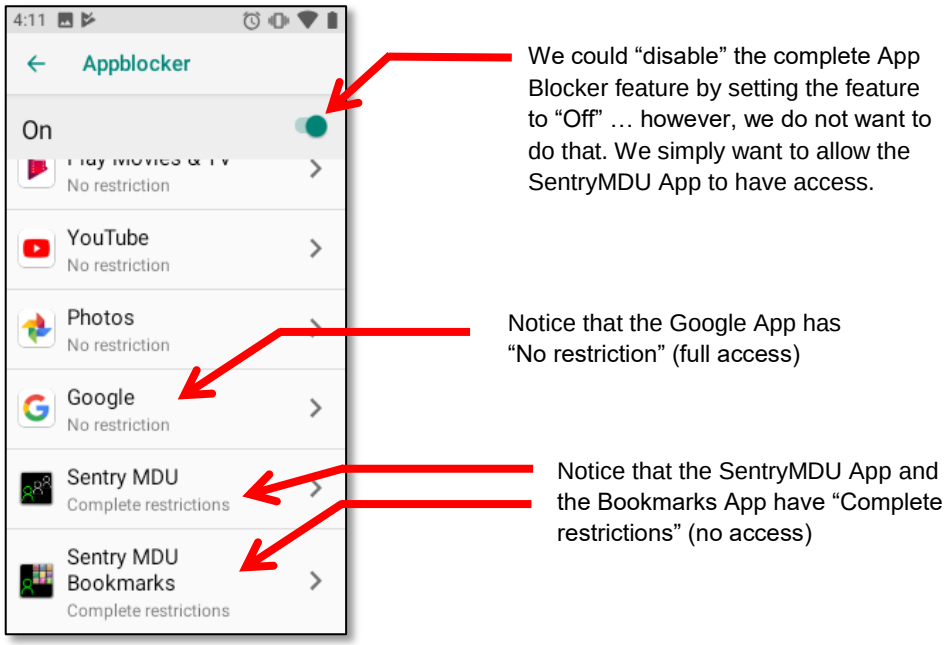
For this device, the **Smart Assistant** contains the App Blocker feature.

On your device it may be under a different category.

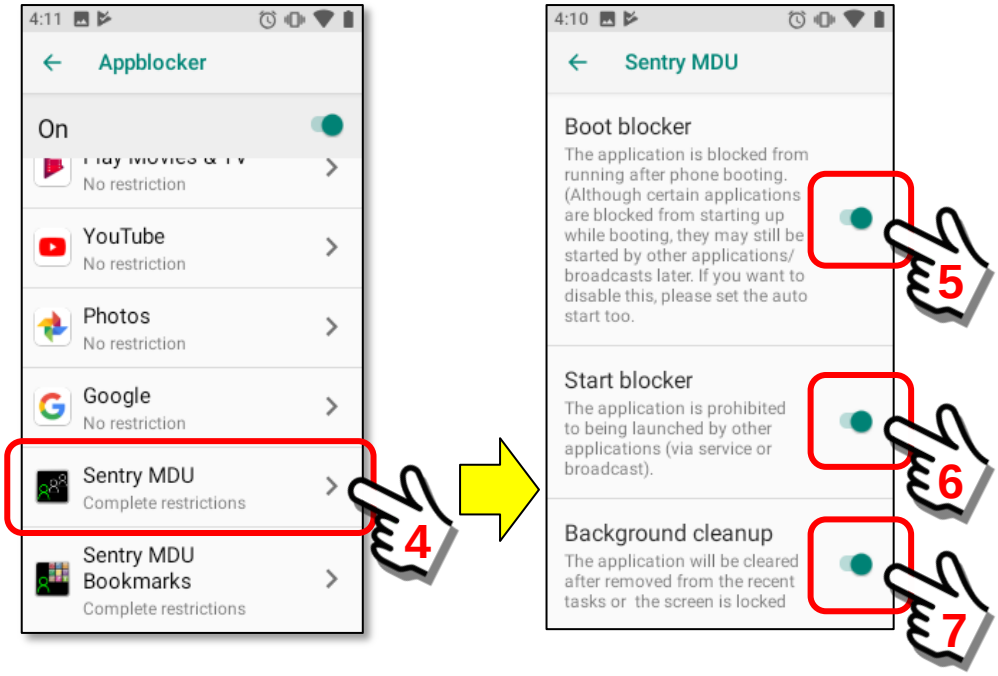
Under the **Smart Assistant** category, we find the App Blocker section. Click on the **App Blocker** button.



Review the **App Blocker** feature and the restrictions on covered Apps.

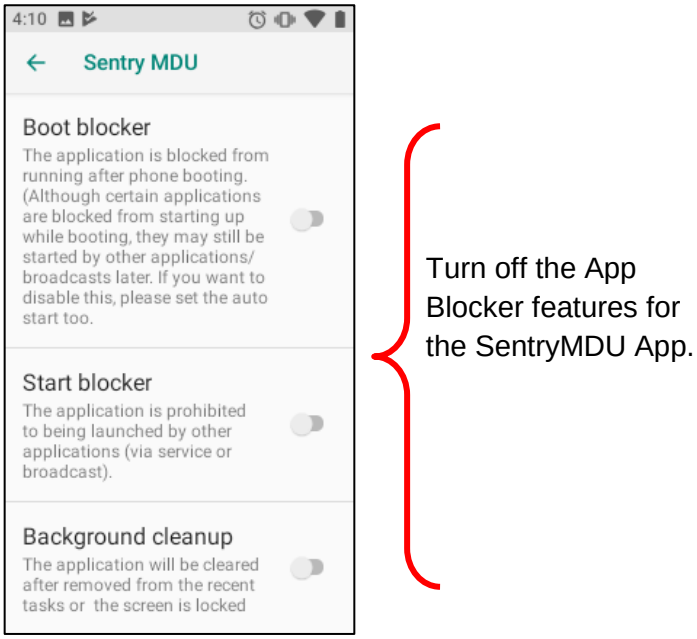


Click on the SentryMDU App button to change the App Blocker settings.

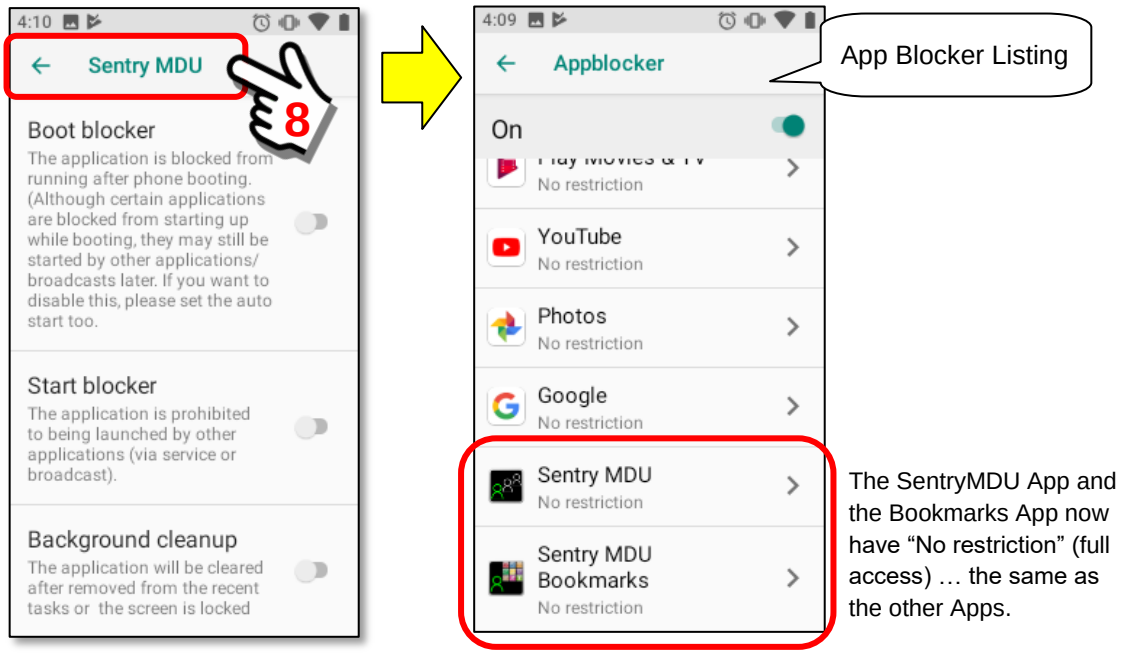


Set the **Boot Blocker**, **Start Blocker** and **Background cleanup** to “Off” by swiping the “slider” control with your finger.

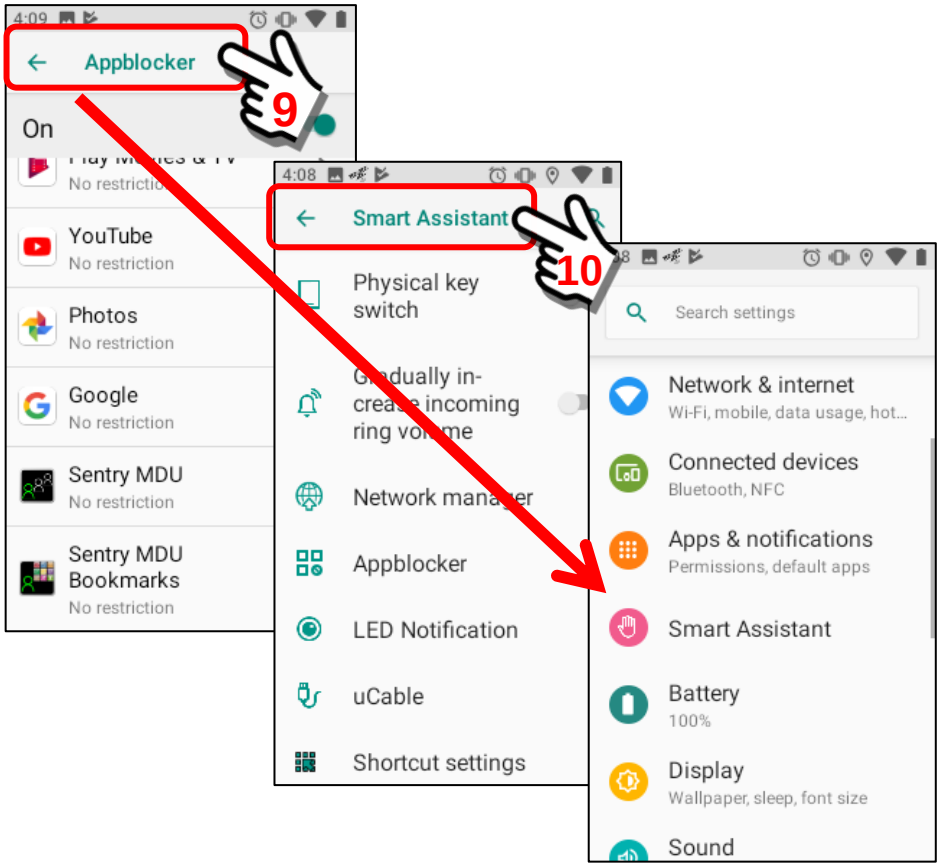
The SentryMDU Panel should now look as follows:



Click on the SentryMDU heading button to return to the App Blocker menu.



At the App Blocker Listing Menu, notice that now there are "No Restriction" on the SentryMDU App on this mobile device. We can now navigate back out of the **Smart Assistant** feature group. This should allow the SentryMDU App to work as designed.



3.2. Where to get the SentryMDU Mobile App

Access to the Download Server:

The SentryMDU App is available via a “link” on the DLT Website or directly from a DLT SentryMDU Administrative Server. **The app is free to download and use**. You will have to cycle through a few screens and then you will be directed to a secure “download”.

> **Important Note: This is advanced commercial software with features that allow remote access to mobile devices (in your Security Domain) anywhere in the world. SINCE the App contains features that allow use as remote Wildlife TrailCam/CritterCam, Police Body Cams, Vehicle Dash Cams, Surveillance and GPS Tracking ... the App does NOT conform to Google Play Store Policy (they do not allow apps that can be used for unattended remote surveillance). Therefore, the SentryMDU App is NOT available on Google Play. You must download the App from our website.**

On your mobile device, proceed to one of the following Websites.

DLT Website:

https://www.digi-lumen.com

DLT SentryMDU Administrative Server:

https://sentrymdu01.sentrymdu.com

When you reach the website, look for the Button below. It will be on the left-side vertical menu. Click on the Button and follow the directions.

In this example, we will start at the DLT Website to begin the process of downloading the SentryMDU mobile app.

Clicking on the SentryMDU Android App Button will open another screen on the DLT Website.

The DLT website will open another screen panel that outlines the process for transferring to the Administrative Server website where the SentryMDU App download file resides.

Text that explains "why" the SentryMDU App is NOT listed on Google Play and the process steps to download the App to your Mobile Device.

Button to re-direct the User to the "secure" Administrative Server Website

Click on the "**Continue to Download Site**" Button.
Your Internet Browser will now be re-directed to the secure website of the SentryMDU Administrative Server.

https://sentrymdu01.sentrymdu.com

DLT SentryMDU Administrative Server "secure" website

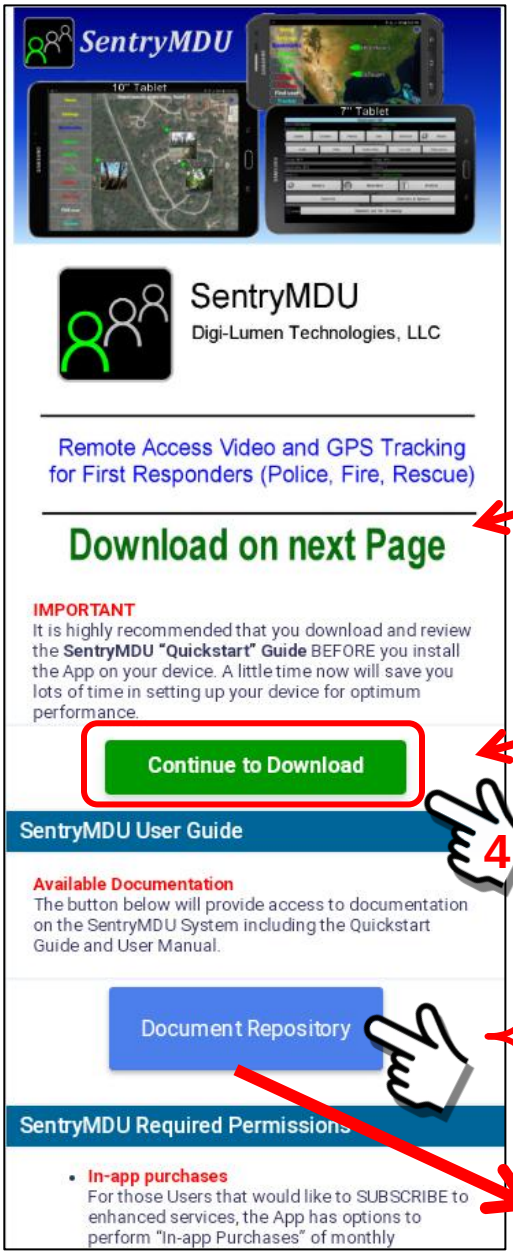
Screen of Mobile Device

In this example, we are now at the **SentryMDU Administrative Server** website panel. As we did on the DLT Website, now click on the SentryMDU Android App Download Button again on this website.

The screens in the preceeding steps have all been sized for browsing on a desktop computer. When used on a mobile device, the text would appear very small and you would need to “zoom in” to read it.

The text on the following screens will be much larger and should be easy to read on a mobile device.

When you click on the ***SentryMDU Android App Download*** Button, you will see a screen panel which shows the PERMISSIONS that the App will use.

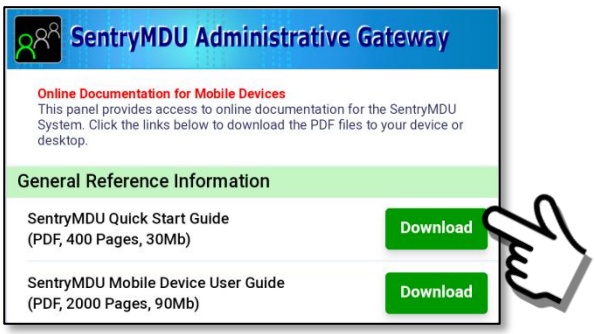


Screen of Mobile Device

Message that the final download step is on the next page.

When you click to continue you agree and understand that the App will be using the permissions explained below

Access to Document Repository to download the SentryMDU QuickStart Guide and Mobile Device User Guide



Text that explains "why" the SentryMDU App needs the permissions and how they are used.

Review the **Access Rights and Permissions** of the SentryMDU App on your mobile device.

Important Note: Since this is commercial software, we do NOT capture information from your device and sell it to others or use your information for marketing purposes. We are not an advertising platform like the BIG Search Engines and Social Media Giants. We think it is "creepy" and an "invasion of privacy" for these companies to extract data from a person's device, monitor their location, send them Ads or Notifications when they walk into a store ... and more. They do this under the pretence of helping to "improve a user's experience". We disagree. We think it is wrong.

The App Permissions we need for the SentryMDU System are explained below. Please read. You will need to agree with this before the App will install.

SentryMDU Required Permissions

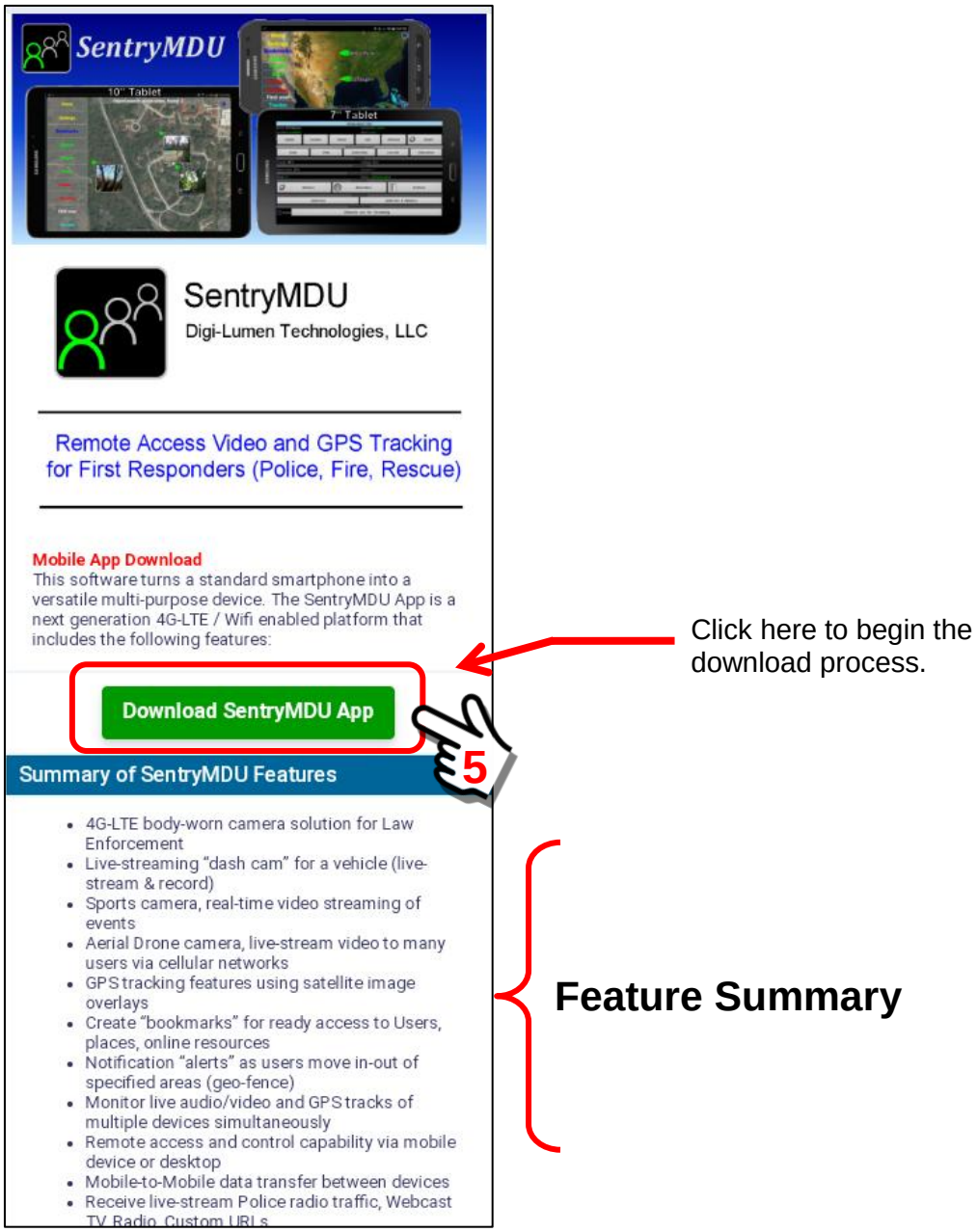
- **In-app purchases**
  For those Users that would like to SUBSCRIBE to enhanced services, the App has options to perform "In-app Purchases" of monthly subscriptions. These are optional.
- **Location**
  The SentryMDU System uses the GPS and location features of the mobile device to provide location data to the Data Server and other users within your security domain. This is an important feature for First Responders (Police, Fire, Rescue) so others in your group (Security Domain) can know where you are in times of emergency. Users have the option to "turn off" GPS tracking if desired.
- **Phone**
  The SentryMDU App allows a User to place calls from within the app communications panels. It simply launches the Android native phone app.
- **Photos/Media/Files**
  The SentryMDU App allows a User to send pictures, videos and other media files to other users within your Security Domain. This is why it has access to the file system where you store pictures. In addition, the app can take pictures and video.
- **Camera**
  As a User of the SentryMDU System, you can access the camera on one of your devices remotely from another SentryMDU device. This allows you to use devices as Critter Cams, remote surveillance cameras, vehicle dash cameras and more. You may use the device as a Motion Detection camera or for Object Recognition to trigger "alerts" when it identifies people, animals, vehicles, etc. You may turn off this feature if desired.
- **Microphone**
  Since the App can monitor and record both audio and video, it needs access to the Microphone on the device.
- **Wi-Fi Connection Information**
  The SentryMDU App can operate with both Wi-Fi and Cellular networks. For this reason it needs Wi-Fi information from your mobile device.

Text that explains "why" the SentryMDU App needs the permissions and how they are used.

Click on the "**Continue to Download**" Button.

Another screen will pop-up on the mobile device. This is the screen where you will finally "download" the SentryMDU App to your device.

This screen will provide a Feature Summary.
When you are ready to download, click the **Download SentryMDU App** Button.

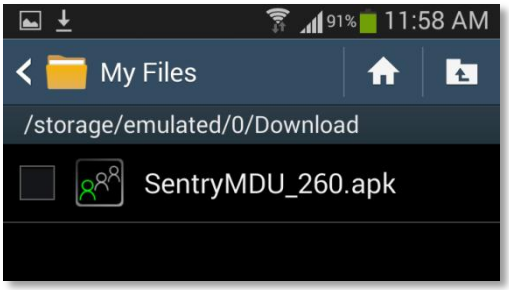


The file will download to the **Download Folder** on your mobile device.

As the file begins to download, you may monitor the progress by observing the "download" icon in the notification bar (your phone may be different). The file is a 58MB file. It may take from a few seconds, to a minute or more, depending on the speed of your internet connection.

Download progress shown on the Notification Bar

Once the file has completed downloading, navigate to the "Download Folder" on your mobile device. You should see a file similar to the following:

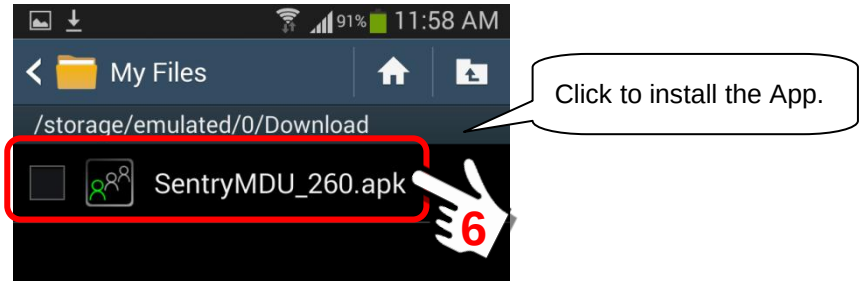


SentryMDU_260.apk

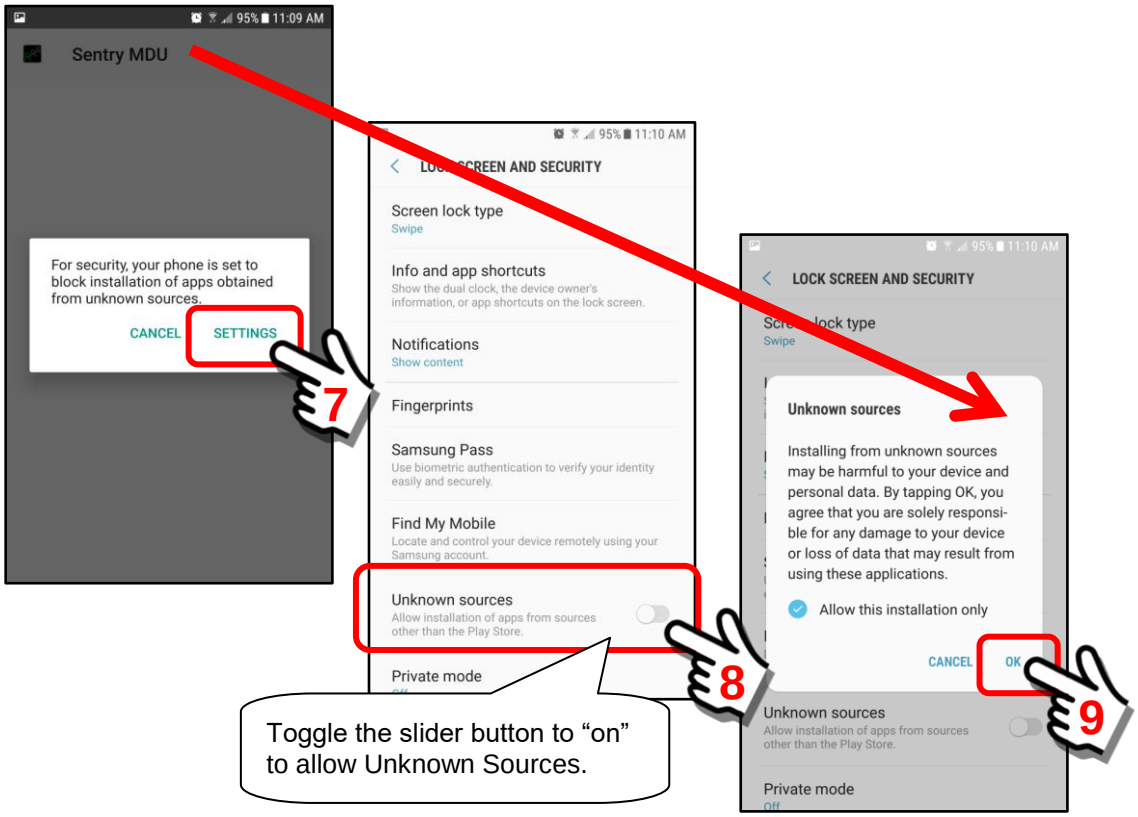
This is the "Release Version" number of the SentryMDU App

When installed, the app will be identified as ***SentryMDU.apk*** (Android Application File). The next step is to INSTALL the app on the mobile device (for now it has only been downloaded).

Click on the app NAME in the Download Folder.

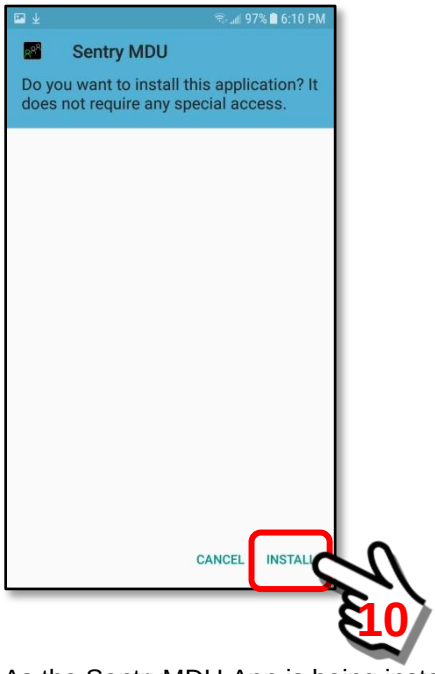


The SentryMDU App will now begin installation.
Since the SentryMDU App is NOT downloaded from the Google Play Store, it is considered an "Unknown Source" by Google since they don't know about it. Depending on your device "settings" you may have "Unknown Sources" blocked. If this is the case, you will need to adjust your settings to allow the SentryMDU App to install.



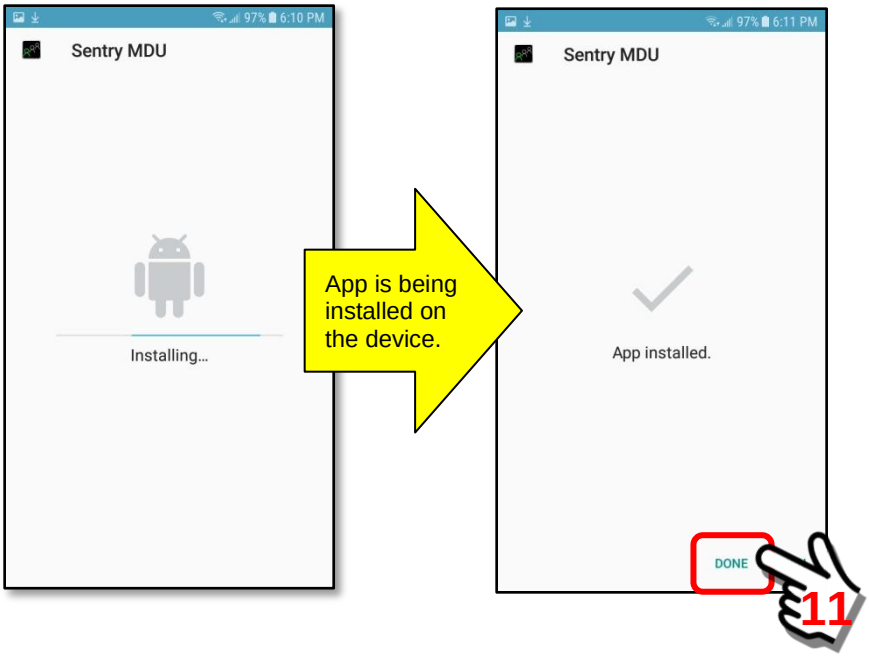
You will get a "scary looking message" from Android about Unknown Sources.
Click the "OK" Button when you are ready to continue.

You will be presented with an INSTALL screen. Click the “Install” Button to continue with installation.



As the SentryMDU App is being installed you will see an installation screen similar to the following. This may take anywhere from 5 seconds to 60 seconds.

Click “Done” when the installation is complete.



The SentryMDU app is now installed on your device.
You will still need to “launch” the app, accept a License Agreement and configure the device for your particular application. See **Section 3.5 or 3.7** for details.

To fully utilize the software and interact with other users, you must register and become a member of a Security Domain (User Group). **Registration is free.** This can be a group you create (ie your family, friends, civic org) or an existing entity that you may work with (Police, Fire, Rescue, Company XYZ). A “group” can be as small as two devices or as large as tens-of-thousands.

If you are a member of an Organization that has a licensed SentryMDU Server, you simply install the App, register an account username, enter your organization License Key information and you are ready to go (see **Section 3.7** for details).

<u>If you do NOT belong to a group with a licensed SentryMDU Server, you have 4 options:</u>

1. Do nothing and remain an Anonymous User (No satellite imagery and reduced feature set since you are not part of a group Security Domain).
2. Register a Username but do NOT purchase a subscription. Maps will be OpenStreetMaps Data and not satellite imagery. No data storage or streaming.
3. Purchase a monthly In-App Subscription to use one of OUR servers.
4. License a server instance of your own (Contact us for details).

For those that purchase an In-App Subscription, we offer three (3) subscription levels based on usage ... from a casual user ... to a commercial level user. Some features that require access to a Licensed Server, via the ***SentryMDU Manager Desktop Client***, are NOT available to Subscription Users (since you are not operating your own server).

For those that want full control over all aspects of the SentryMDU System we recommend licensing the SentryMDU Server and Desktop Client. You may chose to provide and host your own hardware, contract with third-party hosting, or utilize/manage “cloud” based resources. In those cases, we simply license you the software. Contact us for details.

Important Note:

The SentryMDU App is “advertiser” free.

No ads or annoying notifications.

Your Security Profile (selected by you/organization) determines who can see you, your device and the level of access they have to monitor your device.

We do NOT collect information from your device, contact lists, phone numbers, location, etc. Most “free” Apps are free because they make their money by providing/selling the information they get from YOUR mobile device to others and advertisers. We do not do that. **We do NOT collect data about you and provide it to others**.

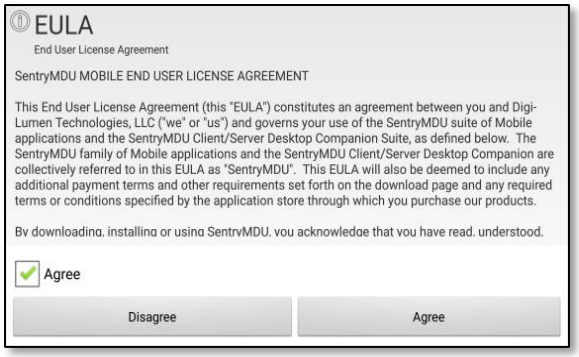
The SentryMDU System is a very sophisticated piece of software. Take a few minutes to understand what it can do.

3.3. The EULA (End User License Agreement)

Sentry MDU Application:

The SentryMDU Application requires that all users agree to a EULA (End User License Agreement) in order to use the software.

As part of the installation process, a User must agree to the EULA or the installation process is aborted. A screen similar to the one shown below will be displayed on the Mobile Device. Please read this carefully.



Essentially, this EULA says that you agree not to “hack” the software, you will not use it for illegal purposes, you will respect the privacy of others, you will respect the intellectual property of others, you understand/agree that the software may contain “bugs” and we do not warrant it for any particular purpose. If you have a problem with this EULA then please do not use the SentryMDU Application.

Users that license the SentryMDU Data Server and Sentry Manager Desktop Client will have additional documents as part of the licensing process.

Open Source Software:

The SentryMDU App is released as “Open Source” software licensed under GNU General Public License, Version 3 (GPL-3.0). The full text of this license is available via a “link” in the **About Section** of the Main Map Screen “Menu” Button.

3.4. The SentryMDU Privacy Policy

Sentry MDU Application:

The SentryMDU Application requires that all users agree that you have reviewed our Privacy Policy in order to use the software.

As part of the installation process, a User must agree to the Privacy Policy or the installation process is aborted. A screen similar to the one shown below will be displayed on the Mobile Device. Please read this carefully.

Essentially, this Privacy Policy describes what information we collect and how that information is used. We do NOT rent or sell user information to anyone. It is only provided to others if required under legal process. If you have a problem with this **Privacy Policy** then please do not use the SentryMDU Application.

Users that license the SentryMDU Data Server and Sentry Manager Desktop Client will have additional documents as part of the licensing process.

3.5. Registration Process (General Registration)

Registration Overview:

The SentryMDU installation and registration is straight forward. Registration is FREE and does not obligate you to spend any money. A User will perform the following steps:

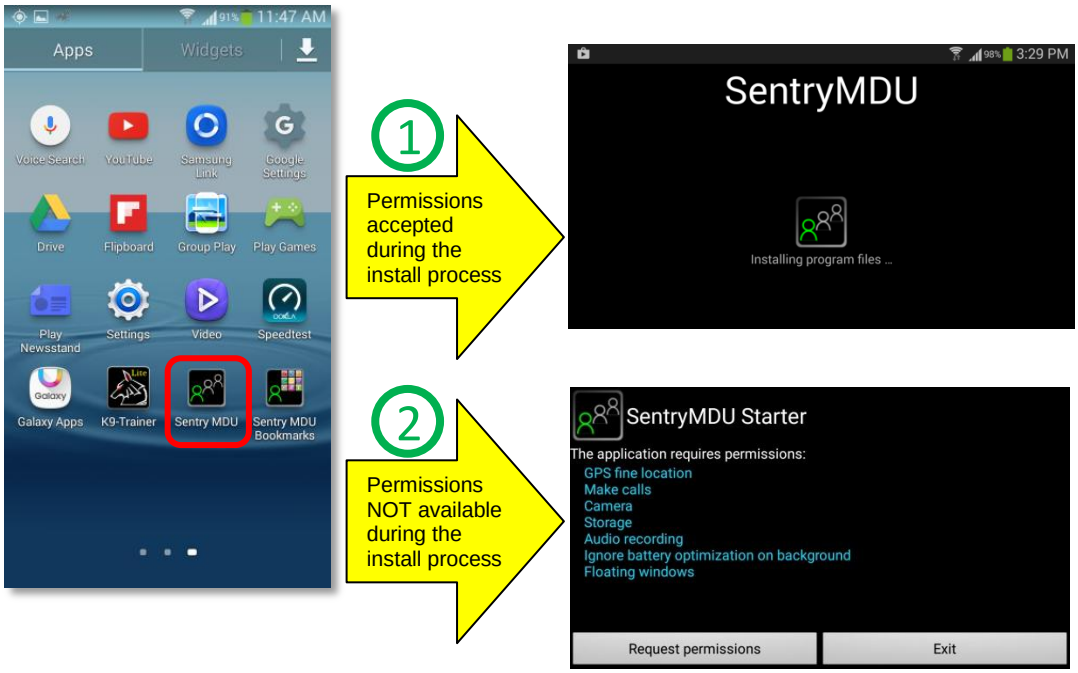
1) Go to the DLT or SentryMDU website and download the App.
2) Select to “Install” the SentryMDU App on your device.
3) If presented, accept required Access Permissions.
4) After the App is installed, return to your screen menu items and locate the SentryMDU Icon.
5) Launch the SentryMDU App on your device.
6) If App Premissions were not available and “Accepted” during the install process, review and accept them now.
7) Agree to the EULA (End User License Agreement).
8) Agree to the Privacy Policy.
9) The SentryMDU App will now install on your device.
10) Complete registration with a Username and Password

Important Note: If you are part of a Licensed Group, your registration steps are a little bit different. Please refer to **Section 3.7** for details.

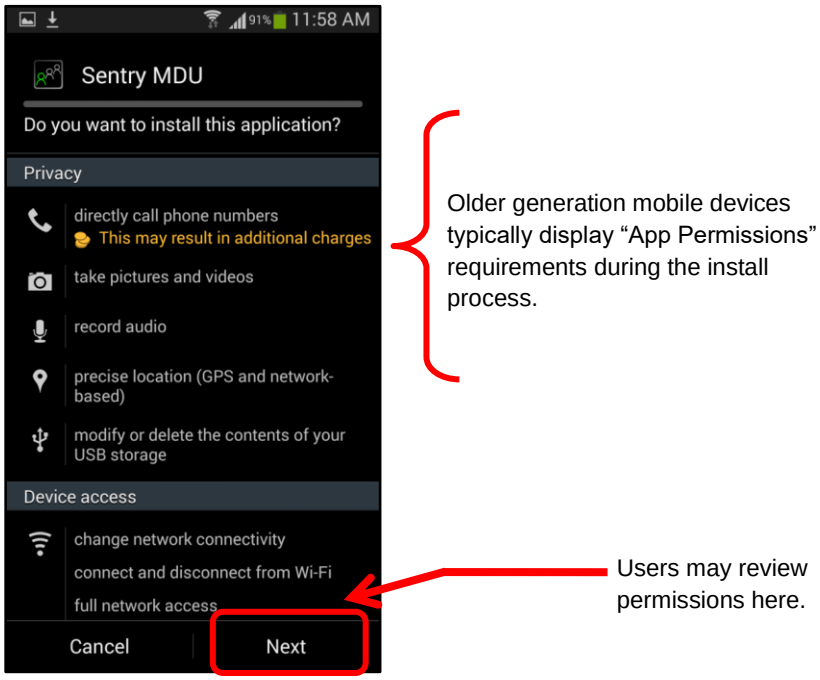
Review of App Installation Steps:

Once the SentryMDU App is downloaded and installed on your device, the system will install two (2) SentryMDU icons on your Apps Panel.

Click the SentryMDU Icon to launch the App for the “first time” and begin the installation process. The system may display one of two different panels as shown below.



Over the last several years the evolution of the Android Operating System has placed increased emphasis on security and privacy. This evolution affects the way User Permissions are handled on a device. For example, older model cell phones may display the “permission” settings for an App as part of the installation process, as shown below.



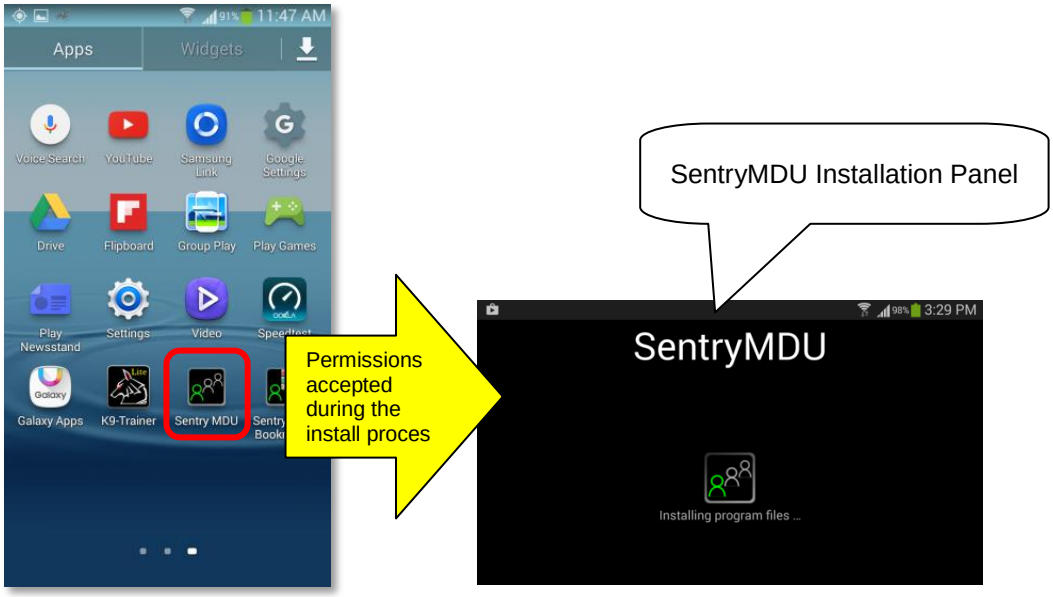
Depending on the Manufacturer, Model and installed Android version of your device, the way that App Permissions are handled may be different. If you are not shown (and do not “Accept”) the App permissions at the “install” level then the SentryMDU app installation process will include a set of screens that cycle through the permission requirements for this App when you first “launch” the App.

> **Important Note: For the SentryMDU App to function properly, ALL required permissions MUST BE ACCEPTED. You can not select some and not others. We use the “All or Nothing” approach. The SentryMDU App will not install until all necessary permissions are satisfied.**
>
> **For example, assume you are going to use the “Motion Detection” features of the App to monitor a remote mobile device using the Camera as a remote surveillance camera. The system would need “network” permissions (Cellular or WiFi), “Camera” (to send video), “Microphone” (to monitor audio), “Location/GPS” (where is it), “Notification” (to notify you that a motion detection event had occurred) and so on.**

For a full listing of the access required by the SentryMDU System, review the “Permissions” section for the App on the DLT or SentryMDU website.

Scenario #1: Permissions approved during App installation

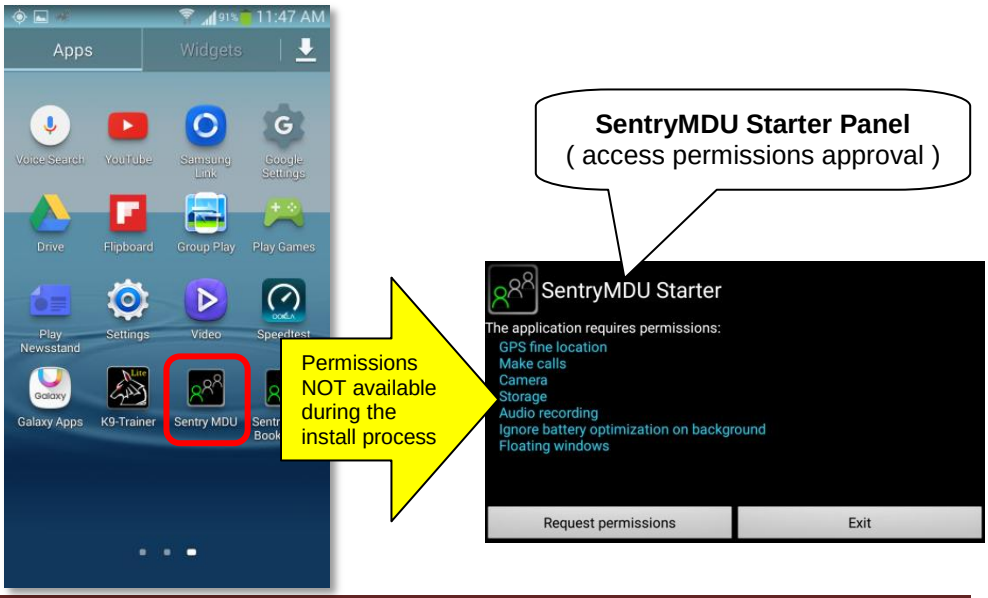
If you are using a device where the permissions list was presented when you installed the App (as shown in previous picture) ... when you launch the App for the first time, you will jump directly to the **SentryMDU Installation Panel**.



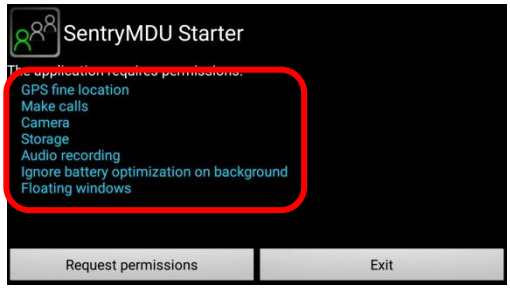
Important Note: Depending on the age and Android version of your mobile device, the time period for installing the program files may vary from 5 seconds ... up to 5 minutes. For example, a Samsung S22 smartphone only takes a few seconds, where an older Samsung S9 may take several minutes. Be patient.

Scenario #2: Permissions NOT accepted during the install process

If you are using a device where the permissions list was NOT presented when you installed the App ... then you will be presented with a **SentryMDU Starter Screen** where the required permissions will be presented to you … and you will need to "approve" them one-by-one. The SentryMDU Installation Panel will be displayed AFTER the permissions are approved.

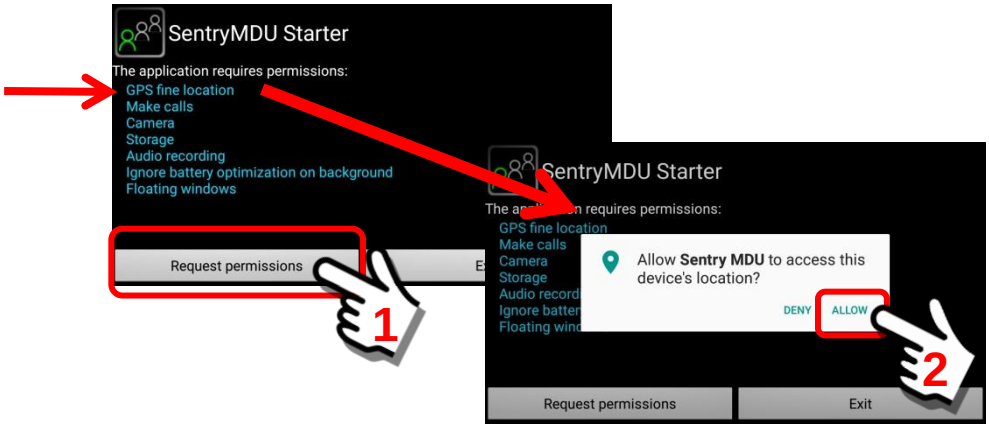


1. ***The SentryMDU Starter Screen***
   If the App Permissions are NOT set during installation, they MUST be set before SentryMDU program files are installed. The SentryMDU Starter Panel is a feature that will ensure that the required permissions are set.



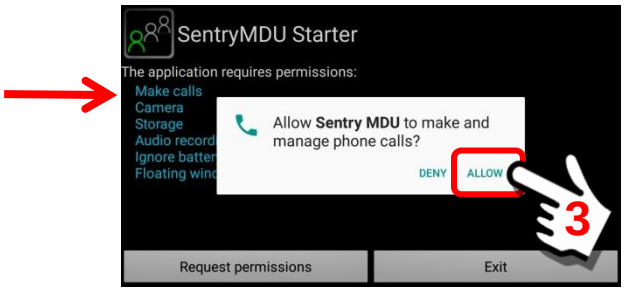
   The SentryMDU System will NOT install unless all permissions on the list are approved.

2. ***The "GPS fine location" permission setting.***
   Click the "Request permissions" Button to begin the review process.



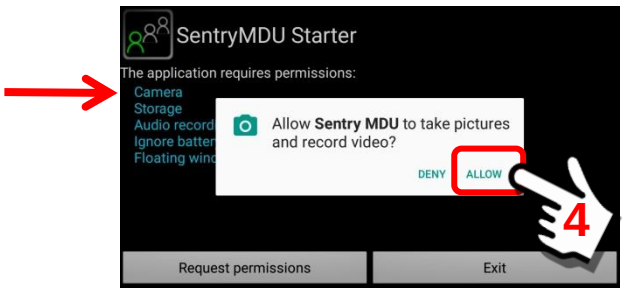
3. ***The "Make Calls" permission setting.***
   As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

   Click "Allow" on the Make Calls Panel (make and manage phone calls).



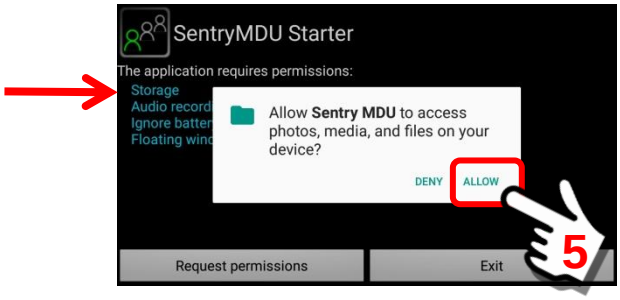
4. ***The "Camera" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Camera Panel (take pictures and record video).



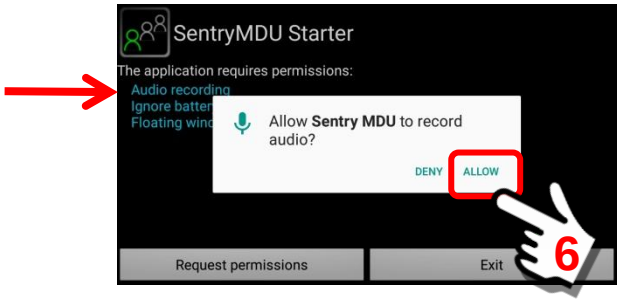
5. ***The "Storage" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Storage Panel (access photos, media and files).



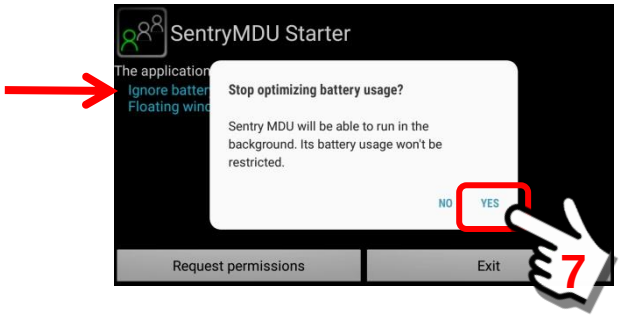
6. ***The "Audio Recording" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Audio Recording Panel (to record audio).



7. ***The "Battery Optimization" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Battery Optimization Panel.



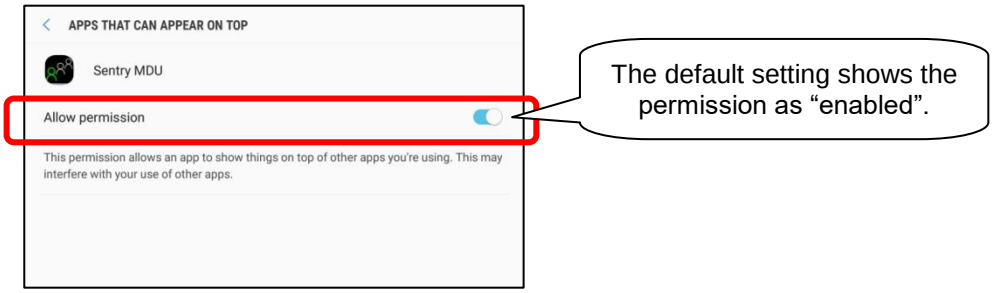
The Battery Optimization "permission" may (or may not) be available on your device. This is a relatively "new" feature of the Android operating system that puts some Apps to "sleep" when not used for long periods of time. The objective is to reduce battery drain when the device is in hibernation or standy mode.

In order for the SentryMDU App to continue receiving notifications and to report GPS location, it is necessary that this optimization feature be "turned off" for the SentryMDU App. We are giving permission that the SentryMDU App can still operate, even when the device is in "standy mode".

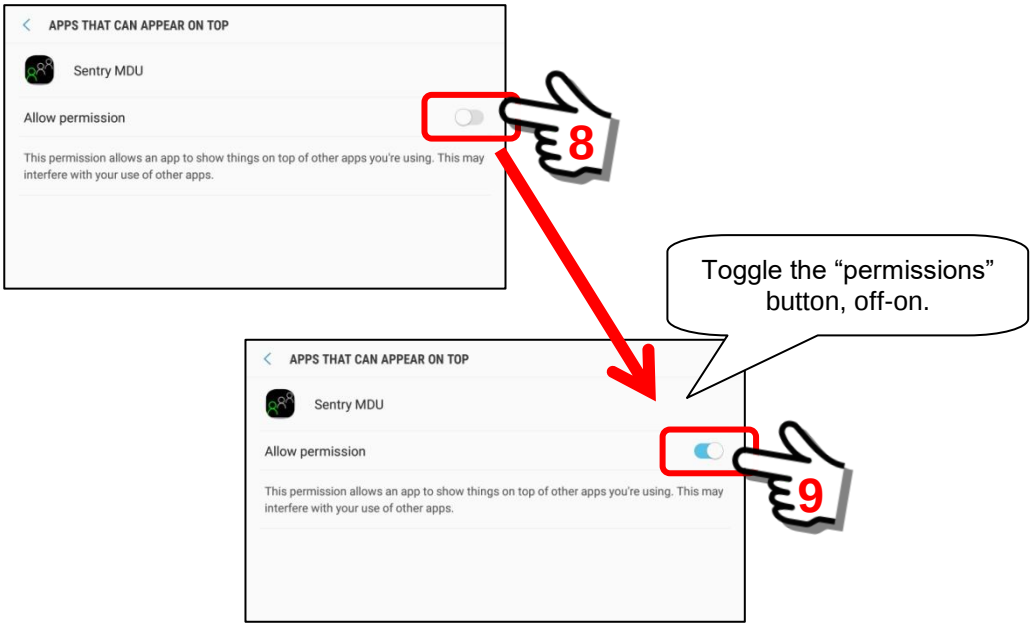
8. ***The "Floating Window" permission setting.***
The final permissions setting is to allow the SentryMDU App to create re-sizable "Floating Windows" that will display on top of the display screens of other Apps. This requires a unique approval process.

When the "Floating Window" item is reached … the system will retrieve the permission panel from the mobile device (not from within the SentryMDU code). If you want to learn about Floating Windows, see **Section 9.13**.

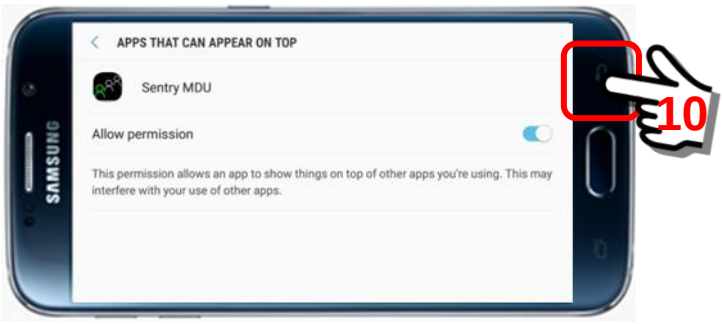
The example shown below is from a smartphone running Android Ver7. Yours may look a bit different. As you can see below, when displayed, it appears that the permission is already set to "Allow permission".



However, for the SentryMDU App to access the permissions “setting” you must toggle the permissions setting “off – on”. This will force the device to recognize SentryMDU as an authorized App.



When finished, click the “Back” Button. The system will now display the SentryMDU Program Installation Panel and continue with installation.

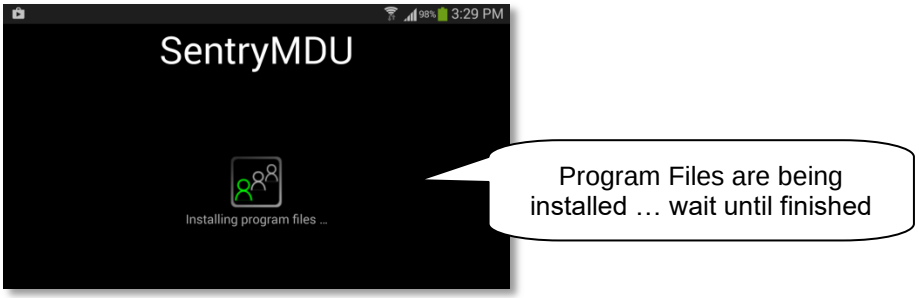


Permissions are now complete.

Review of Registration Steps:

The following screens will be displayed during the installation and registration process.

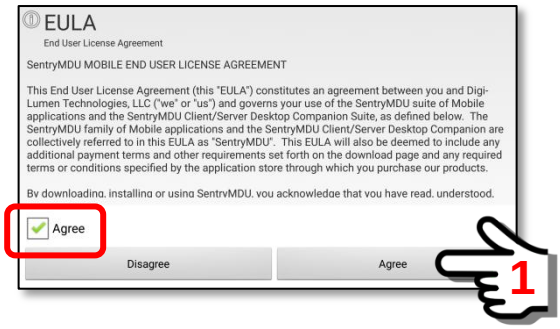
The **SentryMDU Program Installation Panel** will be displayed while the App is being configured and the file structure created.



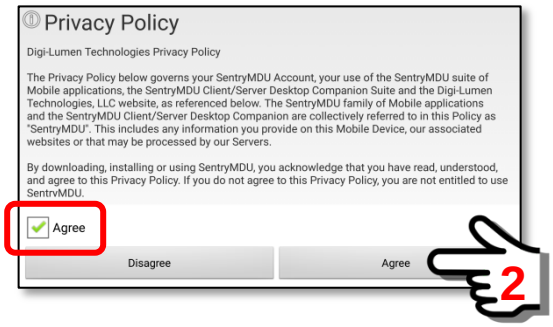
Important Note: Depending on the age and Android version of your mobile device, the time period for installing the program files may vary from 5 seconds ... up to 5 minutes.

For example, a Samsung S22 smartphone only takes a few seconds, where an older Samsung S9 may take several minutes. Be patient.

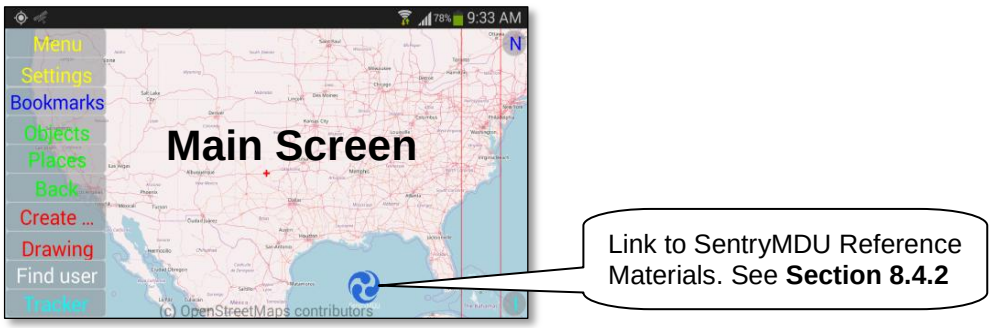
Accept the End User License Agreement (EULA)



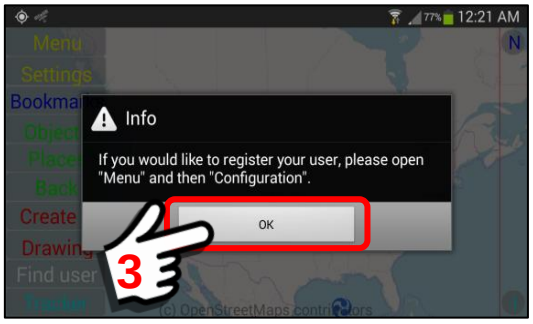
Accept the Privacy Policy



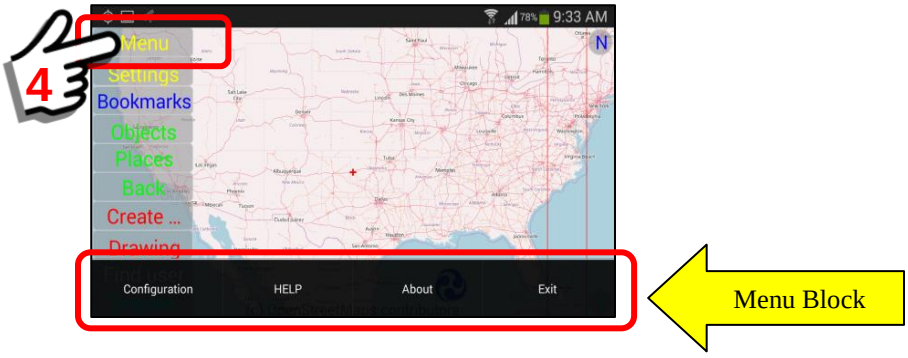
Once the SentryMDU program files have been installed and the EULA executed, a Main Menu screen will be displayed. This is the SentryMDU Main Screen. The “default” map image will be a Road Map View of the North American Continent (USA, Canada, Mexico).



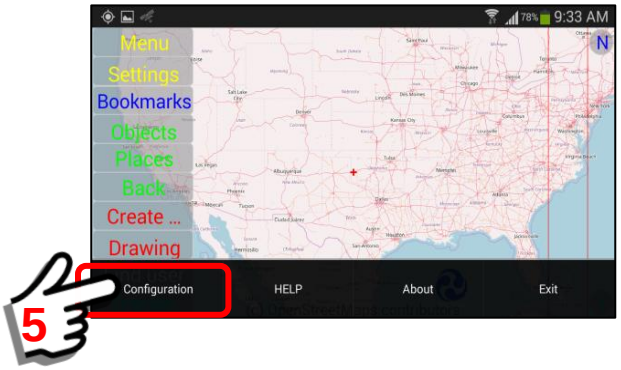
A pop-up message will remind you to continue with device Configuration.



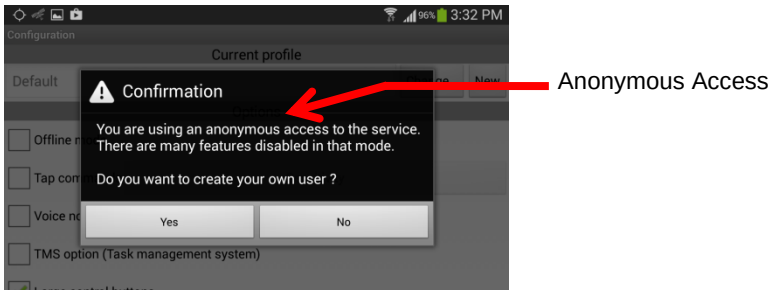
To continue with the registration process, click on the MENU button in the upper left hand side of the screen. A Menu block will now appear at the bottom of the page.



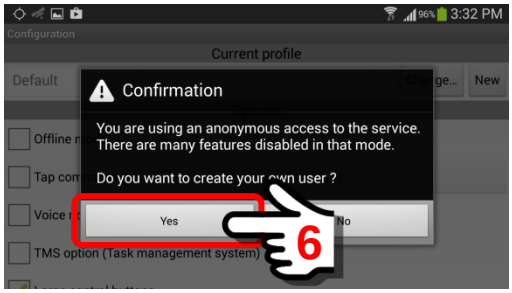
Select the “Configuration” Button from the Menu Block.



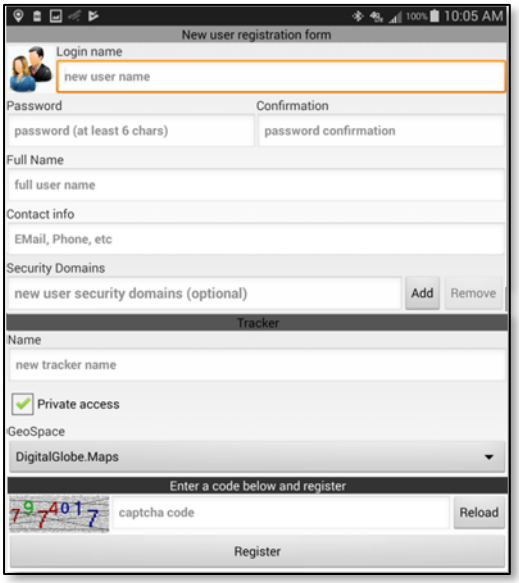
As the Configuration screen begins to display, a “pop-up” box appears and explains that prior to registration you ONLY have Anonymous user access to many of the features.



In order to have access to many of the SentryMDU features, you will need to register as a User. The registration process creates an “account” for you on the SentryMDU Data Server, identifies the mobile device, and creates a security profile. **Registration is free.** This is necessary if you wish to interact with other mobile devices on the network.



By clicking on the “Yes” button, the “New user registration form” will be presented. Depending on the type of device you are using (phone or tablet), as you touch one of the data entry boxes, the device will show a screen “keyboard” so you can enter the required text. See the following rules when filling out the form.



NOTE:

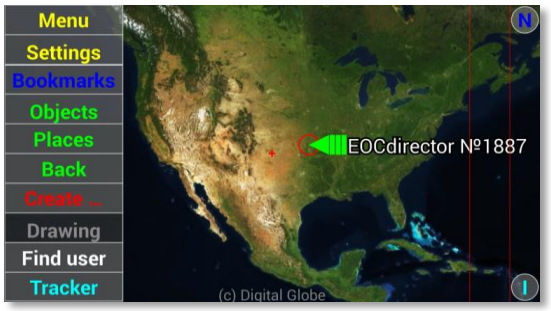
Registration does NOT obligate you to anything. It is FREE.

The use of a License Key or Subscription is OPTIONAL.

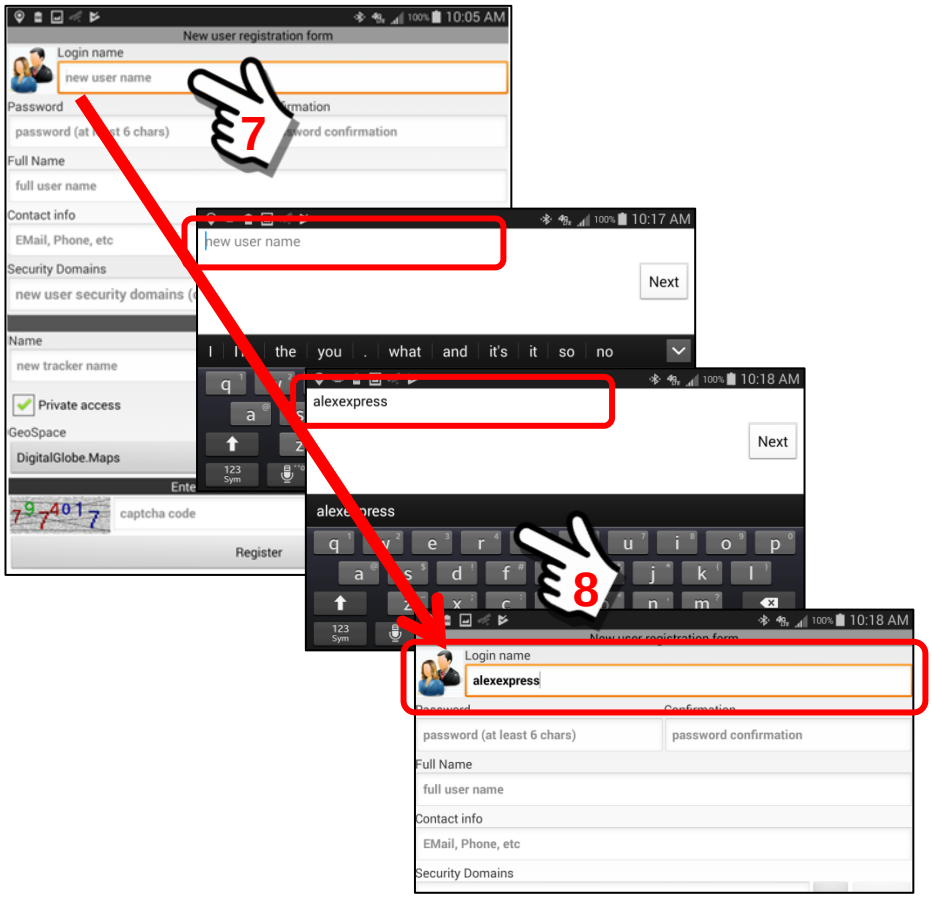
Rules to follow when filling out the registration form:

1. ***Login name***

   A single word name of 5 – 255 characters, no spaces. Special characters (such as !@#$%) are allowed. However the ‘ and ; characters are not allowed (apostrophe and semicolon). This will be your “username” so it should be a descriptive name. This name will appear on the Map Screen and will be the identifier with other Users. For example, if your job title was as the Director of the Emergency Operations Center …. you might use: EOCdirector (as shown below).



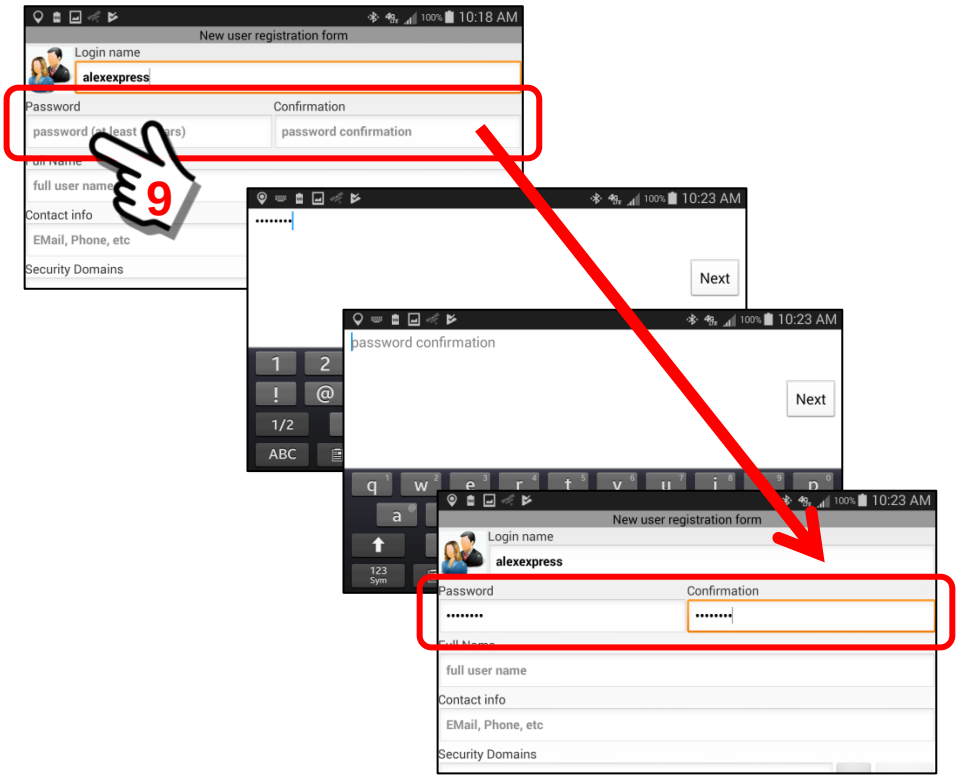
Click inside the “name” box to open an on-screen keyboard. Type your Username. For this example, we will use a user by the name of Alex Express and a Username = “alexexpress”.



2. ***Password***

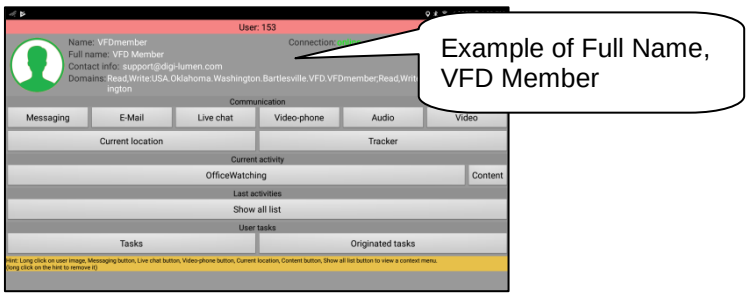
The Password must be 6 – 255 characters, no spaces. Special characters (such as !@#$%) are allowed. However the ‘ and ; characters are not allowed (apostrophe and semicolon).

Click in the password field and enter your password, then confirm by entering again.

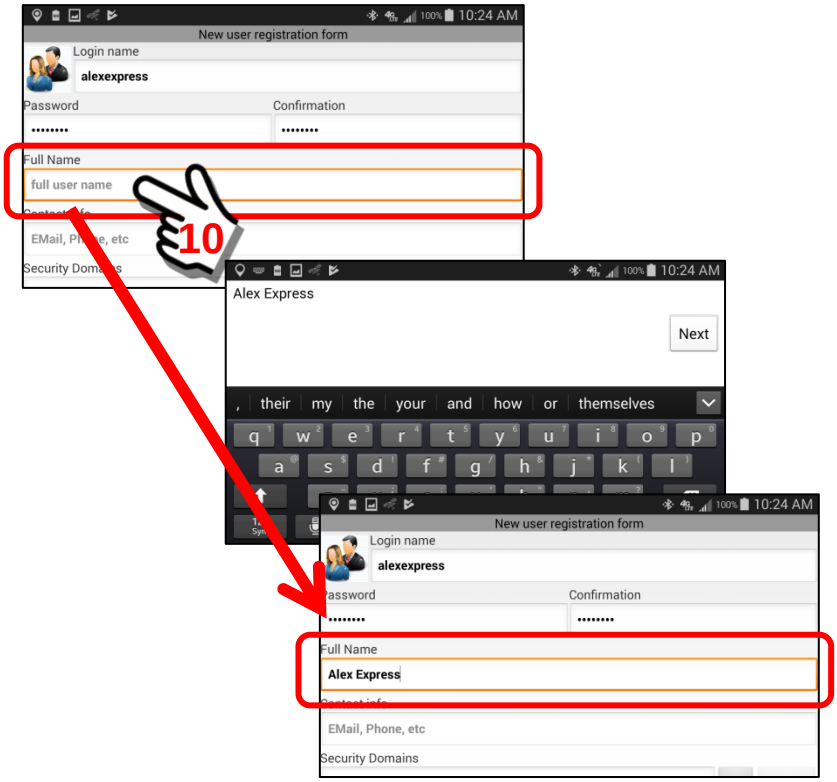


3. ***Full Name***

This is your actual NAME … such as Robert Jones or it could be a “job title” such as **VFD Member** (stands for **V**olunteer **F**ire **D**epartment **Member**). Some features of the Sentry MDU System will use your Full Name in correspondence with other users on the system. Features such as Video Phone or Text Messages will use this name in alerts to other users.



Click inside the data entry field to open the on-screen keyboard. Enter your Full Name. In this example we will use **Alex Express**.

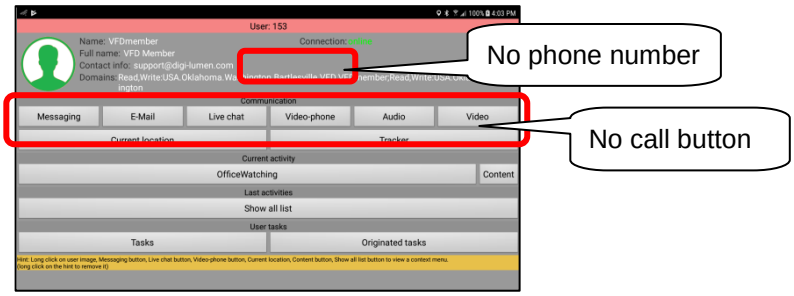


4. ***Contact Info***

This is an email address and (optionally) a phone number. This information is used in two ways:

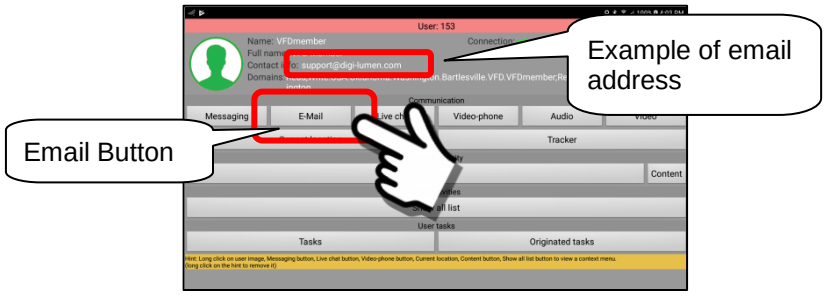
a. If the mobile device you are using has a SIM card (cellular enabled) and you enter the optional phone number, then other SentryMDU users will be able to call you on your phone ***from within*** the SentryMDU App (assuming security credentials allow).

If no number is entered, there will **NOT** be a “Call” button displayed.



b. Whether you enter a phone number or not, we will need a valid email address so that we may contact you in the event something is wrong with your account. We do NOT send marketing emails or other spam. This is only in the event we determine there has been unauthorized use of your account or some other important reason related to your account about which we need to contact you.

It is also for other Users in your organization to be able to email you.



<u>Email Address</u>
The email address must be listed first and in standard email format such as:

myName@gmail.com

<u>Phone Number</u>
The optional phone number must be listed after the email address and separated by a comma “ , “. The phone number must start with a “+” sign and may not include inter-country, inter-town access codes. It must be made up entirely of numbers. It should follow the standard international telephone format such as the USA example shown below:

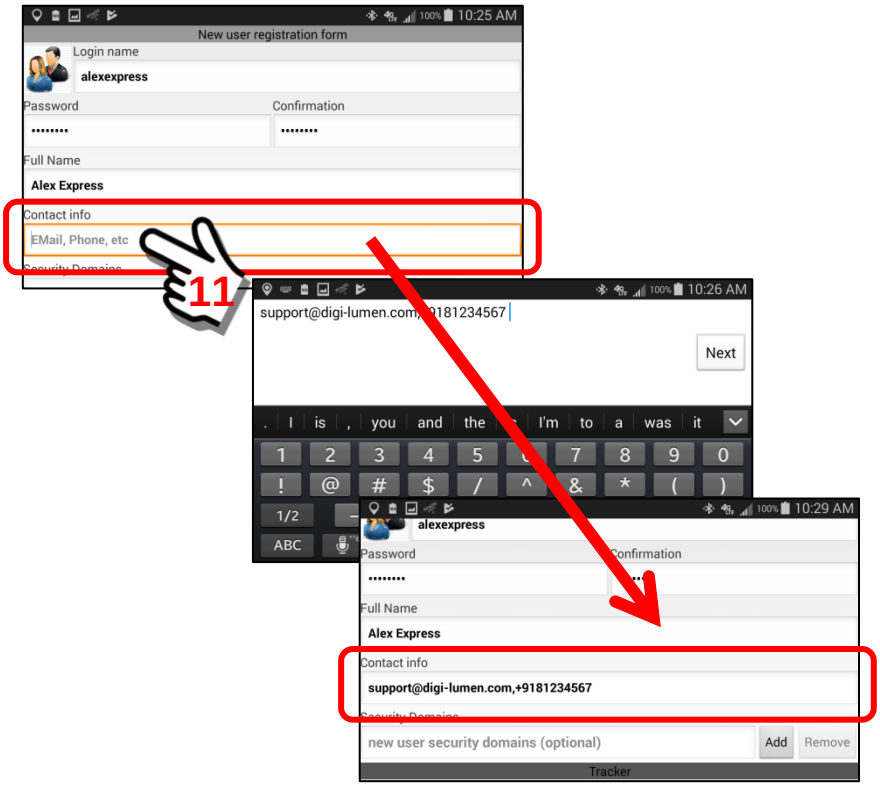
+19181234567

If you choose to list the optional phone number, the entry for the Contact data field may look similar to the following:

myName@gmail.com,+19181234567

Note: No whitespace between letters/numbers

Click in the “Contact Info” box to open the on-screen keyboard.
Enter the contact information.



5. ***Security domains***

The Security Domains data field has several possible options:

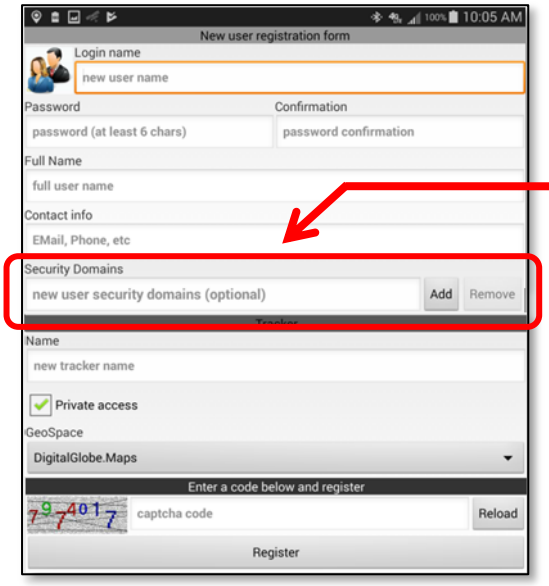
a. If you are part of a Licensed Group, the Account Administrator for your Group MAY provide you with Security Domain information to enter into this data field. If not, then leave this field “blank” during registration.

b. If you plan to purchase a subscription, the system will assign you a “default” set of security settings with your “username” as the root context. In this case, leave this field “blank”. These are discussed in more detail in **Section 6.3**.

c. If you are a FREE user and do not plan to purchase a subscription, or you MAY purchase a subscription at some later date … you should leave the field “blank”. The system will assign you a “default” set of security settings with your “username” as the root context.

d. If you are a FREE user or a Subscription User AND you want to JOIN **an existing** Security Domain … AND you know the DOMAIN_NAME/PASSWORD pair that has been provided to you by the owner of the Security Domain (**Section 6.5**), then you may enter that information in this block. In this case, the system will assign you your OWN default security domain (based on your Username) AND provide you access to the other Security Domain(s) you have added.

The Security Domains data block is “optional”.
Skip ahead to Item #6 unless you are using Optional Security Domains.



Optional security domains

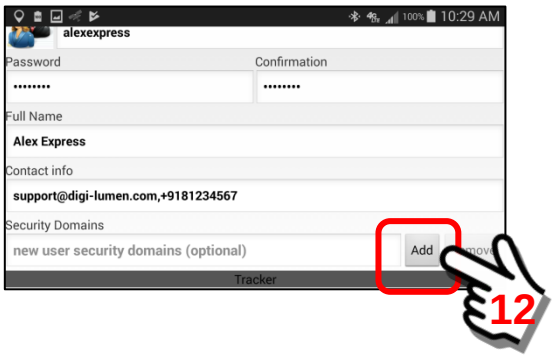
In this exercise, we will assume that we want to “Add” a security domain for a family member. When we add this security domain, it will be in addition to the “default” security domain that will be created by the system (using the Username you have chosen). See **Section 6.4 – 6.5** for additional details.

We will add the following:

Read,Write:samexpress.family.travel.egypt

This will be a Security Domain from **User = Sam Express** (samexpress).

To begin, click on the “Add” Button on the Registration Panel.



A Security Domain Structures panel will open that will enable a user to “search” for security domains of other users. These security domains may then be specified to be “added” to your list of available security domains.

In order to “add” a security domain of another user, there are three conditions that must be met.

Device #1 (your device) and Device #2 (another user’s device)

Conditions to add a “personal” Security Domain of another User:

1. The “other” user must be on the SAME data server instance.
2. Device #2 must have created a personal security domain.
3. User of Device #2 must provide the DOMAIN_NAME / PASSWORD pair to YOU (ie Device #1) so your device may become part of their personal security domain.

Users may create multiple Security Domains to cover work, play, family, specific activities and so on. Users may have up to 100 security domains.

To add the security domain you will now need the DOMAIN_NAME / PASSWORD pair for the user group you want to add.

Domain Name: samexpress.family.travel.egypt
Password: trip1234

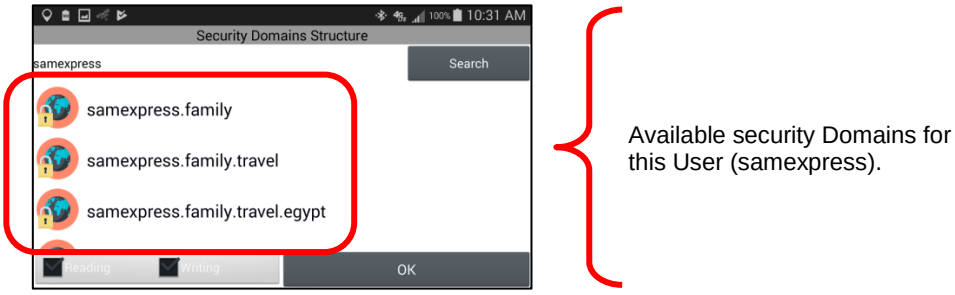
The root element of “*samexpress.family.travel.egypt*” is “samexpress”.

Click on the *“Enter a context of the root element”* text area of the Security Domains Structures Panel.

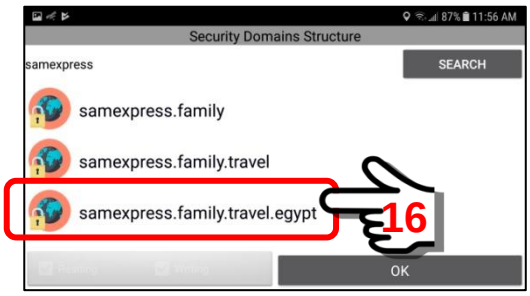
When “clicked” the on-screen keyboard will open. Enter the root element of the security domain … **samexpress**.

When finished, click the ***Search Button***.

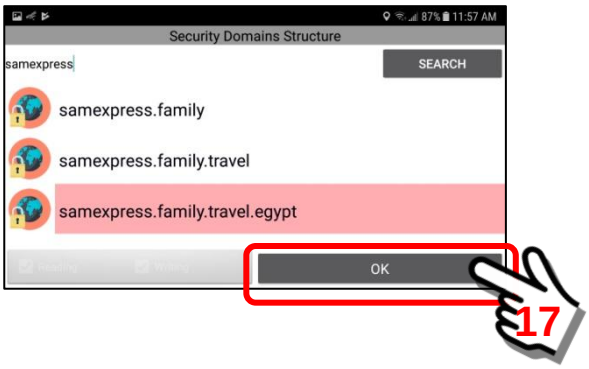
The system will search for ALL security domains with a root context of “samexpress”. In this example, we notice that 3+ items were retrieved.



We are looking for … samexpress.family.travel.egypt … because this is the DOMAIN_NAME that we have a password for. It will not work if we try to use one of the others.

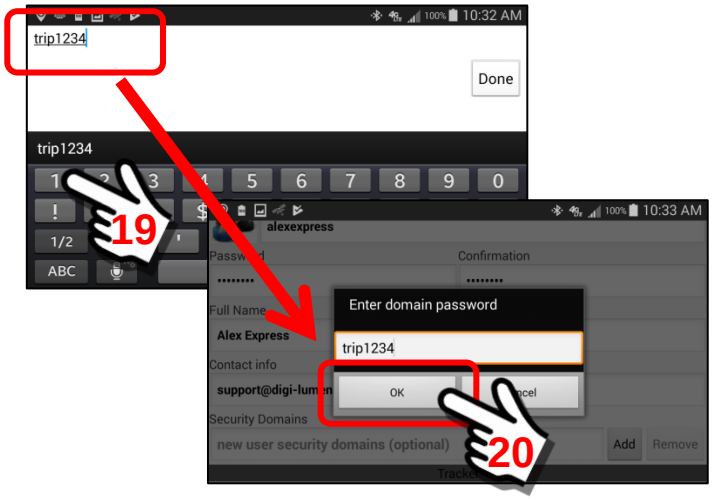


Select (click) on this item to activate the choice.
Then click on the “OK” Button.



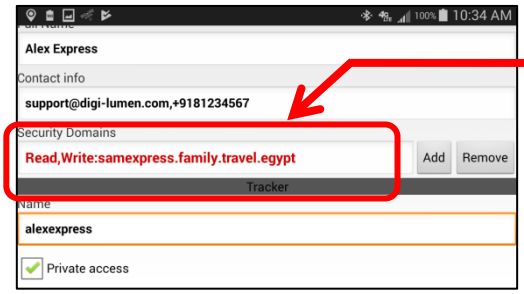
Now that you have selected the security domain that you want to add to your registration panel, the system will prompt for the password.

Enter the password for this security domain. This is the password that was provided to YOU by Sam Express, the owner of Device #2.



Click the “OK” Button to complete the transfer.

The Security Domain from User = Sam Express is now added to the Security Domains data field on the Registration Panel.



Security Domain for user "samexpress"

Important Note:

In the event you use an INCORRECT password, the Registration Form will fail with an error as shown below when you click the "Register" Button and the system processes the registration.

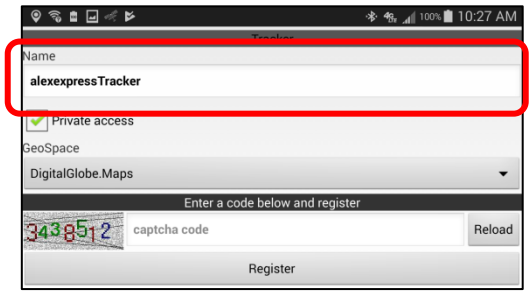
The FORM will not be processed if you have an incorrect password.

6. ***Name (Tracker Name)***

This will be the "name" that the GPS Tracker feature will use to identify a User. By default the system will append the word "Tracker" to the end of the Login name that you selected (Item #1 above). We would suggest you use the same name as you selected for a Login name … however, you can use anything you want (alphanumeric characters only).

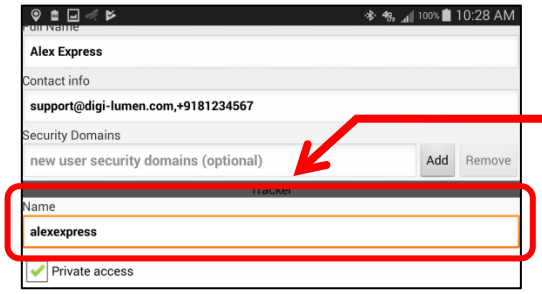
As shown in the following example, the Tracker Name will default to the entered Username + Tracker.

Default name = **alexexpressTracker**.



We will edit the Tracker Name and remove the “Tracker” part to leave just **alexexpress**. Click in the text field to open the on-screen keyboard.

We have now changed the **alexexpressTracker** name to **alexexpress**.



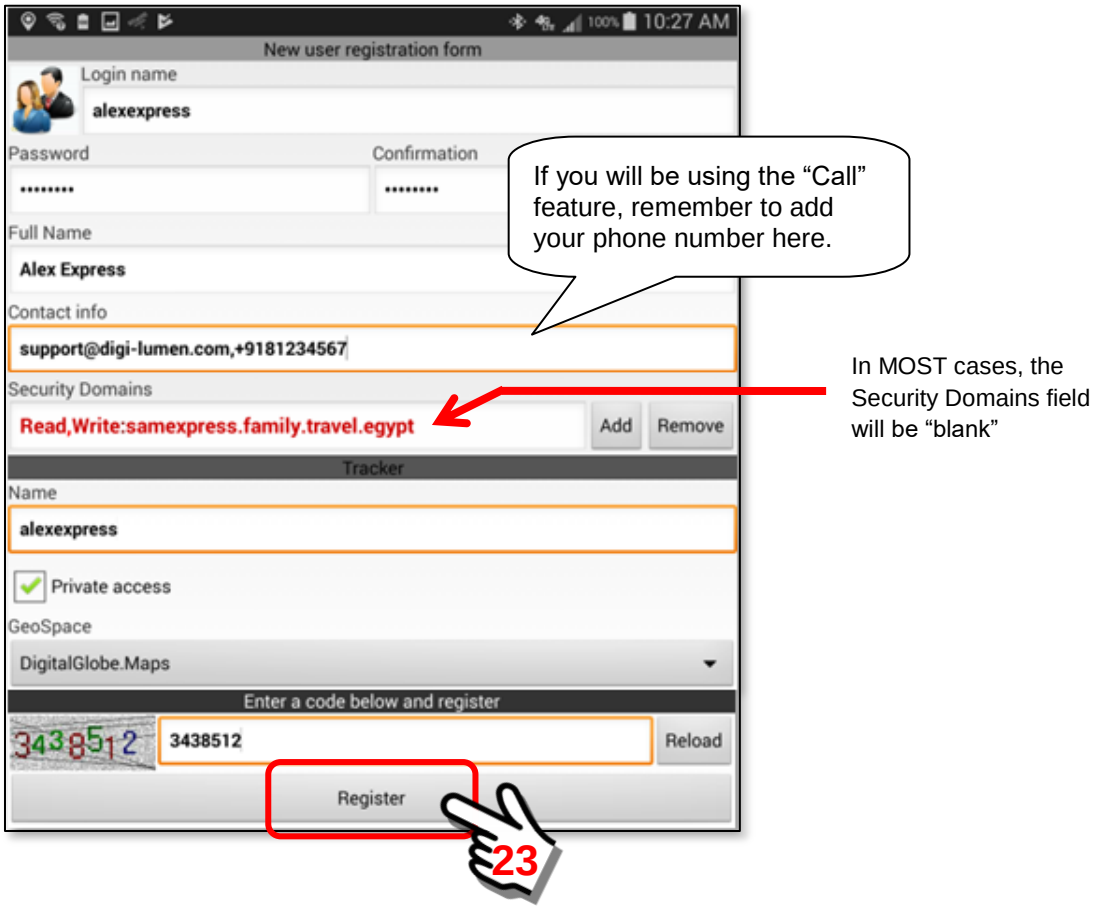
Tracker Name has been changed.

7. ***Private access (checkbox)***
   By default, the Private access checkbox IS CHECKED. Private access means that other Users CANNOT see you or interact WITH YOU unless the security domain settings specifically ALLOW them to see you.

   For those users that have a Licensed Group, you WILL WANT to keep the Private access "checked" since the Account Administrator will have already set up the security domains for you.

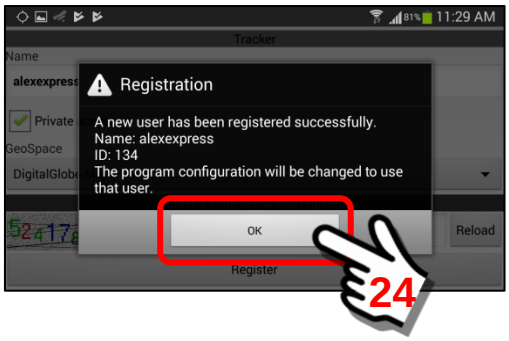
8. ***GeoSpace (selection drop-down box)***
   By default, the DigitalGlobe.Maps GeoSpace is selected. This will work for most users that are located in all but a few regions of the world. The provider of satellite and high-resolution aerial imagery (MapBox or DigitalGlobe, Inc.) has most of the world covered. However, there are regions of the world where they do not have high resolution coverage. For this reason, we have a selection box where other imagery suppliers may be provided (or are available).

Once all of the data fields are filled out, your form should look something like this.



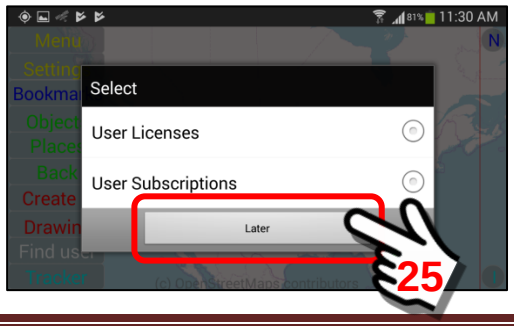
Finally, click on the “Register” Button.
When the “Register” Button is clicked, the mobile device will contact the SentryMDU Data Server and set up an account for you. You will need to have either a cellular or WiFi connection such that the mobile device can contact the SentryMDU Data Server network. This may take 10 – 20 seconds to complete. This account will set the security profile for you as a User of the SentryMDU System and will register your “device” as an authorized device.

Once the “registration” is successful, you will get a message stating that an account has been created for you on the network and that your security profile has been changed from Anonymous to a registered user (in this example, **alexexpress**).

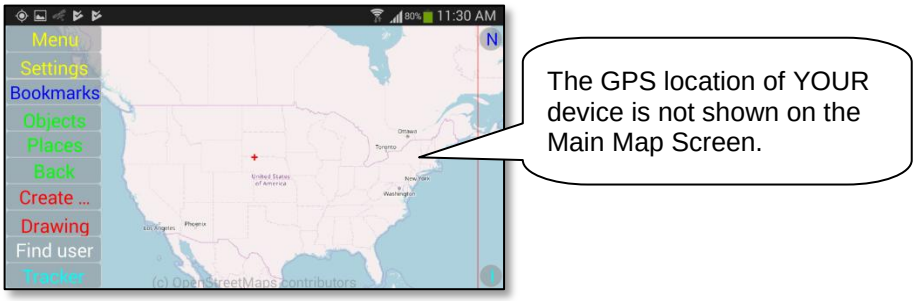


Once the “OK” Button is clicked, the screen will return to the Main Menu Screen.
A pop-up box will be displayed allowing you to select either a *User License* or *User Subscription*.

For this example, we will NOT be selecting either a Subscription or User License.
Click on the “Later” Button.



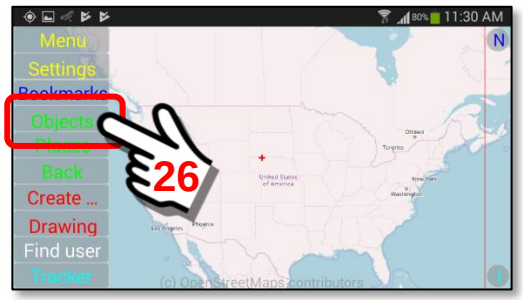
The Main Map Screen will look similar to the following. The default Map View uses the OpenStreetMaps data to display a roads/street map view.



You have now "registered" but your location is not displayed on the map screen until you tell the mobile device that you would like to display your own location. In typical use, since you know where YOU ARE … you may choose not to display YOUR location and only display the GPS location of other Users in the network.

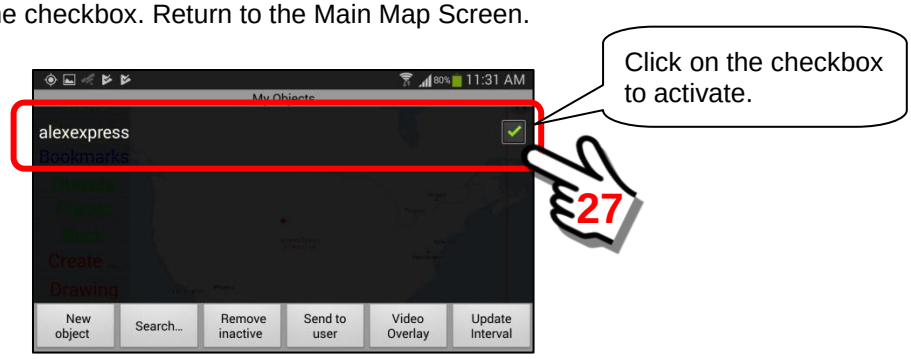
In this example, we will turn on the GPS location (mobile object marker) of your mobile device. **Section 10.5** of this User Manual will cover this feature in detail, but for now, we will just turn on the Mobile Object Marker.

Click on the **Objects Button**.

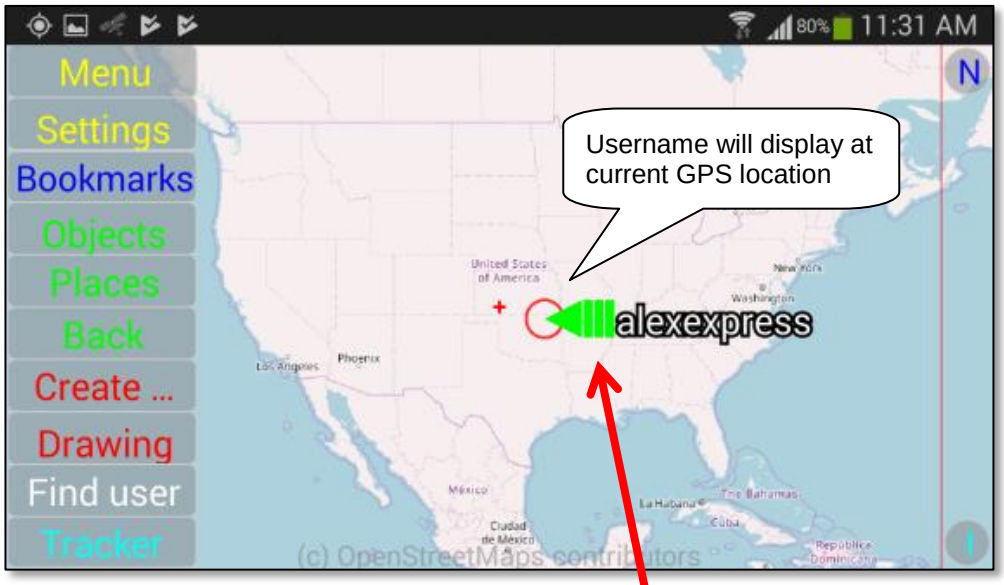


The "My Objects" Panel will be displayed. Since you have only created YOURSELF as a User … and have not imported other users from your Security Domain, your mobile device will be the only device in the list.

In this example, you are the user Alex Express (username = alexexpress). When the "checkbox" is not checked, the user will NOT be displayed on the Map Screen.
To illustrate this feature, we will put a "checkmark" in the checkbox to activate this user. Click on the checkbox. Return to the Main Map Screen.



As a "registered" User, the device will now display your Username at the GPS coordinates of your current location. You may need to zoom in/out to find your location (depending on where you are located in the world).



See **Section 4.4, Item #13** for an explanation of these color codes.

Note:

You have now REGISTERED … but you have NOT COMPLETED CONFIGURATION. See Sections 3.14 and 5.4 for additional settings that you will need to make. This is important if your device is to provide a good user experience and to perform optimally (ie audio/video streaming, map images, etc.) for your specific hardware.

Your next step is to decide if you would like to also have access to satellite imagery. Some examples are shown below.

3.6. Using the SentryMDU App for FREE.

The SentryMDU App is free to use:

The SentryMDU App is free to download and install on your mobile device … or 10 mobile devices … or as many as you want (your whole family).

We do not have a "Trial" Version or a "Lite" Version with a reduced feature set. We have one version. The same for everyone. Whether you are a commercial entity with 10,000 users running your own Licensed Data Server or a "freebie" user with a group of two, you are both running the same SentryMDU App.

The primary difference between free and paid is this …..

> **We have to pay** for the use of satellite imagery, so we cannot just give it away for free (we are NOT supported by advertising and do not sell your data).
>
> As a freebie user, you get OpenStreetMaps map data (Open Source) which is "street maps" and not satellite imagery. We can do this because we run our own OpenStreetMaps Servers and don't have to pay someone else to do it for us.
>
> Freebie users do not get disk storage to store your audio/video files on OUR Data Server (you can still store it on your own mobile device).
>
> Freebie users cannot live stream broadcast through our Data Server and consume bandwidth (most free users would not use this feature anyway).
>
> **Using the SentryMDU App for free does NOT obligate you to purchase a Subscription or License the software later.**

If you are happy with the OpenStreetMaps type screens and don't need streaming or disk storage … then staying a "freebie" will probably work for you. As explained above, the most noticeable thing you get with a paid subscription (or License) is the multi-zoom levels of beautiful satellite imagery.

What we hope you will do:

If you are a "Free" user, we hope you will enjoy the SentryMDU software, get some benefit out of it and tell your friends about it.

Eventually, we hope you will see the value to spending a few cents per day, in order to get access to the high resolution satellite imagery, disk storage space and the use of streaming resources through our Data Server.

Enjoy the ride!

3.7. Registration on a Licensed Server (using a License Key)

Licensing Process Overview:

When an organization "licenses" a SentryMDU System (Data Server and Desktop Client), this means they have signed a software agreement with us to license the use of the SentryMDU software for a specific period of time (ie Annual Contract). This software license enables the organization to use/install a dedicated SentryMDU Data Server instance exclusively for their own organization use. They may choose to provide and host their own hardware (for security and control reasons) or contract with third-party hosting companies to manage the resources.

As explained in Section 2, the SentryMDU System is comprised of 3 layers of technology. For full access to ALL available features it is necessary that all three technology layers are in control by the User (or User Group).

When a SentryMDU Data Server is licensed, DLT will provide an **Installation Guide** to the customer for software installation and configuration. Part of the configuration process will include the following:

1) Create a security domain hierarchy for the organization.
2) Identify the roles/responsibilities of User job classifications that will be linked to Security Domain access rights.
3) Create License Number / Access Key pairs to be used during User Registration.

Member of a Licensed Group:

The configuration of a licensed SentryMDU Data Server includes setting up several "temporary" User License Access Keys for that server instance. This License Access Key is usually maintained by the IT Department of the organization. As a User reading this document, you only need to know that someone in your IT Department will provide you with the License Access Key and other information you will use.

The purpose of the License Key is to make it very easy for "new" users in the organization to register. All of the Security Domain, job classification and access/control settings have been pre-determined by the Organization's IT Department.

To register as a "new" user with a **License Number / License Access Key**, a user will need four (4) pieces of information:

1) An "Anonymous User" **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

Licensed User Registration Overview:

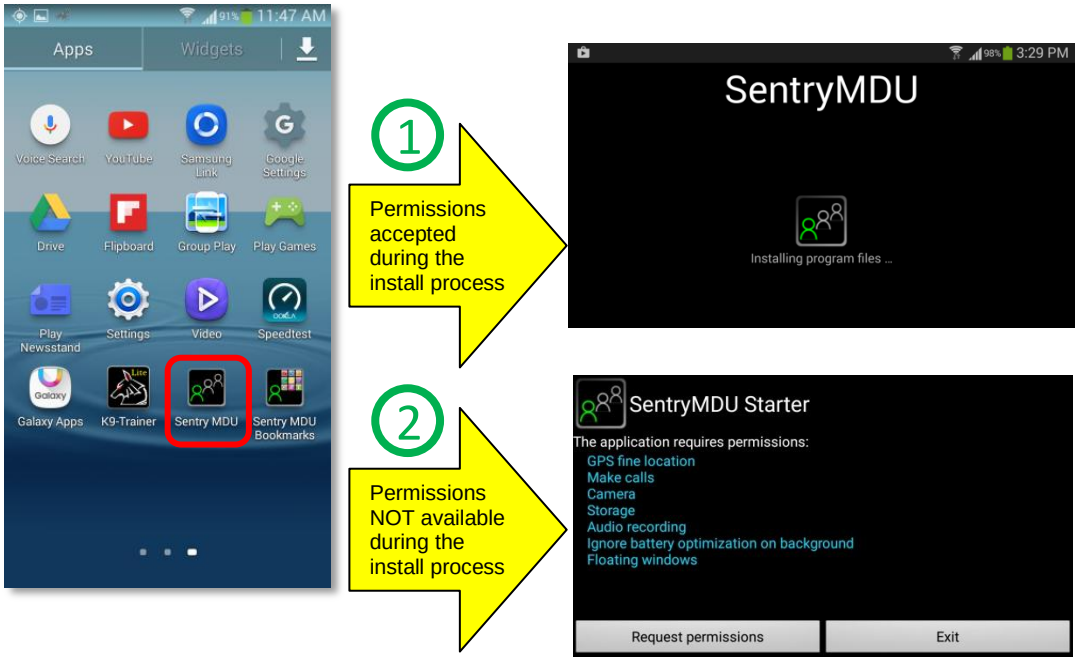
The SentryMDU installation and registration is straight forward. Registration is FREE and does not obligate you to spend any money. A User will perform the following steps:

1) Contact your Organization's Administrative Person and get the 4 pieces of information mentioned above, that will be needed for registration.
2) Go to the DLT or SentryMDU website and download the App.
3) Select to "Install" the SentryMDU App on your device.
4) If presented, accept required Access Permissions.
5) After the App is installed, return to your screen menu items and locate the SentryMDU Icon.
6) Launch the SentryMDU App on your device.
7) If App Permissions were not available and "Accepted" during the install process, accept them now (SentryMDU Starter Panel).
8) Agree to the EULA (End User License Agreement).
9) Agree to the Privacy Policy.
10) The SentryMDU App will now install on your device.
11) Enter your Licensed Server address into the Main Configuration Panel.
12) Enter the "Anonymous" user password for your Licensed Server.
13) Complete registration with a "new" Username and Password.
14) Enter your License Number / License Access Key.
15) You are done!

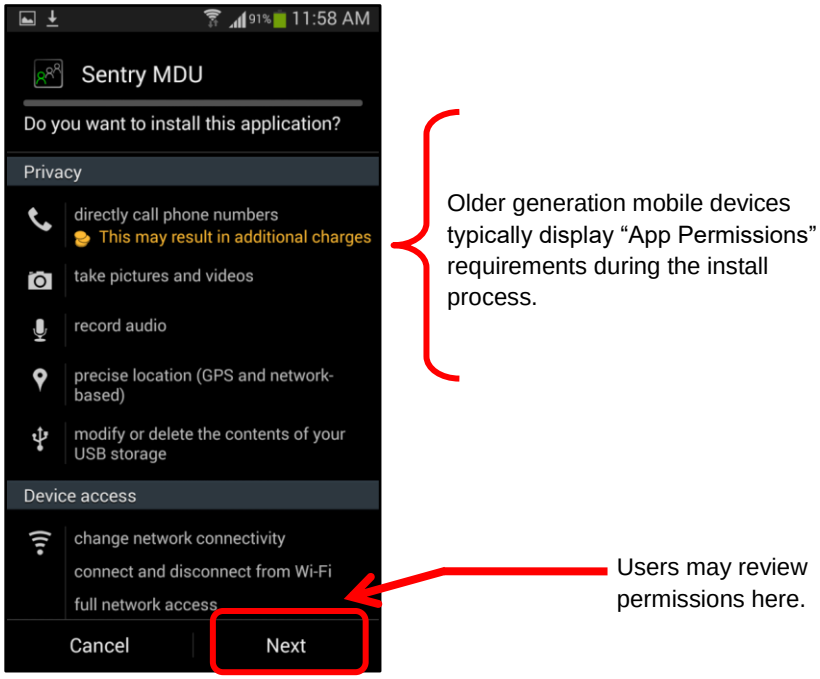
Review of App Installation Steps:

Once the SentryMDU App is downloaded and installed on your device, the system will install two (2) SentryMDU icons on your Apps Panel.

Click the SentryMDU Icon to launch the App for the "first time" and begin the installation process. The system may display one of two different panels as shown below.



Over the last several years the evolution of the Android Operating System has placed increased emphasis on security and privacy. This evolution affects the way User Permissions are handled on a device. For example, older model cell phones may display the “permission” settings for an App as part of the installation process, as shown below.



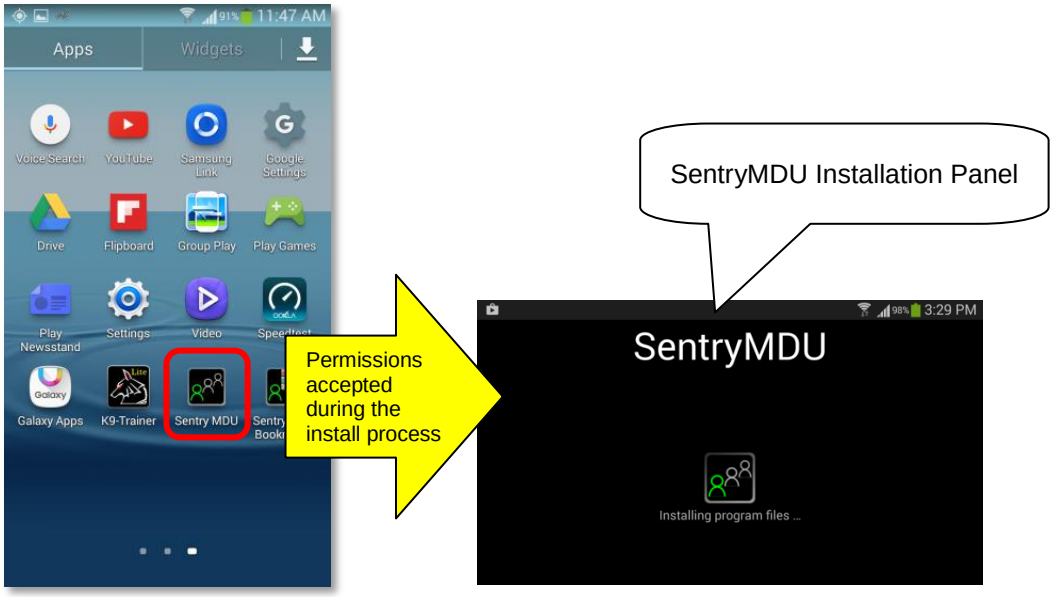
Depending on the Manufacturer, Model and installed Android version of your device, the way that App Permissions are handled may be different. If you are not shown (and do not “Accept”) the App permissions at the “install” level then the SentryMDU app installation process will include a set of screens that cycle through the permission requirements for this App when you first “launch” the App.

> **Important Note: For the SentryMDU App to function properly, ALL required permissions MUST BE ACCEPTED. You can not select some and not others. We use the “All or Nothing” approach. The SentryMDU App will not install until all necessary permissions are satisfied.**
>
> **For example, assume you are going to use the “Motion Detection” features of the App to monitor a remote mobile device using the Camera as a remote surveillance camera. The system would need “network” permissions (Cellular or WiFi), “Camera” (to send video), “Microphone” (to monitor audio), “Location/GPS” (where is it), “Notification” (to notify you that a motion detection event had occurred) and so on.**

For a full listing of the access required by the SentryMDU System, review the “Permissions” section for the App on the DLT or SentryMDU website.

Scenario #1: Permissions approved during App installation

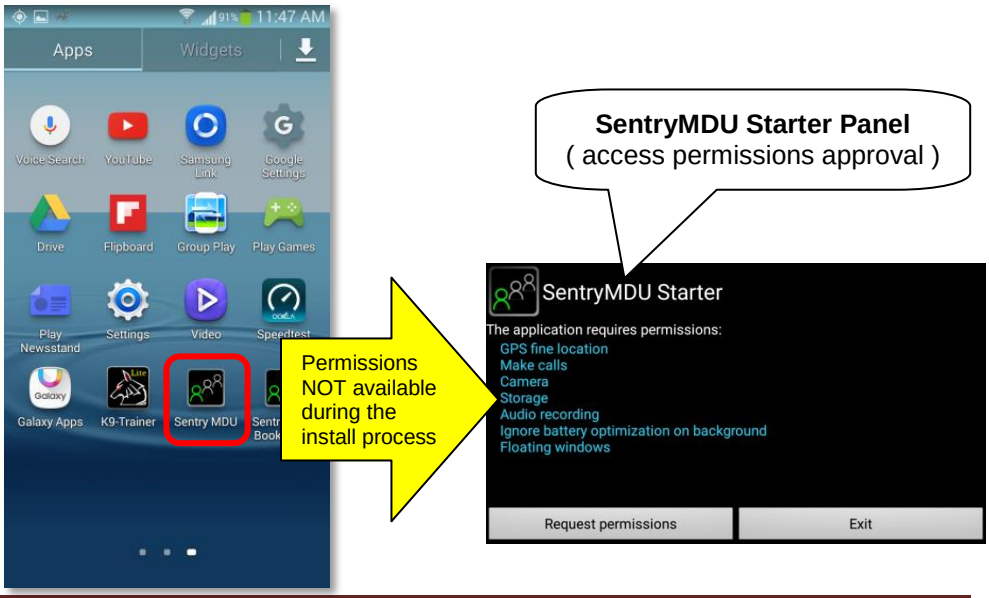
If you are using a device where the permissions list was presented when you installed the App (as shown in previous picture) ... when you launch the App for the first time, you will jump directly to the **SentryMDU Installation Panel**.



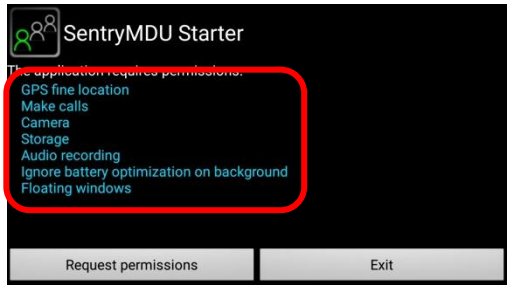
Important Note: Depending on the age and Android version of your mobile device, the time period for installing the program files may vary from 5 seconds ... up to 5 minutes. For example, a new Samsung S22 smartphone only takes a few seconds, where an older Samsung S9 may take several minutes. Be patient.

Scenario #2: Permissions NOT accepted during the install process

If you are using a device where the permissions list was NOT presented when you installed the App ... then you will be presented with a **SentryMDU Starter Screen** where the required permissions will be presented to you … and you will need to "approve" them one-by-one. The SentryMDU Installation Panel will be displayed AFTER the permissions are approved.

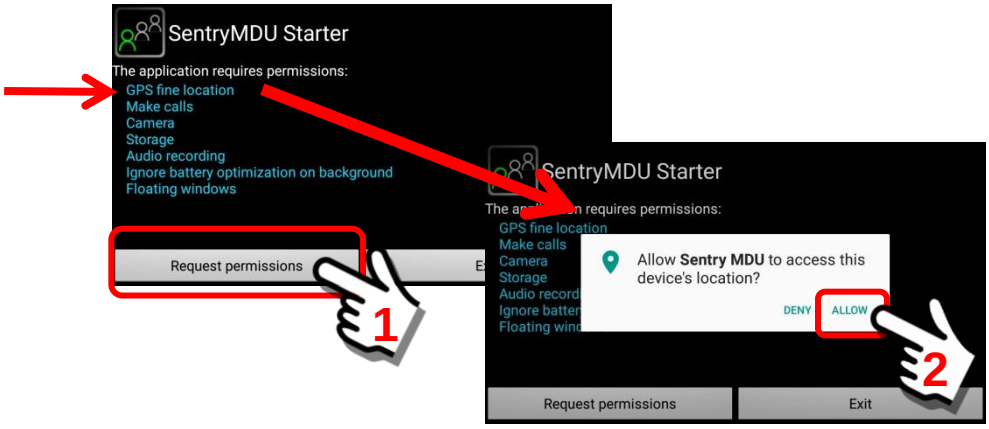


1. ***The SentryMDU Starter Screen***
   If the App Permissions are NOT set during download, they MUST be set before SentryMDU program files are installed. The SentryMDU Starter Panel is a feature that will ensure that the required permissions are set.



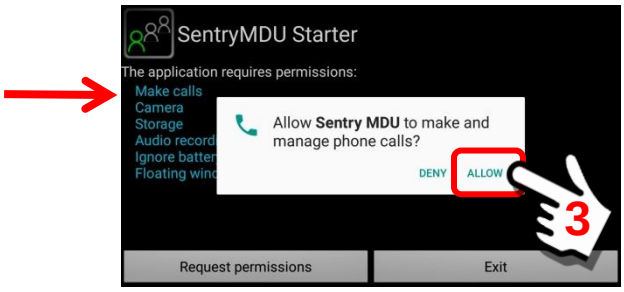
   The SentryMDU System will NOT install unless all permissions on the list are approved.

2. ***The "GPS fine location" permission setting.***
   Click the "Request permissions" Button to begin the review process.



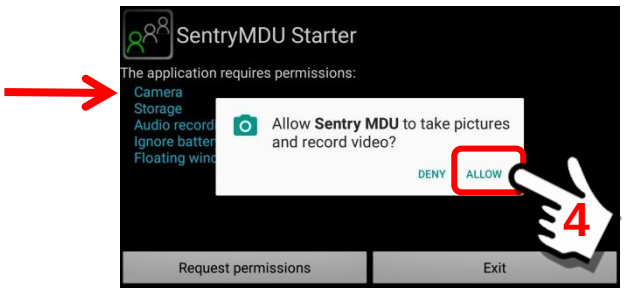
3. ***The "Make Calls" permission setting.***
   As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

   Click "Allow" on the Make Calls Panel (make and manage phone calls).



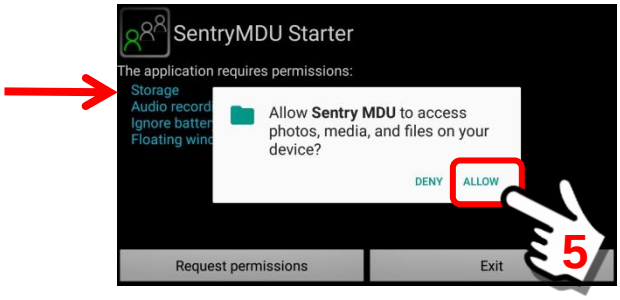
4. ***The "Camera" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Camera Panel (take pictures and record video).



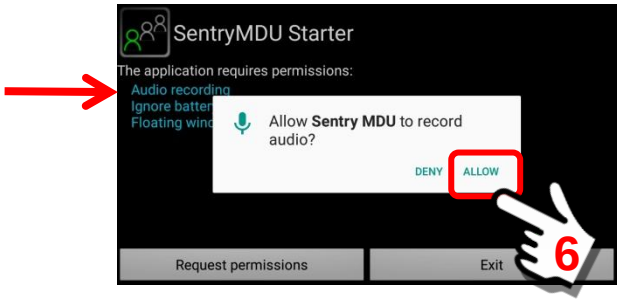
5. ***The "Storage" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Storage Panel (access photos, media and files).



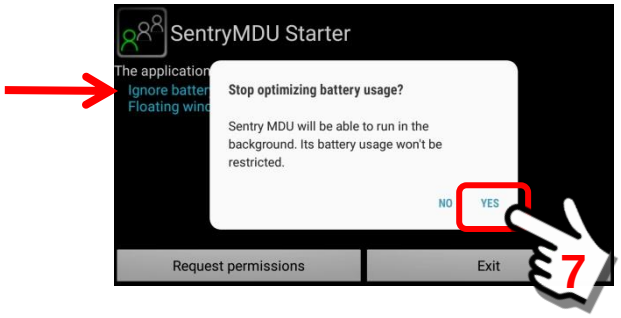
6. ***The "Audio Recording" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Audio Recording Panel (to record audio).



7. ***The "Battery Optimization" permission setting.***
As you select and click the "ALLOW" Option on each permissions panel, the screen will advance to the next permission option.

Click "Allow" on the Battery Optimization Panel.



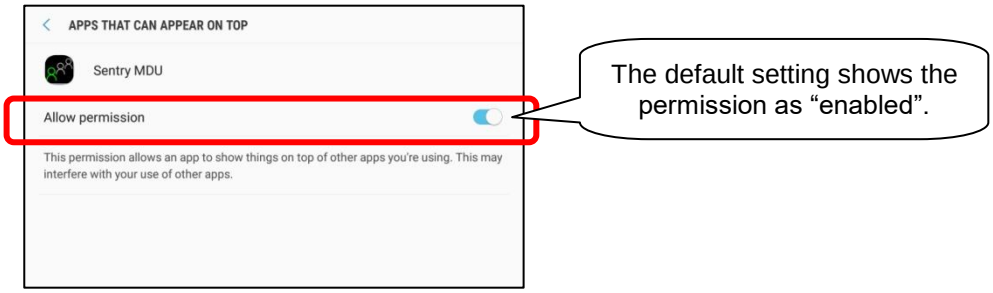
The **Battery Optimization** "permission" may (or may not) be available on your device. This is a relatively "new" feature of the Android operating system that puts some Apps to "sleep" when not used for long periods of time. The objective is to reduce battery drain when the device is in hibernation or standy mode.

In order for the SentryMDU App to continue receiving notifications and to report GPS location, it is necessary that this optimization feature be "turned off" for the SentryMDU App. We are giving permission that the SentryMDU App can still operate, even when the device is in "standy mode".

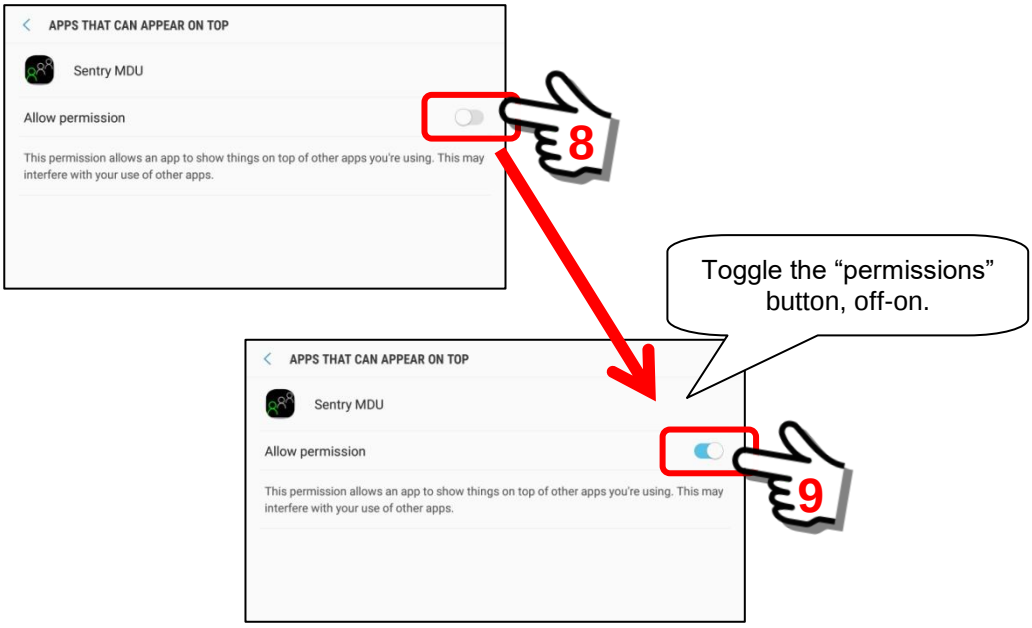
8. ***The "Floating Window" permission setting.***
The final permissions setting is to allow the SentryMDU App to create re-sizable "Floating Windows" that will display on top of the display screens of other Apps. This requires a unique approval process.

When the "Floating Window" item is reached … the system will retrieve the permission panel from the mobile device (not from within the SentryMDU code). If you want to learn about Floating Windows, see **Section 9.13**.

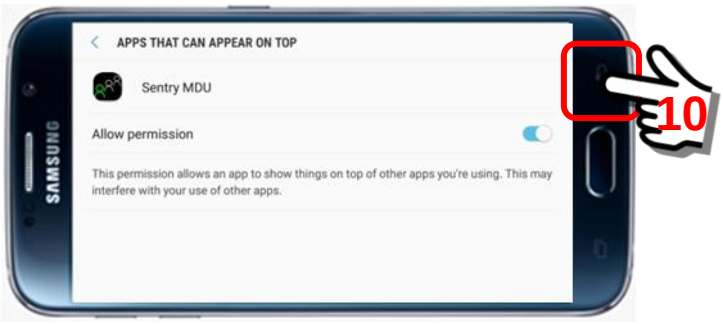
The example shown below is from a smartphone running Android Ver7. Yours may look a bit different. As you can see below, when displayed, it appears that the permission is already set to "Allow permission".



However, for the SentryMDU App to access the permissions “setting” you must toggle the permissions setting “off – on”. This will force the device to recognize SentryMDU as an authorized App.



When finished, click the “Back” Button. The system will now display the SentryMDU Program Installation Panel and continue with installation.



Permissions are now complete.

Review of Registration Steps for a Licensed User:

The following screens will be displayed during the installation and registration process.

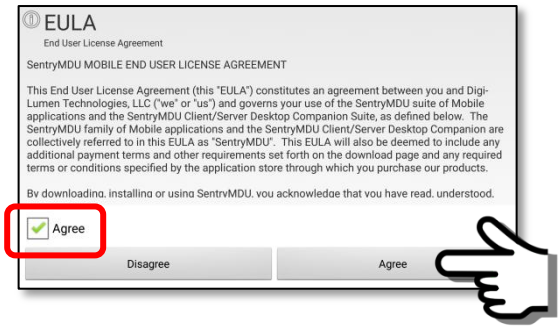
The *SentryMDU Program Installation Panel* will be displayed while the App is being configured and the file structure created.

Program Files are being installed … wait until finished

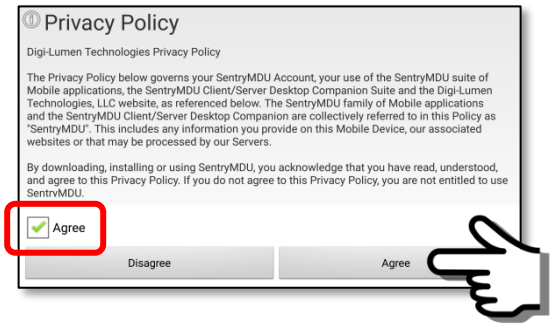
Important Note: Depending on the age and Android version of your mobile device, the time period for installing the program files may vary from 5 seconds ... up to 5 minutes.

For example, a Samsung S22 smartphone only takes a few seconds, where an older Samsung S9 may take several minutes. Be patient.

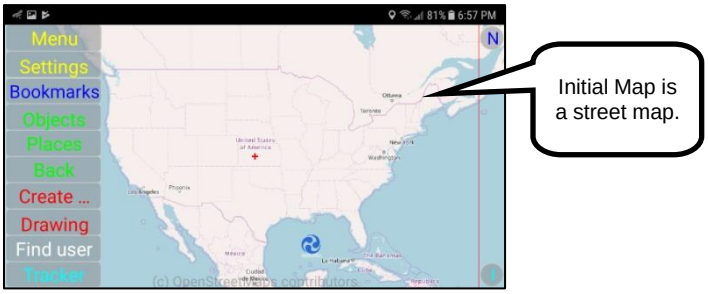
Accept the End User License Agreement (EULA)



Accept the Privacy Policy



After initial installation, the Main Map screen displays a “Street Map” (using OpenStreetMap data) and not a satellite image.

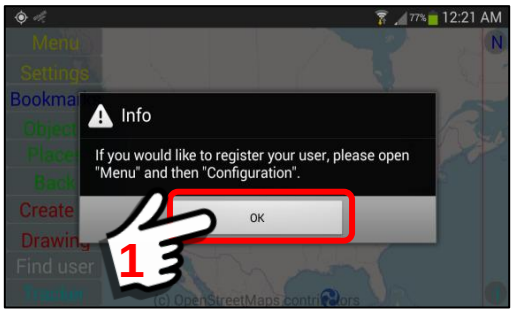


At this stage in the Registration Process you are still an “Anonymous” User. You have NOT yet selected or been assigned to a Security Domain.

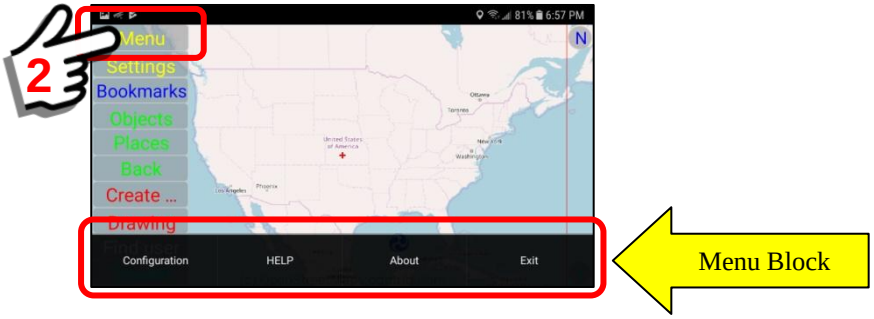
In this example, we are going to illustrate the screens that will be displayed during the User Licensing Process when you sign up with a Licensed Server.

1. ***Starting at the Main Map Screen***
   Once the SentryMDU program files have been installed and the EULA executed, a Main Menu screen will be displayed. This is the SentryMDU Main Screen. The “default” map image will be a Road Map View of the North American Continent (USA, Canada, Mexico).

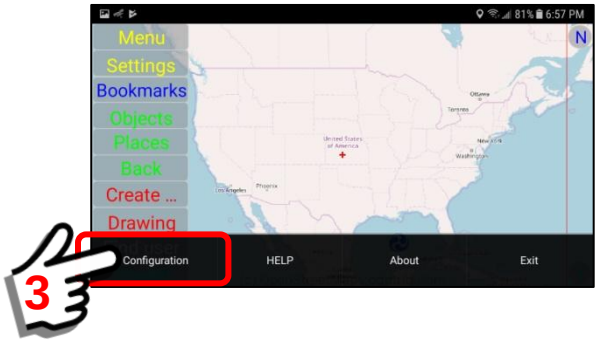
A pop-up message will remind you to continue with device Configuration.



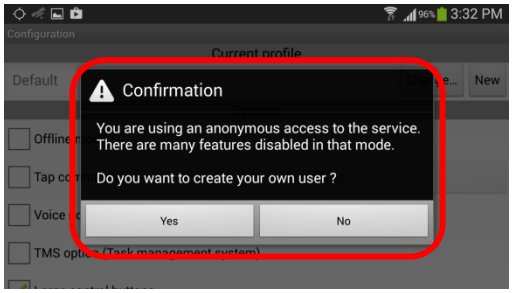
To continue with the registration process, click on the MENU button in the upper left hand side of the screen. A Menu block will now appear at the bottom of the page.



Select the “Configuration” Button from the Menu Block.



As the Configuration screen begins to display, a “pop-up” box appears and explains that prior to registration you will ONLY have Anonymous user access to many of the features.



In order to have access to the Licensed Server, you will need to register as a User on that server instance. The registration process creates an “account” for you on the Licensed Data Server, identifies the mobile device, and implements a security profile for that has been pre-selected for you by your Organization’s IT Department. **Registration is free.**

BEFORE we create a new user on the Licensed Server we must **SELECT** the licensed server that we want to use.

2. ***Change the Server Address on the Main Configuration Panel***

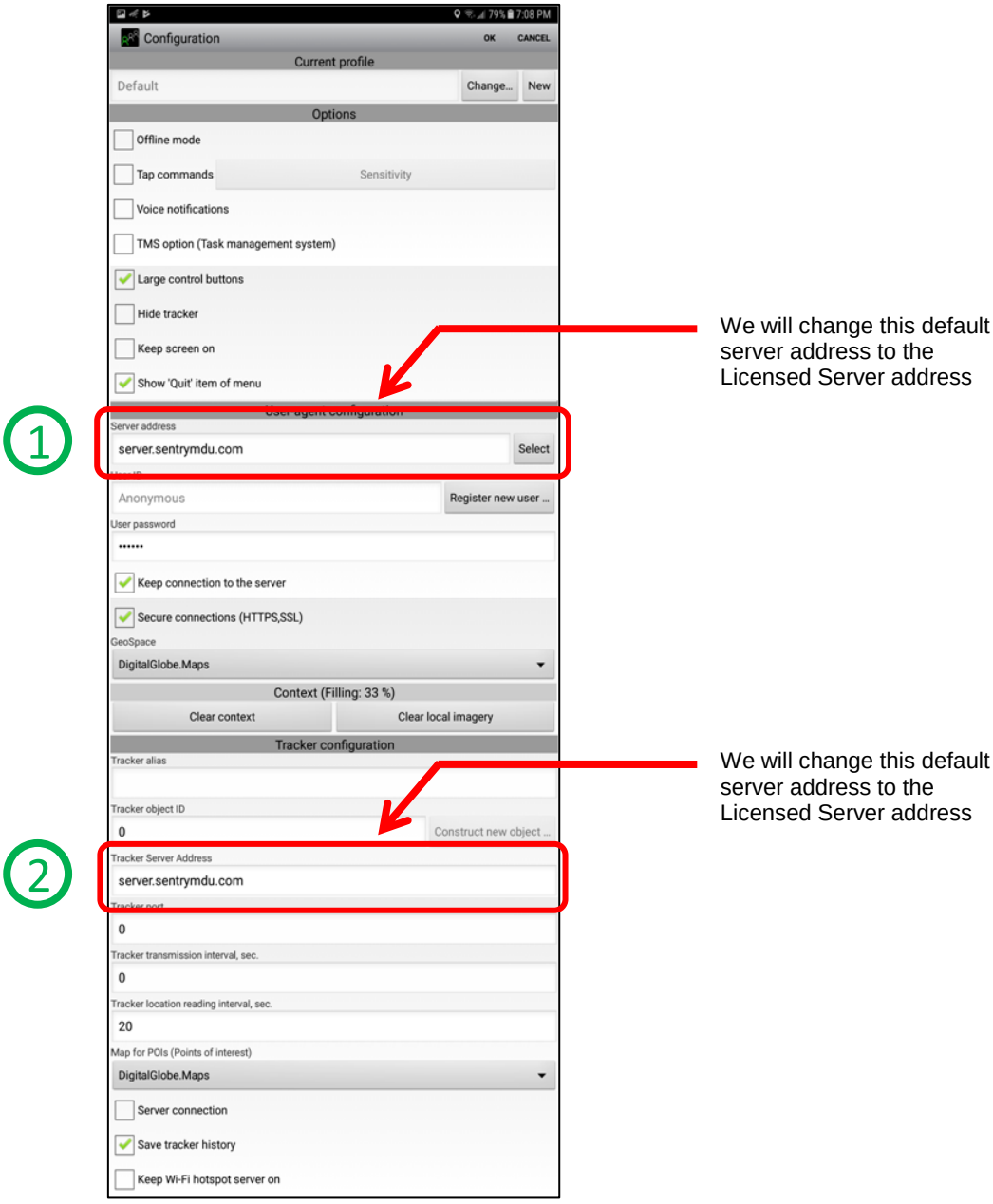
Since we need to CHANGE the default registration server address to the Licensed Server that we will be using, we need to edit the Main Configuration Panel and enter the Domain Name (or IP address) of our Licensed Server.

<u>Licensed Servers will generally fall into two categories:</u>

a. Servers administered by DLT within OUR server network.
b. Customer owned/operated servers NOT within our network.

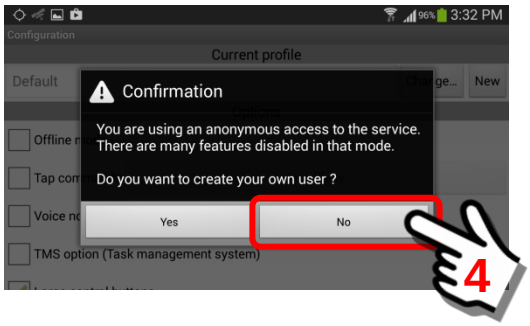
This section will cover BOTH of these options (option "a" is preferred).

An example of the Main Configuration Panel is shown below.



To start this change process, click the “No” Button. We do not want to create a new user just yet … we first need to change the Server Address.

Click the “No” Button on the pop-up Confirmation Panel.



a. Servers administered by DLT within OUR server network

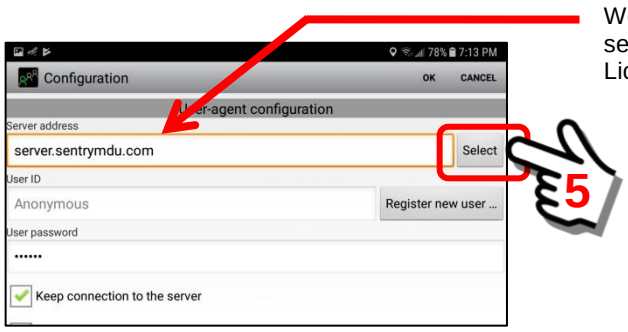
Servers within the SentryMDU System network will be available via a drop-down menu located on the Main Configuration Panel.

We will now use one of the four pieces of licensing information provided to us by our organization.

1) An “Anonymous User” **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

We will use the name of the Licensed Server Instance (or Domain Name). In this example, the Licensed Server name is **USA Server – Oklahoma**.

To see the available DLT Servers, click on the “Select” Button.



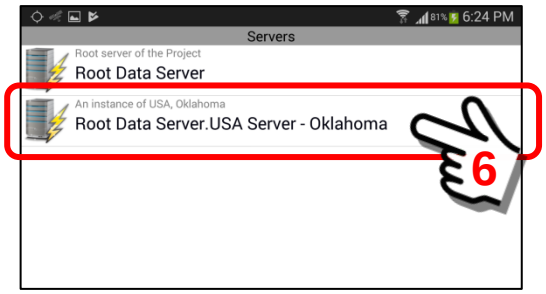
We will change this default server address to the Licensed Server address

A listing of available DLT Data Servers is shown.

In the server list, two dedicated License Servers are shown. In this exercise, we will select the 2nd License Server (USA Server – Oklahoma). If your Organization has been assigned a DLT Licensed Server, this is where you would select your specific server instance.

> **Important Note: You CANNOT just pick a server from the list to use. It must be a server that your organization has "licensed" and that you have a password to access (the next step).**

Click on the Server name.

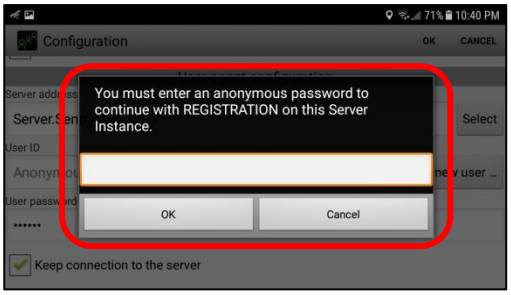


Since we are changing from the "default" DLT Registration Server to a Data Server dedicated to YOUR organization, you will need to enter an "Anonymous User" PASSWORD to be able to connect to this "new" server instance. Your organization may change this Anonymous User password on a periodic basis so you will need to make sure this is the current "active" password for your server instance.

We will now use another of the four pieces of licensing information provided to us by our organization.

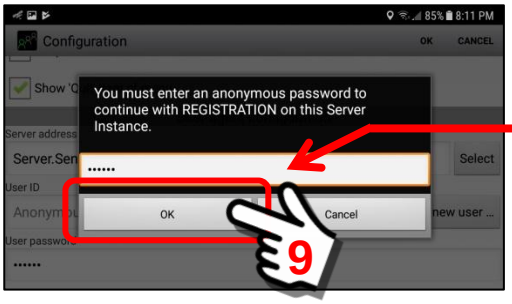
1) An "Anonymous User" **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

A pop-up panel will appear.



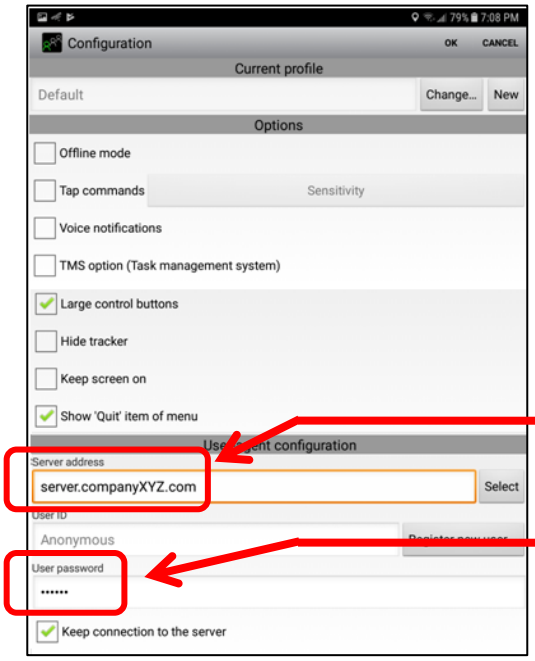
Click inside the data entry box. An on-screen keyboard will appear.
Enter the “Anonymous User” password here.

Click the “Back” Button on your phone to return to the pop-up box.
When finished, click the “OK” Button to continue.



The PASSWORD you have been provided HERE.

You will be returned to the Main Configuration Panel.

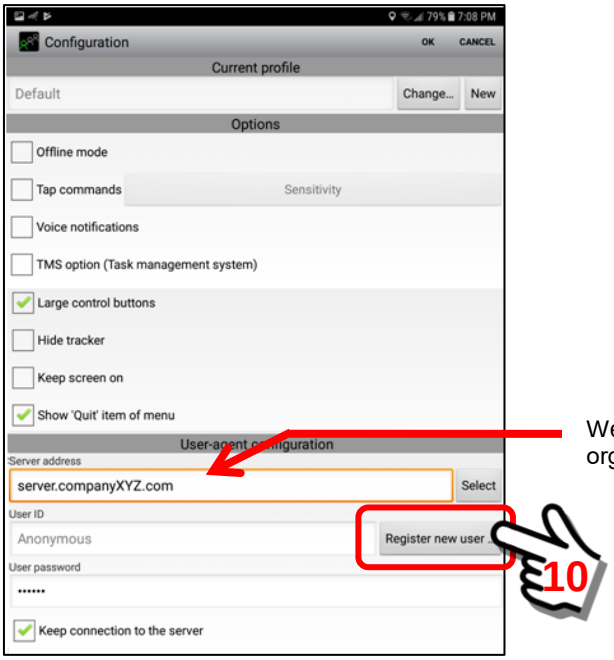


We changed the Server Instance in two places … HERE and below.

We changed the Anonymous User password HERE.

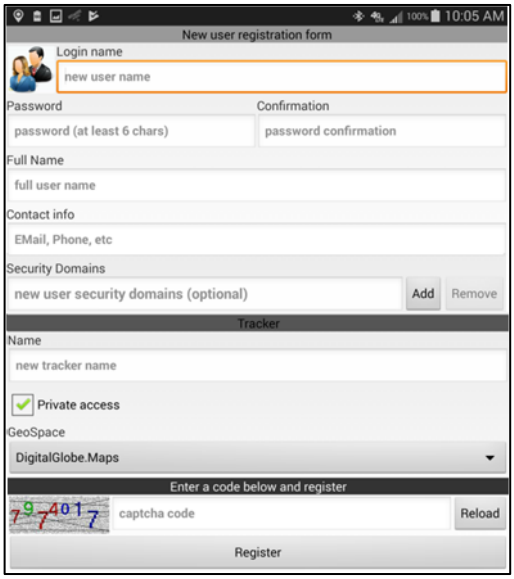
The next step is to change from an “Anonymous User” to an authorized REGISTERED user with a Username/Password combination. This will allow the creation of Security Domains on this Licensed Server instance.

To register as a “new” user, Click the “**Register new user …**” Button on the Main Configuration Panel.



We will be registering on YOUR organization’s Licensed Server.

By clicking on the “**Register new user …**” button, the “New user registration form” will be presented. Depending on the type of device you are using (phone or tablet), as you touch one of the data entry boxes, the device will show a screen “keyboard” so you can enter the required text.



NOTE:

Registration is required to become a User on a Licensed Data Server.

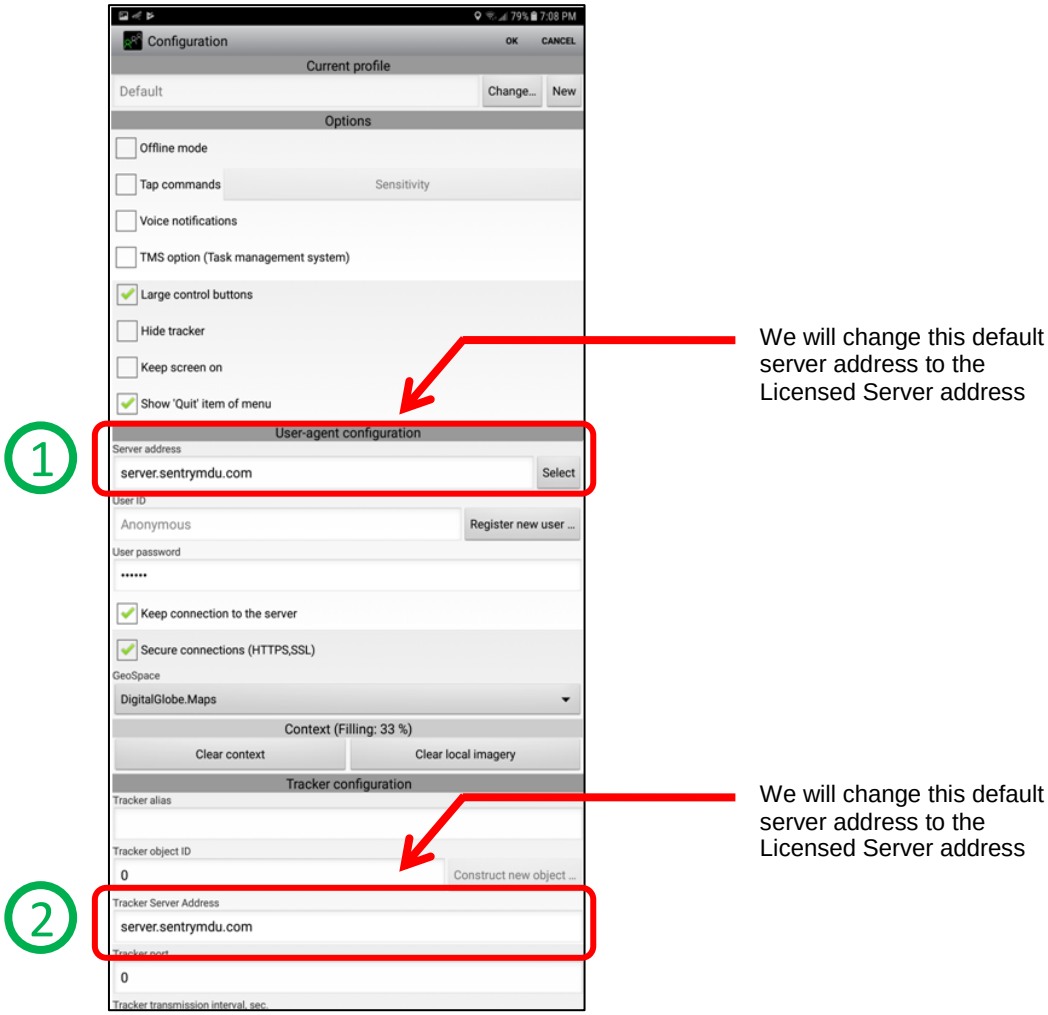
b. Customer owned/operated servers NOT within our network.
Servers NOT within the SentryMDU System network will need to be manually entered on the Main Configuration Panel.

We will now use one of the four pieces of licensing information provided to us by our organization.

1) An “Anonymous User” **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

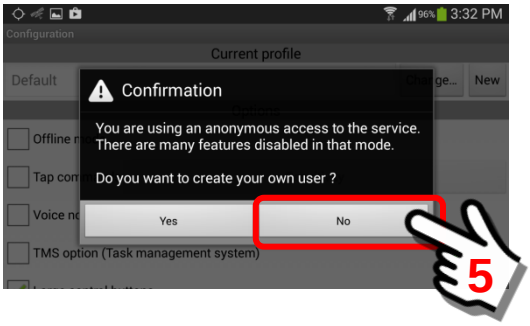
We will use the name of the Licensed Server Instance (or Domain Name). In this example, the Licensed Server name is **server.companyXYZ.com**.

An example of the Main Configuration Panel is shown below.

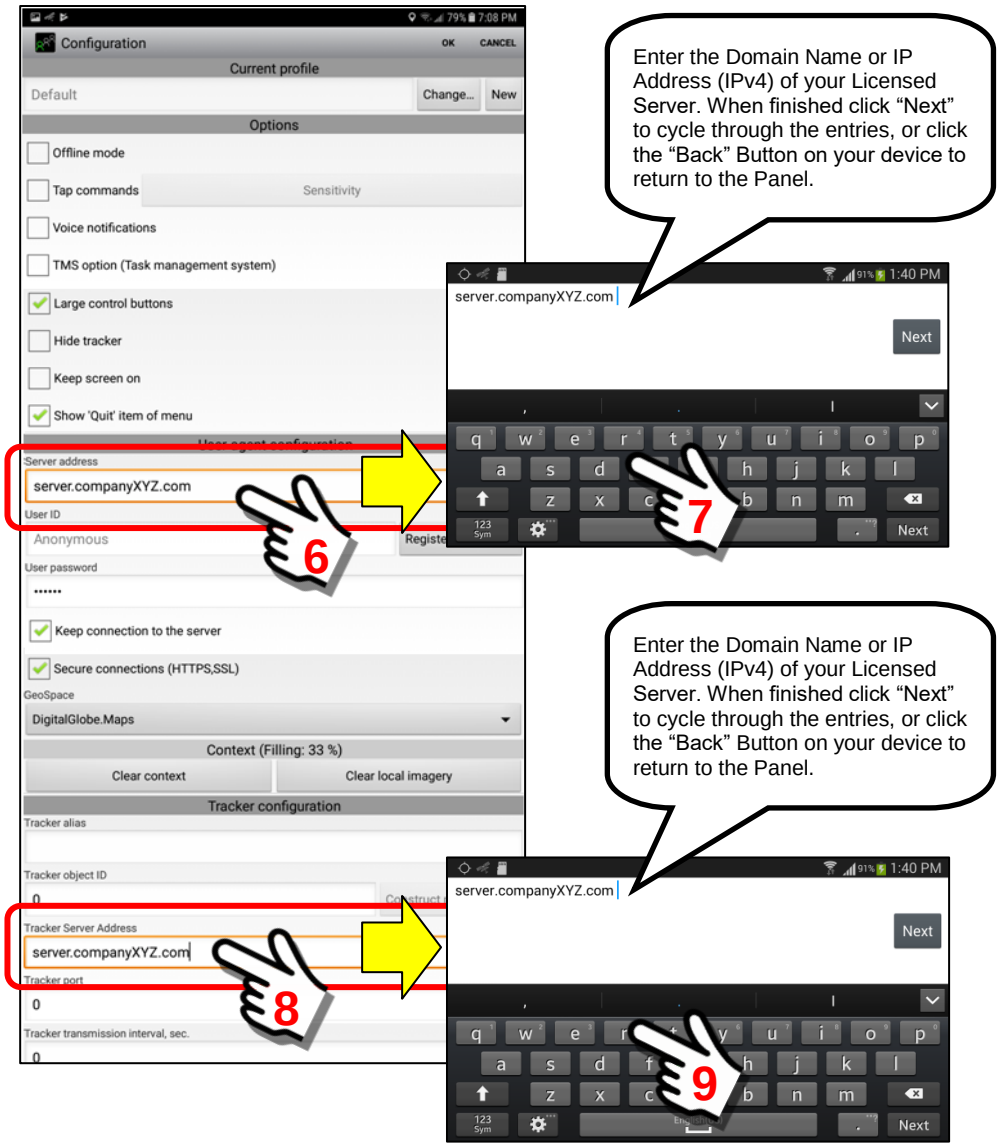


To start this change process, click the “No” Button. We do not want to create a new user just yet … we first need to change the Server Address.

Click the “No” Button on the pop-up Confirmation Panel.



The Main Configuration Panel is displayed. Click inside the data fields. As you touch one of the data entry boxes, the device will show a screen “keyboard” so you can enter the required Domain Name or IP Address.



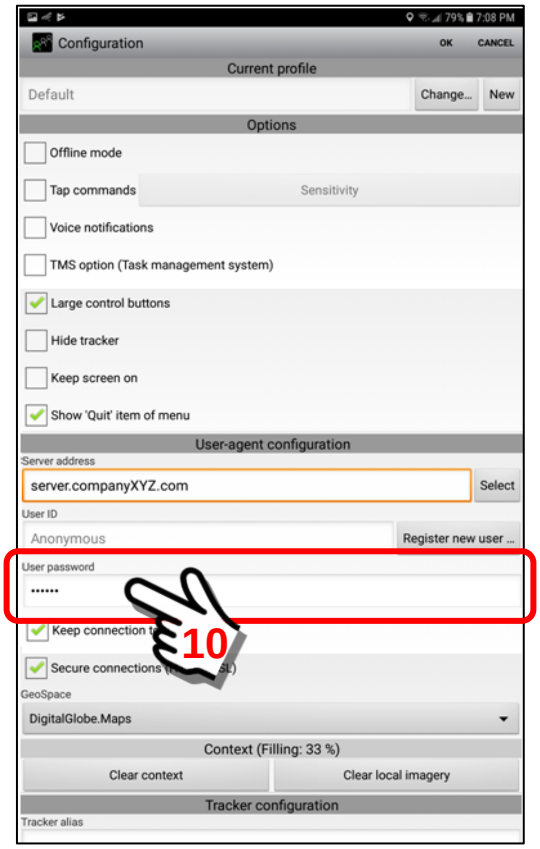
Important Note: **Make sure that BOTH entries are to the SAME Licensed Server. If not, your registration will fail.**

Since we are changing from the "default" DLT Registration Server to a Data Server (**server.companyXYZ.com**) dedicated to YOUR organization, you will need to enter an "Anonymous User" PASSWORD to be able to connect to this "new" server instance. Your organization may change this Anonymous User password on a periodic basis so you will need to make sure this is the current "active" password for your server instance.

We will now use another of the four pieces of licensing information provided to us by our organization.

1) An "Anonymous User" **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

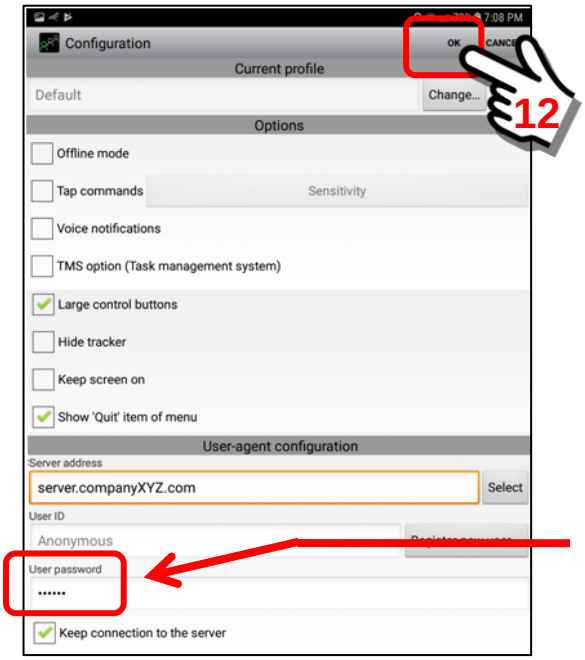
While still at the Main Configuration Panel, change the password for the Anonymous user. Click on the "Password" data field.



Change the Anonymous User password to that provided by your organization.

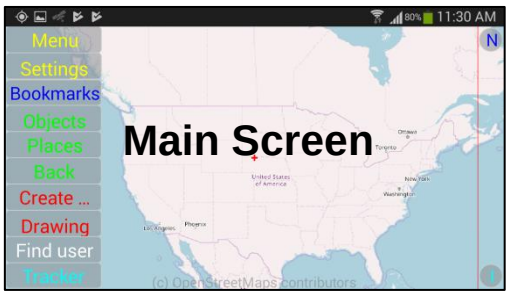
Click the “Back” Button on your mobile device to return to the Main Configuration Panel. Once back at the Main Configuration Panel, you must SAVE this new configuration.

Click on the “OK” Button.

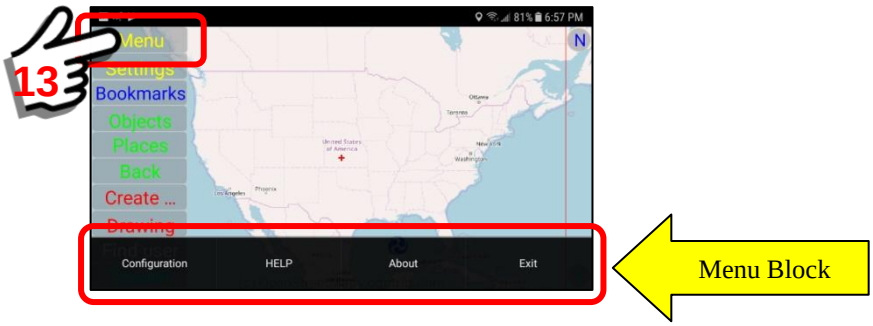


We changed the Anonymous User password HERE.

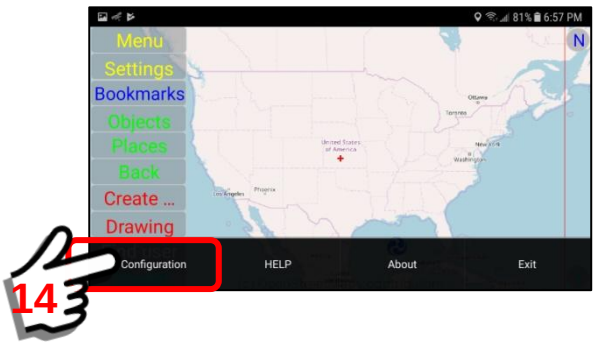
You will be returned to the Main Map Screen.



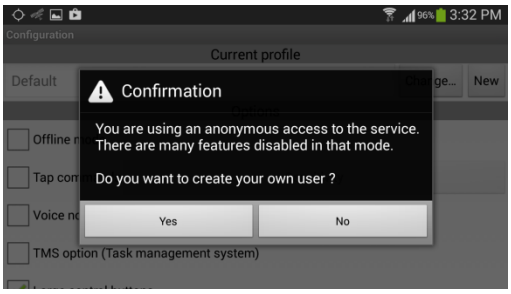
To continue with the registration process, click on the MENU button in the upper left hand side of the screen. A Menu block will now appear at the bottom of the page.



Select the “Configuration” Button from the Menu Block.



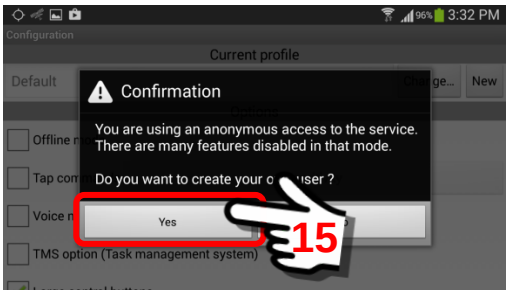
As the Configuration screen begins to display, the “pop-up” box appears a second time and again explains that prior to registration you ONLY have Anonymous user access to many of the features. However, remember that NOW you are on a DIFFERENT server, your organizations Licensed Server.



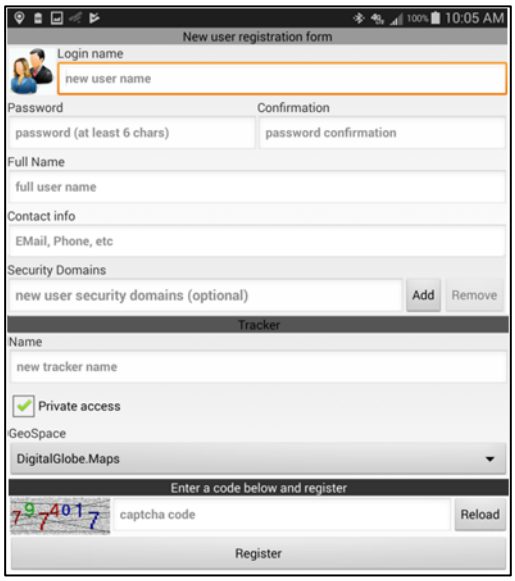
Since we have previously set the address for this Licensed Server, we can now start the registration process. This will create an “account” for you on the Licensed Data Server, identify the mobile device, and implement a security profile for that has been pre-selected for you by your

Organization's IT Department. **Registration is free.** This is necessary if you wish to interact with other mobile devices on the Licensed Data Server network.

Click the "Yes" Button.



By clicking on the "Yes" button, the "New user registration form" will be presented. Depending on the type of device you are using (phone or tablet), as you touch one of the data entry boxes, the device will show a screen "keyboard" so you can enter the required text. See the following rules when filling out the form.



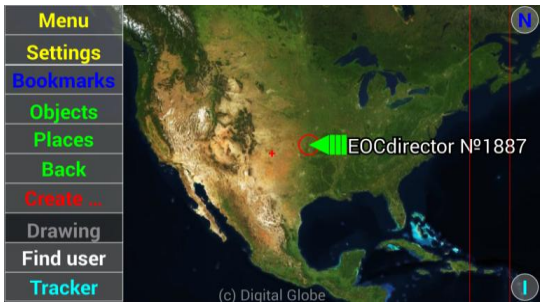
NOTE:

Registration is required to become a User on a Licensed Data Server.

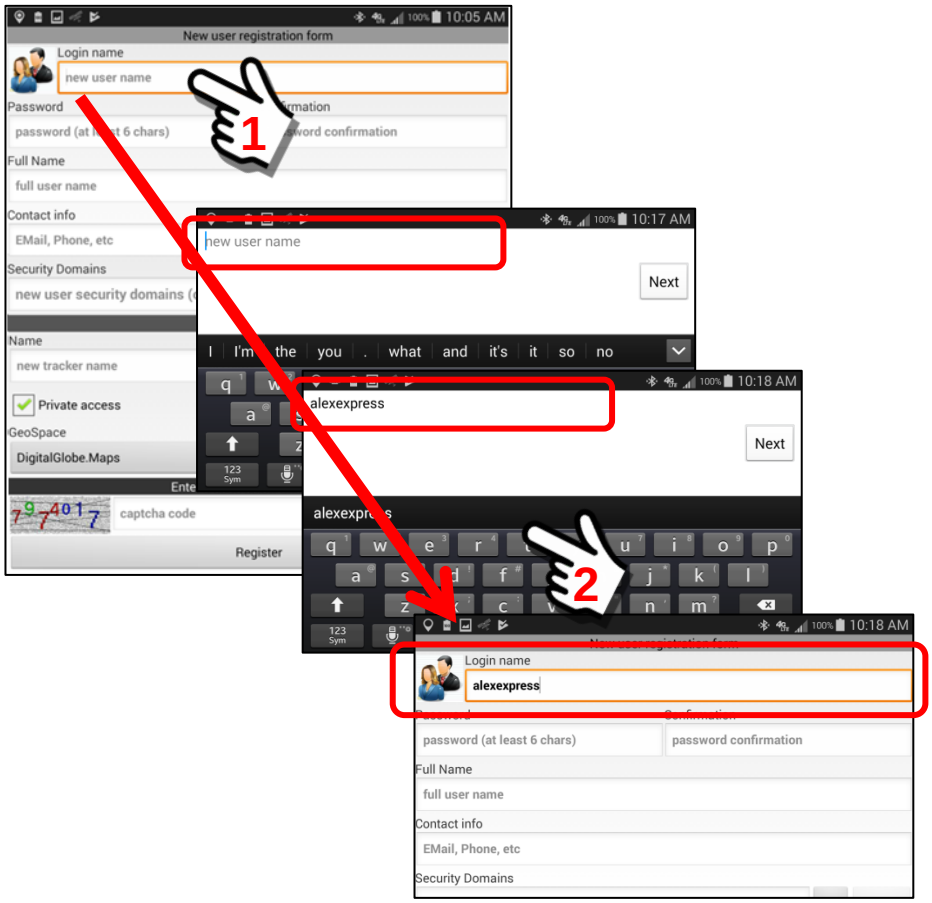
Rules to follow when filling out the registration form:

1. ***Login name***

   A single word name of 5 – 255 characters, no spaces. Special characters (such as !@#$%) are allowed. However the ‘ and ; characters are not allowed (apostrophe and semicolon). This will be your “username” so it should be a descriptive name. This name will appear on the Map Screen and will be the identifier with other Users. For example, if your job title was as the Director of the Emergency Operations Center …. you might use: EOCdirector (as shown below).



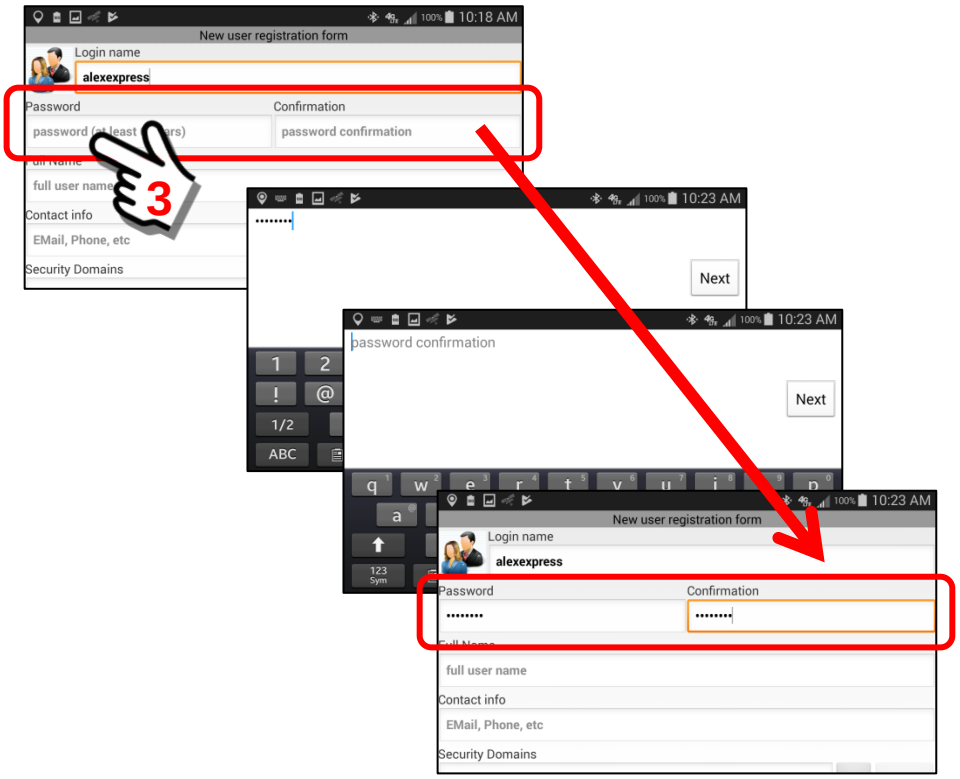
Click inside the “name” box to open an on-screen keyboard. Type your Username. For this example, we will use a user by the name of Alex Express and a Username = “alexexpress”.



2. ***Password***

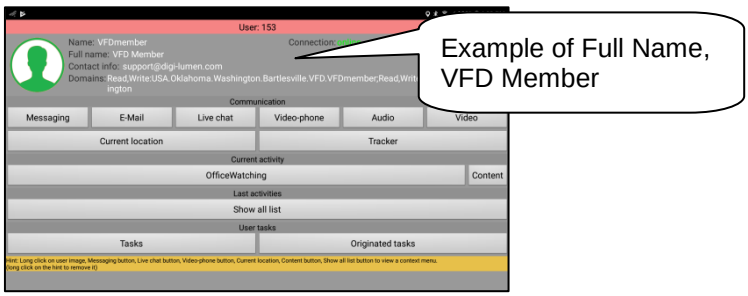
The Password must be 6 – 255 characters, no spaces. Special characters (such as !@#$%) are allowed. However the ‘ and ; characters are not allowed (apostrophe and semicolon).

Click in the password field and enter your password, then confirm by entering again.

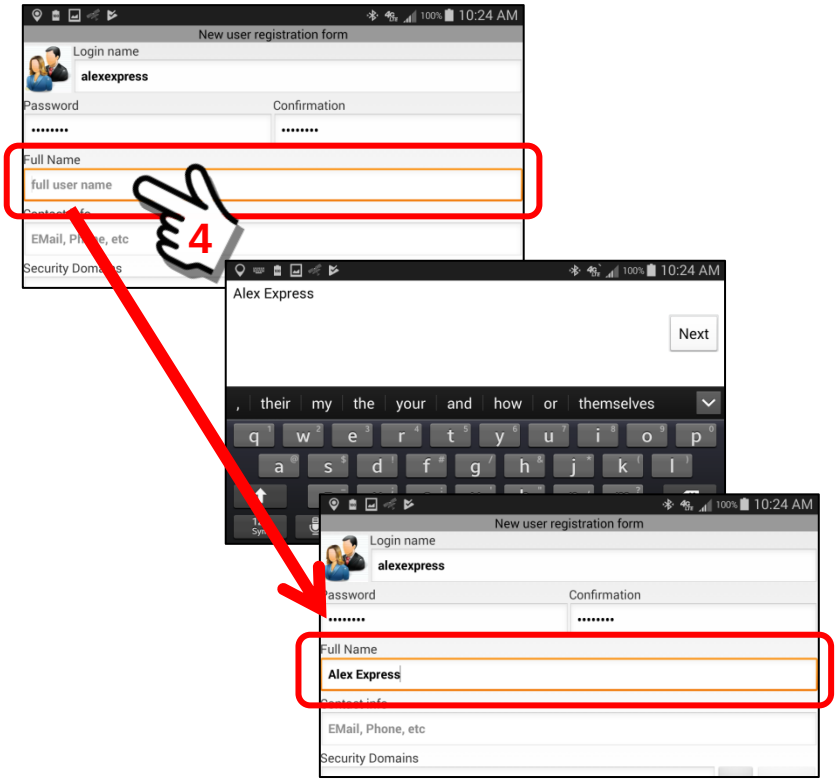


3. ***Full Name***

This is your actual NAME … such as Robert Jones or it could be a “job title” such as **VFD Member** (stands for **V**olunteer **F**ire **D**epartment **Member**). Some features of the Sentry MDU System will use your Full Name in correspondence with other users on the system. Features such as Video Phone or Text Messages will use this name in alerts to other users.



Click inside the data entry field to open the on-screen keyboard.
Enter your Full Name.

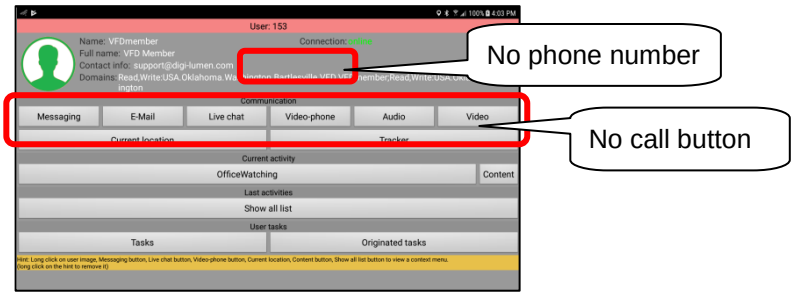


4. *Contact Info*

This is an email address and (optionally) a phone number. This information is used in two ways:

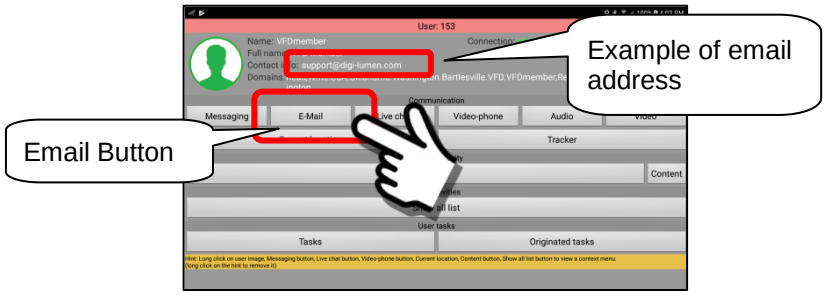
a. If the mobile device you are using has a SIM card (cellular enabled) and you enter the optional phone number, then other SentryMDU users will be able to call you on your phone ***from within*** the SentryMDU App (assuming security credentials allow).

If no number is entered, there will **NOT** be a “Call” button displayed.



b. Whether you enter a phone number or not, we will need a valid email address so that we may contact you in the event something is wrong with your account. We do NOT send marketing emails or other spam. This is only in the event we determine there has been unauthorized use of your account or some other important reason related to your account about which we need to contact you.

It is also for other Users in your organization to be able to email you.



<u>Email Address</u>
The email address must be listed first and in standard email format such as:

myName@gmail.com

<u>Phone Number</u>
The optional phone number must be listed after the email address and separated by a comma “ , “. The phone number must start with a “+” sign and may not include inter-country, inter-town access codes. It must be made up entirely of numbers. It should follow the standard international telephone format such as the USA example shown below:

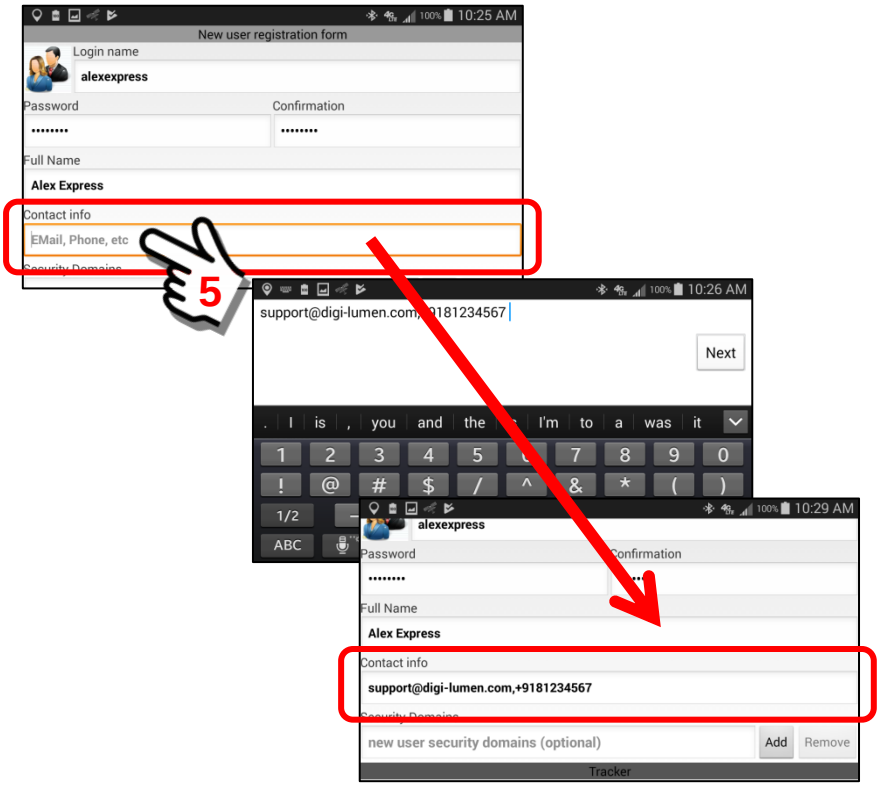
+19181234567

If you choose to list the optional phone number, the entry for the Contact data field may look similar to the following:

myName@gmail.com,+19181234567

Note: No whitespace between letters/numbers

Click in the “Contact Info” box to open the on-screen keyboard.
Enter the contact information.



5. ***Security domains***

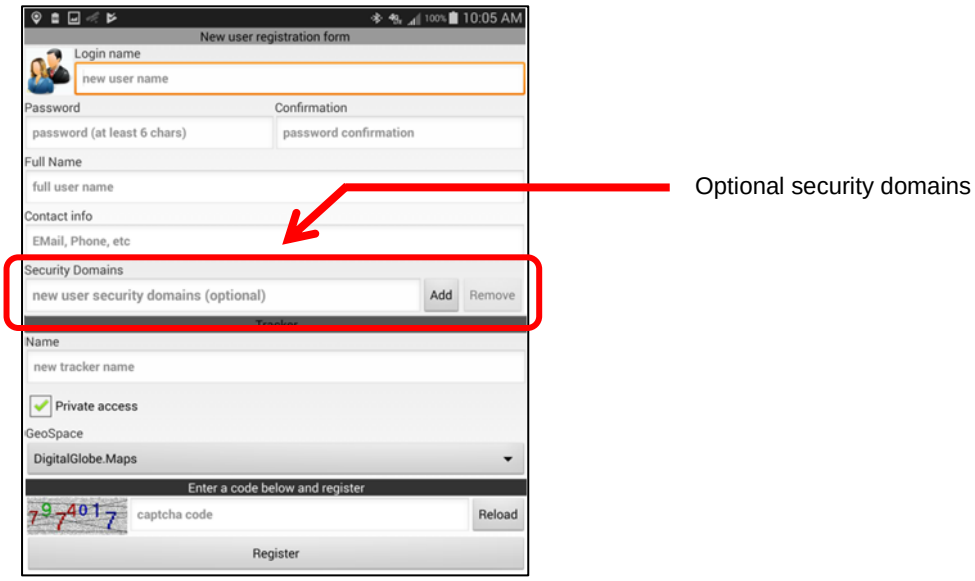
The Security Domains data field has several possible options:

a. If you are part of a Licensed Group, the Account Administrator for your Group MAY provide you with Security Domain information to enter into this data field. If not, then leave this field “blank” during registration.

b. If you will be a Licensed User AND you want to JOIN **an existing** Security Domain … AND you know the DOMAIN_NAME/PASSWORD pair that has been provided to you by the owner of the Security Domain (**Section 6.5**), then you may enter that information in this block. In this case, the system will assign you your OWN default security domain (based

on your Username) AND provide you access to the other Security Domain(s) you have added. This is in addition to the security domains assigned by the User License.

The Security Domains data block is “optional”.



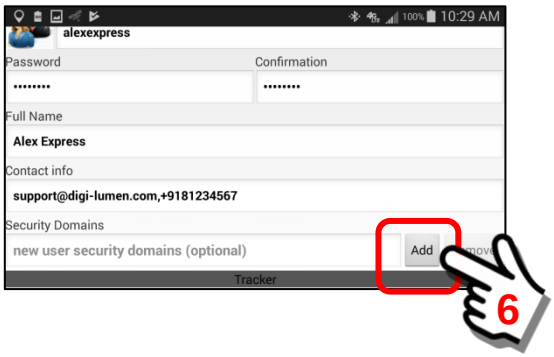
In this exercise, we will assume that we want to “Add” a security domain for a family member. When we add this security domain, it will be in addition to the security domain pre-configured by your IT Department AND the “default” security domain that will be created by the system using the Username you have chosen. See **Section 6.4 – 6.5** for additional details.

We will add the following:

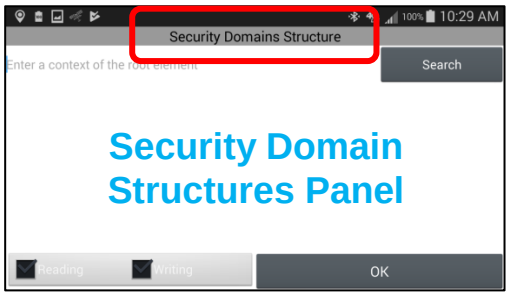
Read,Write:samexpress.family.travel.egypt

This will be a Security Domain from **User = Sam Express** (samexpress).

To begin, click on the “Add” Button on the Registration Panel.



A Security Domain Structures panel will open that will enable a user to "search" for security domains of other users. These security domains may then be specified to be "added" to your list of available security domains.



In order to "add" a security domain of another user, there are three conditions that must be met.

Device #1 (your device) and Device #2 (another user's device)

Conditions to add a "personal" Security Domain of another User:

1. The "other" user must be on the SAME data server instance.
2. Device #2 must have created a personal security domain.
3. User of Device #2 must provide the DOMAIN_NAME / PASSWORD pair to YOU (ie Device #1) so your device may become part of their personal security domain.

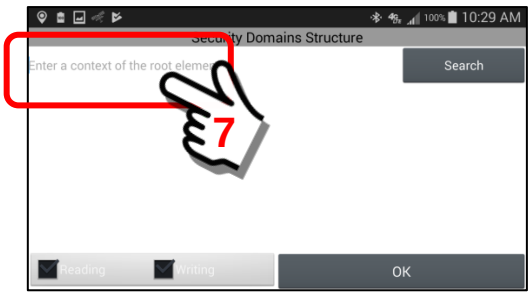
Users may create multiple Security Domains to cover work, play, family, specific activities and so on. Users may have up to 100 security domains.

To add the security domain you will now need the DOMAIN_NAME / PASSWORD pair for the user group you want to add.

Domain Name: samexpress.family.travel.egypt
Password: trip1234

The root element of "*samexpress.family.travel.egypt*" is "samexpress".

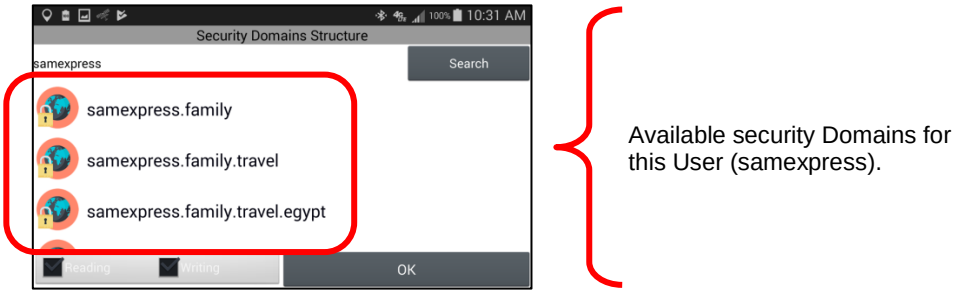
Click on the *"Enter a context of the root element"* text area of the Security Domains Structures Panel.



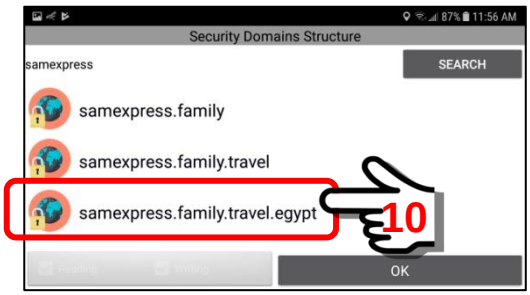
When “clicked” the on-screen keyboard will open. Enter the root element of the security domain … **samexpress**.

When finished, click the ***Search Button***.

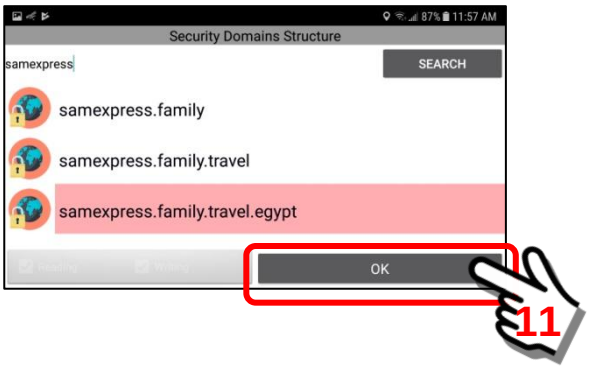
The system will search for ALL security domains with a root context of “samexpress”. In this example, we notice that 3+ items were retrieved.



We are looking for … samexpress.family.travel.egypt … because this is the DOMAIN_NAME that we have a password for. It will not work if we try to use one of the others.

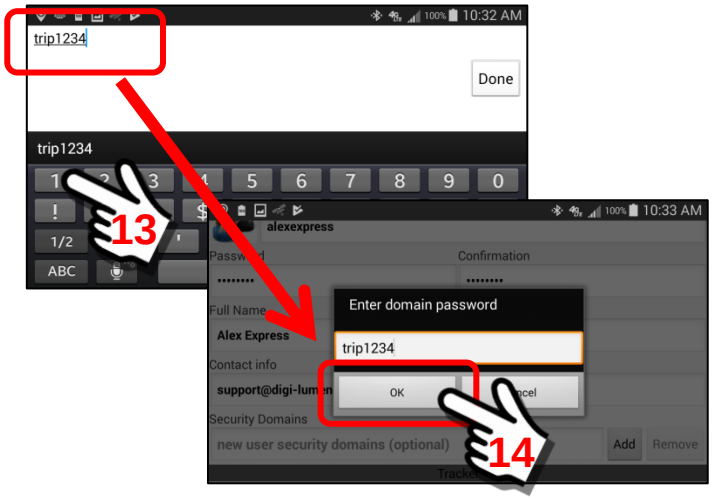


Select (click) on this item to activate the choice.
Then click on the “OK” Button.



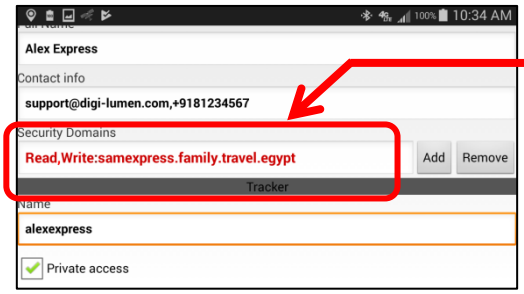
Now that you have selected the security domain that you want to add to your registration panel, the system will prompt for the password.

Enter the password for this security domain. This is the password that was provided to YOU by Sam Express, the owner of Device #2.



Click the “OK” Button to complete the transfer.

The Security Domain from User = Sam Express is now added to the Security Domains data field on the Registration Panel.



Security Domain for user "samexpress"

Important Note:

In the event you use an INCORRECT password, the Registration Form will fail with an error as shown below when you click the "Register" Button and the system processes the registration.

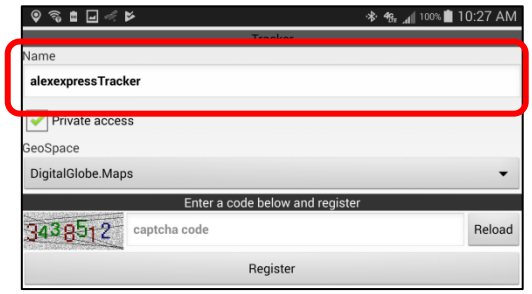
The FORM will not be processed if you have an incorrect password.

6. ***Name (Tracker Name)***

This will be the "name" that the GPS Tracker feature will use to identify a User. By default the system will append the word "Tracker" to the end of the Login name that you selected (Item #1 above). We would suggest you use the same name as you selected for a Login name … however, you can use anything you want (alphanumeric characters only).

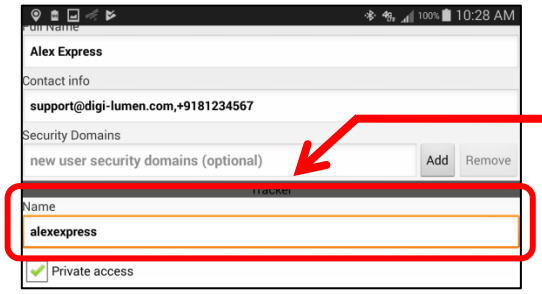
As shown in the following example, the Tracker Name will default to the entered Username + Tracker.

Default name = **alexexpressTracker**.



We will edit the Tracker Name and remove the “Tracker” part to leave just **alexexpress**. Click in the text field to open the on-screen keyboard.

We have now changed the **alexexpressTracker** name to **alexexpress**.



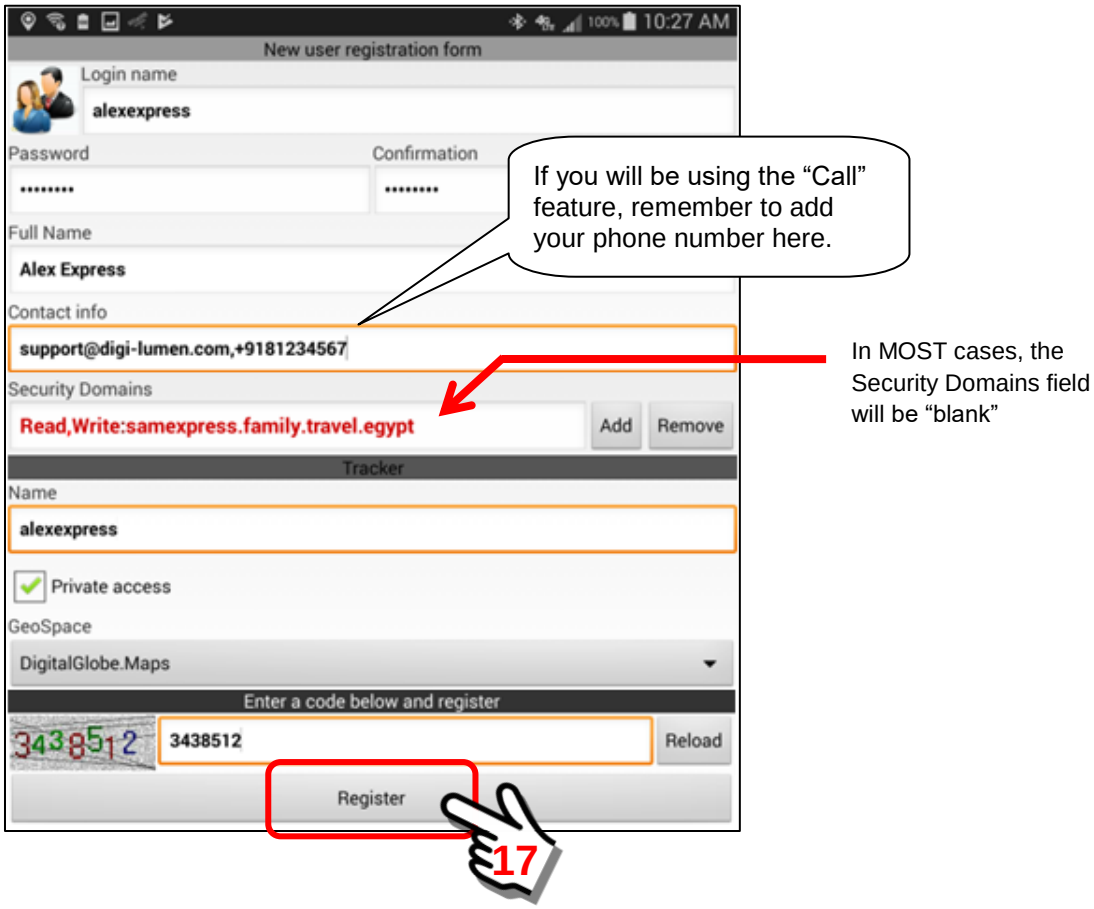
Tracker Name has been changed.

7. ***Private access (checkbox)***
   By default, the Private access checkbox IS CHECKED. Private access means that other Users CANNOT see you or interact WITH YOU unless the security domain settings specifically ALLOW them to see you.

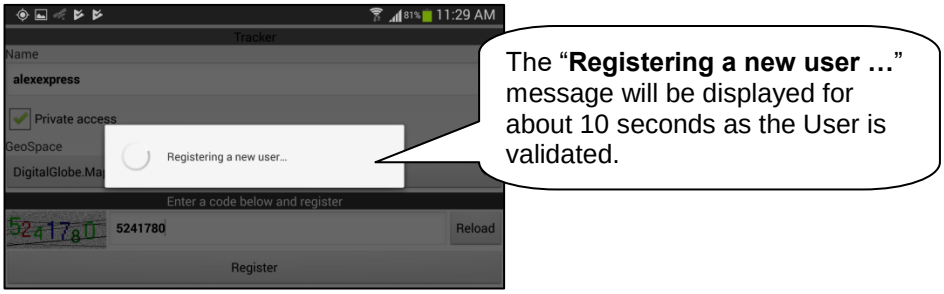
   For those users that have a Licensed Group, you WILL WANT to keep the Private access "checked" since the Account Administrator will have already set up the security domains for you.

8. ***GeoSpace (selection drop-down box)***
   By default, the DigitalGlobe.Maps GeoSpace is selected. This will work for most users that are located in all but a few regions of the world. The provider of satellite and high-resolution aerial imagery (MapBox / DigitalGlobe) has most of the world covered. However, there are regions of the world where they do not have high resolution coverage. For this reason, we have a selection box where other imagery suppliers may be provided (or are available).

Once all of the data fields are filled out, your form should look something like this.

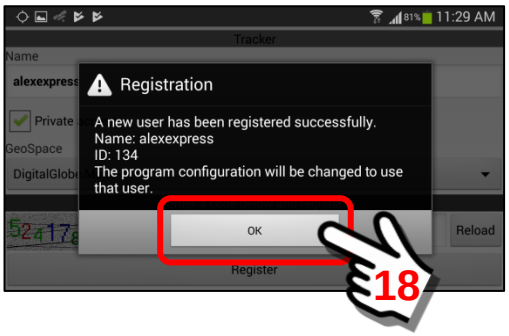


Finally, click on the “Register” Button.
When the “Register” Button is clicked, the mobile device will contact the “licensed” SentryMDU Data Server for your organization and set up an account for you. You will need to have either a cellular or WiFi connection such that the mobile device can contact the SentryMDU Data Server network. This may take 10 – 20 seconds to complete. This will set your security profile that has been pre-configured by your Organization and will register your “device” as an authorized device.



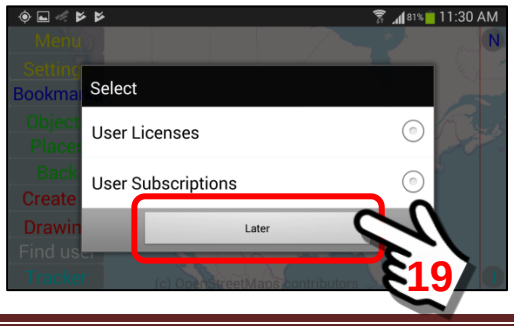
Once the “registration” is successful, you will get a message stating that an account has been created for you on the network and that your security profile has been changed from Anonymous to a registered user.

Click the “OK” Button to continue

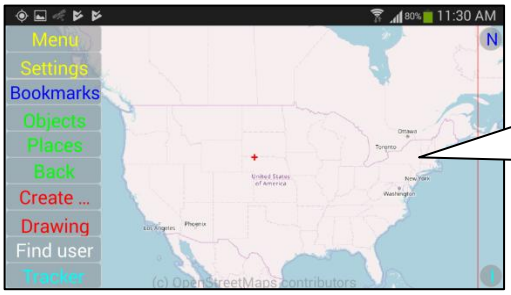


Once the “OK” Button is clicked, the screen will return to the Main Menu Screen.
A pop-up box will be displayed allowing you to select either a *User License* or *User Subscription*.

For this example, we will NOT do a License just yet … we will do it later in this section.
Click on the “Later” Button.



The Main Map Screen will look similar to the following. The default Map View uses the OpenStreetMaps data to display a roads/street map view.



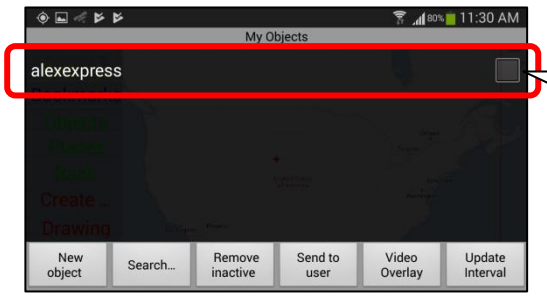
The GPS location of YOUR device is not shown on the Main Map Screen.

You have now "registered" but your location is not displayed on the map screen until you tell the mobile device that you would like to display your own location. In typical use, since you know where YOU ARE … you may choose not to display YOUR location and only display the GPS location of other Users in the network.

In this example, we will turn on the GPS location (mobile object marker) of your mobile device. **Section 10.5** of this User Manual will cover this feature in detail, but for now, we will just turn on the Mobile Object Marker.

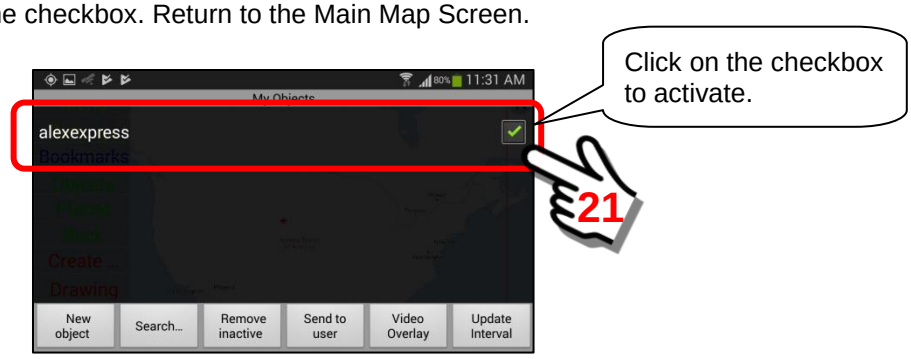
Click on the **Objects Button**.

The "My Objects" Panel will be displayed. Since you have only created YOURSELF as a User … and have not imported other users from your Security Domain, your mobile device will be the only device in the list.



By default, this box is NOT checked during the install process.

In this example, you are the user Alex Express (username = alexexpress). When the "checkbox" is not checked, the user will NOT be displayed on the Map Screen.
To illustrate this feature, we will put a "checkmark" in the checkbox to activate this user.
Click on the checkbox. Return to the Main Map Screen.



As a "registered" User, the device will now display your Username at the GPS coordinates of your current location. You may need to zoom in/out to find your location (depending on where you are located in the world).

See **Section 4.4, Item #13** for an explanation of these color codes.

Note:

You have now REGISTERED … the next step is to activate the User License assigned to your User Classification.

Selecting and Installing a User License on a Device:

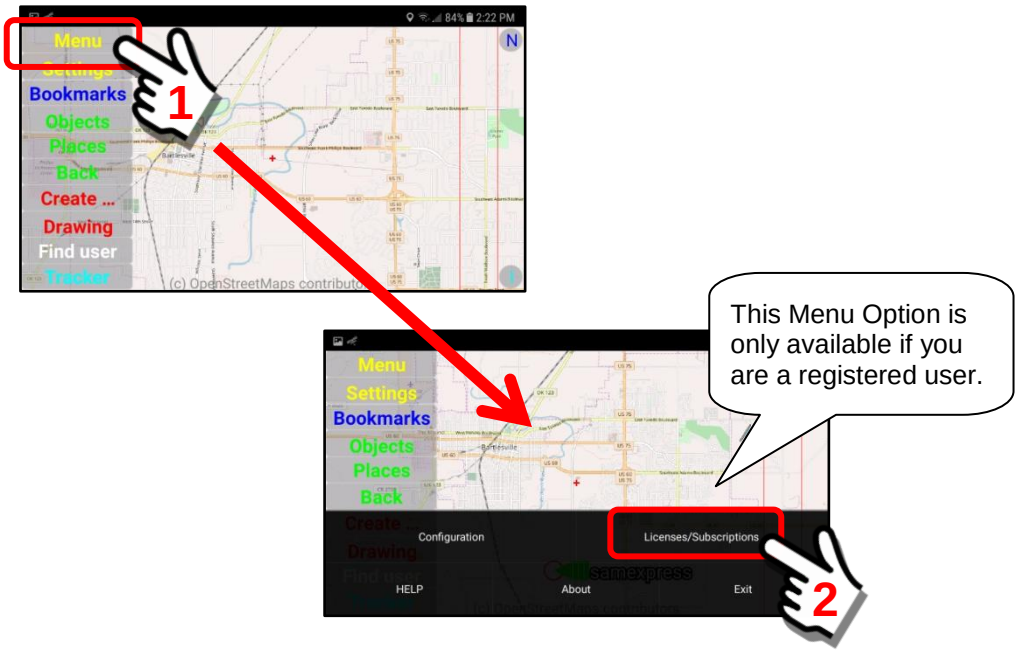
In this example, we have registered a "new" user on the Licensed SentryMDU Server of our Organization. We are now going to illustrate how to INSTALL a User License on a mobile device.

We will now use the remaining two pieces of licensing information provided to us by our organization.

1) An "Anonymous User" **initial registration password** for your Server Instance.
2) The **License Number** that has been given to the Job Classification for this User.
3) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.
4) The **Domain Name** (or IP Address) for your SentryMDU Licensed Server Instance.

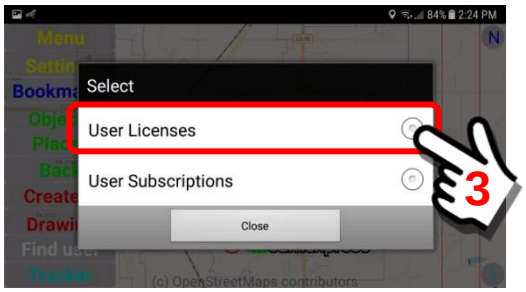
We will now review the following 10 steps.

1. ***Open the Menu Panel and select the "Licenses/Subscriptions" Button.***

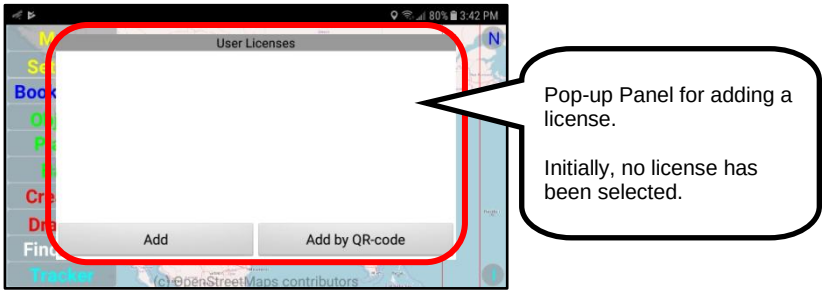


2. ***Select the "User Licenses" Option.***

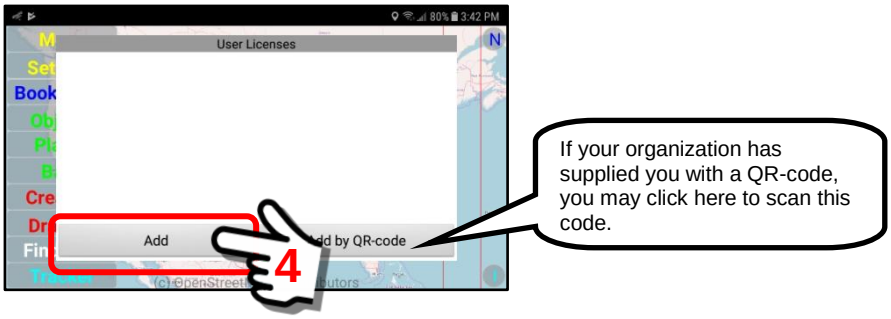
A pop-up panel will appear. Select the "User Licenses" option.



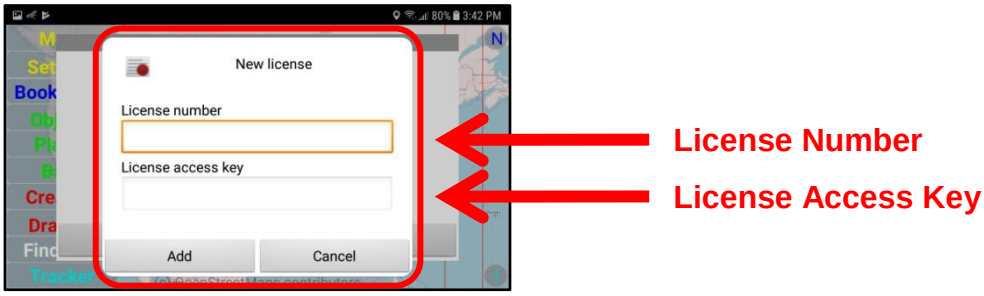
3. ***The "User Licenses" selection panel will appear.***



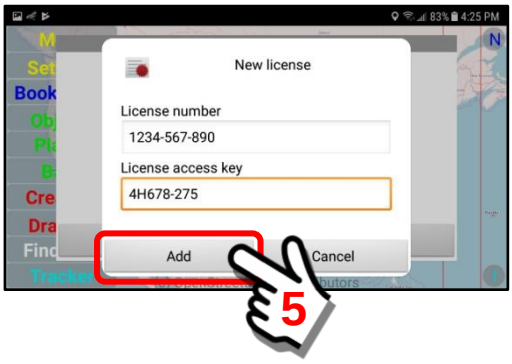
4. ***Click on the "Add Button".***
To display the license input screen, click the "Add" Button.



5. ***Data Entry panel for new license is displayed.***
A pop-up panel will appear with two (2) data entry fields.

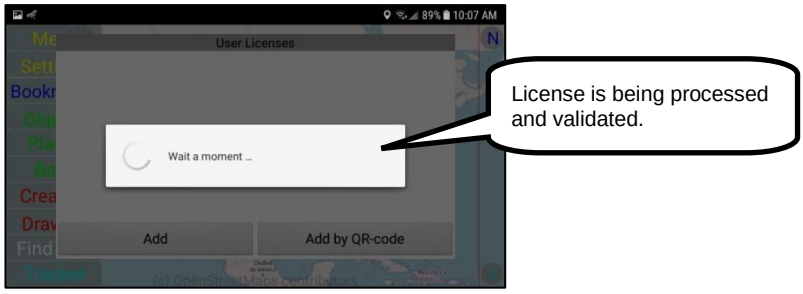


6. ***Enter the License Number and License Access Key.***
Click on the "Add" button when finished.

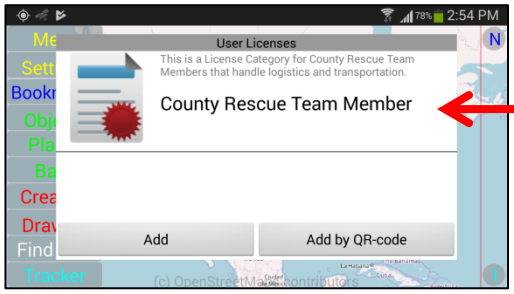


7. ***The submitted User License job classification will be validated.***
If the entered data is correct, and the temporary License Access Key is used during the time period set by your IT Department, the User License security domain for this job category (County Rescue Team Member) will be installed on the mobile device.

The mobile device will contact the SentryMDU System to validate the license and retrieve the User Category parameters.

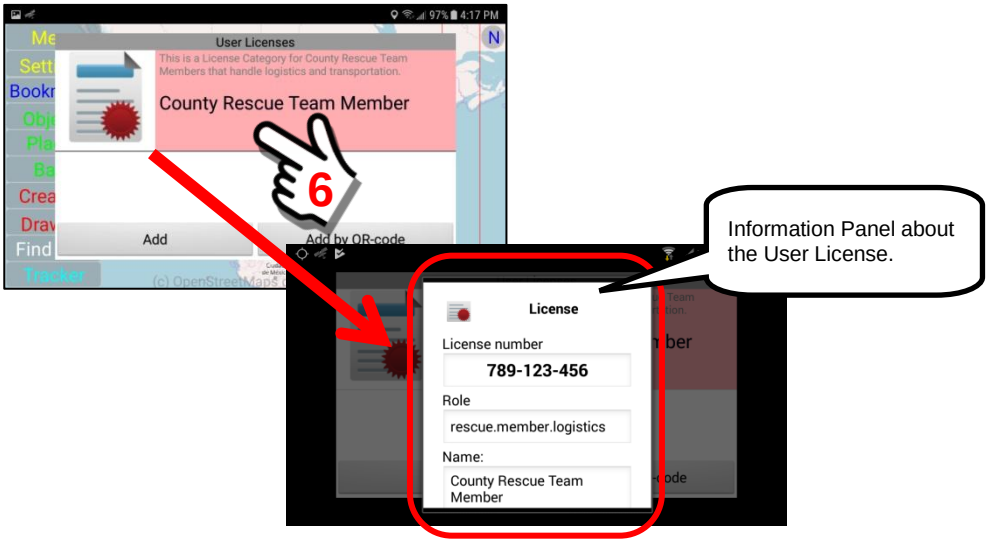


The validated License and User Category will be displayed on the panel.

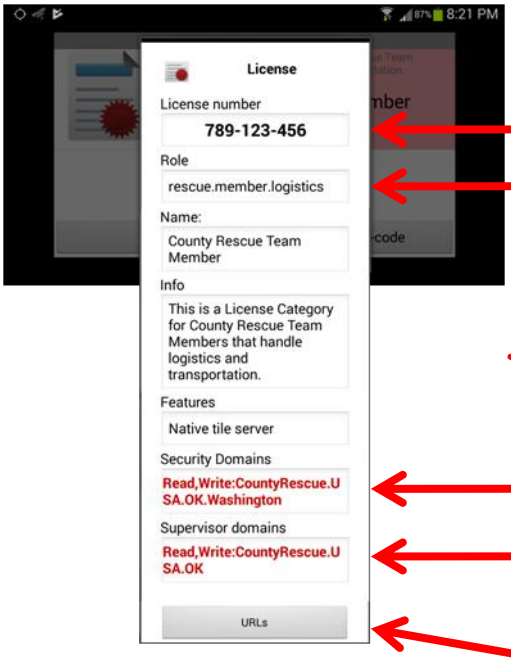


License Category and Description.
Note:
Your Organization may have many license categories that will provide specific features for Team Members, Team Leaders, Managers, etc.

8. ***Review User License, job role and Security Domain***
Click on the User License name (County Rescue Team Member) to open a pop-up panel that will display the license parameters and the installed Security Domain.



The full listing may be displayed by scrolling the pop-up panel.



License Number

User role and classification as selected by Licensed Organization

Organizations with a Licensed Server have access to create, modify and remove User License parameters via a web portal into an Administrative Server.

Default Security Domain for all users in this classification

Supervisory Security Domain for all users in this classification

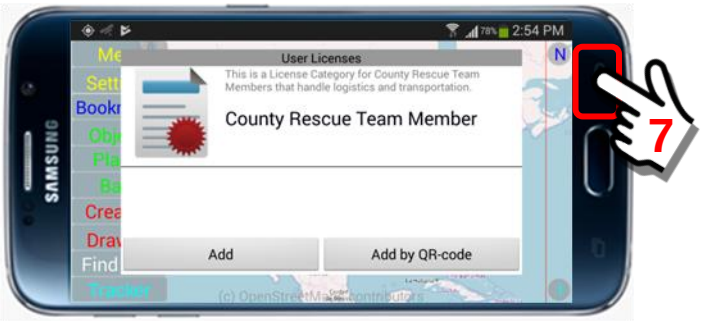
Listing of URLs provided to this User Class during initial installation.

Note:

This is a list of the Custom Bookmarks and Data References that are installed for this specific User Category. These are set by your Organization.

9. *Return to the Main Map Screen*

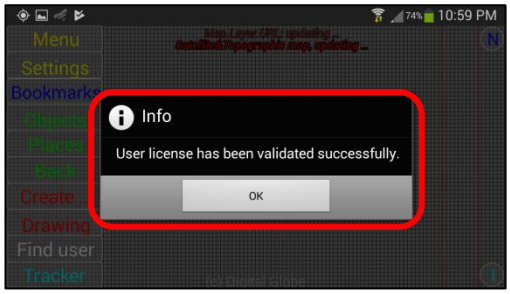
Click on the "Back" button on the device to return to the Main Map Screen.



When the "Back" Button is clicked, this starts the License Validation Process. This may take several seconds depending on your internet connection.

10. ***Main Map Screen is now displayed with Satellite Imagery***
As the mobile device processes the screen change, the satellite imagery for this User LIcense is downloaded and installed on the device in accordance with the organization's imagery contract.

A pop-up message will display if the User License is valid.



Satellite imagery will now fill the screen

Note:

You have now REGISTERED and installed a User License … but you have NOT COMPLETED CONFIGURATION. See Sections 3.14 and 5.4 for additional settings that you will need to make. This is important if your device is to provide a good user experience and to perform optimally (ie audio/video streaming, map images, etc.) for your specific hardware.

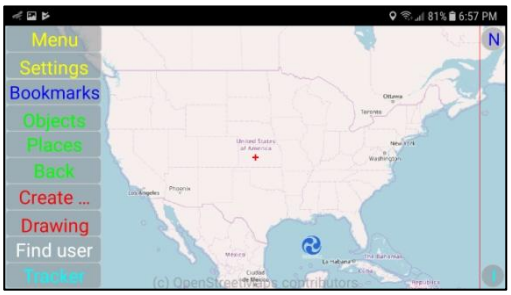
Options for changing the type of Map Imagery to display:

The Sentry MDU Application allows a user to select a number of options on how they would like the screen to display satellite imagery and maps. There are 3 primary image/map options and several overlay "layers" that can display additional symbols and icons. The 3 primary map options are as follows:

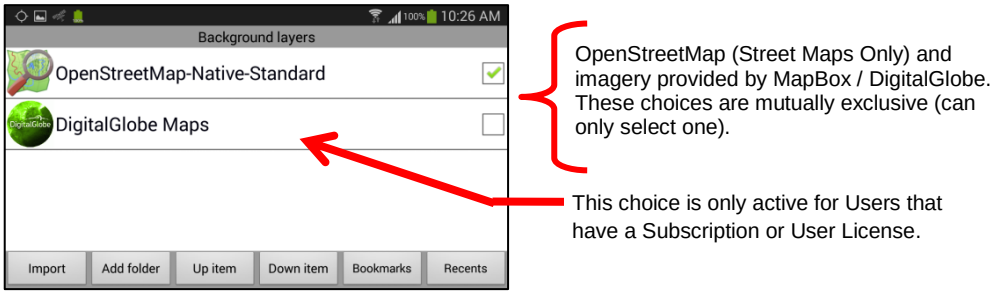
1. Satellite Image overlaid with a street map
2. Satellite Image
3. Street Map

The "default" setting is Item #1 – Satellite image overlaid with a street map.

After initial installation (and before registration) you will notice that the Main Map screen displays a "Street Map" (using OpenStreetMap data) and not a satellite image.



1. ***Location of the Map Layer display options.***
   The available Map Layers are installed in the Background Layers Folder on the Viewing Configuration Panel.



<u>OpenStreetMap-Native-Standard</u>

OpenStreetMaps is an "Open Source" set of map data supported by a worldwide community. DLT operates a tile server that delivers this "road/street" map data to the SentryMDU App.

<u>DigitalGlobe Maps</u>

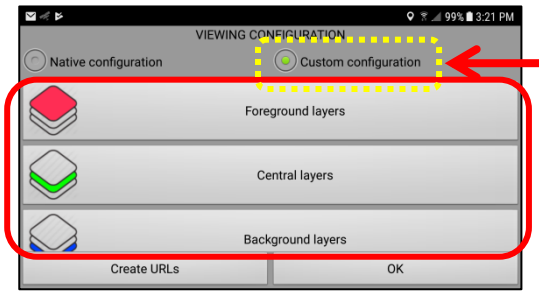
DigitalGlobe (a Maxar company) is a commercial provider of high resolution satellite imagery to governments and industry. They operate a constellation of satellites that scan the earth continually and provide updates to their imagery on a regular basis. The SentryMDU App retrieves imagery data from MapBox, a reseller of DigitalGlobe imagery.

2. ***Select the "Custom Configuration" Option***

The "Custom" option is an alternate view mode of the Foreground, Central and Background Layers functions. To open this panel, click the ***Custom Configuration*** Button on the Viewing Configuration Panel.

<u>Three large buttons will be displayed</u>

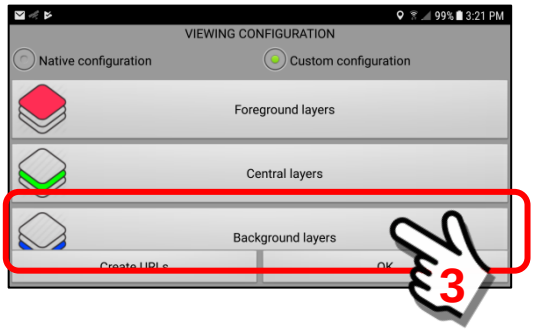
1. Foreground Layers
2. Central Layers
3. Background Layers



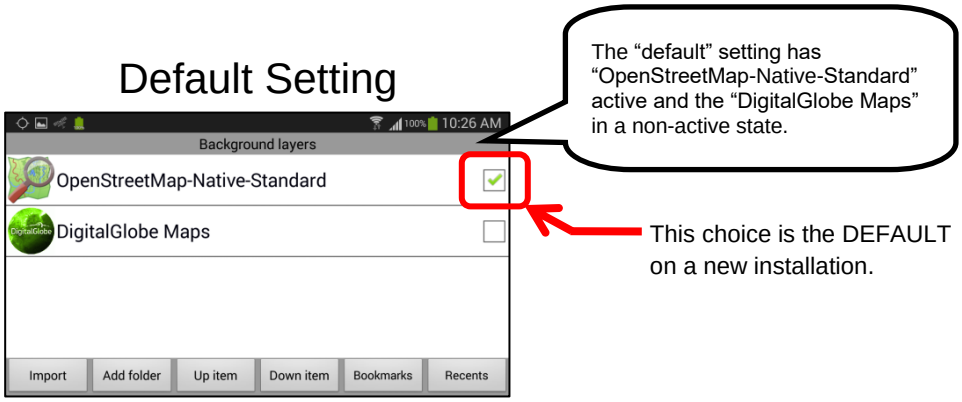
Custom Configuration mode is now activated

3. ***Select the "Background Layers" Folder***

Select the Background Layers folder for access to the imagery and maps that are available on the Mobile Device.



The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put “custom” maps of your own in this folder.



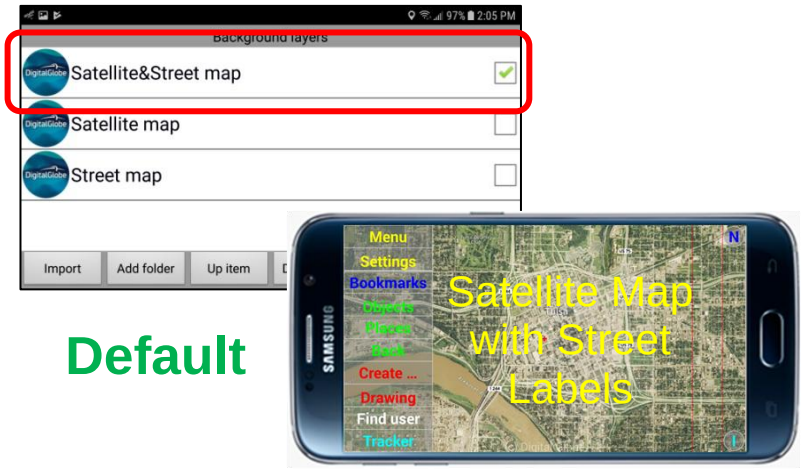
4. ***DigitalGlobe Maps for Users with a Subscription or User License.***
When a User device installs the MapBox/DigitalGlobe Map imagery by way of a Subscription or User License, the DigitalGlobe Maps menu item will become active.

To view the 3 different DigitalGlobe Map options, click on the Menu Item.

During an initial install of the MapBox / DigitalGlobe Maps, the “**Satellite&Street map**” option will be installed by default.

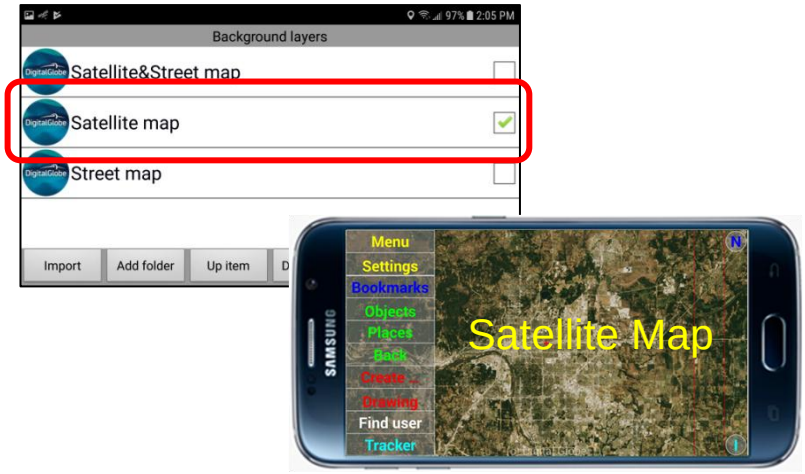
A User may select any of the other map options as indicated below.

1

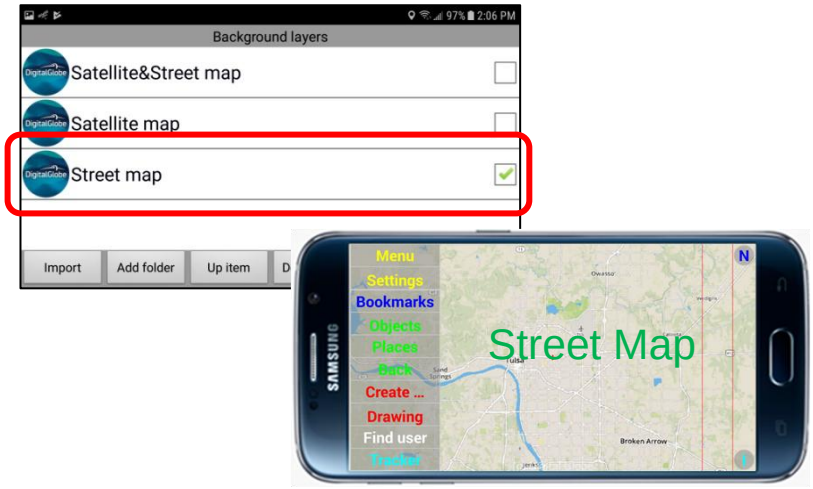


Default

2



3

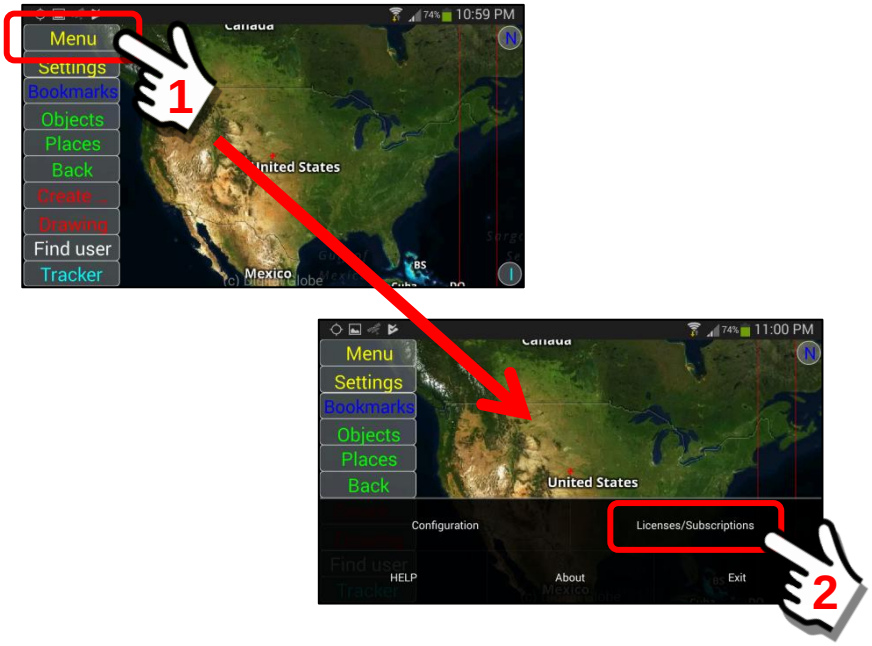


Removing a User License from the Device:

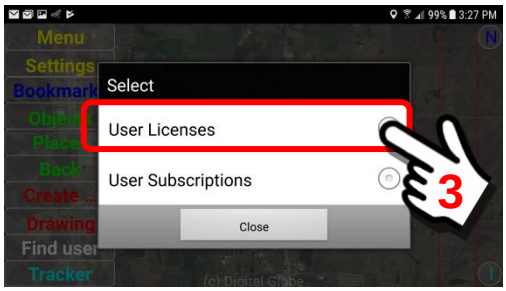
In the SentryMDU system a Subscription and a User on a “licensed” Data Server (User License) may not co-exist for the same “User Profile”, on the same mobile device. You must be either one or the other (or none). See **Section 5.3** on how to create multiple “User Profiles” that will allow BOTH subscriptions and Licensed Users to co-exist on the same device.

In this example, we are going to illustrate how to REMOVE a User that has a User License on a SentryMDU data server. You may use this feature if you have a User License in a specific category and you will be moving to a “new” category of License. In this scenario you must remove the existing license and then install the “new” license.

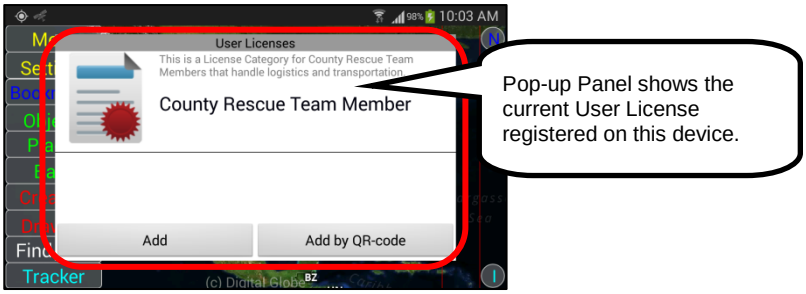
1. ***Open the Menu Panel and select the “Licenses/Subscriptions” Button***
   Click on the *Menu Button* on the Main Map Screen and then select the *Licenses/Subscriptions Button*.



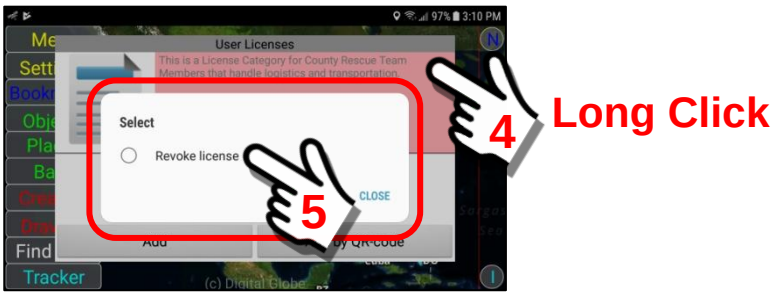
2. ***Select the “User Licenses” Option***
   A pop-up panel will appear. Select the “User Licenses” option



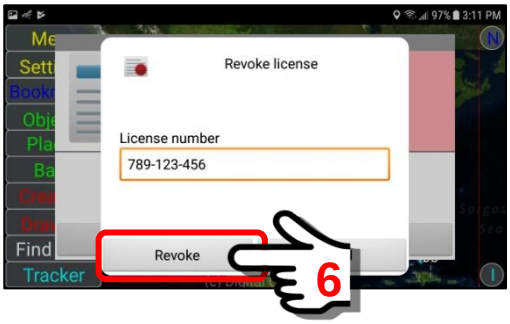
3. ***The "User Licenses" selection panel will appear***
The User Licenses Panel will show the active User License that is installed on this mobile device.



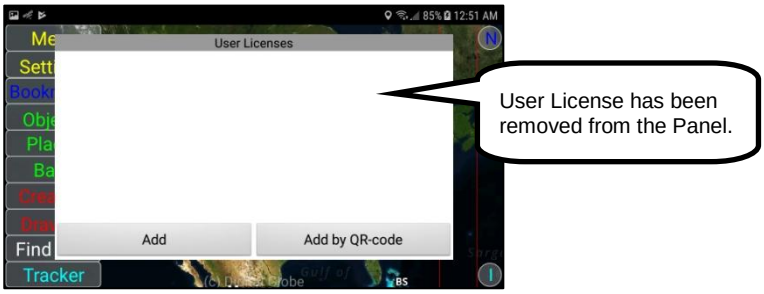
4. ***Select the User License, long click on the name***
Perform a "long click" on the User License name. A pop-up box will appear with a button to "revoke" the User License. Click on the Revoke Button.



5. ***Verify the correct License Number***
Verify the License Number for your Organization. Click on the **Revoke Button** to remove this license access from the mobile device.



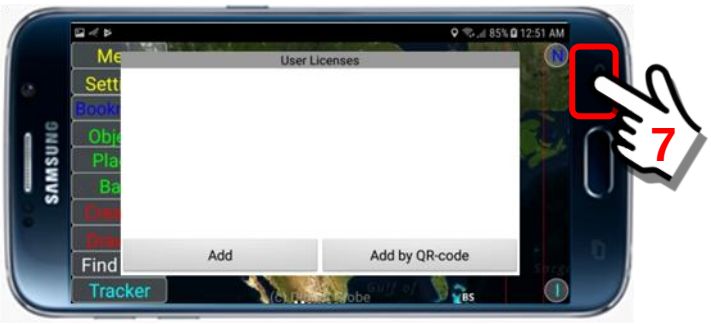
6. ***The User License will be removed from the device***
Notice that the User License (County Rescue Team Member) is no longer shown on the device.



7. ***Satellite Imagery will be removed from the device***
Without a User License, the mobile device "access" will be removed from SentryMDU Data Server of the Organization. You will still be "registered" on the particular server instance, but you will default to your personal Security Domain. You will no longer have access to others on the network until you select and install ANOTHER user license.

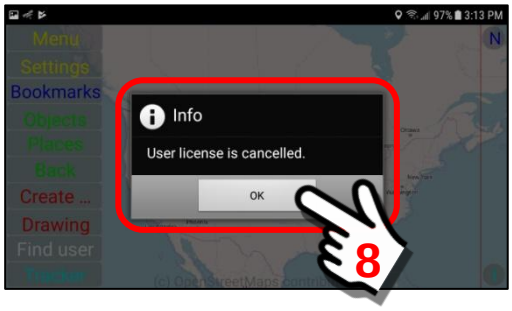
You will no longer have access to file storage, streaming and satellite imagery that is provided by that Server Instance.

Click the "Back" Button to return to the Main Map Screen.



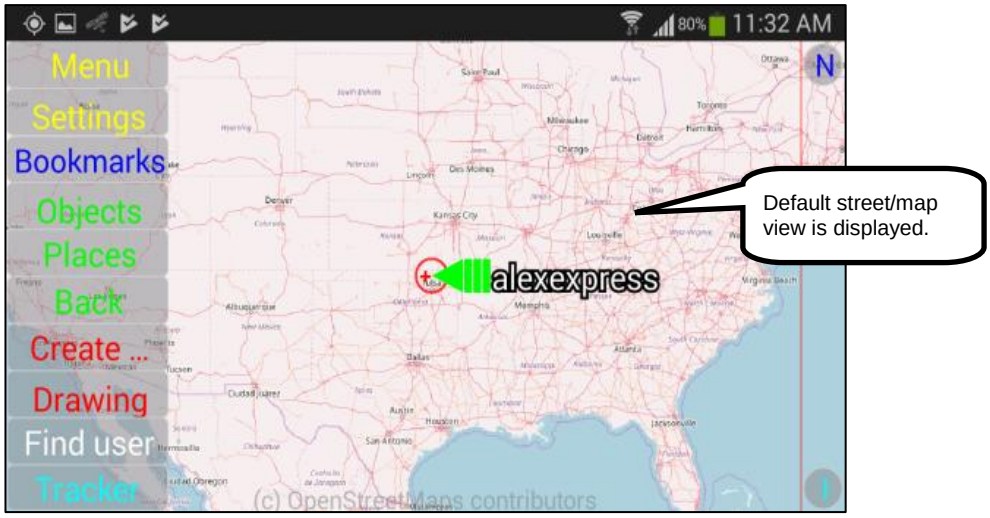
As you return to the Main Map Screen, the satellite imagery on the device will be removed.

Finally, a pop-up box will inform the User that the User License has been successfully cancelled.



Click the "OK" Button to continue …

8. ***The "default" OpenStreetMaps data will now be displayed.***
Notice that the screen has now reverted to the road map display. Since you are on a Licensed Server, in order to access the high resolution satellite imagery once again, you must input another **User License/Access Key** combination.



3.8. Using In-App Subscriptions

Subscription Overview:

In-App Subscriptions are available for those Users that do not belong to an organization that has a Licensed Server AND they would like access to enhanced satellite imagery, server data storage and broadcast bandwidth.

In most cases, a subscription would be used by a family, small civic group, clubs and small businesses with fewer than 20 members. Once a group size gets larger than 50-80 members it is usually more cost effective for the group to license a SentryMDU Server instance. Since the SentryMDU System is NOT supported by advertising (no Ads) and we do NOT sell User data, we must charge for our service in order to cover the use of Satellite Imagery, server disk storage and internet usage.

Important Note:

We use Stripe.com as our Payment Gateway and In-app Subscription Processor. If you pay for Services or Subscriptions on our website or mobile app, they handle ALL financial transactions.

Your billing information and credit card numbers NEVER hit our Servers. To validate purchases, Stripe.com sends us an encrypted ID Code that has been assigned to your account.

Stripe.com is certified to *PCI Service Provider Level 1*. This is the most stringent level of certification available in the payments industry.

Subscriptions are governed by the following:

a. We use **Stripe.com** as our Payment Gateway and In-app Subscription Processor. We accept all major credit and debit cards in 130+ currencies. You may visit their website to learn more.
b. All subscriptions on are on a “monthly” time period. For example, a subscription that starts on the 12th day of a month will end on the 12th day of the next month.
c. You may “upgrade” or “downgrade” a subscription at any time (ie in the middle of a month). The unused pro-rated remaining value of your current subscription will be applied as a credit toward your new subscription. You will not be “billed” until the remaining balance is used up. See Stripe.com documentation for details of this Policy.
d. You may cancel a subscription at any time. However, there are NO refunds. You will continue to have access to the “paid for” content until your monthly time period has expired. At that point, the subscription will NOT be renewed.
e. To “manage” your Subscriptions, access the SentryMDU Administrative Server Gateway website (via a computer or your mobile device) and log into your account. Here you can view, cancel, renew, upgrade/downgrade and manage your SentryMDU subscription.

We offer three (3) Subscription Levels to cover the needs of most subscription users.

1. **Level 1 Access** ($4.99 USD/mon, should be adequate for the casual user)
   i. 6,000 Satellite Imagery tiles per month
   ii. 100 Mb of Data Server Disk storage for audio/video files
   iii. 500 Mb of data streaming to other remote devices
2. **Level 2 Access** ($9.99 USD/mon)
   i. 12,000 Satellite Imagery tiles per month
   ii. 200 Mb of Data Server Disk storage for audio/video files
   iii. 1 Gb of data streaming to other remote devices
3. **Level 3 Access** ($14.99 USD/mon)
   i. 24,000 Satellite Imagery tiles per month
   ii. 500 Mb of Data Server Disk storage for audio/video files
   iii. 2 Gb of data streaming to other remote devices
4. We suggest ALL users start at a Level 1 subscription … if you exceed the usage rates for Level 1, then upgrade to Level 2, and so on.
5. We recommend a user to purchase a SentryMDU Server License if you have usage needs that are higher than Level 3.

Enhanced Services Pricing Tables

Level 1 Access	Level 2 Access	Level 3 Access
$ 4.99 / month	$ 9.99 / month	$ 14.99 / month
6,000 Satellite Tiles	12,000 Satellite Tiles	24,000 Satellite Tiles
100MB Server Storage	200MB Server Storage	500MB Server Storage
500MB Bandwidth	1GB Bandwidth	2GB Bandwidth
Subscribe	Subscribe	Subscribe

Subscription Users do NOT have direct access to the Data Server via the SentryMDU Manager Desktop Client (MS Windows Program). There are some features/functions (about 10%) that will NOT be available/customizable. For these features, we have selected “defaults” that should work for most users. If you need/want the ability to “fine tune” the system, then you must have a SentryMDU Server License.

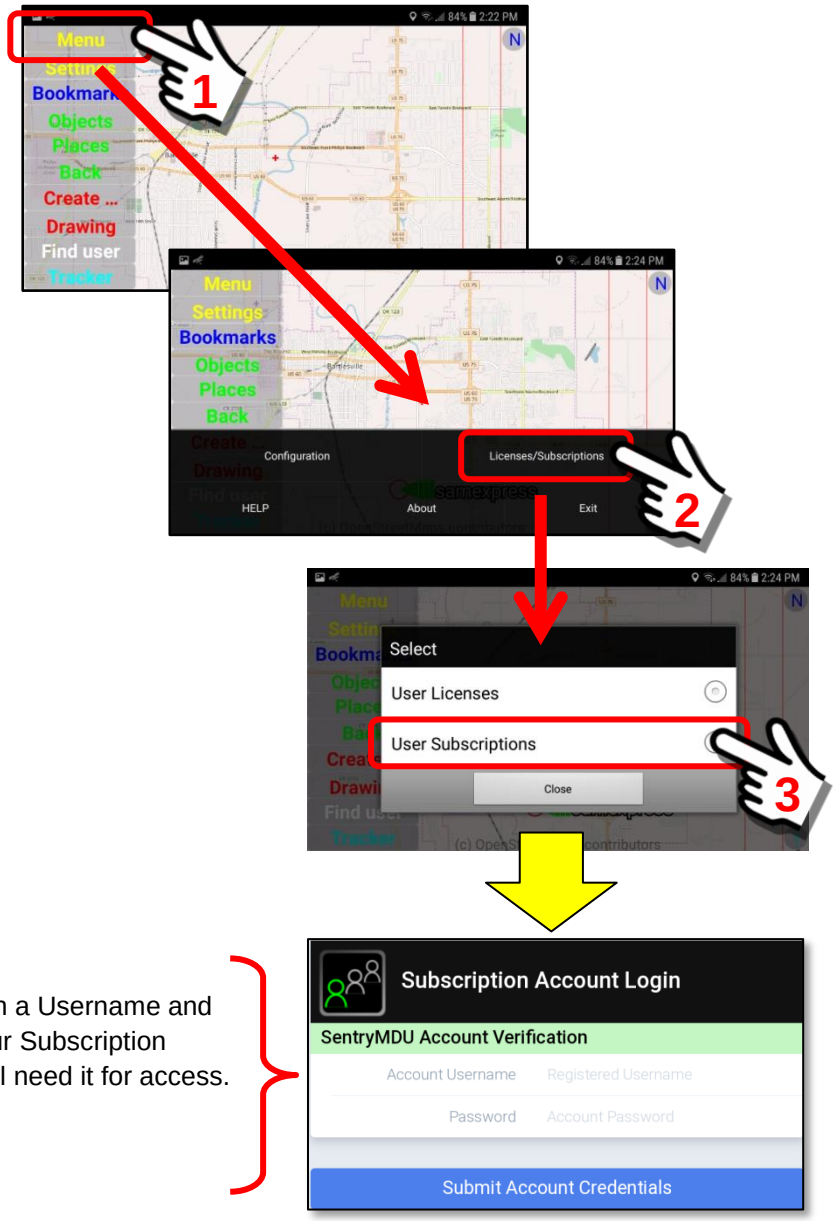
Registering for a Subscription Account:

We provide two (2) methods/formats from which you can manage a Subscription Account.

1. Your mobile device (phone or tablet)
2. Desktop Computer via the SentryMDU Administrative Website.

Before you can select a Subscription, you must create a “Subscription Account”. This is a different account from what you used to “register” your mobile device. A subscription account (optional) will enable you to manage all aspects of a SentryMDU monthly subscription (provide credit card information, start a subscription, upgrade/downgrade, cancel, etc.). This account, once established, may be accessed from your mobile device or a desktop computer via the SentryMDU Administrative website.

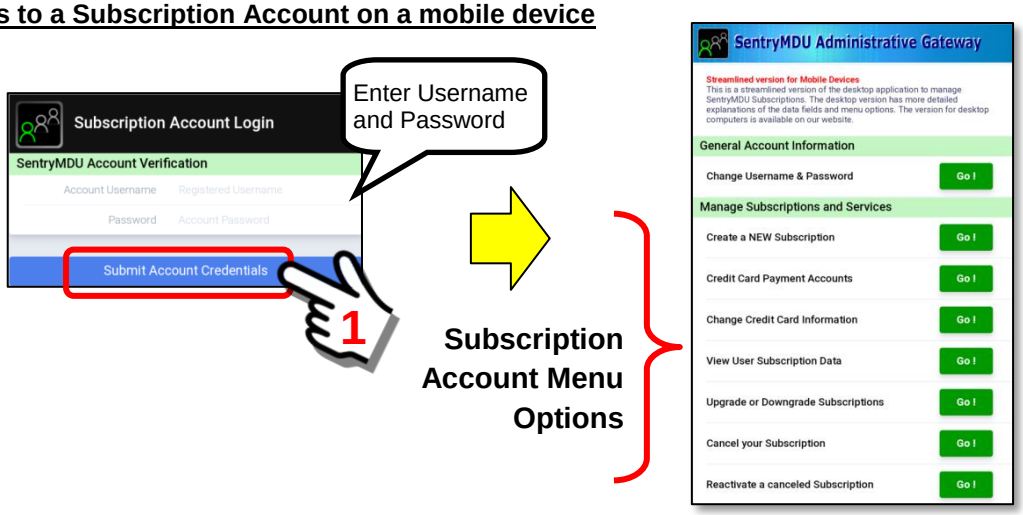
The screens below show how to access your subscription account on a mobile device.



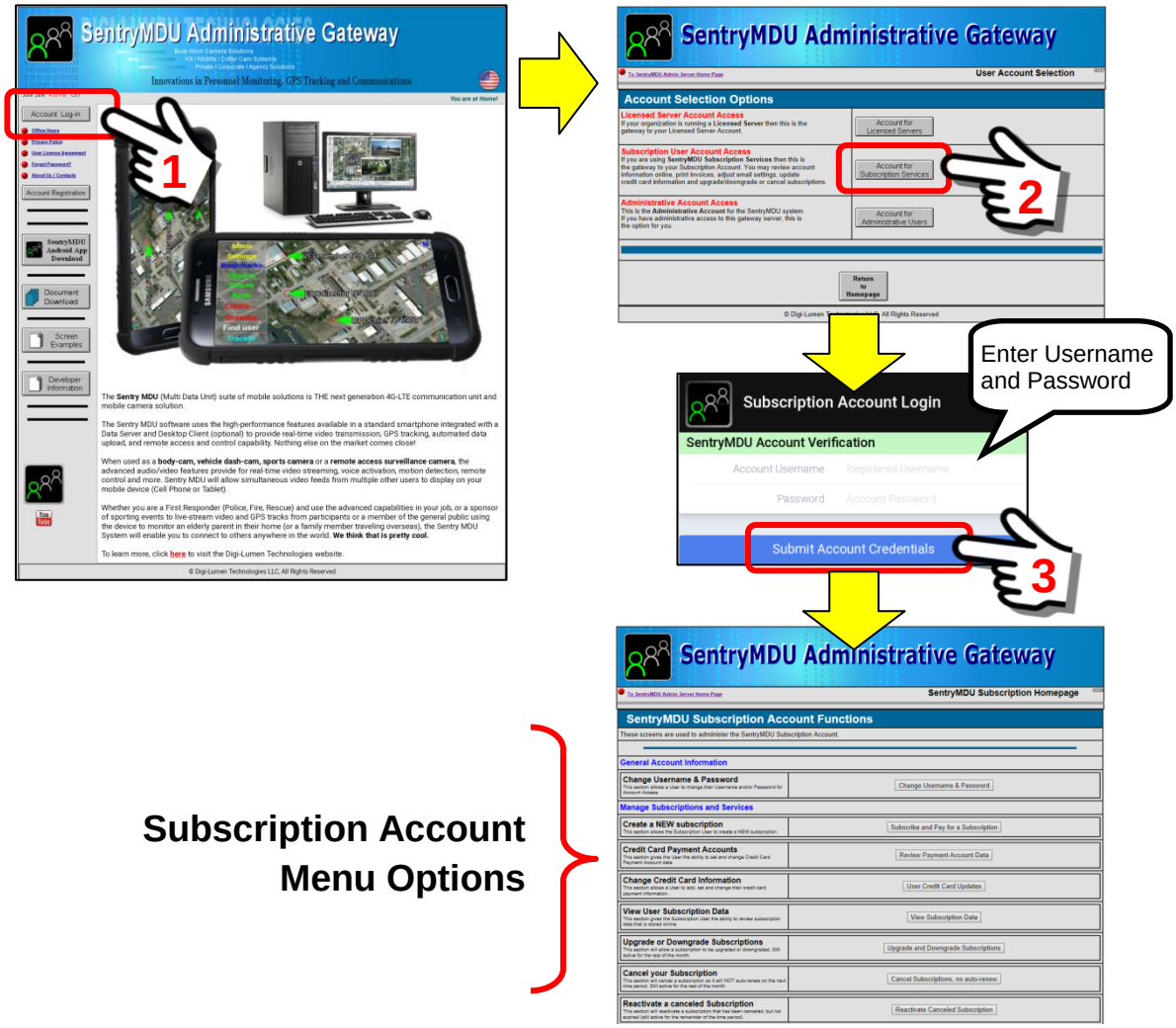
We will establish a Username and Password for our Subscription Account. We will need it for access.

The “Login Panel” for a Subscription Account will look the same for both a Mobile Device and a Desktop Computer. However, the Menu Option screens will look different. Since the mobile device has a smaller screen, it will not have as much detail as the larger screens. Examples are shown below.

Access to a Subscription Account on a mobile device



Access to a Subscription Account on a Desktop Computer



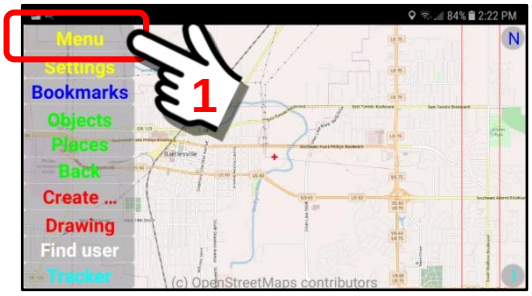
Registering a subscription account on a Mobile Device

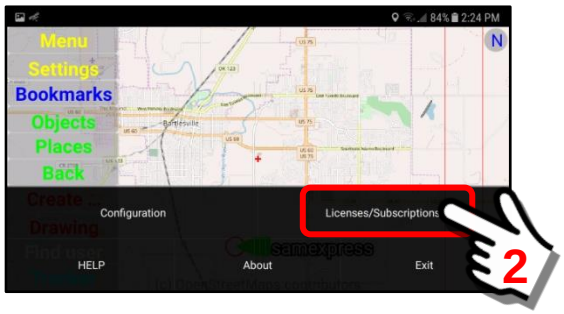
To access the subscription feature, you must first “register” an account on our SentryMDU Administrative Server and set up a payment method (ie credit card) so you can pay for the subscription. The use of subscriptions is “optional”.

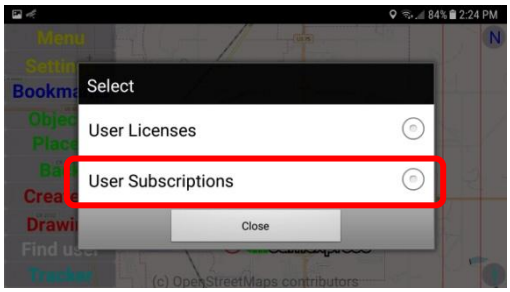
The following list will describe the steps.

1. ***Open the Menu Panel and select the “Licenses/Subscriptions” Button***
   When you select the ***User Subscriptions*** option from the select box, the system will check to see if you have an existing Subscription Account. If you do NOT have an existing account, the system will provide a set of screens where you can register for a Subscription Account.

   Navigate to the **User Subscriptions** option in the Select Box.

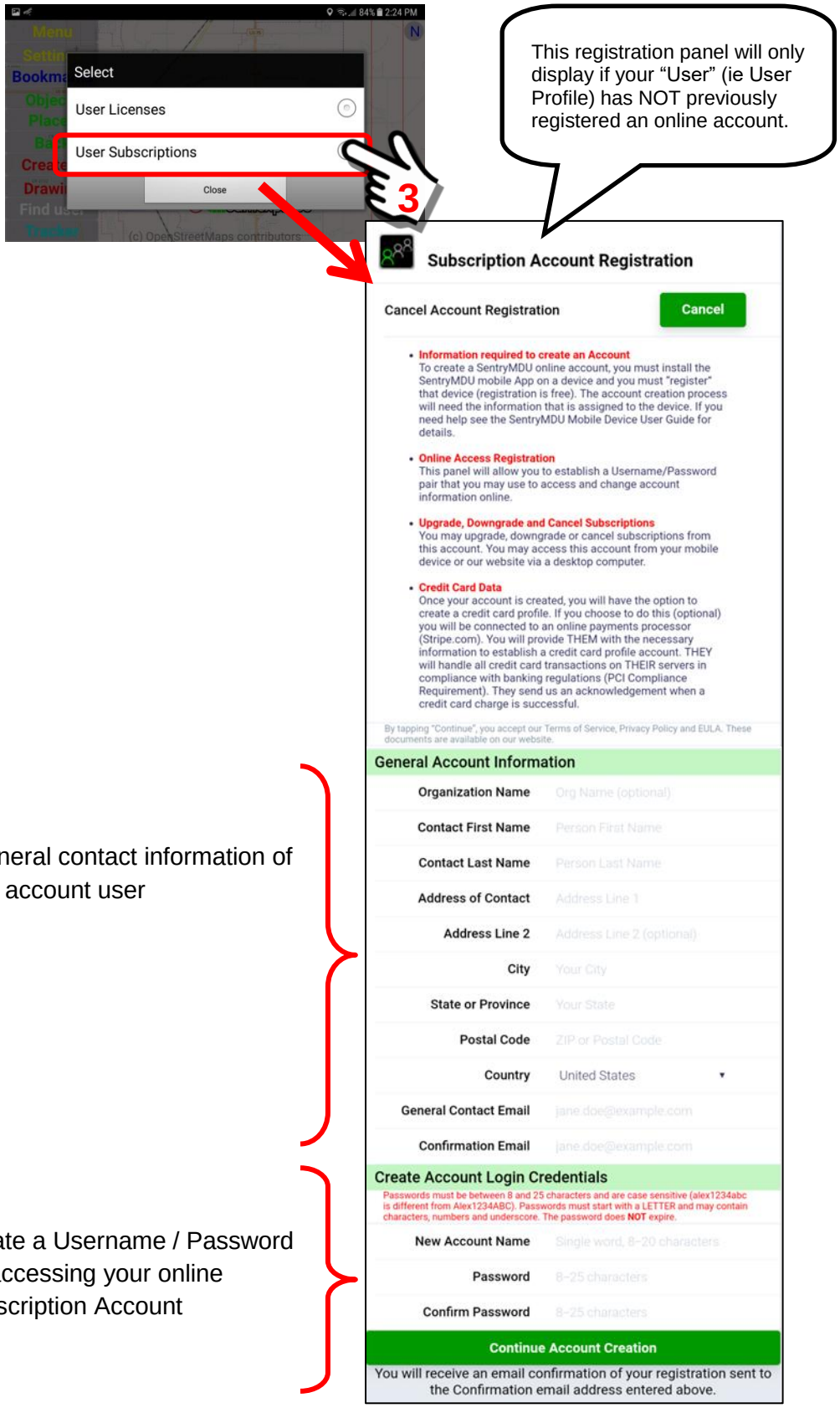






2. ***Select the User Subscriptions option***

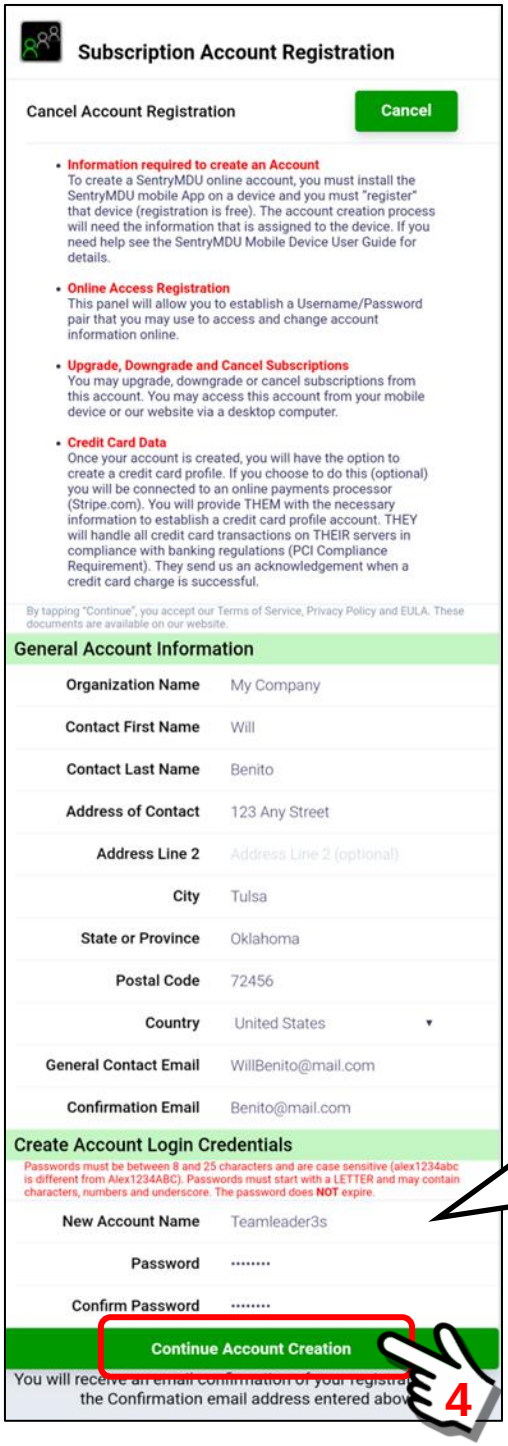
Click on the “User Subscriptions” option button.



3. ***Fill out the Subscription Account Registration form***

Fill out the Form. When finished, click the “Continue Account Creation” Button to continue. You will have a chance to review your entries before the final submit.

When you establish an account “Login” name, you may use the same username as your mobile device … or a different name. We recommend a different name. You will have options to change BOTH the Username and Password of this Subscription Account, as you desire.

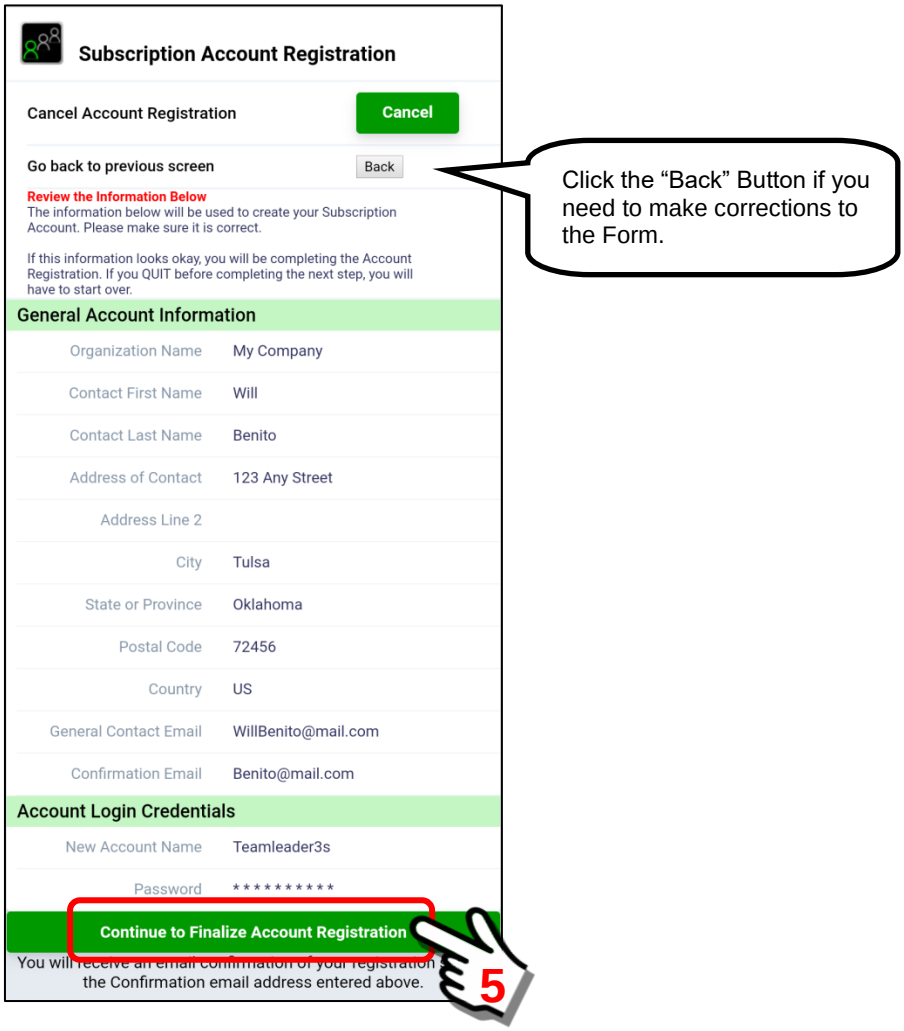


When you establish an account “Login” name, you may use the same username as your mobile device … or a different name.

4. ***Review data entry … submit to create new account***
This panel will provide a review of the data you entered. If you need to correct something, use the “Back” Button at the top right side of the panel to return to the previous screen.

> **Important Note: Make a note of your password and store in a secure place. Passwords do NOT expire and are encrypted on our Servers. If you lose your password, we cannot help you.**

When you are ready to proceed, click the “Continue to Finalize Account Registration” Button at the bottom of the panel.

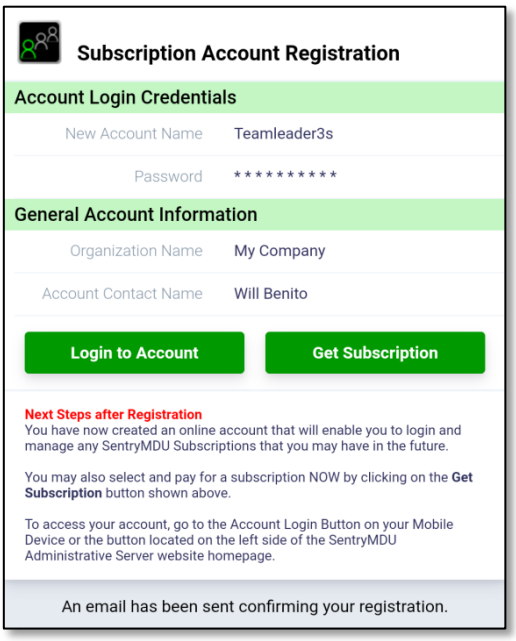


You will receive a confirmation email of your registration.

5. ***Successful registration of a Subscription Account***

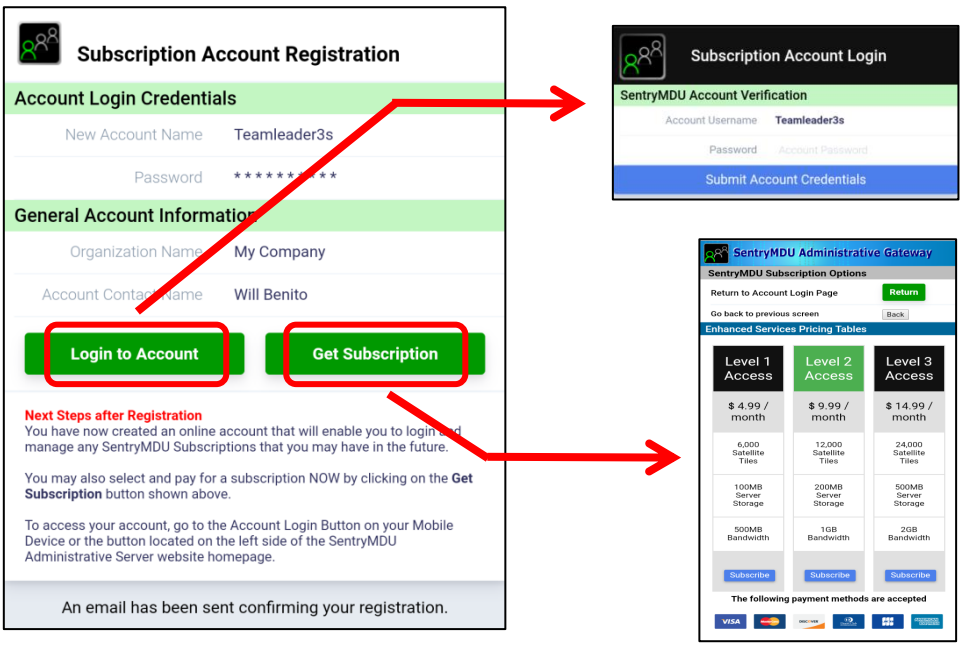
When you submit the Registration Form, the system will check the data you entered for errors and incorrect formatting. In addition, your Username must be “unique” in our system … if someone else has already selected that Username, you will be prompted to choose another name.

If all is well, you will see the following panel.



6. ***Next steps after Subscription Account registration***

Upon a successful initial Account Registration, you will be presented with two options … (1) Go to the Account Login Screen, (2) Sign up for a subscription.

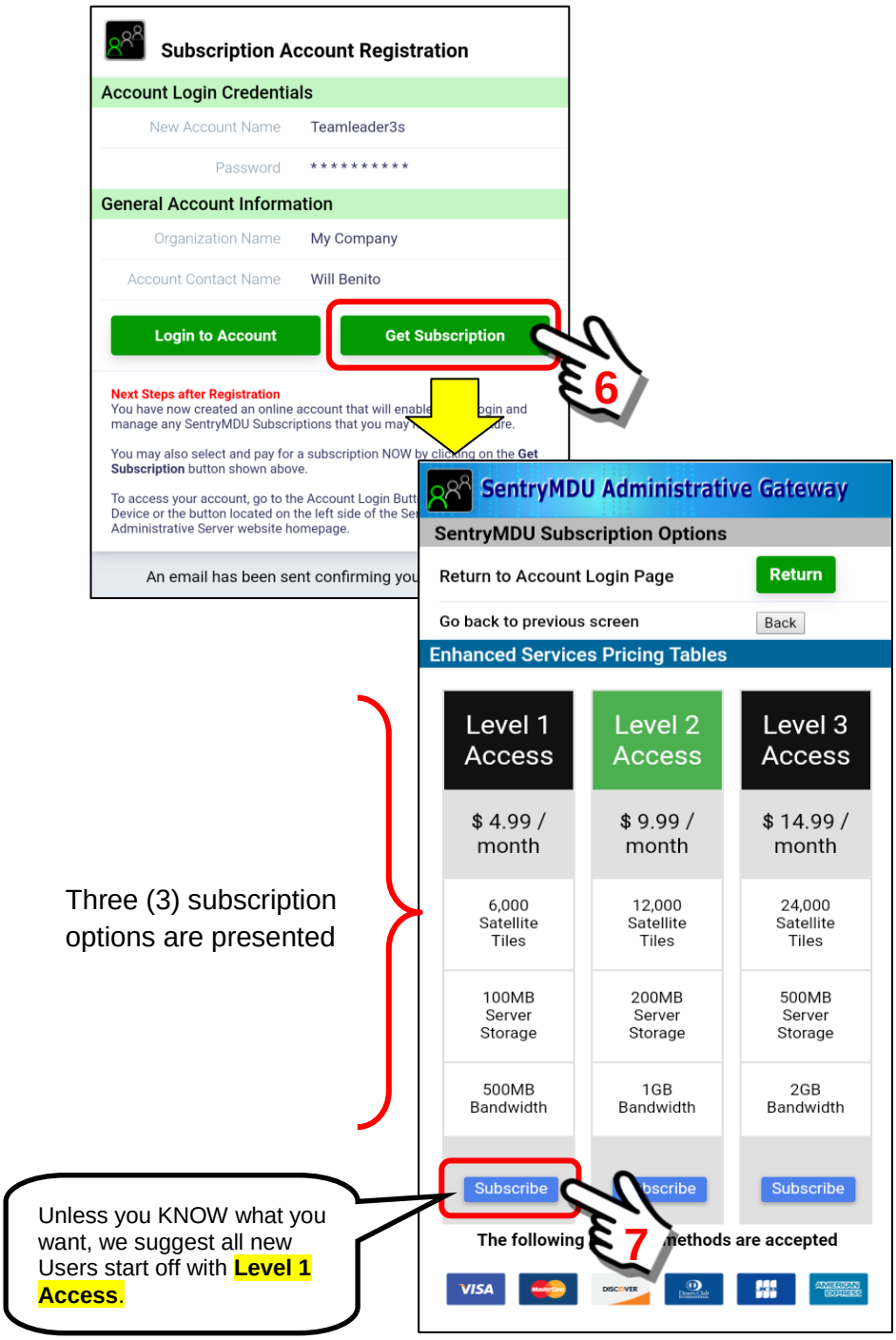


7. ***Sign up for a Subscription***

In this example, we are selecting to sign up for a subscription option NOW. We could do it later, by logging into our Subscription Account and signing up for a new subscription … but since we registered in order to get a subscription, we will do it now.

Select the “Get Subscription” Button.

Review the available subscription options and click the “Subscribe” Button for the subscription you want.

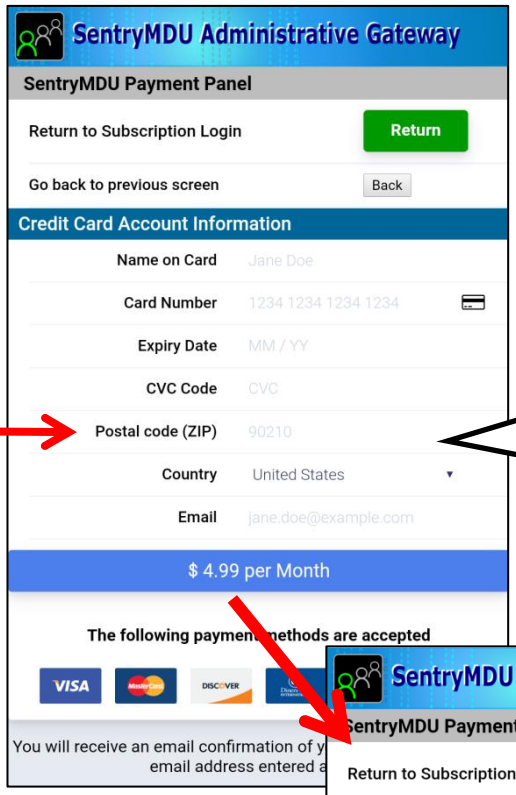


8. ***Enter your Credit Card information***

The SentryMDU Payment Panel will be displayed. Enter your credit card information and an email address where you would like a “confirming email” to be sent. All fields are required (except Postal Code).

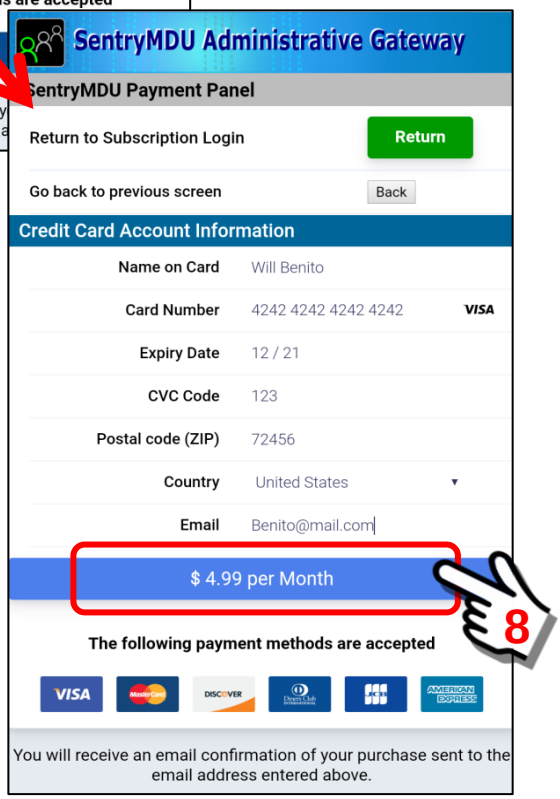
For those countries that do NOT have postal codes (ZIP), leave this field blank.

When finished, click on the subscription price at the bottom of the form.



This field is OPTIONAL. However, if your BANK requires the entry of a Postal Code, then your credit card will be declined if you do not enter one (**most Banks require this**).

Fill out the Credit Card information form

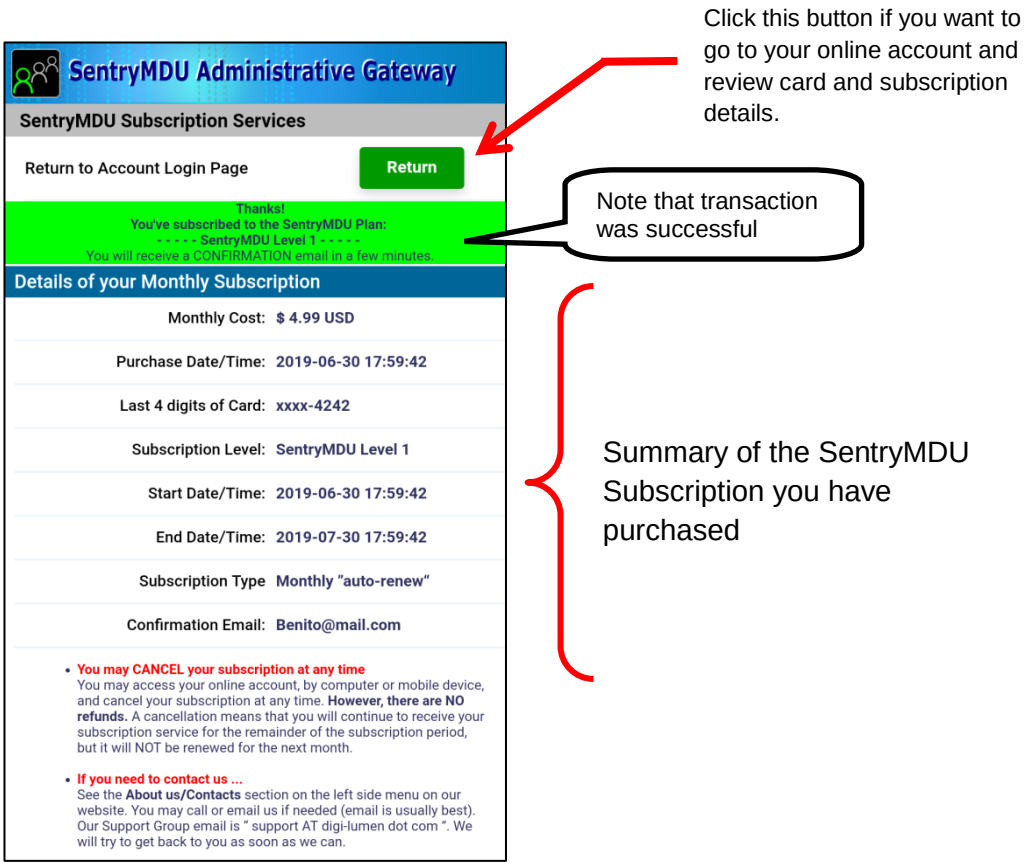


9. ***Credit card information is validated and processed***

The validation process may take anywhere from a few seconds to a minute or more depending on your internet speed and your location in the world.

Do not "re-click" the button a second time, lots of things are happening in the background … you will get an error message if things are not working correctly.

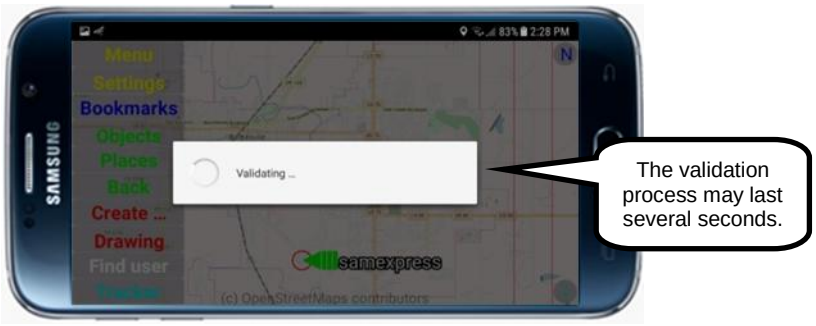
If the transaction is successful (card is charged and subscription is validated) you will see the following summary panel.



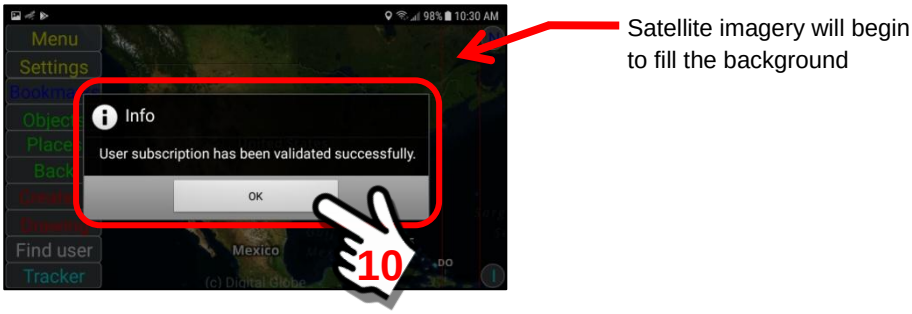
10. ***Close the Browser Panel***

To "activate" the subscription you have just purchased, close the screen panel. Generally, clicking the "back" button on your mobile device will do it.

11. ***Subscription validation and return to Main Map Screen***
The mobile device will contact the SentryMDU Administrative Server and receive validation that a successful transaction has occurred. Depending on your internet speed and location, this action may take 10 -20 seconds.



12. ***Dialog box displayed after successful validation***
Upon subscription validation and contact with the SentryMDU Administrative Server, the system will display a pop-up dialog box. Click "OK" to continue.



13. ***The system will install satellite imagery for the current map location.***
Satellite imagery will now be installed on the device and the Main Map Screen will change from an OpenStreetMaps street view map to satellite images. In addition, the Data Server will be configured for the data storage and data streaming parameters you selected.

Street Map Screen

Satellite Map Screen

Registering a subscription account on a Desktop Computer

You may also use a Desktop Computer (internet Browser) to “register” an account on our SentryMDU Administrative Server. The use of subscriptions is “optional”. This example illustrates how to register for an “online” Subscription Account via a Desktop Computer.

Use your Internet Browser (ie MS Edge, Firefox, etc.) and navigate to the secure website of the SentryMDU Administrative Server.

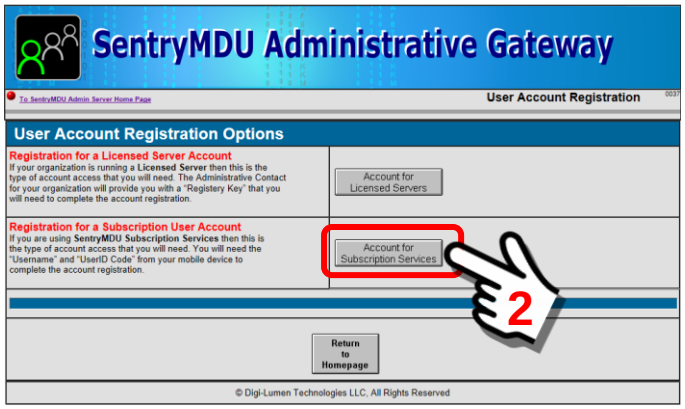
https://sentrymdu01.sentrymdu.com

In this example, we will use the **SentryMDU Administrative Server** website to register for a Subscription Account. Click on the “Account Registration” Button.

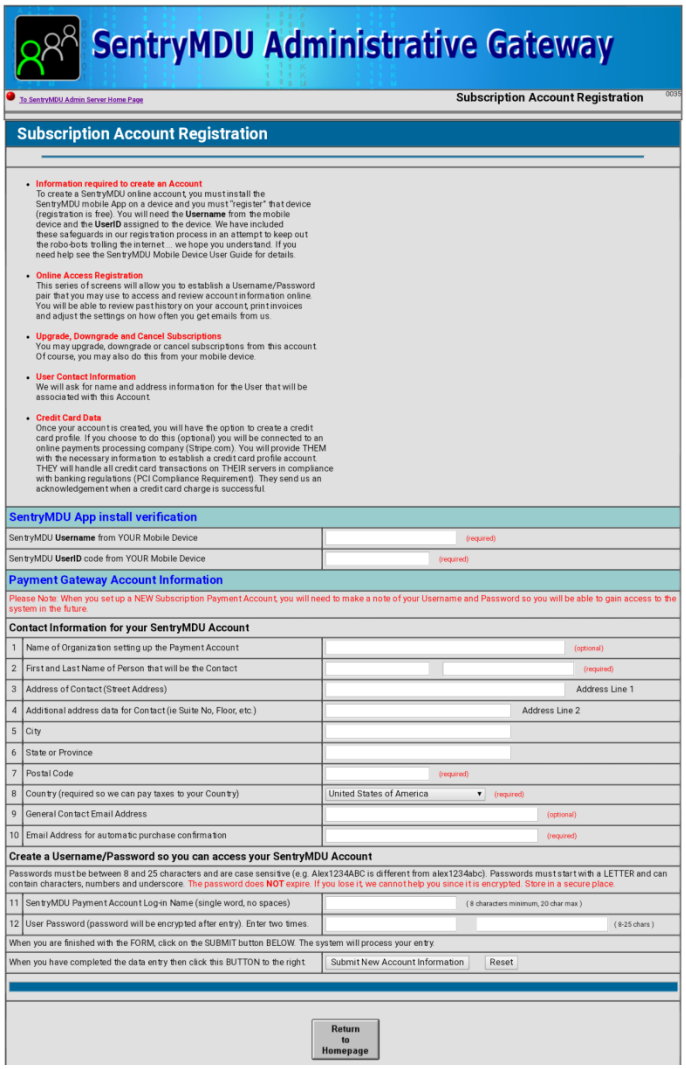
A page will appear for you to accept our Privacy Policy and EULA (End User License Agreement). Select “I Agree” to continue.

This will open a webpage where you can register for a Subscription User Account.

Click on the “Account for Subscription Services” Button.



The “Subscription Account Registration” panel will be displayed.
Follow the instructions to register for an online account.

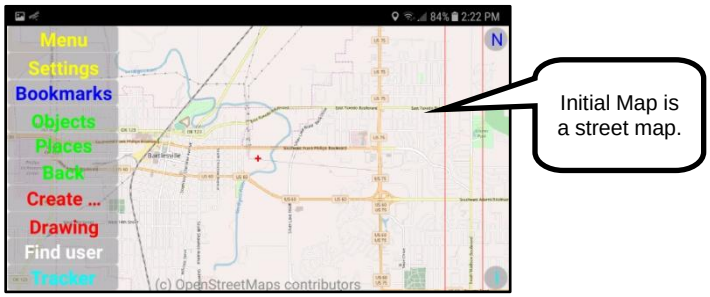


Create a Subscription using the online Subscription Account

This example assumes that you are a registered User and that you have already established an “online” Subscription Account … **but not yet signed up for a subscription**.

The SentryMDU App is free to download and install. We provide it for “free” so you may install it, play with it, look at some of the screens and decide if this is something you want to use. If you have played with it for a while, but now want a subscription, follow these directions.

After initial installation and registration you will notice that the Main Map screen displays a “Street Map” (using OpenStreetMap data) and not a satellite image.

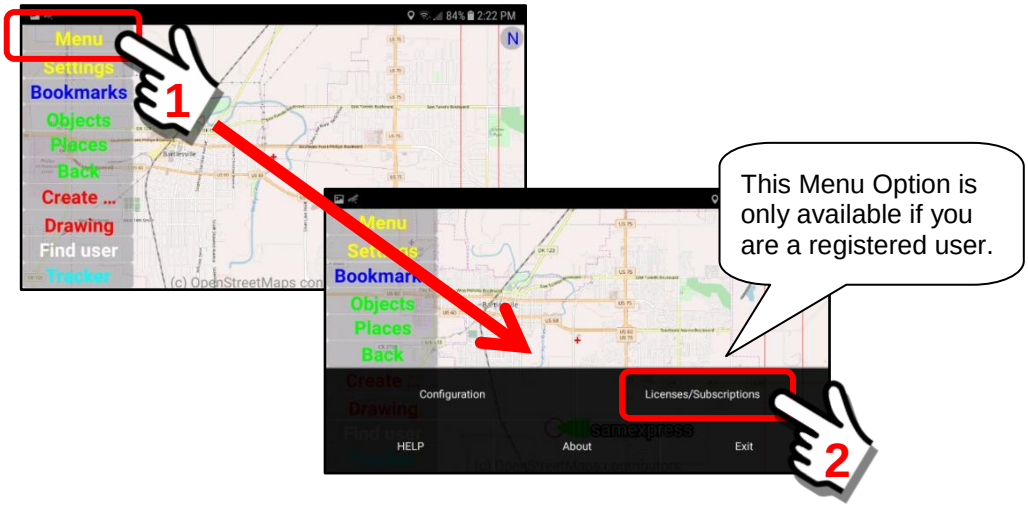


We provide the OpenStreetMap views as the default display **BEFORE** you select one of the following options:

1. Do nothing and remain an Anonymous User (reduced feature set since you are not part of a group Security Domain).
2. Register a Username but do NOT purchase a subscription. Maps will be OpenStreetMaps Data and not satellite imagery. No data storage or streaming.
3. Purchase an In-App Subscription.
4. Sign up with a Licensed Server run by your Organization.

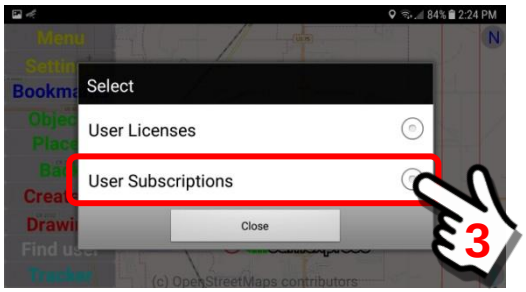
In this example, we are going to illustrate the screens that will be displayed during the Subscription Process (Item #3 above).

1. Open the Menu Panel and select the “Licenses/Subscriptions” Button



2. ***Select the "User Subscriptions" Option***

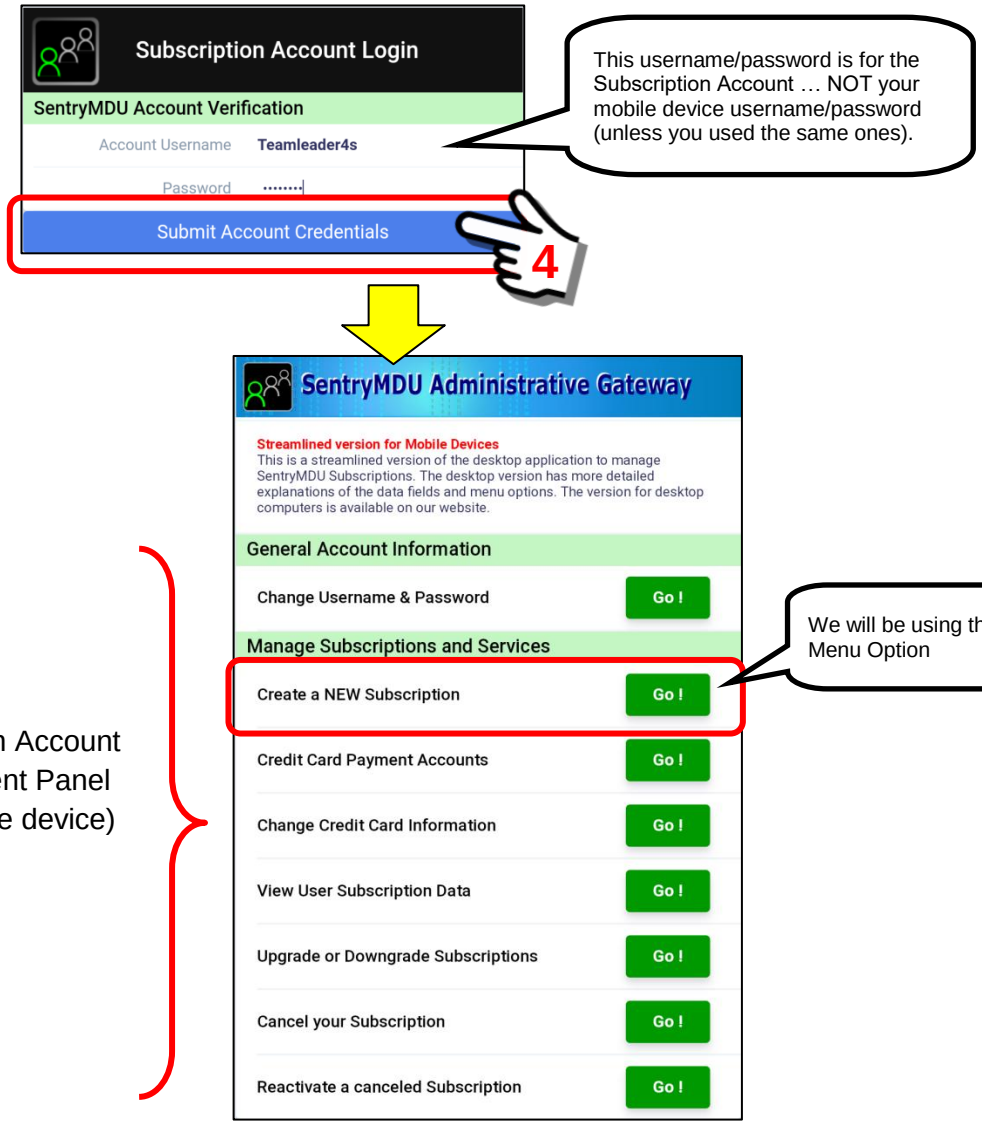
A pop-up panel will appear. Select the "User Subscriptions" option.



3. ***The "Subscription Account Login" panel will appear***

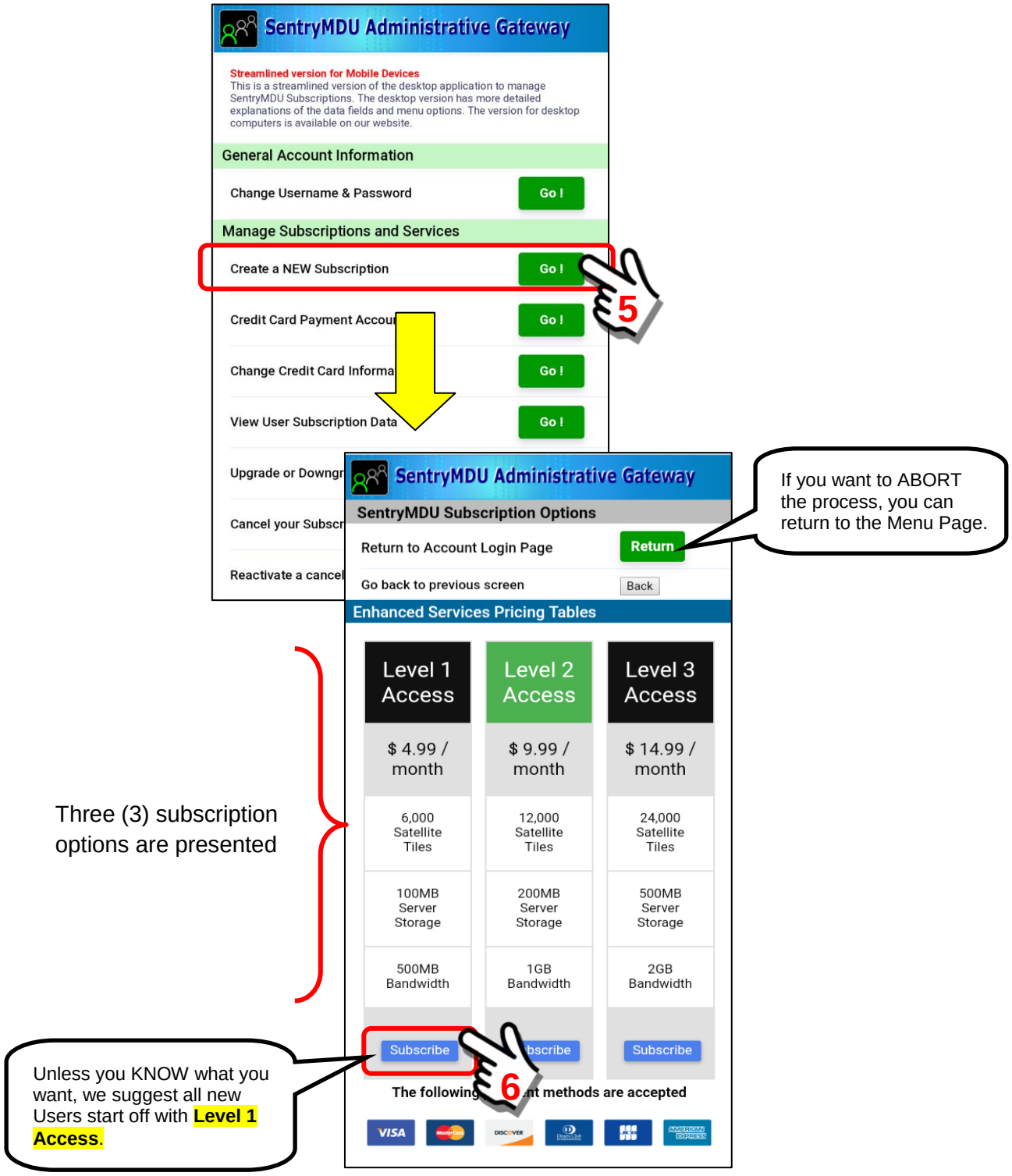
A pop-up panel will appear on the mobile device. The "Account Username" data field will be pre-filled in for your mobile device (ie Teamleader4s).

Enter your Subscription Account password.
Submit the account credentials.



4. ***Click on the "Create a NEW Subscription" menu item***
To display the available subscriptions, click the "Go!" Button.

Review the available subscription options and click the "Subscribe" Button for the subscription you want



5. ***Enter your Credit Card information***

The SentryMDU Payment Panel will be displayed. Enter your credit card information and an email address where you would like a “confirming email” to be sent. All fields are required (except Postal Code).

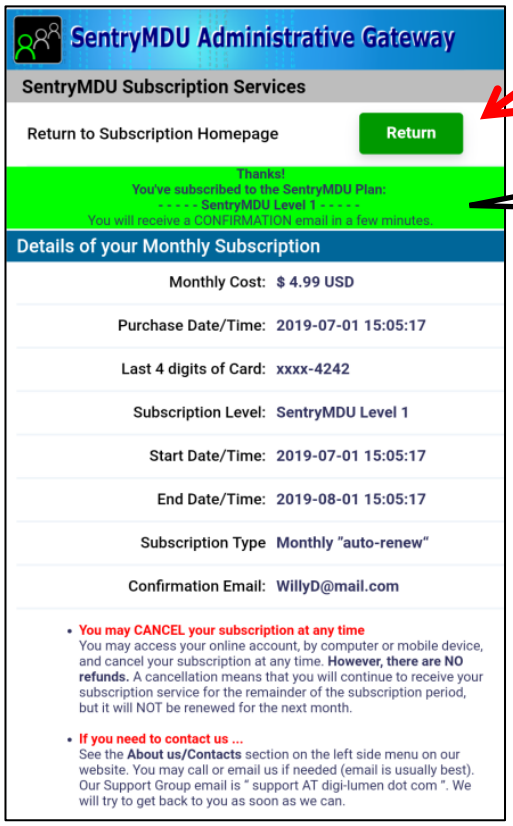
For those countries that do NOT have postal codes (ZIP), leave this field blank.

When finished, click on the subscription price at the bottom of the form.

6. ***Credit card information is validated and processed***
The validation process may take anywhere from a few seconds to a minute or more depending on your internet speed and your location in the world.

Do not "re-click" the button a second time, lots of things are happening in the background … you will get an error message if things are not working correctly.

If the transaction is successful (card is charged and subscription is validated) you will see the following summary panel.

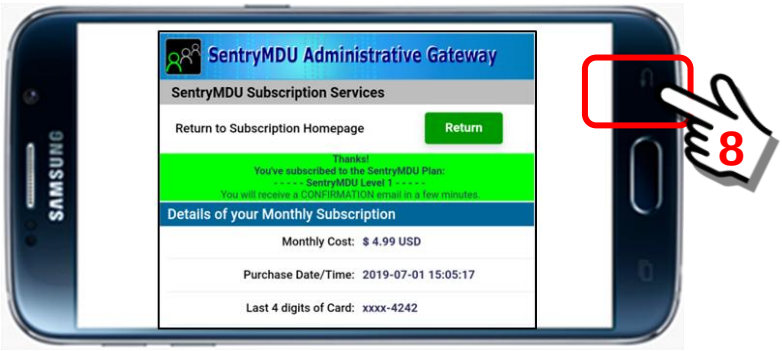


Click this button if you want to go to your online account and review card and subscription details.

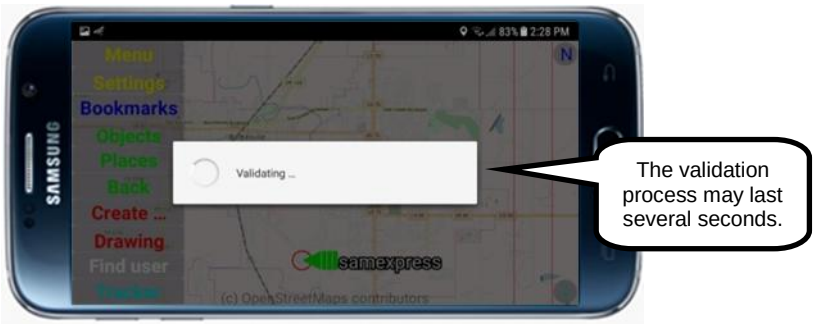
Note that transaction was successful

Summary of the SentryMDU Subscription you have purchased

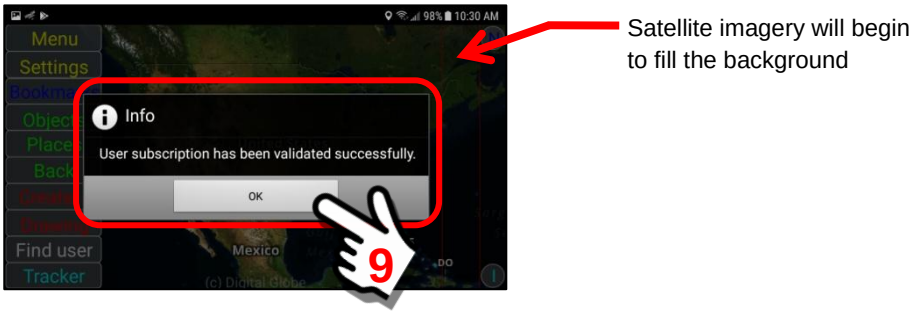
7. ***Close the Browser Panel***
To "activate" the subscription you have just purchased, close the screen panel. Generally, clicking the "back" button on your mobile device will do it.



8. ***Subscription validation and return to Main Map Screen***
The mobile device will contact the SentryMDU Administrative Server and receive validation that a successful transaction has occurred. Depending on your internet speed and location, this action may take 10 -20 seconds.



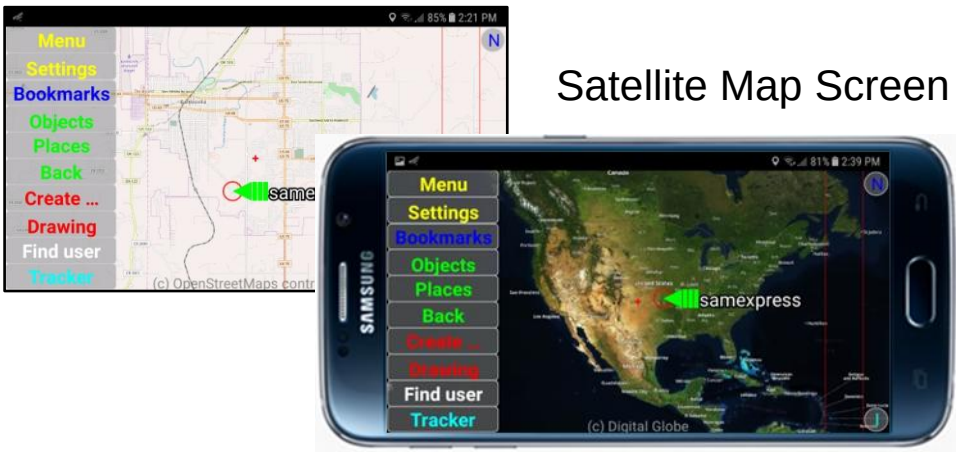
9. ***Dialog box displayed after successful validation***
Upon subscription validation and contact with the SentryMDU Administrative Server, the system will display a pop-up dialog box. Click “OK” to continue.



10. ***The system will install satellite imagery for the current map location.***
Satellite imagery will now be installed on the device and the Main Map Screen will change from an OpenStreetMaps street view map to satellite images. In addition, the Data Server will be configured for the data storage and data streaming parameters you selected.

Street Map Screen

Satellite Map Screen



3.9. Managing Subscription Accounts

Overview:

The SentryMDU App includes a Subscription Management feature that provides a set of screens for managing subscriptions and credit card information associated with subscriptions. The purchase of a subscription (for enhanced satellite imagery, data storage and streaming bandwidth) is optional and not required to use the SentryMDU App. This section will describe the features and menu options of the Subscription Management Panel.

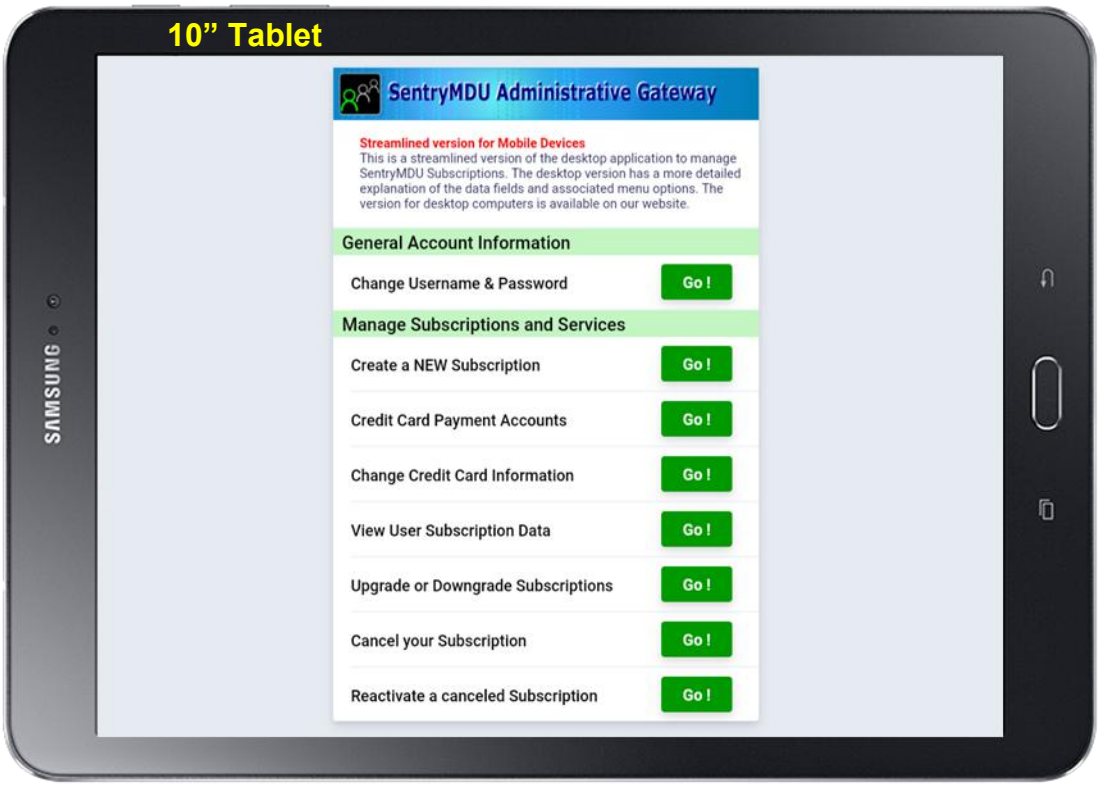
The **Subscription Management Panel** has a series of buttons that provides the following options.

1. Change Username/Password
2. Create a NEW Subscription
3. Credit Card Payment Accounts
4. Change Credit Card Information
5. View User Subscription Data
6. Upgrade or Downgrade Subscriptions
7. Cancel your Subscription
8. Reactivate a canceled subscription

Layout of the Subscription Management Panel:

In this example, we will focus on the Subscription Management Panel as displayed on a mobile device (phone or tablet). The same features (menu items) are provided on our website if you would prefer to use a desktop computer.

The picture below shows the ***Subscription Management Panel*** on a 10" Tablet.

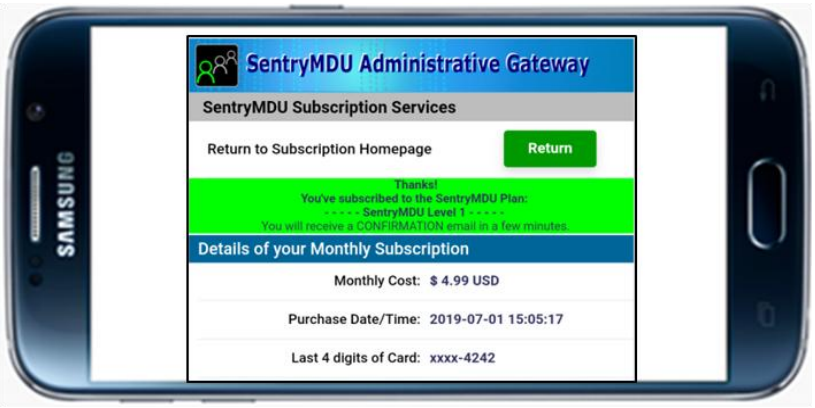


Review of Subscription Management Feature options:

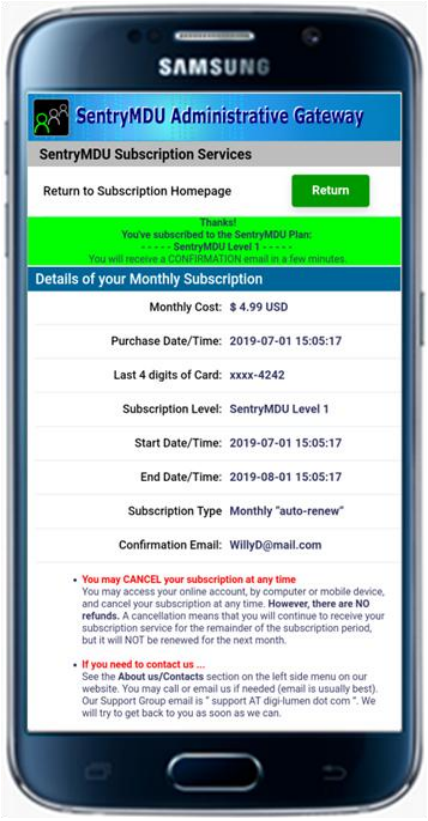
1. ***Panel rotation for Portrait or Landscape Mode***
   The Subscription Management Panel is designed to work on a variety of mobile devices of varying screen sizes. This includes the ability to display in either a "Portrait" or "Landscape" screen orientation.

   Important Display Note: If you experience "word wrap" where text wraps due to narrow screen width, adjust your display "font size" to a smaller number and things should display properly (small to medium font size is best). Your mobile device must support HTMLv5 for these features to work (Android ver 7.1+ support HTMLv5).

   Example of Landscape Mode



   Example of Portrait Mode

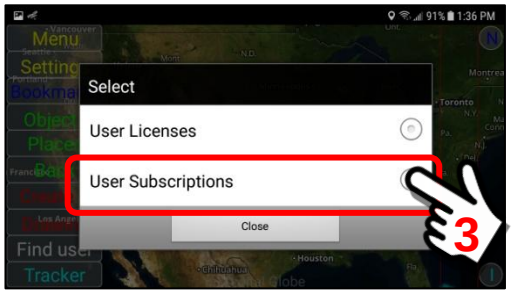


2. ***Navigate to the Subscription Management Panel "Homepage"***
The Subscription Management Panel is accessed from the Main Map Screen panel.

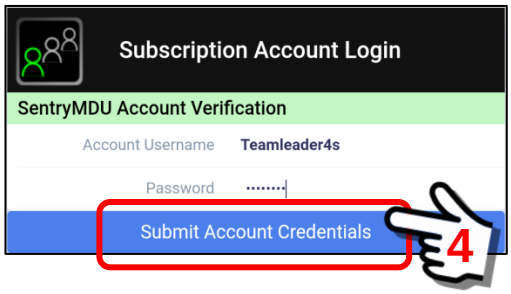
At the Main Menu Screen, click on the **Menu Button**.

At the Main Menu Block, select the **Licenses/Subscriptions** option.

A pop-up "Select" Box will appear in the center of the screen.
Click on the "**User Subscriptions**" option.

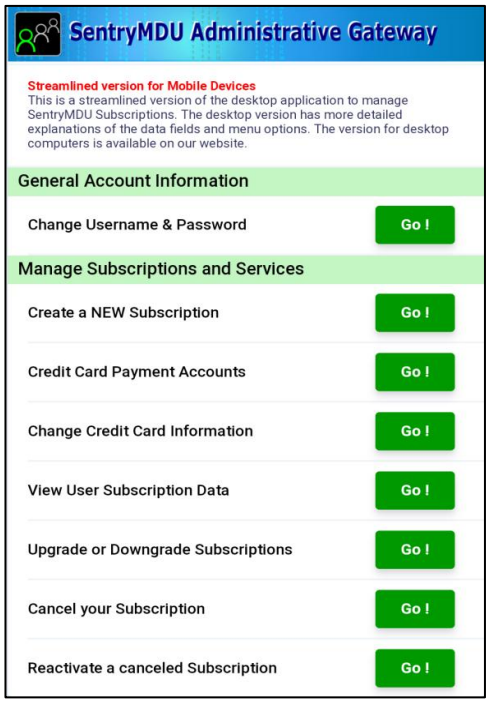


Log in to your Subscription Management Account.



3. *Subscription Management Panel "Homepage"*

The "Subscription Account Homepage" panel will be the hompage panel for all functions. As you execute menu items, you will have "return" options to return to this homepage panel.



4. *Change Username and/or Password*

This option allows you to change the Subscription Account Username OR Password OR both. This screen will "default" to use your current Username as the Account Login Name. If you make a change, the system will return you to the Login Panel where you must log in again under your NEW name.

5. ***Create a NEW Subscription***
   This is the option to create a NEW subscription. If your subscription has expired … or you have not set up a subscription yet … this is the place to create a new subscription.

6. ***Credit Card Payment Accounts***
   This option allows a User to update billing information for their Credit Card and other general account settings.

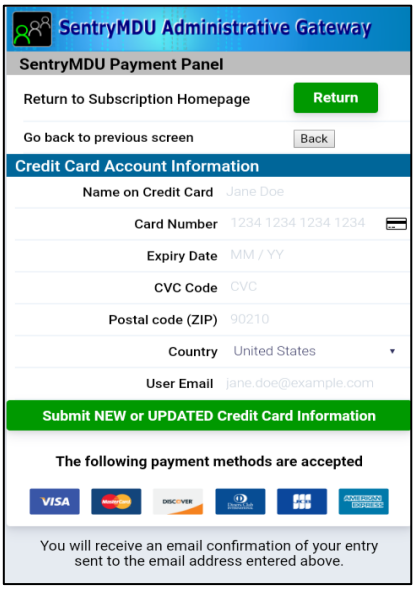
   <u>The following data fields are available for change</u>

   a. Organization Name
   b. Address of Contact Person (Address Line 1)
   c. Address Line 2
   d. City
   e. State or Province
   f. Postal Code
   g. Country
   h. Device phone number
   i. General Contact Email Address
   j. Email receive settings (ie monthly, quarterly, never, etc.)

   This panel does NOT allow you to change card numbers, expiration dates or CVC codes on your card … those will be done on another panel (see below).

7. ***Change Credit Card Information***
   This option provides a "review" of the credit card information that is on file. It does NOT display a full card number (we only have the last 4 digits) or CVC code (we don't have the security code). This screen pulls data from the online Credit Card Processor that keeps the User sensitive information.

   This section allows you to enter NEW credit card data, change existing data on a card or update your expiration date and CVC Code.



8. ***View User Subscription Data***

This menu option provides a review of your subscription. It will provide details of the subscription “level”, cost, subscription start/stop dates as well as statistics of resource usage (Tile, Storage and Streaming usage).

If a subscription is canceled, it will provide information on “who” canceled it and when.

9. ***Upgrade or Downgrade Subscriptions***

This menu option will allow you to upgrade or downgrade a subscription.

When a subscription is “upgraded”, the pro-rated time ($$) remaining on your current subscription is credited toward the purchase of your new subscription. The subscription start/stop periods are NOT changed. Your credit card will be charged immediately for any amounts due.

When a subscription is “downgraded”, the pro-rated time ($$) remaining on your current subscription is credited toward the purchase of your new subscription. The subscription start/stop periods are NOT changed. In the case of a “downgrade”, since the credit will be MORE than the cost of the “new” subscription, the credited amount will be carried over to the next months subscription payment (we do not provide refunds). Your credit card will NOT be charged on a “downgrade”. The next months subscription billing will apply the credit towards any due payments.

10. ***Cancel your Subscription***

This menu option will allow a User to CANCEL a subscription. We do not provide “refunds” on canceled subscriptions. When a User cancels a subscription, the User will still receive access to the subscribed content (Satellite imagery, Data Storage and Streaming bandwidth) for the remainder of the subscribed time period. Cancellation will stop the “auto-renew” process. At the end of the original subscribed time period, the subscription will NOT be renewed and the content access will terminate.

You may NOT cancel a Subscription ... AND THEN create a new one right away. The reason is because we do NOT provide refunds on subscriptions and you may have unexpired credits on your subscription. On a canceled subscription the user access and content is still available for the remainder of the subscribed time period. Once the time period has expired, you may create a NEW subscription.

If you have canceled your subscription by mistake, we have a Menu Item where you may “reactivate” a canceled subscription. This can only be done if you have unexpired time left on the original subscription time period.

For example, let us assume you started a subscription at the beginning of a month. About mid-month you decide to cancel the subscription so that it will

not renew automatically at the beginning of the next month. Of course, the cancellation only stops the auto-renewal ... you still have access to content. Five days before the end of the month, you have a change of mind and decide that you DO WANT TO CONTINUE with the subscription. As long as the subscription has not expired you may reactivate the subscription (and upgrade/downgrade as desired).

11. Reactivate a canceled Subscription

This menu option allows a User to “reactivate” a canceled subscription.

If you have canceled your subscription by mistake, this Menu Item is where you may “reactivate” a canceled subscription. This can only be done if you have unexpired time left on the original subscription time period.

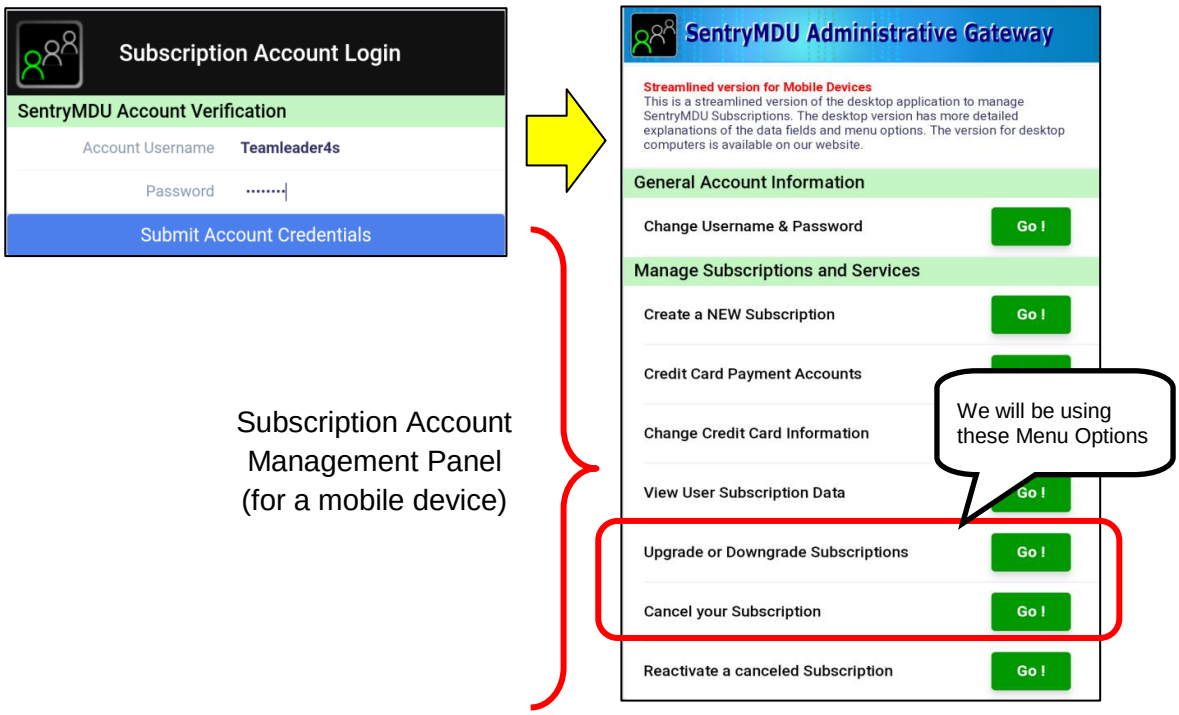
For example, let us assume you started a subscription at the beginning of a month. About mid-month you decide to cancel the subscription so that it will not renew automatically at the beginning of the next month. Of course, the cancellation only stops the auto-renewal ... you still have access to content. Five days before the end of the month, you have a change of mind and decide that you DO WANT TO CONTINUE with the subscription. As long as the subscription has not expired you may reactivate the subscription (and upgrade/downgrade as desired).

3.10. Upgrade/Downgrade and Cancel Subscriptions

Overview:

This section will describe how to upgrade, downgrade and cancel subscriptions using the Subscription Management Account. These features are available on your mobile device and/or with a Desktop Computer via the SentryMDU Administrative Website.

In this example, we will use the mobile device as our platform.



User Subscription Panel (Upgrade, Downgrade and Cancel):

After initial installation and registration, the Main Map Screen displays a “Street Map” (using OpenStreetMap data) and not a satellite image. The previous sections covered how to “Add” a Subscription to your mobile device if you want high resolution satellite imagery. This section will describe options to **Upgrade/Downgrade** a subscription and how to **Cancel** a subscription from your device.

The Subscription Management Panel has a series of buttons that provides the following options.

1. Change Username/Password
2. Create a NEW Subscription
3. Credit Card Payment Accounts
4. Change Credit Card Information
5. View User Subscription Data
6. Upgrade or Downgrade Subscriptions
7. Cancel your Subscription
8. Reactivate a canceled subscription

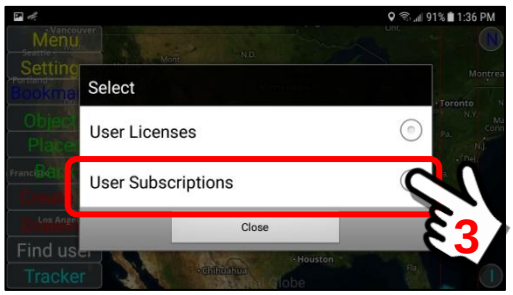
The sections below will cover the **Upgrade/Downgrade** and **Cancel** options.

1. ***Upgrade / Downgrade a Subscription.***
   In this example, we will assume you currently have a “Level 1” subscription and want to **UPGRADE** to a “Level 2” subscription.

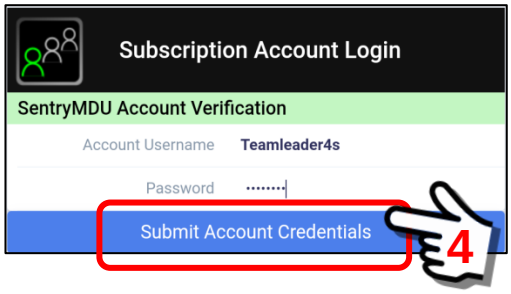
   At the Main Menu Screen, click on the **Menu Button**.

   At the Main Menu Block, select the **Licenses/Subscriptions** option.

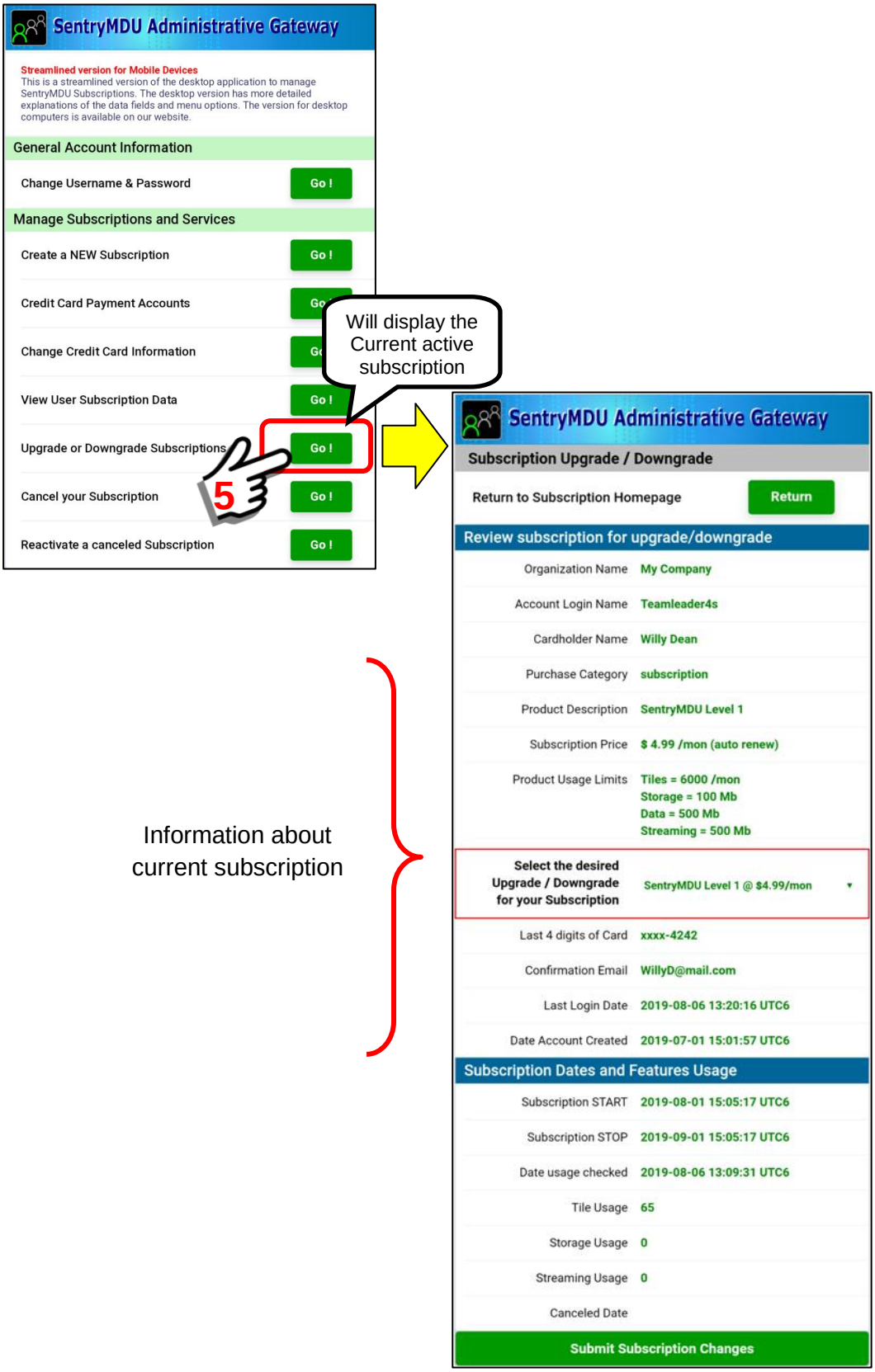
   A pop-up “Select” Box will appear in the center of the screen.
   Click on the “**User Subscriptions**” option.



   Log in to your Subscription Management Account



The Subscriptions Management Panel will be displayed.
Locate the “Upgrade/Downgrade Subscriptions” Menu item.
Click on the “Go!” Button.

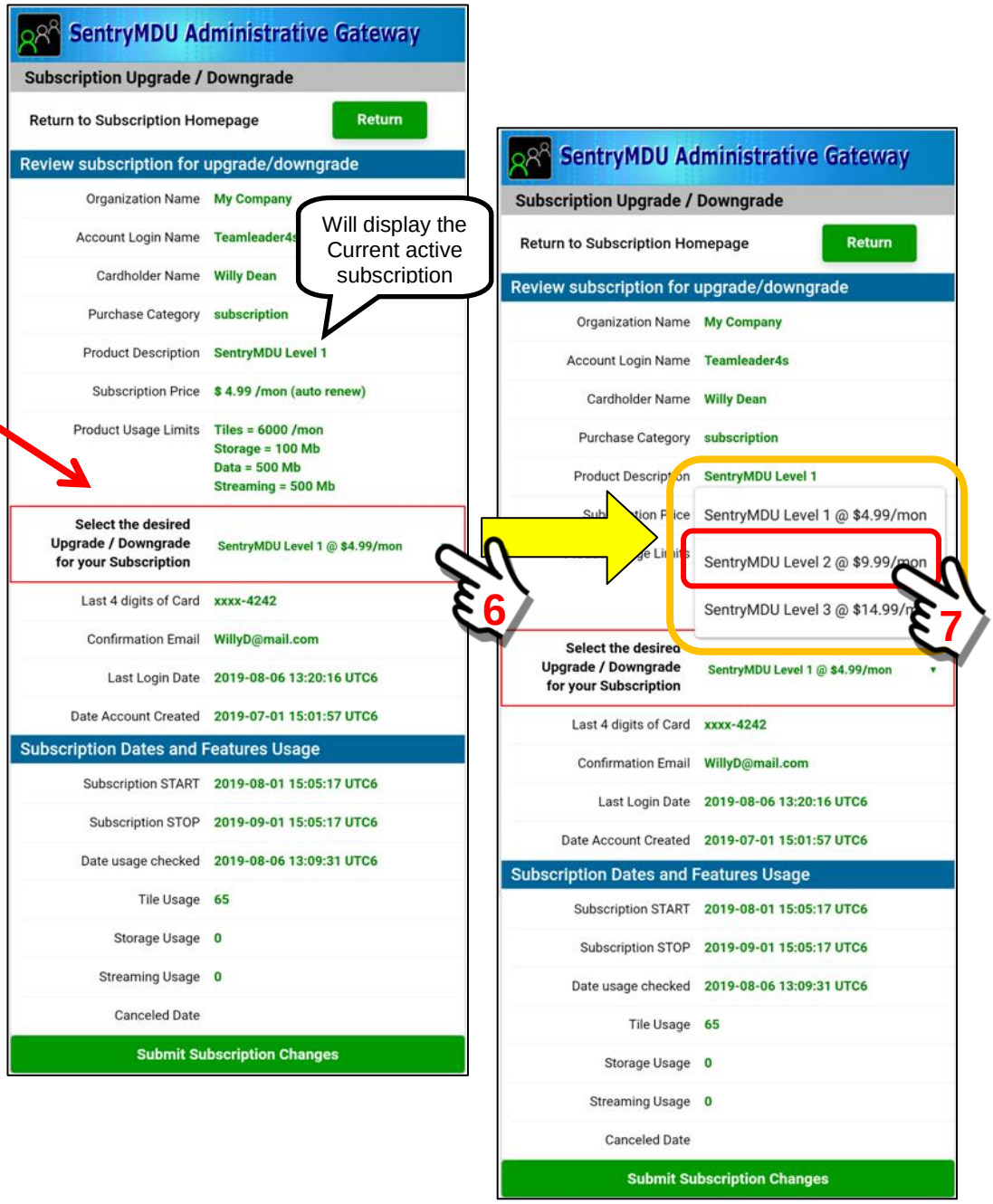


Notice that the CURRENT Subscription has a “red” box around it.
To CHANGE the current subscription, click to open a pop-up options menu.

A pop-up panel will appear with the available subscription options. Since you are currently in a “Level 1” Subscription, the available options are Levels 2-3.

Select the desired upgrade option from the choices.

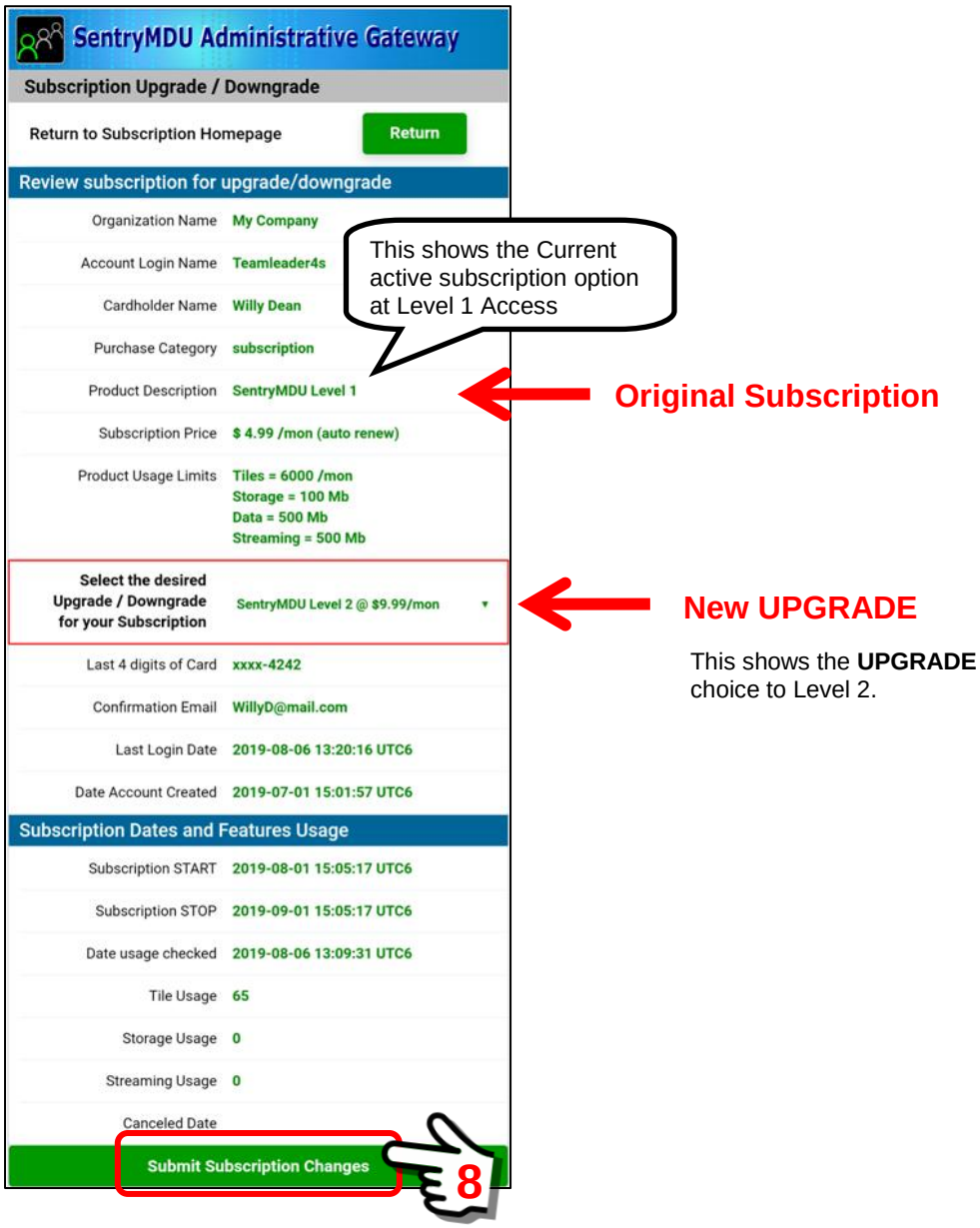
Red Box around current subscription choice. Click to open pop-up menu options



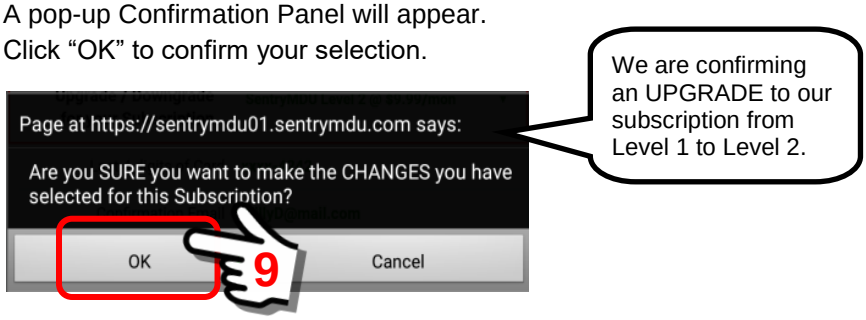
In our example, we want to UPGRADE our subscription from Level 1 Access to Level 2 Access. We selected Level 2.

We have now selected a Level 2 Option from our pop-up menu. We are currently in a “Level 1” Subscription, and we want to move to a Level 2 subscription.

When you are satisfied with your choice, click on the “Submit Subscription Changes” Button at the bottom of the page.



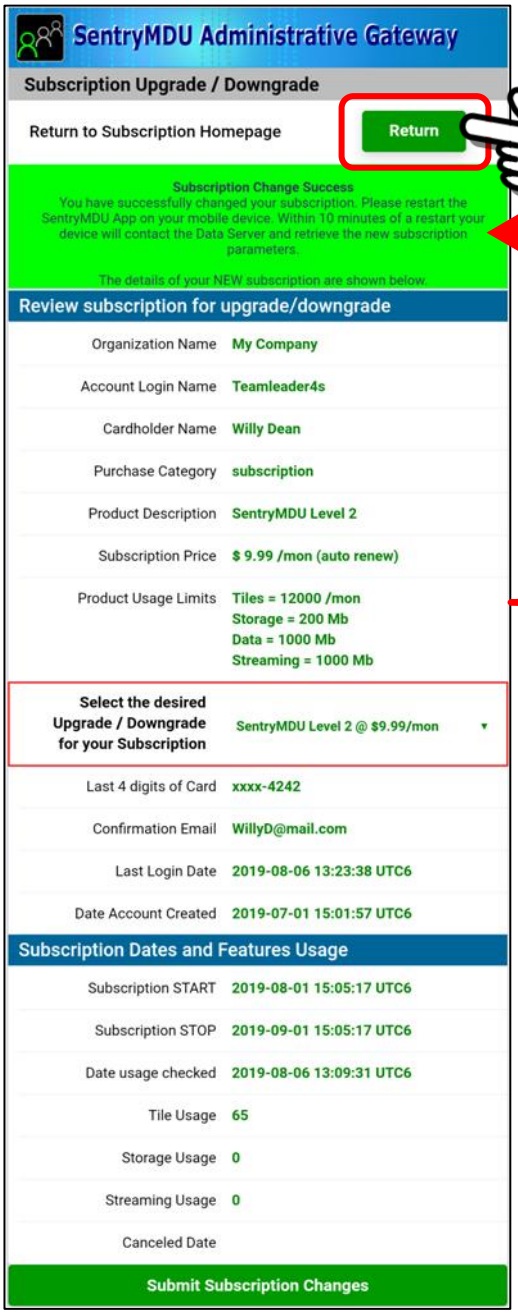
A pop-up Confirmation Panel will appear. Click “OK” to confirm your selection.



You have now selected to UPGRADE your subscription. The system will credit any “unused” portion of your previous subscription ($$$) towards the purchase of this “new” subscription (you will only be charged the difference).

The Credit Card Payments Processor (that handles our Banking) will begin to implement the change process and accept payment. You will receive an “automated” confirmation email with a receipt and the purchase details. You will be charged via the Credit Card information that is currently on file with the Payment Processor (we do not store that information). If your Card is declined you will get an error message.

If all goes well, the screen will display a “Subscription Change Success” message and display the NEW subscription parameters as shown below.

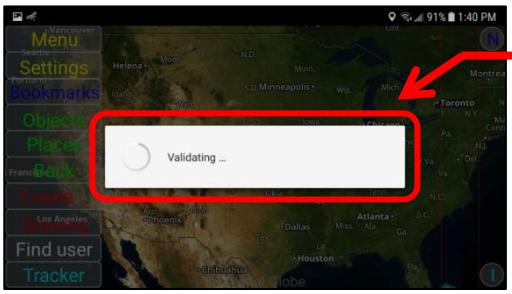


Click the “Return” Button to return to the Subscription Management Panel.

Success Message !

The system will show the NEW subscription (and price) and new parameters

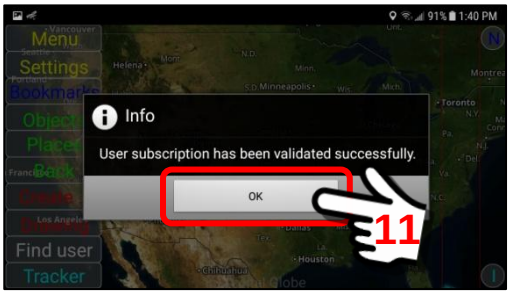
As you return to the Main Map Screen, the system will process these changes and validate the transaction.



Validation process may take several seconds … depending on your internet connection.

If the validation is successful, you will receive a message that the subscription UPGRADE has been validated successfully.

Click the “OK” Button to continue.



Since the UPGRADE transaction has been successful, you now have access to the “new” upgraded parameters of the “Level 2” Subscription (tile usage, data storage and streaming bandwidth).

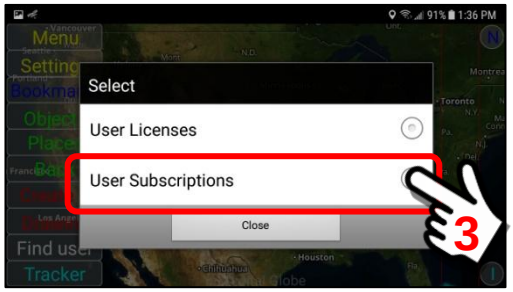
2. *Cancel a Subscription*

In this example, we will assume you currently have a “Level 2” subscription and want to **CANCEL** this subscription. When you “cancel” a subscription you will continue to receive the subscribed content until the end of the period. However, it will NOT RENEW when the subscription expires.

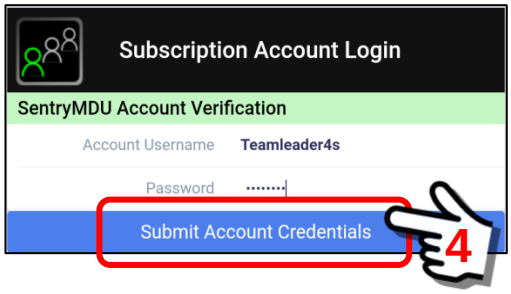
At the Main Menu Screen, click on the **Menu Button**.

At the Main Menu Block, select the **Licenses/Subscriptions** option.

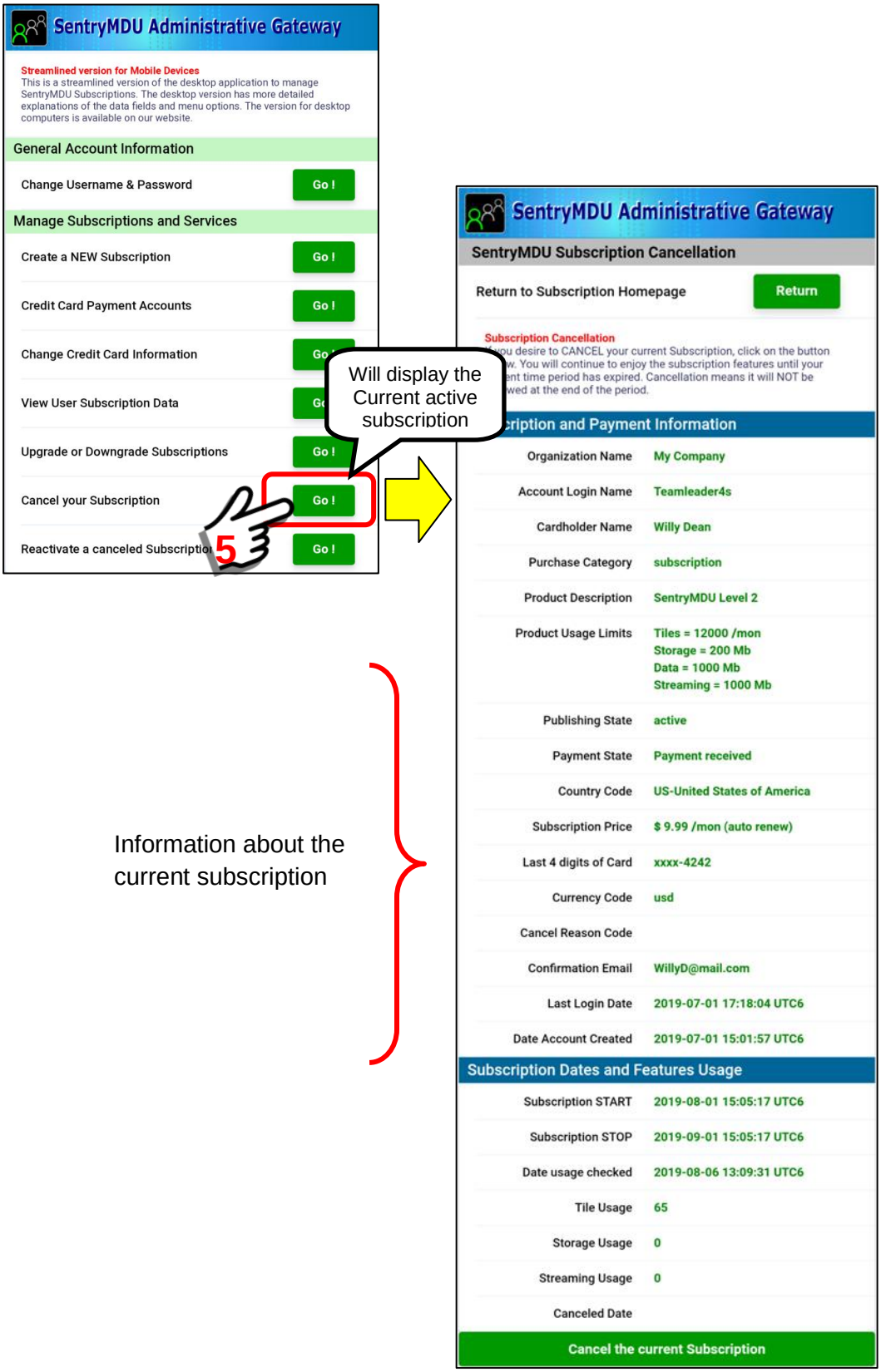
A pop-up “Select” Box will appear in the center of the screen.
Click on the “**User Subscriptions**” option.



Log in to your Subscription Management Account



The **Subscriptions Management Panel** will be displayed.
Locate the “Cancel your Subscription” Menu item.
Click on the “Go!” Button.



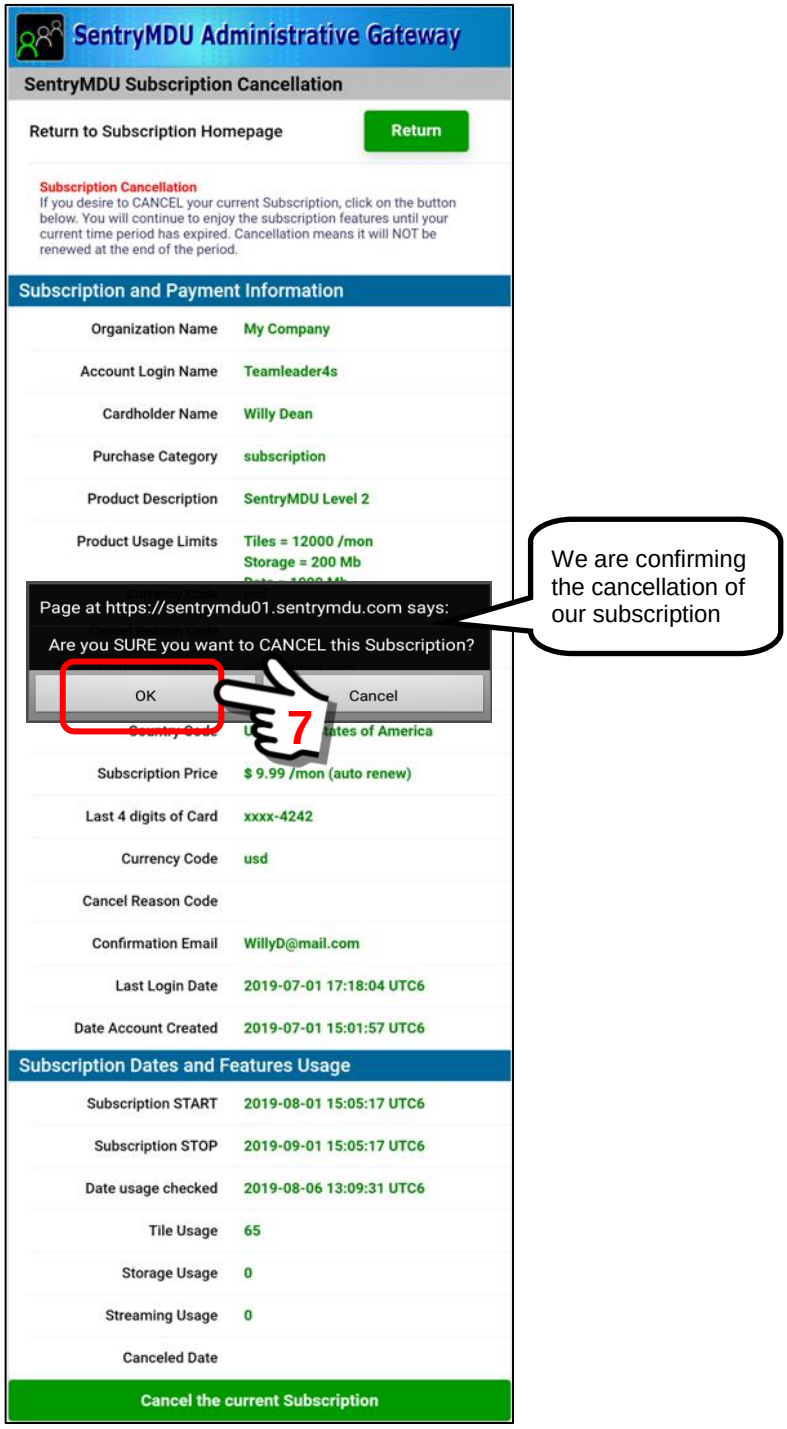
To cancel a current subscription, select the Button at the bottom of the ***SentryMDU Subscription Cancellation*** panel.

Click on the button now.

Information about the current subscription

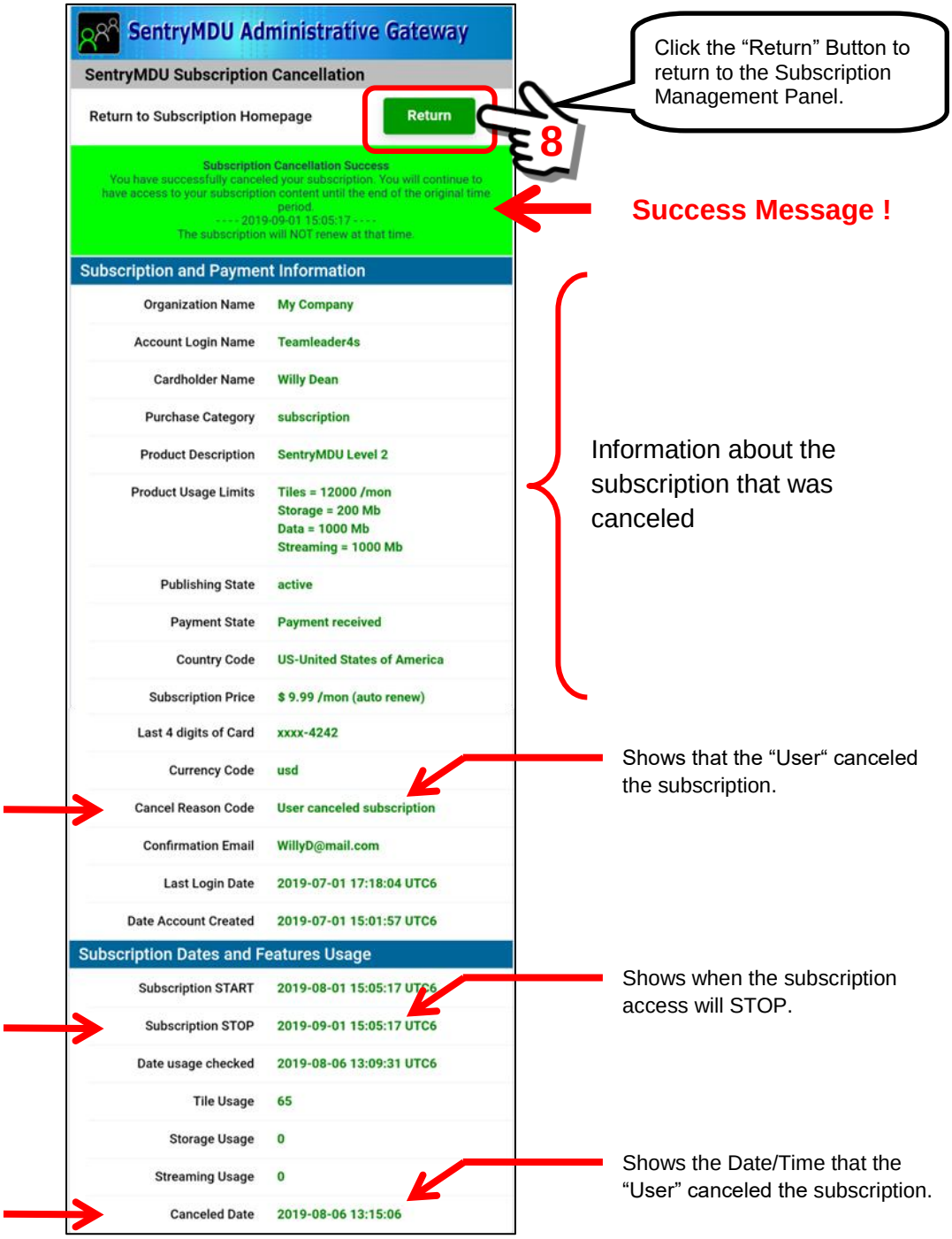
Click to Cancel

A pop-up Confirmation Panel will appear.
Click “OK” to confirm you want to cancel your subscription.



You have now selected to CANCEL your subscription. You will continue to have access to “content” (Satellite imagery, Data Storage and Streaming Bandwidth) for the remaining duration of your subscription time period. When the time period expires, the subscription will NOT renew for the next month.

If all goes well, the screen will display a “Subscription Cancellation Success” message and display the subscription parameters as shown below.

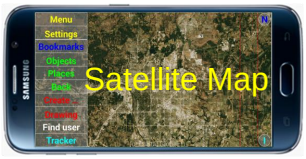


You have completed the cancellation process. You may now return to the Subscription Management Panel.

3.11. Changing Map Imagery

Overview:

The Sentry MDU App has several options to display different type of Map Imagery. This section will outline the various options and describe the menus where the settings are made.



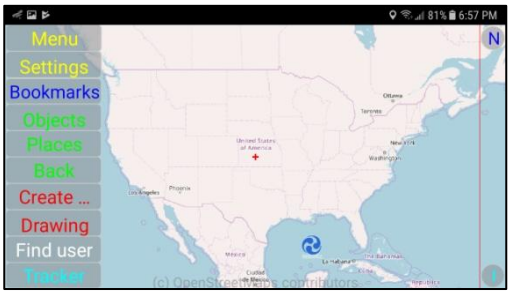
Options for changing the type of Map Imagery to display:

The Sentry MDU Application allows a user to select a number of options on how they would like the screen to display satellite imagery and maps. There are 3 primary image/map options and several overlay "layers" that can display additional symbols and icons. The 3 primary map options are as follows:

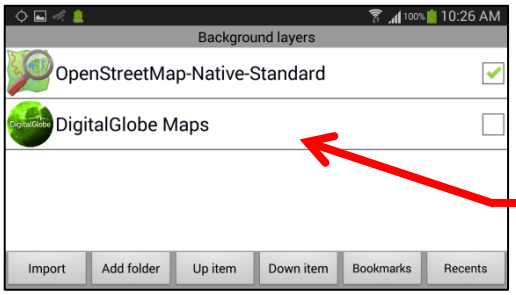
1. Satellite Image overlaid with a street map
2. Satellite Image
3. Street Map

The "default" setting is Item #1 – Satellite image overlaid with a street map.

After initial installation (and before registration) you will notice that the Main Map screen displays a "Street Map" (using OpenStreetMap data) and not a satellite image.



1. ***Location of the Map Layer display options.***
   The available Map Layers are installed in the Background Layers Folder on the Viewing Configuration Panel.



OpenStreetMap (Street Maps Only) and imagery provided by MapBox/DigitalGlobe. These choices are mutually exclusive (can only select one).

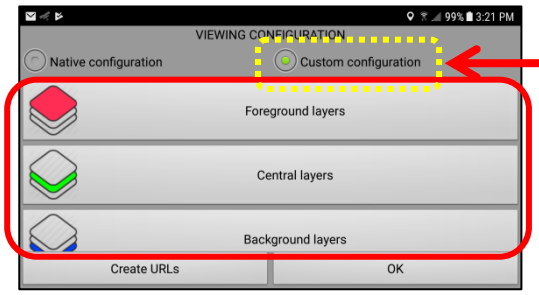
This choice is only active for Users that have a Subscription or User License.

2. ***Select the "Custom Configuration" Option***

The "Custom" option is an alternate view mode of the Foreground, Central and Background Layers functions. To open this panel, click the ***Custom Configuration*** Button on the Viewing Configuration Panel.

<u>Three large buttons will be displayed</u>

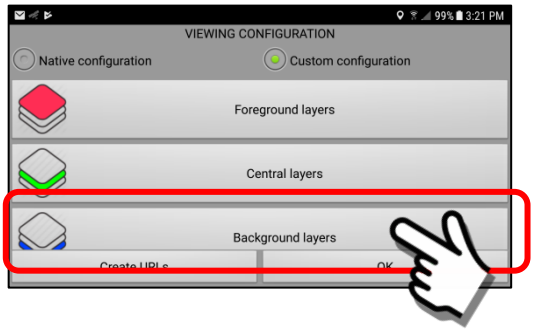
1. Foreground Layers
2. Central Layers
3. Background Layers



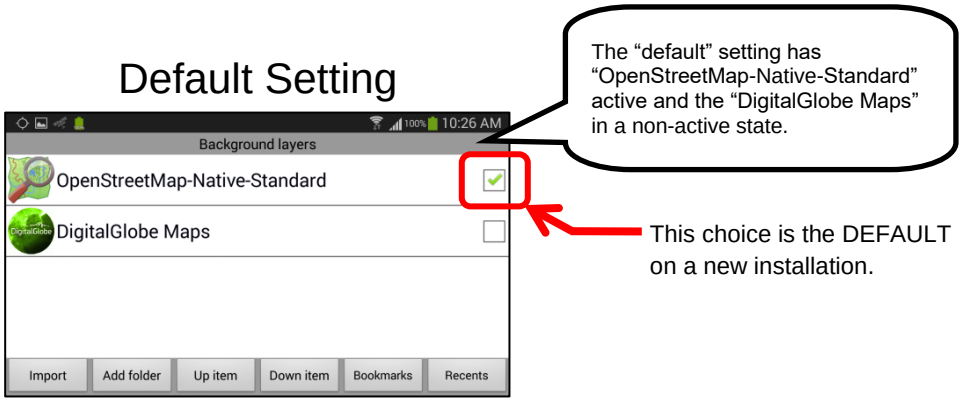
Custom Configuration mode is now activated

3. ***Select the "Background Layers" Folder***

Select the Background Layers folder for access to the imagery and maps that are available on the Mobile Device.



The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put "custom" maps of your own in this folder.



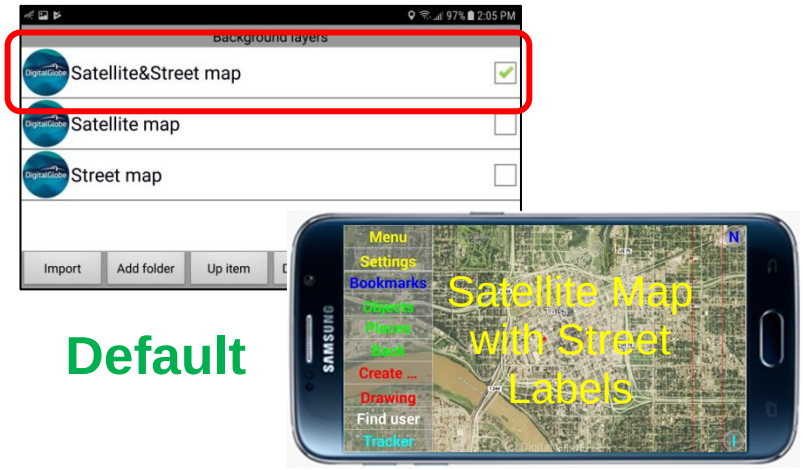
4. ***DigitalGlobe Maps for Users with a Subscription or User License.***
When a User device installs the MapBox/DigitalGlobe Map imagery by way of a Subscription or User License, the "DigitalGlobe Maps" menu item will become active.

To view the 3 different DigitalGlobe Map options, click on the Menu Item.

During an initial install of the DigitalGlobe Maps, the "**Satellite&Street map**" option will be installed by default.

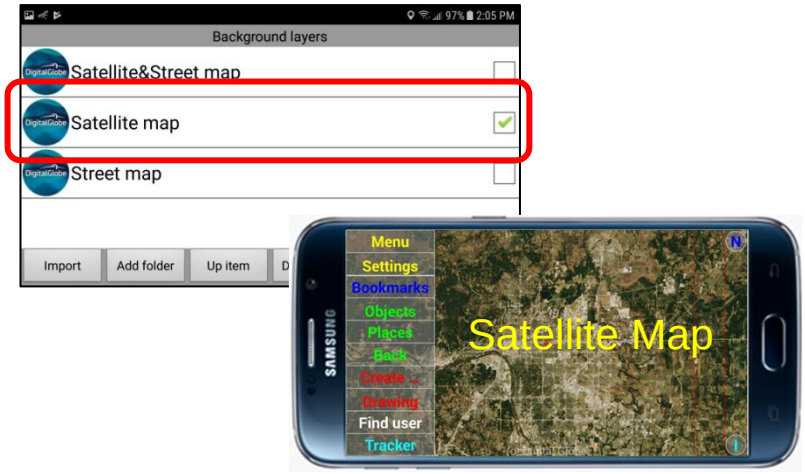
A User may select any of the other map options as indicated below.

1

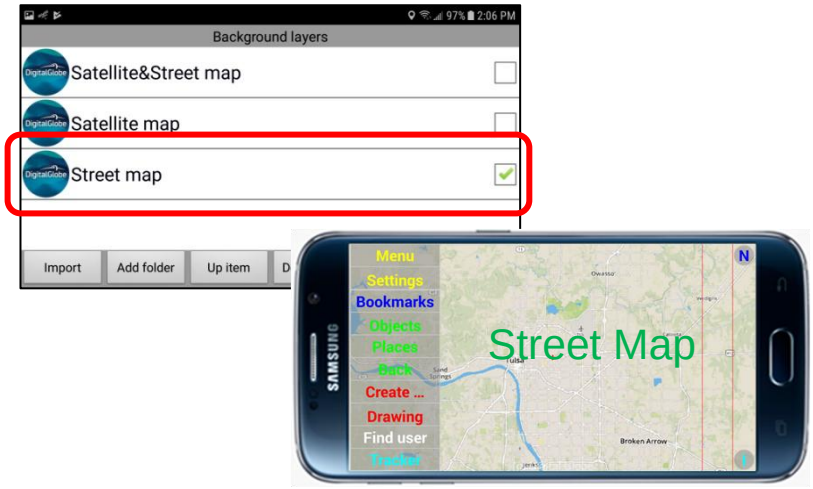


Default

2



3



3.12. Folders and files created on your Mobile Device

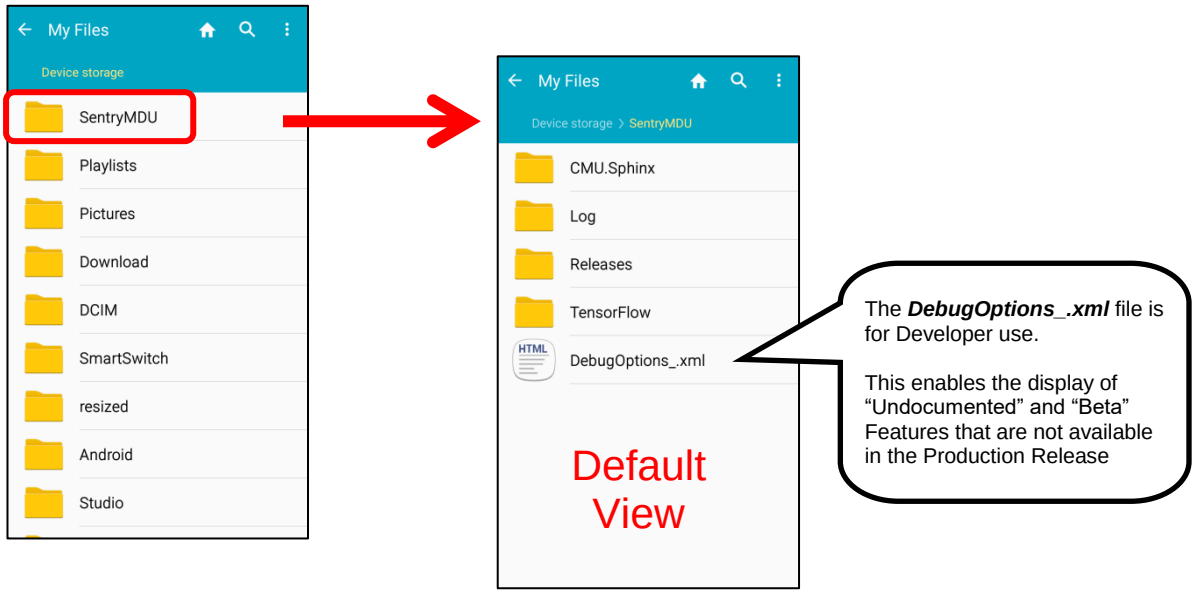
Overview:

The Sentry MDU App creates one main folder on the mobile device with 8 sub-folders. The primary program folder is called ... ***SentryMDU***.

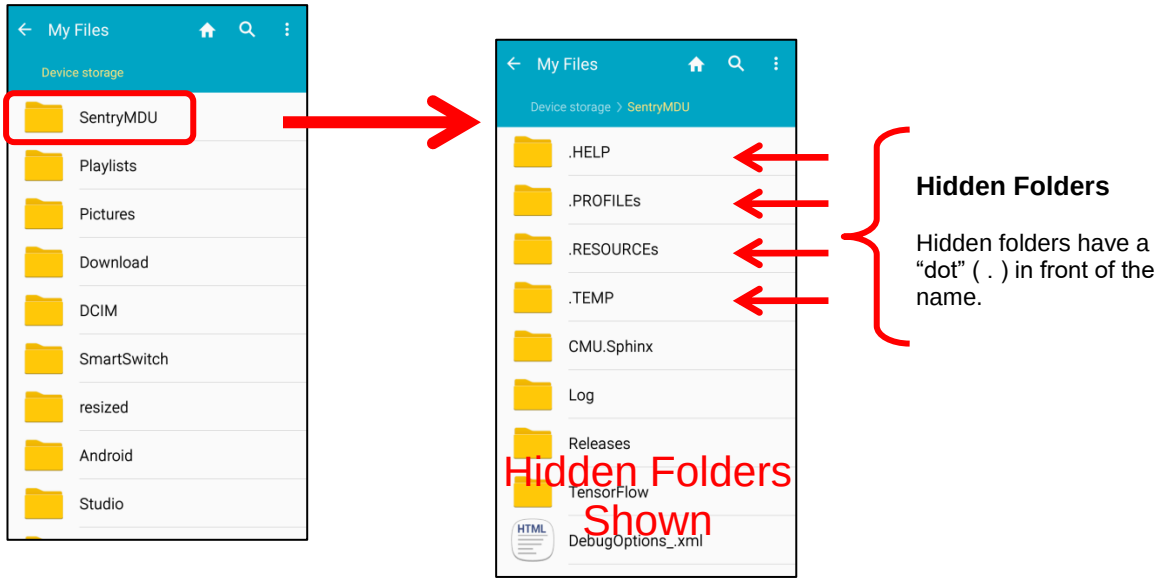
Most mobile devices have a setting (in File Folders menu) that conceals what are called "hidden folders". These are file folders that a general user does not need to know about. The Sentry MDU System installs 4 visible folders and 4 hidden folders. If you want to see the hidden folders, then adjust your device settings to allow you to see the hidden folders.

Folders installed by the Sentry MDU Application:

The example screens shown below are from a Samsung Galaxy smartphone. Your screens may look somewhat different.



When the "hidden" folders are displayed, the display will look as follows:



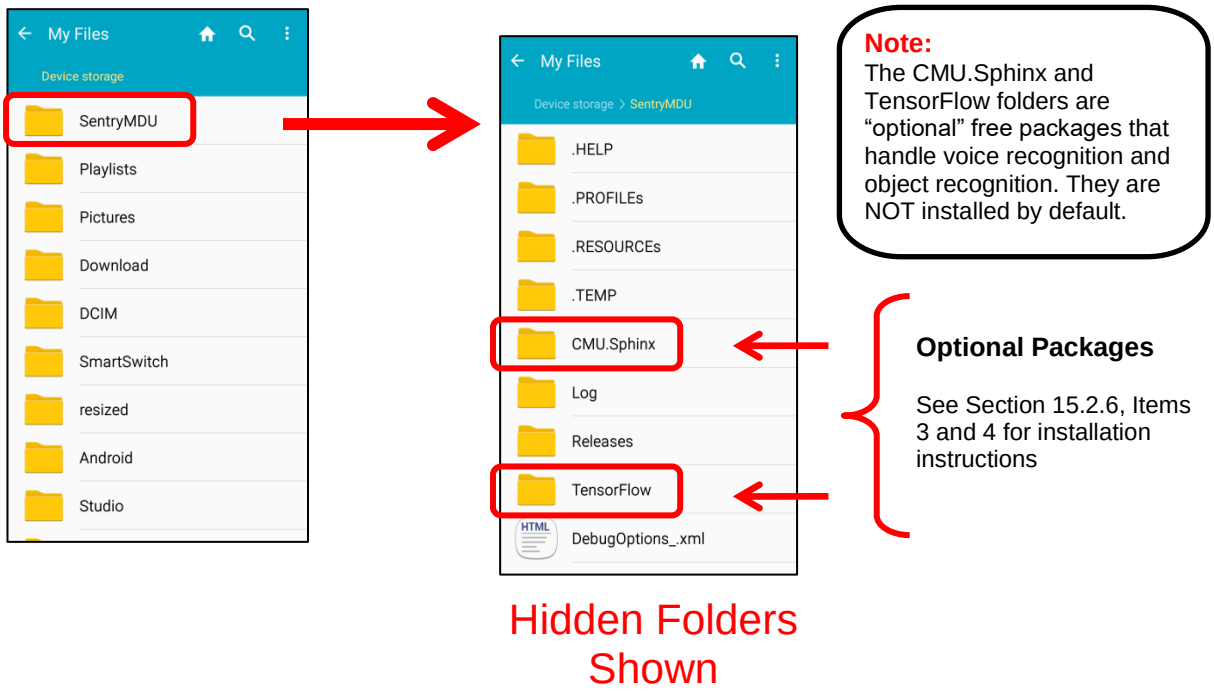
“Optional” folders to install in the Sentry MDU Application:

The SentryMDU Application provides additional downloads for those Users that would like to use *Voice Recognition* and *Object Recognition* features. These two features utilize 3rd Party “Open Source” software and are NOT included by default because they are LARGE packages.

The default download of the SentryMDU App is about 59 MB. If we included these optional packages in the SentryMDU App, it would push the initial download to 100+ MB. Therefore, since many users may not have a need for the advanced features found in the *Voice Recognition* and *Object Recognition* packages, we have decided to make them optional. They are free to download. See Sections 15.2.6, Items 3 and 4 for installation instructions.

The *Object Recognition* package (utilizing A.I., artificial intelligence technology) when installed, will create the **TensorFlow Folder**. The *Voice Recognition* package, when installed, will create the **CMU.Sphinx Folder**.

Example screens shown below are from a Samsung Galaxy smartphone. Your screens may look somewhat different.



Uninstall and Completely Remove the SentryMDU App:

To “uninstall” the SentryMDU App … simply use ***App Management*** on your mobile device to uninstall the SentryMDU App. However, the SentryMDU Folder (with data and account settings) will still remain. Delete the SentryMDU Folder to completely remove all traces of SentryMDU.

3.13. Access rights, permissions and background processes

Overview:

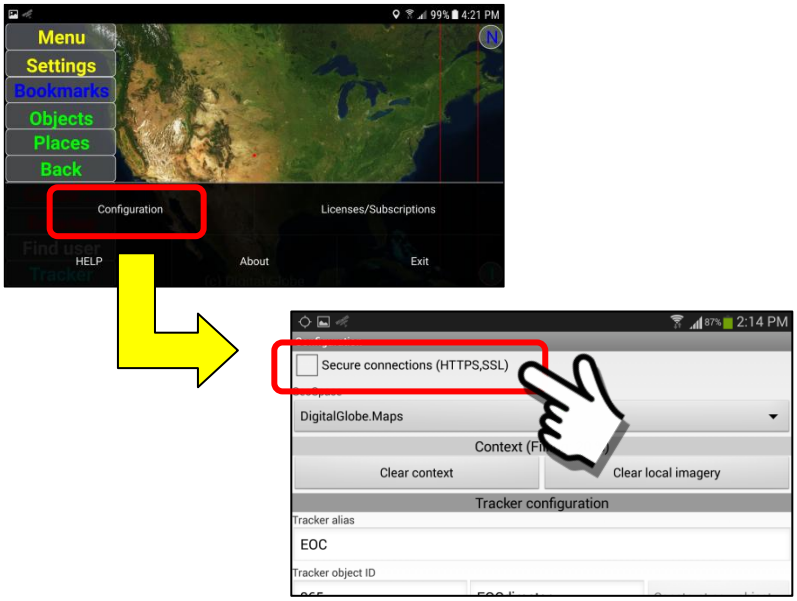
The Sentry MDU System incorporates several layers of security. Some of these security features may be adjusted by the User, others will require System Administrative privileges.

1. Users that created a Username/Password pair during registration should use hard to guess passwords.
2. The device can be configured to use HTTPS / SSL (Secure Socket Layer) encryption to make sure all communications is secured between communicating devices. This setting is available on the Main Configuration panel.
3. Licensed users (and their associated IT Departments) may configure user security domains to restrict/allow access to other users and/or features of the mobile device. Some of the security domain features include Read, Write, View Only, segregate user population into groups, exercise supervisory control and more. The Sentry MDU Desktop Client is required to set and edit Security Domains. Subscription Users have limited control of these features.
4. The Sentry MDU App can be set to "start" when the phone is first turned on. This is necessary if a User is to receive communications, messaging and GPS location monitoring even if the Sentry MDU App is not launched. These background processes may be turned off from the main menu (more later on this). Typical situations where you may want to turn off the background process would be times when you are on vacation, off-duty or you just don't want other users (that have the permissions) to know where you are.

A few example screens:

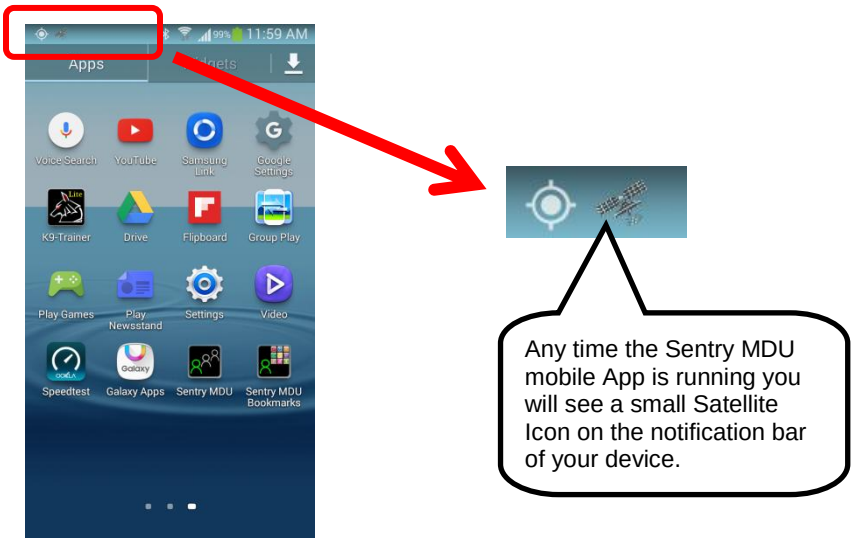
Setting HTTPS / SSL (Secure Socket Layer) Encryption.

To set the HTTPS / SSL encryption make sure the checkbox on the main configuration screen is "checked". The default is "unchecked".



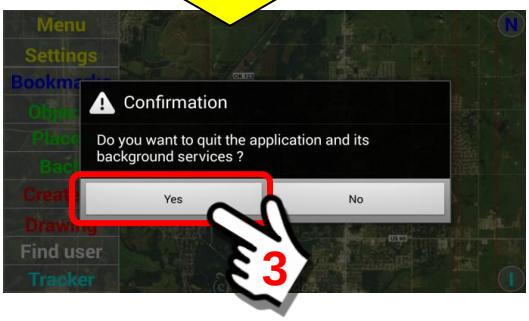
Turn off the Sentry MDU background process

If you wish to completely “turn off” the Sentry MDU mobile App, follow the instructions below.



Launch the Sentry MDU App and select the Menu Button on the Main Map screen.

Select “Exit” on the Menu Block



Click on “Yes” to confirm that you want to stop all Sentry MDU processes.

As you exit the App and return to the device screen you will notice that the Satellite Icon is no longer shown. This indicates that the Sentry MDU Application has been stopped.

Automatic start-on-phone-start feature:

To manage the start-stop of the SentryMDU System each time the mobile device is turned on, we have equipped the App with an automatic start-stop feature.

Here is how it works:

- If the SentryMDU App is running (active) when the mobile device is turned “off” then it will start automatically when the mobile device is turned on again.

- If the SentryMDU App is NOT running (not active) when the phone is turned “off” then the App will NOT start automatically when the mobile device is turned on again.

3.14. Additional recommended settings for your Mobile Device

Overview:

Modern mobile devices (Smartphones and Tablets) have a variety of screen, audio and video settings that can be adjusted by the User. Many of the settings are “personal preferences” set by the user while others may be phone defaults.

Depending on the settings some may interfere with features of the Sentry MDU Application or affect the user experience.

Review the following settings on your mobile device:

1. ***Adjust screen “touch” sensitivity to match User ability***
   The Sentry MDU App uses two forms of screen activation. The first is where a user touches (clicks) on a menu item … we will call this a “Short Click”. The second is what you will see referred to as a “Long Click”. A long click is where the screen is touched for at least ½ second.

   If a user has hand “shake” issues it may be beneficial to adjust the length of time that a “touch” is interpreted as a “Long Click”. Most mobile devices have a setting where this time is adjustable. The default for most phones is ½ second.

2. ***Screen timeout***
   We suggest you set the screen timeout to at least 10 minutes. Most mobile devices set the screen timeout to 2 minutes to conserve battery life. If you plan to use the Sentry MDU to observe the location of other Users on the network (via GPS) or view video you do not want the screen to “turn off” every few minutes.

   If the device is mounted in a vehicle or you are using a tablet on a desktop, and are connected to a power source …. there is no reason to conserve battery power. We suggest you set it to at least 10 minutes or to “Keep screen on” mode that is available at the Configuration Panel (see Section 5.4, Item #8 for details).

3. ***Brightness***
   We suggest you set the screen brightness to 80%+. Most mobile devices set the screen brightness to “automatic” to conserve battery life. If the mobile device is to be used outdoors or in sunlight you will want it to be as bright as possible.

   If the device is mounted in a vehicle or you are using a tablet on a desktop, and are connected to a power source …. there is no reason to conserve battery power. We suggest you set it to 80 – 100% brightness.

4. ***Touch sounds***
   The touch sounds give a “click” sound as you type and do screen entries. You will want this feature turned “on”.

5. ***Volume Settings***
   Volume settings on most mobile devices have 4 components that can be individually adjusted.
   a. Music, video, games and other media.
   b. Ringtone
   c. Notifications
   d. System

   Generally, you want all of these to be at a high level. To use the audio/video features (recording, steaming, listening) you will need both “a” and “d” at a high level.

6. ***Vibrations***
   The Sentry MDU System uses the “vibration” feature on mobile devices to provide feedback to the user. It provides feedback when you make screen selections, when voice commands are activated and as recording notification. You will want vibration turned “on”.

7. ***Voice Control (Voice commands to control device)***
   Many mobile devices have a “Voice Command” feature built into the device. The Sentry MDU also has a voice control feature that can turn recording (or activate other sensors) on/off. We recommend turning “off” the native voice control feature of your mobile device so it does not conflict with the Sentry MDU feature (only if you plan to use the recording voice control feature).

8. ***Power Saving mode***
   We recommend turning “off” the Power Saving Mode of your mobile device.

9. ***Accessibility***
   Many mobile devices have an “Accessibility” feature that allows adjustment of touch, sound and screen features for users who have impaired vision, hearing or reduced dexterity. If you have difficulty doing a “Long Click” menu selection, we recommend you adjust the “Press and hold delay” setting of your device.

10. ***Motion***
    We recommend turning “off” the Motion feature on your mobile device. The Motion feature allows users to tilt a phone for pan/zoom operations, shake for updates and more. The issue is that the Sentry MDU Application monitors and makes available to users all of the sensors on the mobile device (GPS, Accelerometer, Barometric, Gyroscopic, Proximity, etc.). If the Motion feature is not deactivated, it may interfere with the Sentry MDU App.

11. ***Smart Screen***
    We recommend turning “off” the Smart Screen feature on your mobile device. The Smart Screen feature (available on some mobile devices) uses the front facing camera to see if a user is looking at the screen and will adjust display rotation and time the display stays on by knowing if a person is looking at it. For this feature to work the phone uses the front facing camera. The Sentry MDU App also uses the front facing camera as just another “sensor” that can be monitored either locally or remotely. If the Smart Screen feature is not deactivated, it may interfere with the Sentry MDU App.

12. ***Hands Free Mode***
    We recommend turning “off” the Hands Free Mode feature on your mobile device.

13. ***Location Services***
    We recommend turning “on” the Location Services of the mobile device. The Sentry MDU System uses GPS satellites to provide location data.

14. ***Adjust font size for text (Subscription Management Panel)***
    On a mobile device, Users have the ability to “set” the size of the text “font” that is displayed. Since the Subscription Management feature allows the screen display to rotate “on-the-fly” from either Portrait or Landscape mode, if the text size is too large, you may see the text “word wrap” down the screen. The “fix” for this issue is to reduce the size of your text font. A midrange setting of “medium” to “small” font size will work best.

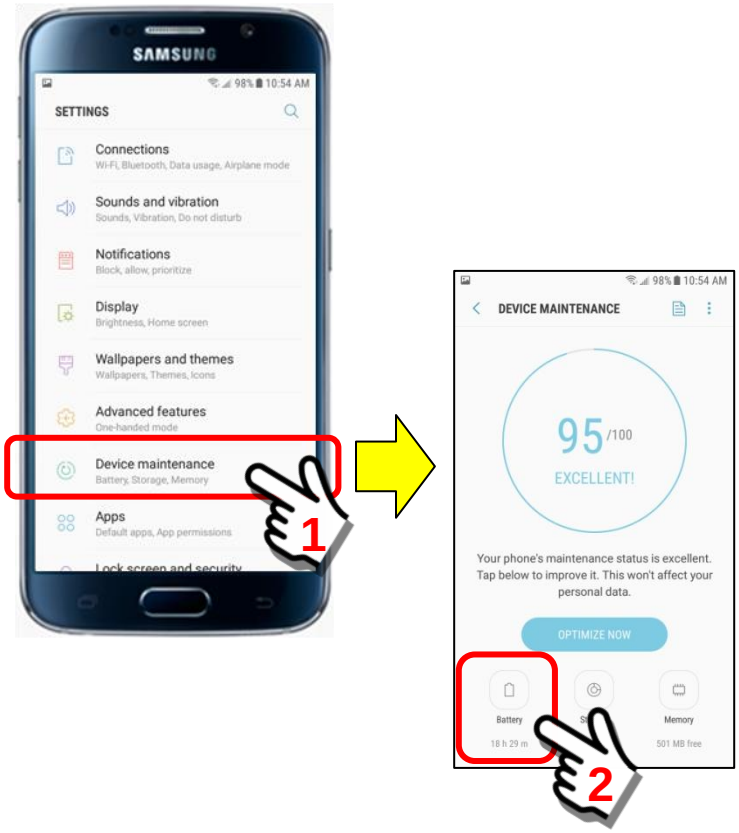
15. ***Auto rotate screen***
    The Sentry MDU App uses the mobile device screen in a Landscape mode. The program will use this mode regardless of the Auto Rotate setting. You can set it any way you like.

16. ***Battery Optimization Settings***
    Many smartphones have battery optimization features that will put Apps to “sleep” if they are not used in a long period of time. As a User, you can customize these features. Since the SentryMDu App will run in the “background” when you are not accessing it directly (for notifications, alerts, GPS location, etc.), you want to make sure that your device does not put the App to “sleep”. This is very important for mobile devices that are used in remote locations for remote monitoring, such as when installed in our Solar Powered remote enclosure (ie the Birdhouse).

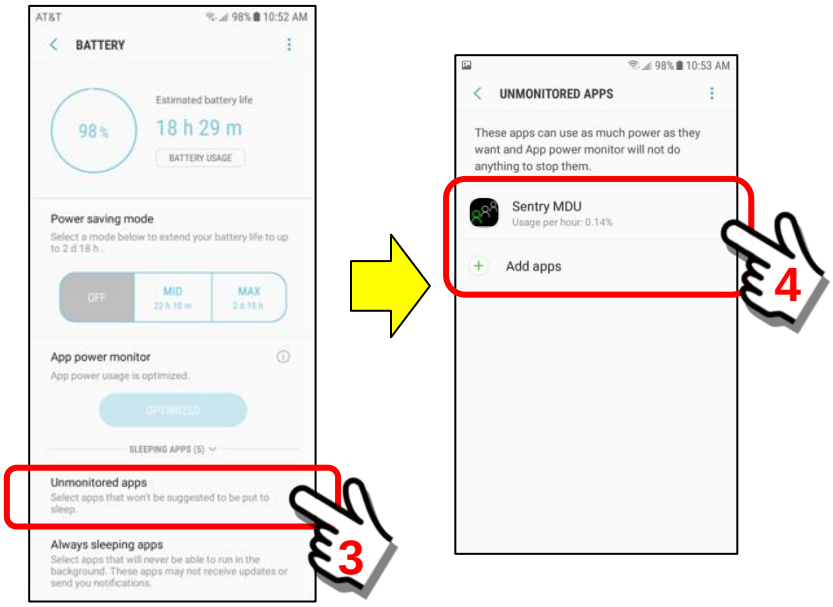
Solar Powered remote surveillance enclosure for locations without power.

To adjust the Battery Optimization settings, navigate to the native "**Settings App**" on your device. Illustrated below will be a Samsung Phone, yours may look somewhat different, however the features should be similar.

<u>Open the Settings Panel and locate the Battery Optimization Feature</u>



<u>Select the Battery Feature, then add SentryMDU as an **Unmonitored App**</u>



3.15. SentryMDU software "updates" sent to your Mobile Device

Overview:

The SentryMDU System includes a "software updater" that will notify you of updates to the SentryMDU App. Updates are optional, but recommended. We continually improve and add features to the software so it is always a good idea to install any updates..

In most cases, updates will not remove any user data or change any user configurations. In the event changes will impact User data, you would be notified in advance to take steps to copy/backup your data.

Follow these steps to "update" the SentryMDU App:

1. ***The SentryMDU App must be "running" to receive an update notification***
   The SentryMDU App must be running in order to receive a notification that a software "update" is available. It can be running in the foreground (you are using it) or the background (you are not using it, but it is still running and you can see the satellite icon on the notification bar). When the SentryMDU App is "started" a timer counts to 10 minutes. After 10 minutes, the App will contact the SentryMDU Administrative Server to see if there are any software updates available. It will compare the current software version on the mobile device, to the "new" available software update. If you need a new version, the software update will be downloaded and stored in the SentryMDU Folder on your device in the "Releases" sub-folder (see **Section 3.12** for file system details).

   Important Note: Once the App is "started" it will only check ONE TIME for a software update. If you never re-start the SentryMDU App, it will NOT check again for a software update. It is always a good idea to check/restart the App every so often so that you can see if a software update is available.

   At this stage, the software has been downloaded to your device … but NOT installed. You are still running the previous version.

2. ***Install the new software version on your device.***
   The software update will be installed into the "Releases" Folder located in the SentryMDU folder on your mobile device. It will be an APK file. All Android applications are APK files.

   The name will be something like this:

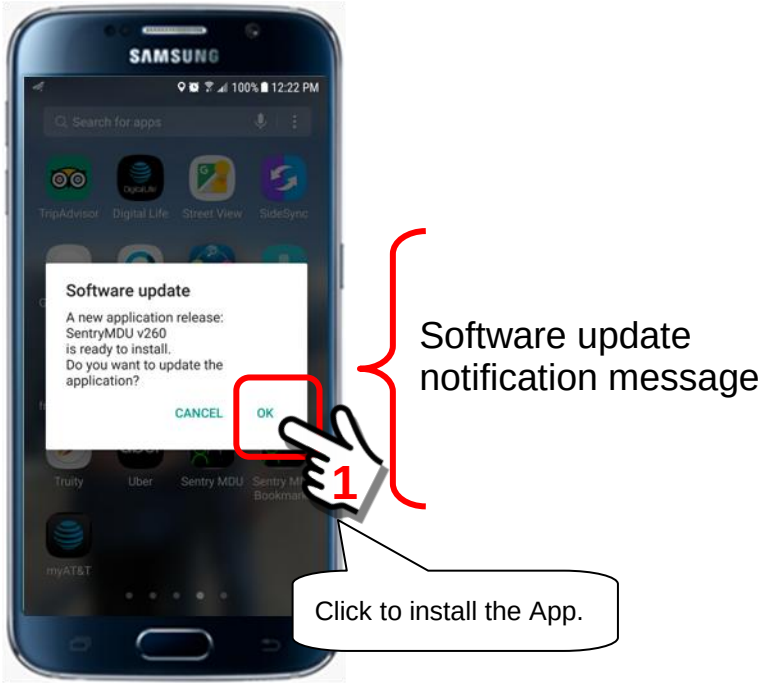
   SentryMDU_260.apk

   This is the "Release Version" number of the SentryMDU App

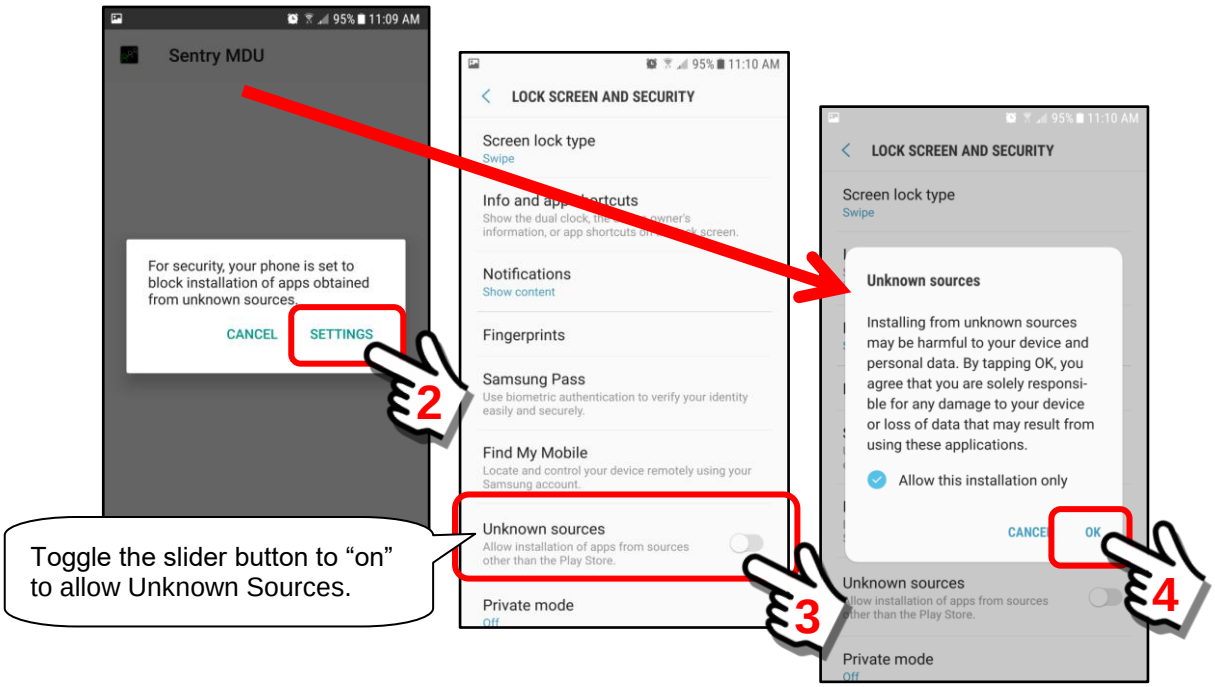
   When installed, the app will be identified as ***SentryMDU.apk*** (Android Application File).

When the software has been downloaded and stored in the Releases Folder, you will then get a “Notification” on your phone that a software “update” is available.

The Notification pop-up is as follows:

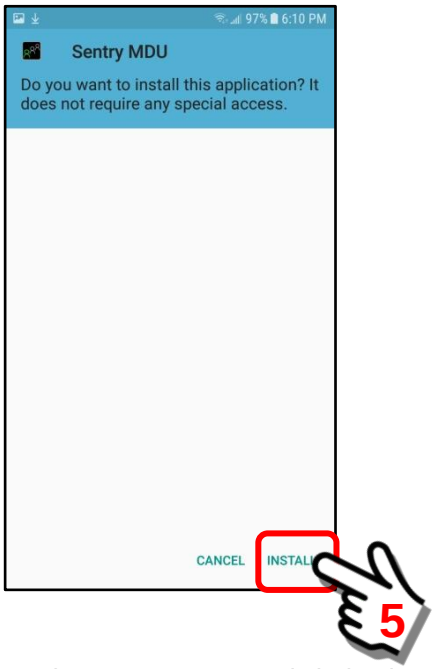


The SentryMDU App will now begin installation.
Since the SentryMDU App is NOT downloaded from the Google Play Store, it is considered an “Unknown Source” by Google since they don’t know about it. Depending on your device “settings” you may have “Unknown Sources” blocked. If this is the case, you will need to adjust your settings to allow the SentryMDU App to install.



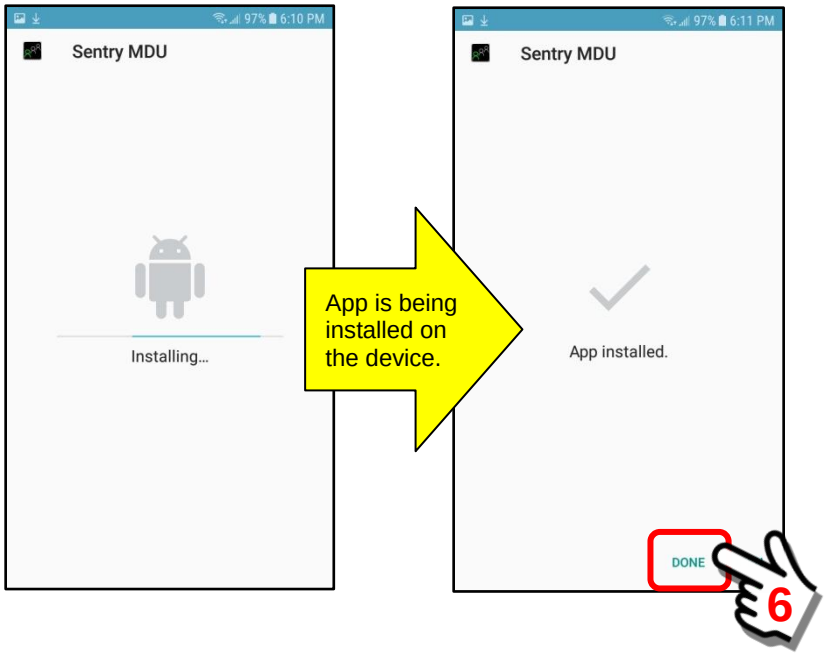
You will get a “scary looking message” from Android about Unknown Sources. Click the “OK” Button when you are ready to continue.

You will be presented with an INSTALL screen. Click the “Install” Button to continue with installation.



As the SentryMDU App is being installed you will see an installation screen similar to the following. This may take anywhere from 5 seconds to 60 seconds.

Click “Done” when the installation is complete.



The SentryMDU app “update” is now installed on your device. **You must re-launch the App and start it again.**

4. The Sentry MDU Main Menu

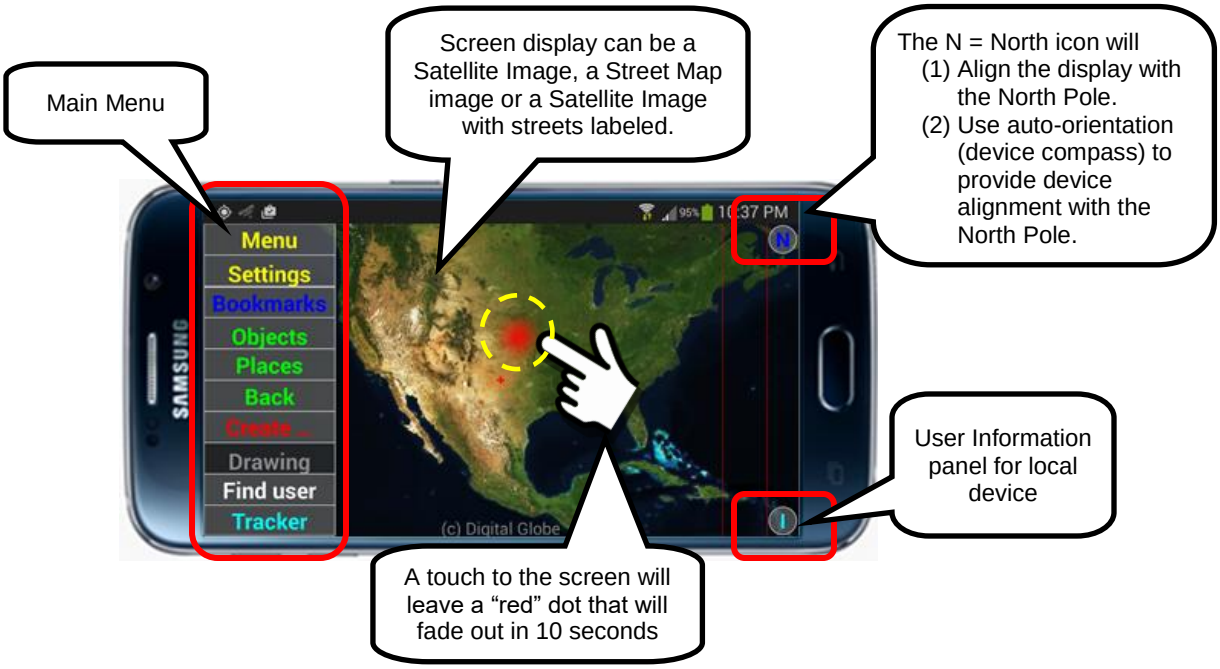
4.1. Overview and screen layout

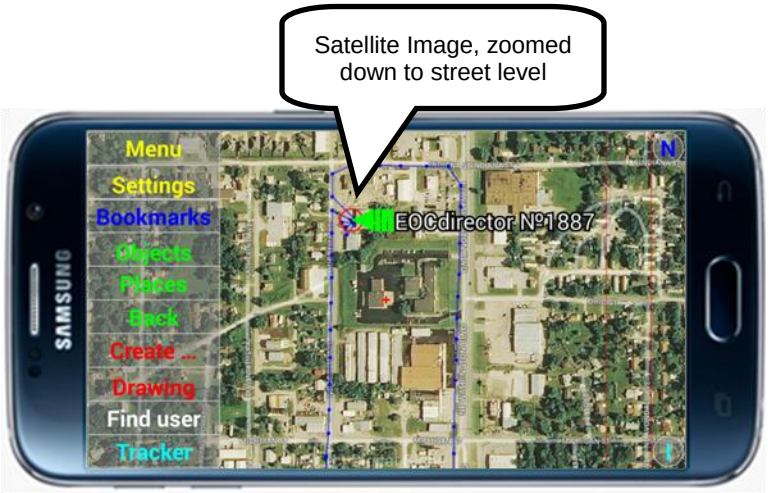
Overview:

The Sentry MDU App is designed to run on both smartphones and tablets. The “look & feel” on both devices should be about the same. The only difference is in the size of the screens and the amount of scrolling required (less on the larger screens).

Layout of the Sentry MDU screen:

The Sentry MDU Application is oriented in “landscape” mode on mobile devices. The primary elements are detailed below as shown on a Samsung S6 smartphone.





4.2. General screen navigation, menu access, pan/zoom, rotate

Overview:

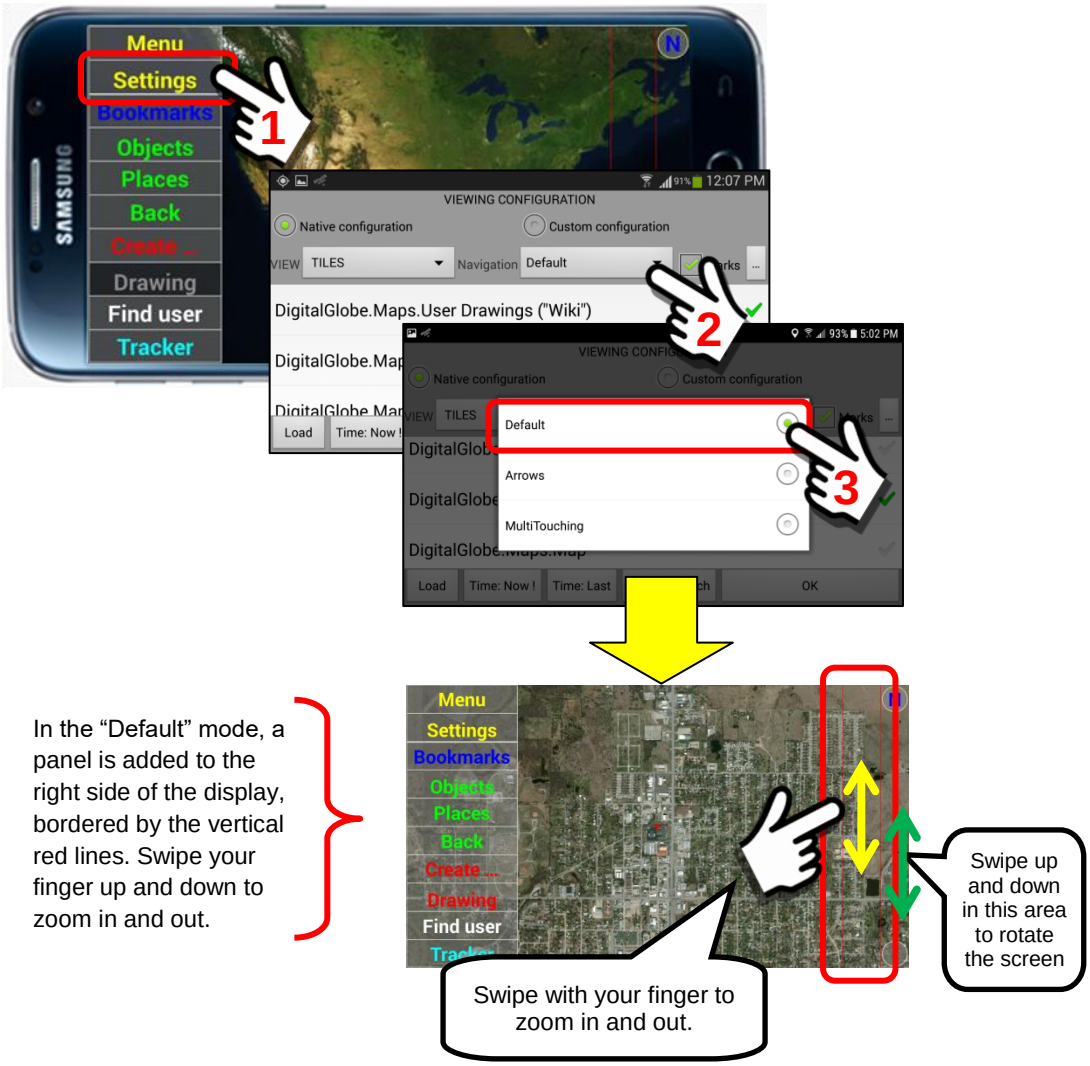
The Sentry MDU App provides the user with a number of options for screen navigation. There are 3-modes that can be set via a configuration menu (Default, Arrow, Multi-touch).

In all 3 modes, the screen can pan to the right, left, up or down by simply dragging a finger about on the screen. The zoom function can be set to use a “two-finger” multi-touch swipe or a single-finger zoom with the activated side-panel. The screen can also be “rotated” so that a user can orient the screen to their physical location for a more accurate user experience. This section will describe the screen navigation features of the Sentry MDU App.

Navigation features of the Sentry MDU Application:

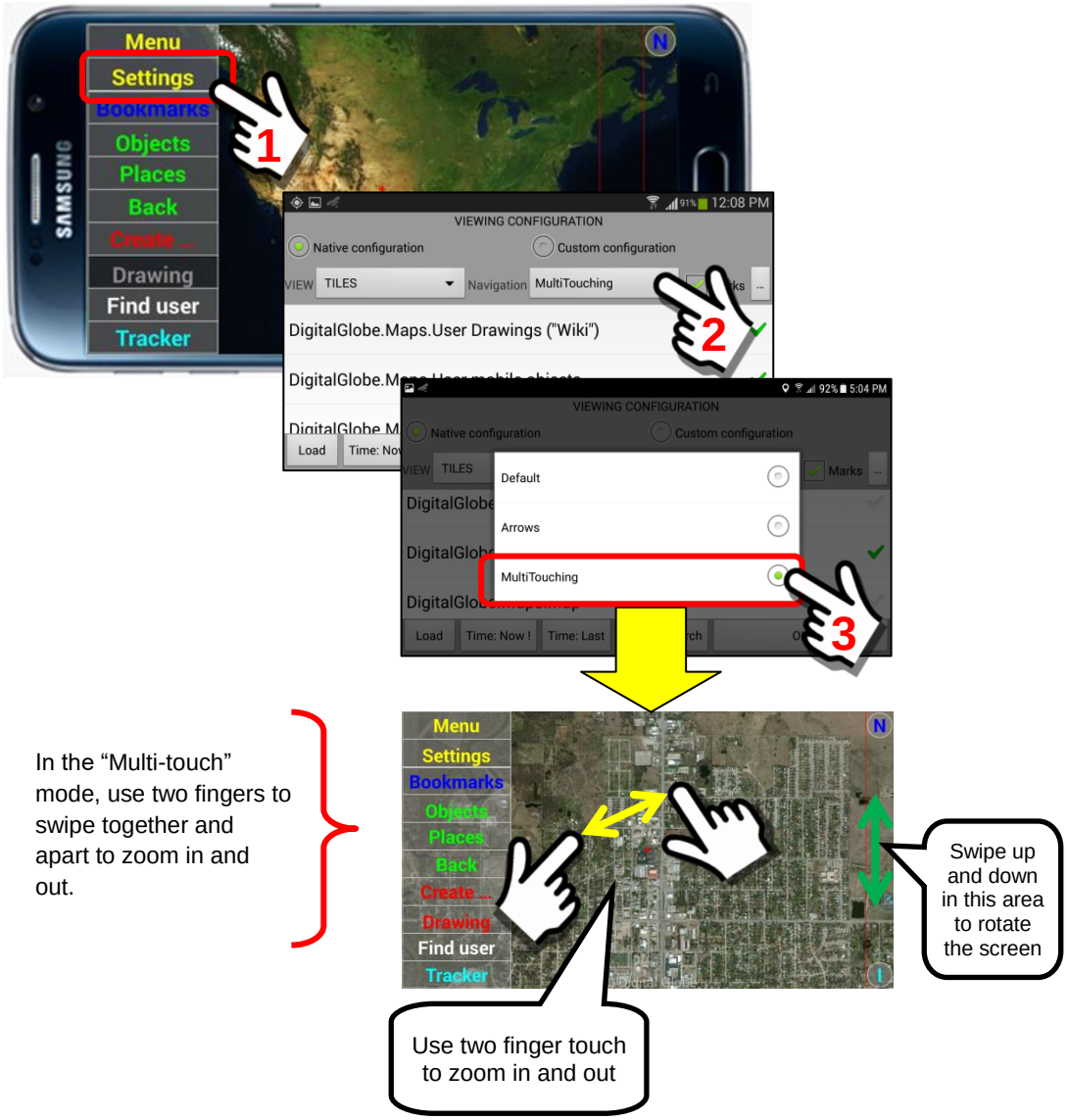
1. ***Configuration of the 3 navigation modes.***
   The various navigation modes are set from the SETTINGS Menu.

   <u>Option #1: Default Mode</u>



Option #2: Arrows Mode

Option #3: Multi-touch Mode



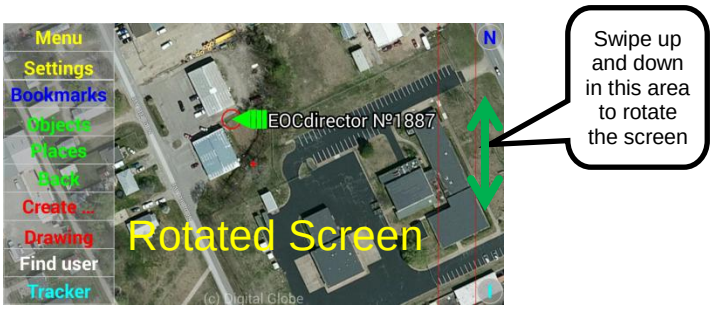
2. ***Screen rotation to NORTH using "N" Icon.***
   The SentryMDU System has a North Button with two functions.

   a. Performing a "Short click" will align the display maps of the mobile device with the North Pole.
   b. Performing a "Long click" will use the internal compass and gyroscopic sensor of the mobile device to provide continuous auto-orientation of the map screen to be in alignment with the North Pole.

In the examples below we will illustrate these functions.

Short click to align display maps to the North Pole

In the default operating mode, the Main Map Screen will be aligned in a vertical orientation … assuming that “North” is at the top of the screen. As we have shown, users have the ability to “rotate” the map screen image to achieve a better viewing angle.



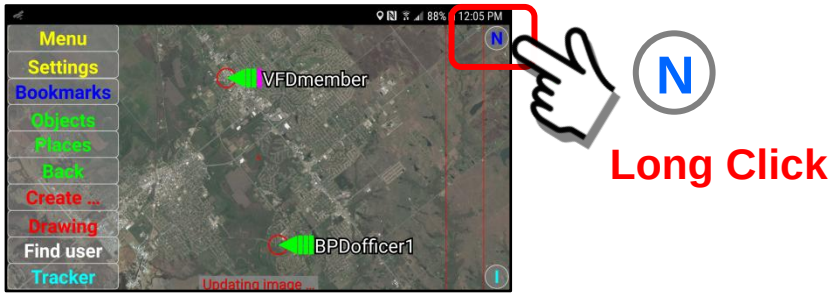
Once you are done with the screen rotation and would like to re-align the screen to “North”, simply click on the “N” Icon as shown below.

Click on the “N” icon to re-align the screen to magnetic north.

Long click to use the compass to align the map screen with the North Pole

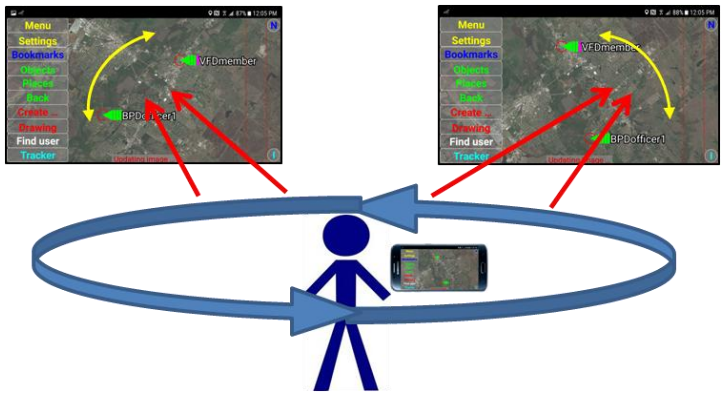
In this “auto-orientation” mode the Map Screen on the mobile device will continuously be adjusted (rotated) to align with the North Pole. As the user walks around with the mobile device, the internal compass of the mobile device will continuously update the relative position of the device to the North Pole.

The auto-orientation mode feature is illustrated as follows. Perform a “Long click” on the “N” Icon Button.



As you move the mobile device to different positions, you should notice the screen rotation to maintain a “North Pole” orientation of the device.

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, this auto-rotation feature will NOT work.



Perform a “Long click” again to toggle the auto-orientation feature to “off”.

4.3. Selecting a Main Screen view (Satellite or Map view)

Overview:

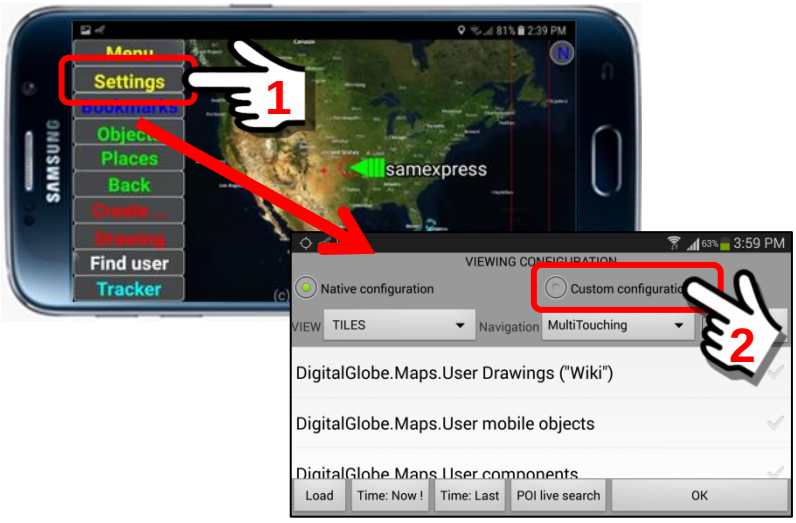
The Sentry MDU Application allows a user to select a number of options on how they would like the screen to display satellite imagery and maps. There are 3 primary image/map options and several overlay "layers" that can display additional symbols and icons. The 3 primary map options are as follows:

1. Satellite Image overlaid with a street map
2. Satellite Image
3. Street Map

The "default" setting is Item #1 – Satellite image overlaid with a street map.

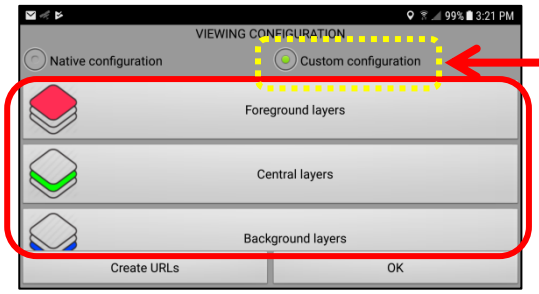
Setting up the desired display screen:

The following example screens below explain how to set the Main Screen view options.



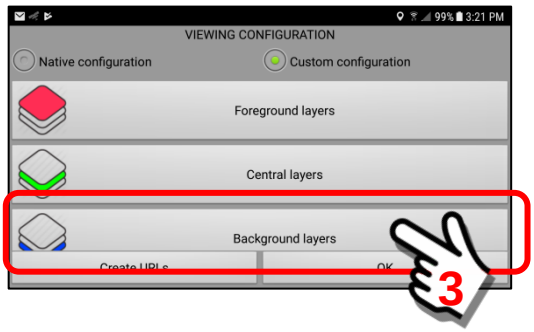
<u>Three large buttons will be displayed</u>

1. Foreground Layers
2. Central Layers
3. Background Layers

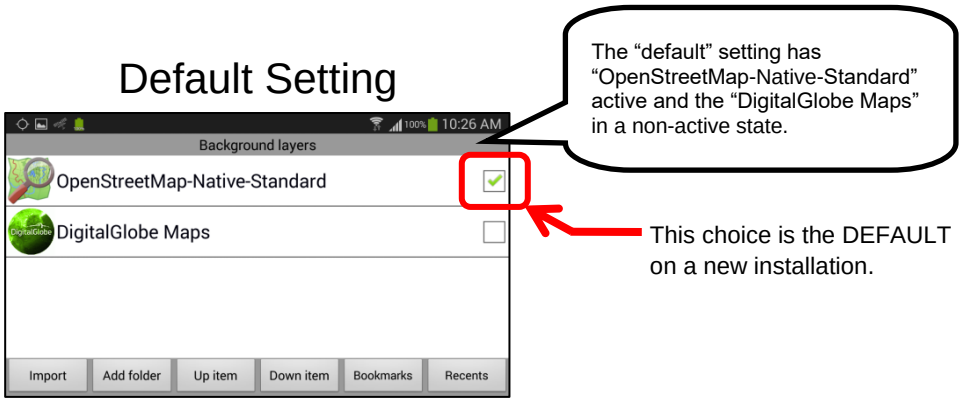


Custom Configuration mode is now activated

Select the Background Layers folder for access to the imagery and maps that are available on the Mobile Device.

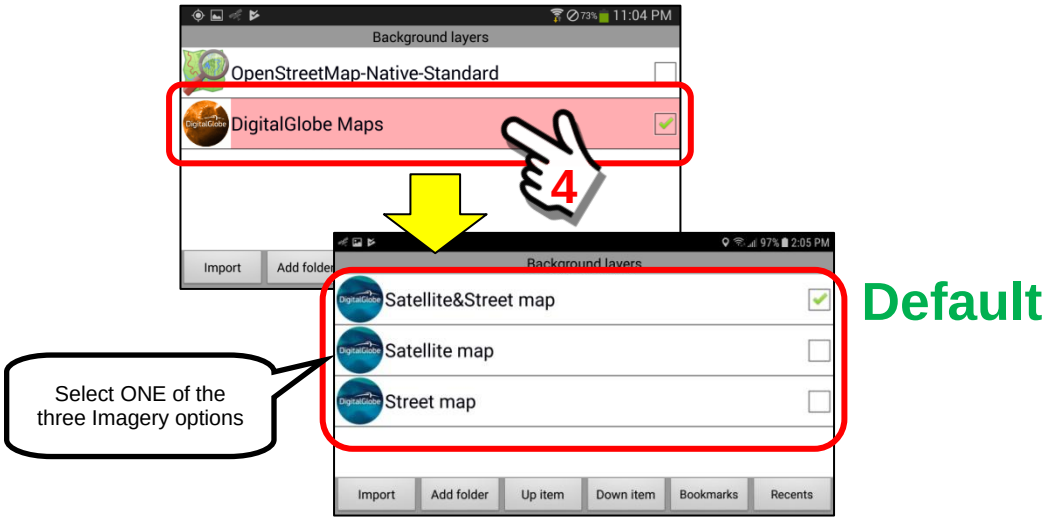


The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put "custom" maps of your own in this folder.



When a User device installs the MapBox / DigitalGlobe Map imagery by way of a Subscription or User License, the "DigitalGlobe Maps" menu item will become active.

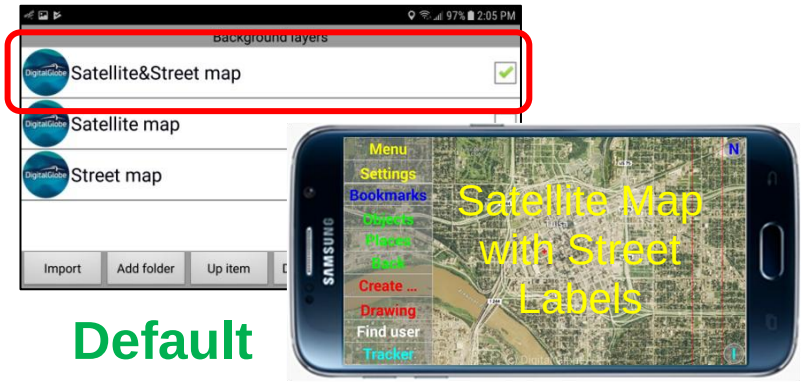
To view the 3 different DigitalGlobe Map options, click on the Menu Item.



During an initial install of the DigitalGlobe Maps, the "**Satellite&Street map**" option will be installed by default.

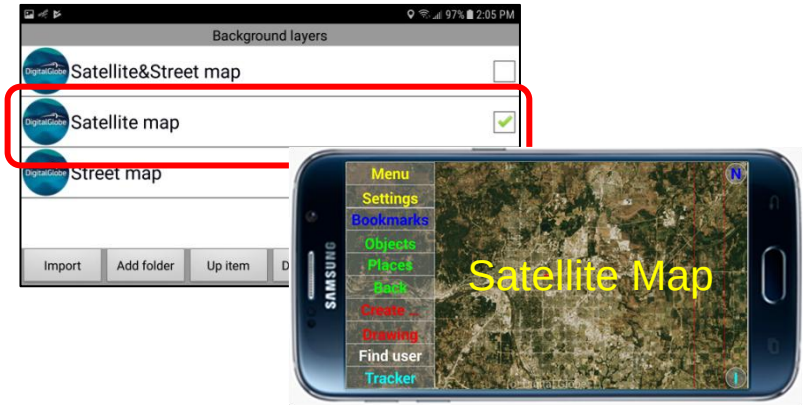
A User may select any of the other map options as indicated below.

1

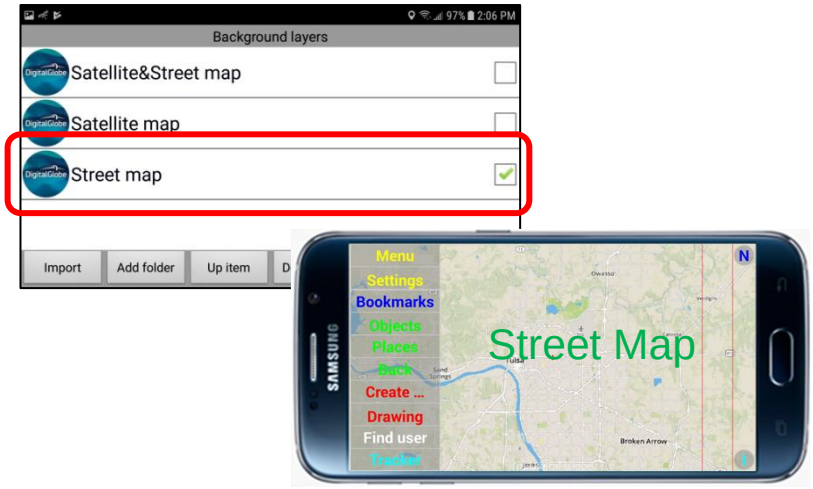


Default

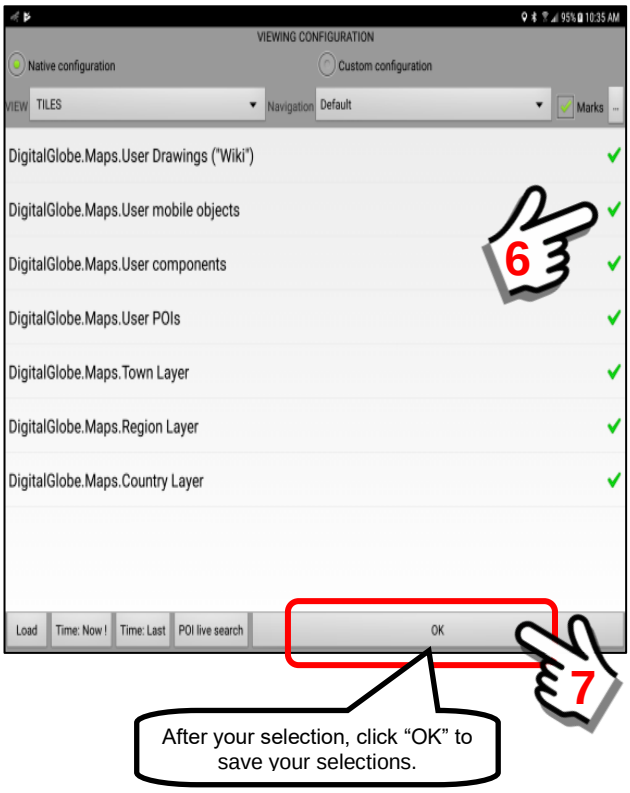
2



3



Available additional layers are described below. See **Section 8.12** for further details.



User Drawings layer shows the drawing created by a user via the "Drawing" Menu Option.

User Mobile Objects layer shows user Tracker Objects.

User Components layer shows objects created by a user via the "Create …" Menu Option.

POI's, known as "Points of Interest" will display user created points of interest created via the Tracker Panel.

Country, Region and Town layers are currently NOT being used. It is a "future" enhancement that will eventually contain "border" markings for these areas.

4.4. Introducing the Main Screen menu choices and buttons

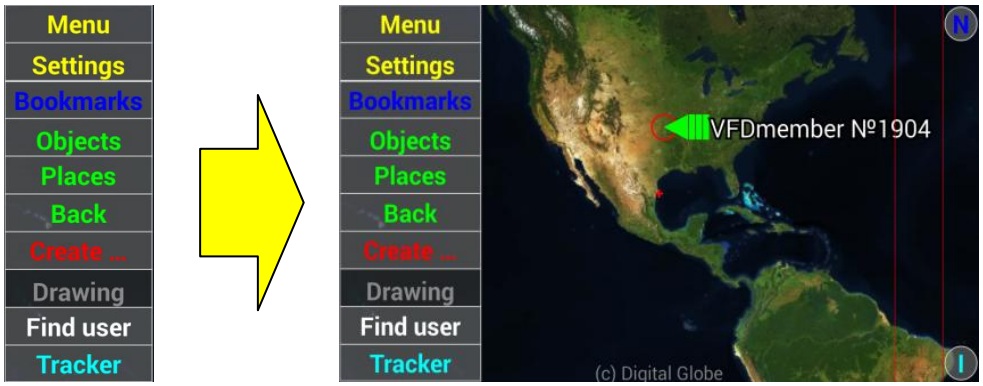
Overview:

All features of the Sentry MDU System can be reached from the Main Menu screen. The system is designed as a hierarchical set of cascading menus with additional features launched via a “Long Click” action on specific menus.

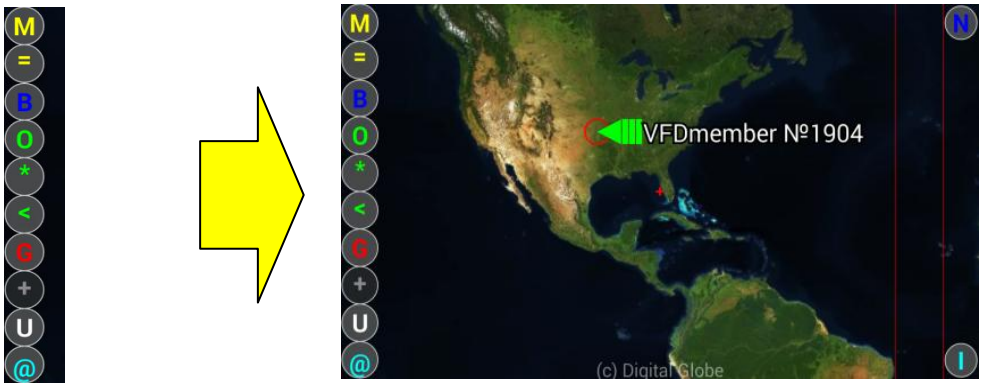
This overview will introduce the first set of Main Screen menus. Subsequent chapters of this User Guide will explore each menu level in additional detail.

The Sentry MDU App main screen menus:

The default setting of the Sentry MDU App main screen is to provide word descriptions of the Main Menu buttons. This is the recommended setting until a user becomes familiar with the Sentry MDU System.



An alternative setting that uses letters and symbols can be selected once the user becomes familiar with the screen layout. This feature opens up more screen area for use as shown below.

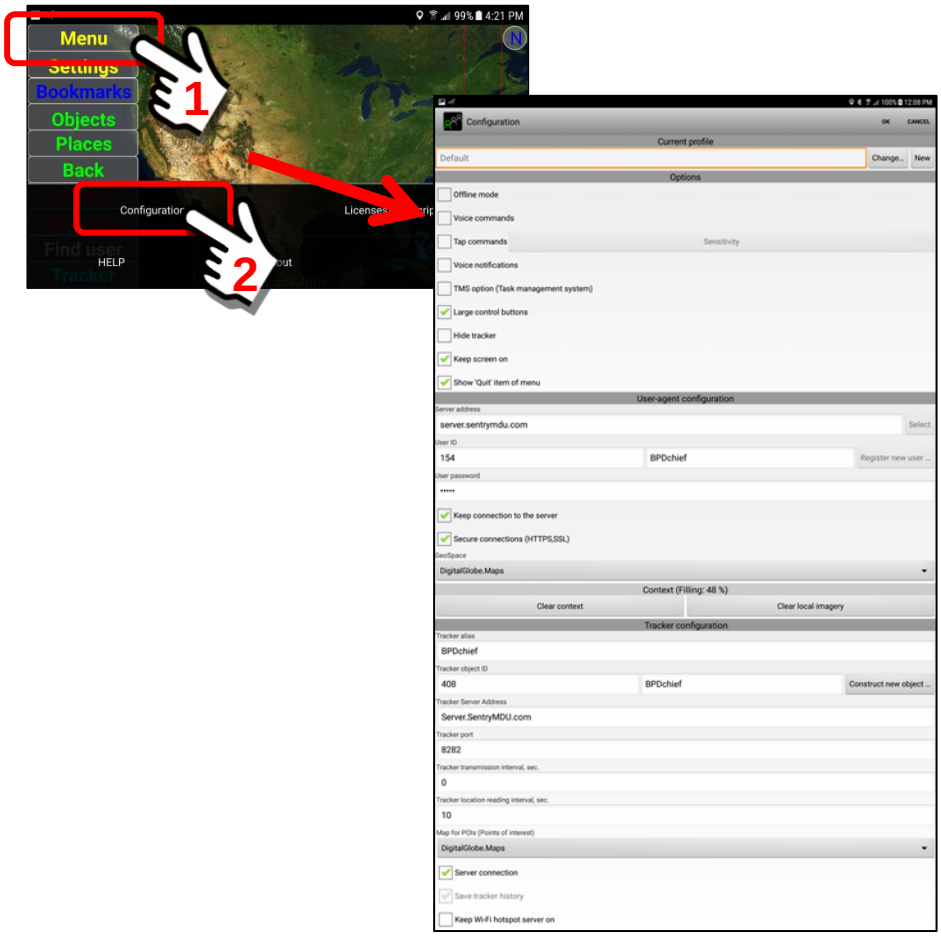


To change the Main Screen menu settings a user will “uncheck” the “Large control buttons” configuration option at the Main Configuration panel, and then SAVE the change.

Description of the Main Screen menu buttons:

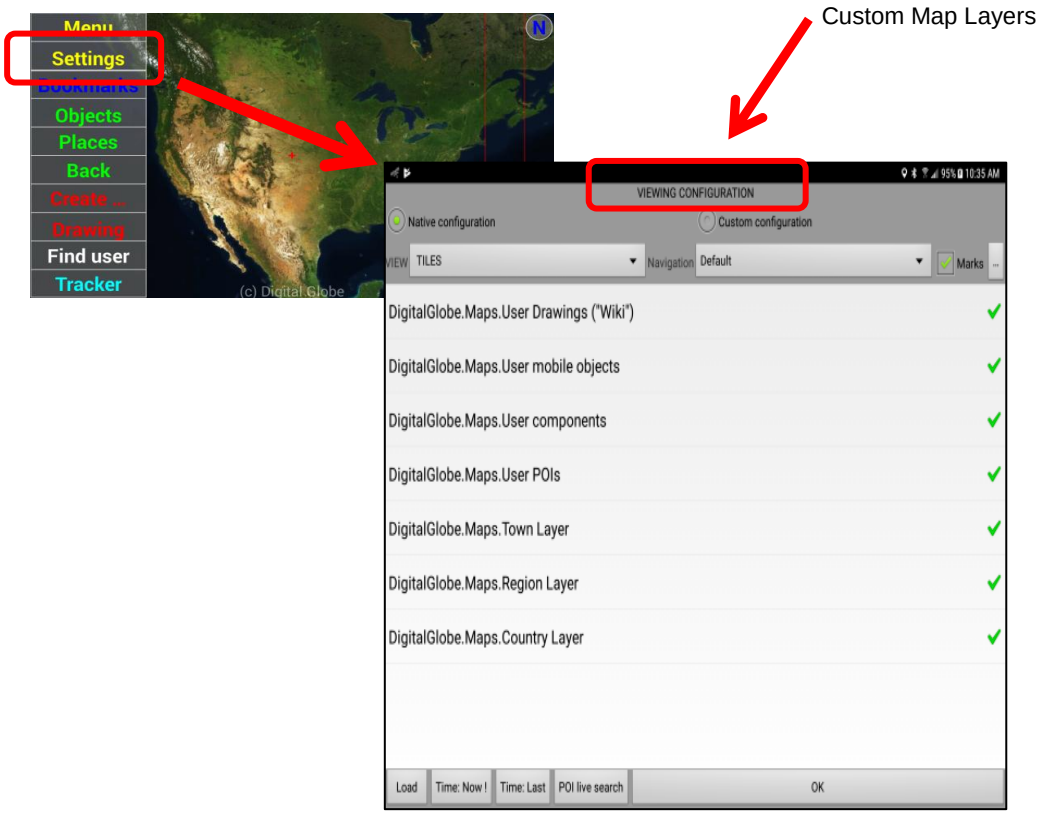
1. ***Menu -*** **Menu**

   The Menu Button on the Main Screen displays a panel block at the bottom of the screen. The Sentry MDU App main configuration panel is available from this menu block.



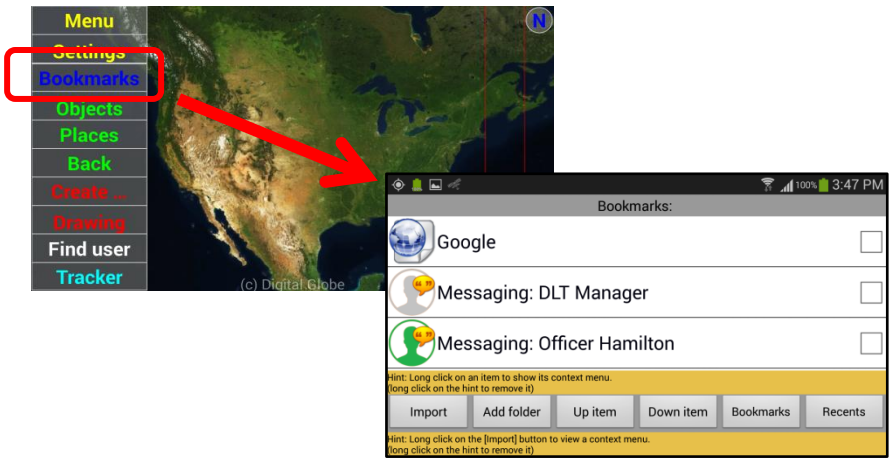
2. ***Settings -*** **Settings**

The Settings Button provides a panel where different satellite and map imagery can be selected. In addition, specific object, Custom Maps and "points-of-interest" layers may be added to the image. Navigation preferences are also set from this panel.



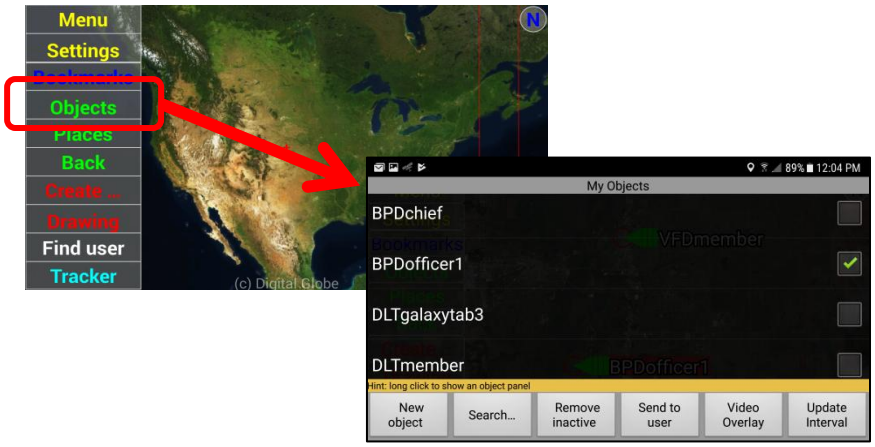
3. ***Bookmarks -*** **Bookmarks**

Bookmarks are "shortcuts" that are created to provide rapid access to many of the Sentry MDU features. Examples can be pre-set video recording, access to other users, instant messaging and internet website access.



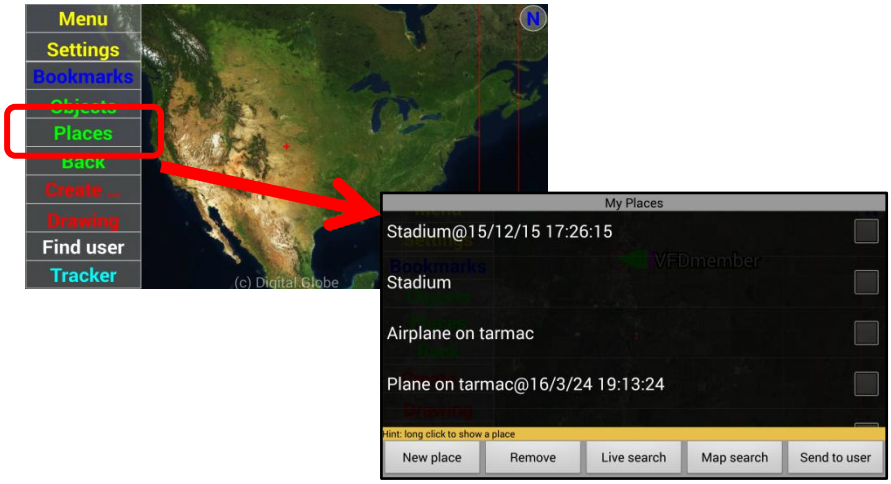
4. ***Objects -***

Objects are the name given to “users” and “devices” on the Sentry MDU network. This panel allows users to search for other users, create new objects, remove inactive objects and provide rapid video connections to other mobile devices (assuming security permissions allow).



5. ***Places -***

The Places Button allows a user to designate a specific location (via GPS coordinates) as a “place”. Audio, video and pictures may be attached to a “place”. The places feature allows for rapid retrieval of the stored information and further allows one user to send another user the “places” data.

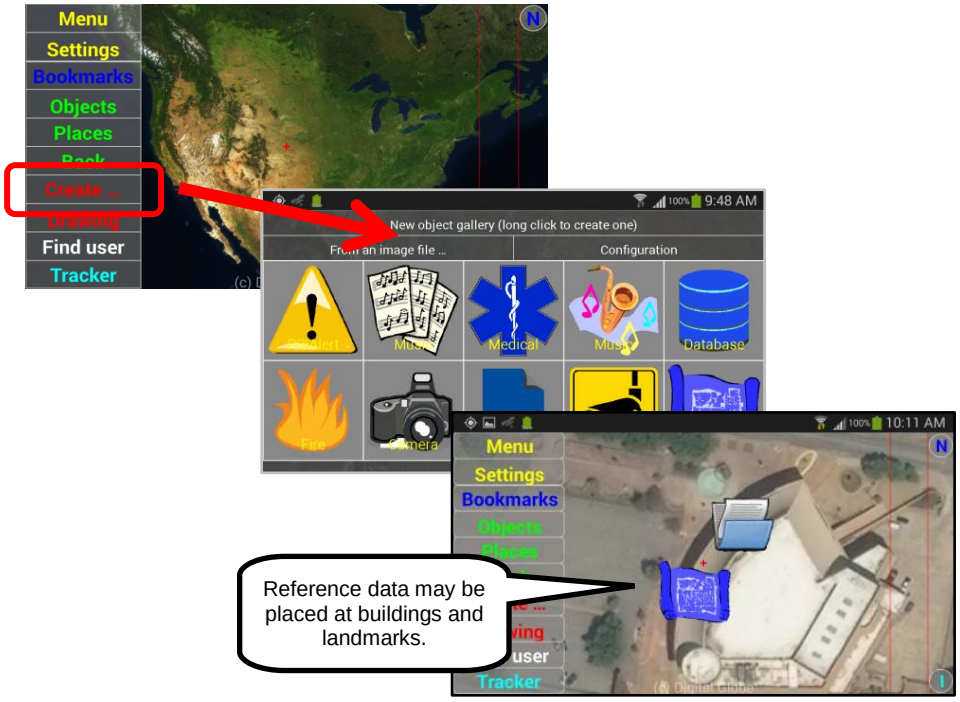


6. ***Back -***

The Back Button allows a user to go “back” and retrieve the previous screen that was being viewed.

7. ***Create … -*** Create …

The “Create …” feature allows a user to create regions on the map where information can be stored. This data can include pictures, video files, audio files, reference information, etc.



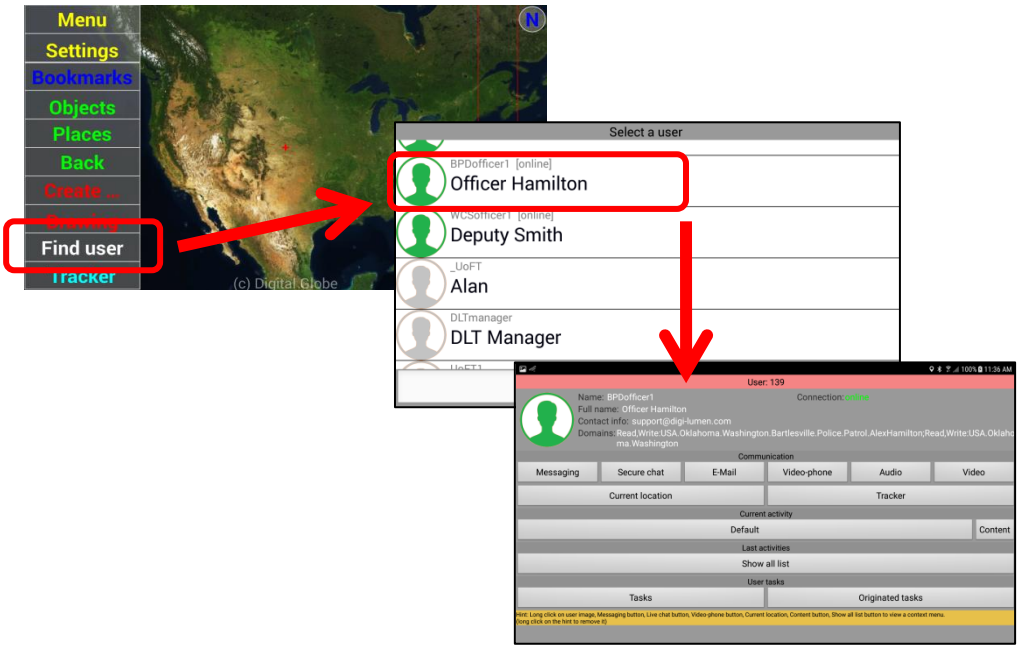
8. ***Drawing -*** Drawing

The Drawing feature allows a user to “draw” on the device screen using a finger as a stylus. These drawings may be saved on the device or sent to other users in the Sentry MDU network.

This feature may be disabled from the Settings Panel. See **Section 8.12** of this user guide for details.

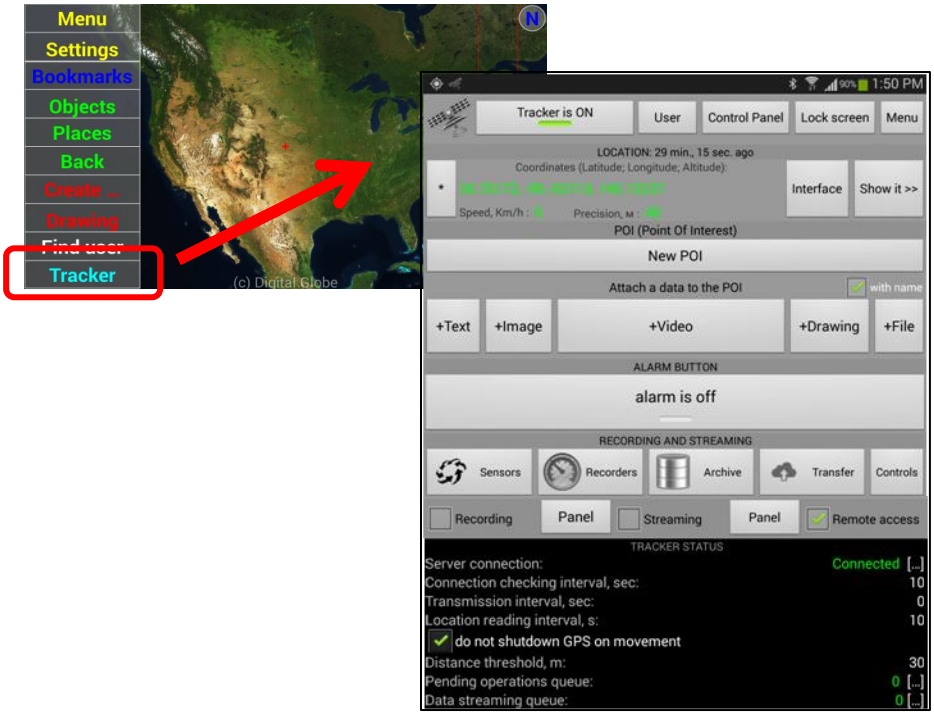
9. ***Find user -*** **Find user**

The Find User feature allows users to search for other users in the network and then connect via text messaging, live chat or video-phone. In addition, users may view/review the stored content (audio, video, images, places) of other users (assuming permissions allow).



10. ***Tracker -*** **Tracker**

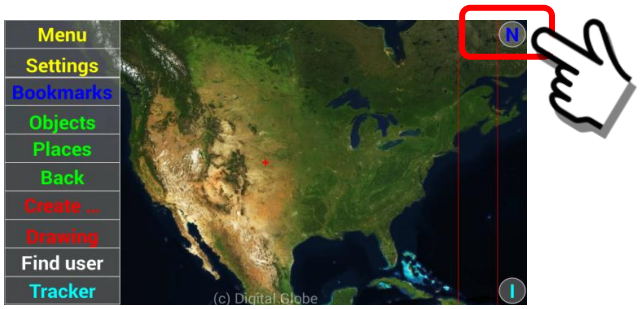
The Tracker feature provides for audio/video recording, body cam capability, setting of POI's, monitoring environmental sensors and setting alarm parameters. This is the primary GPS tracking feature panel.



11. *North Alignment Icon -*

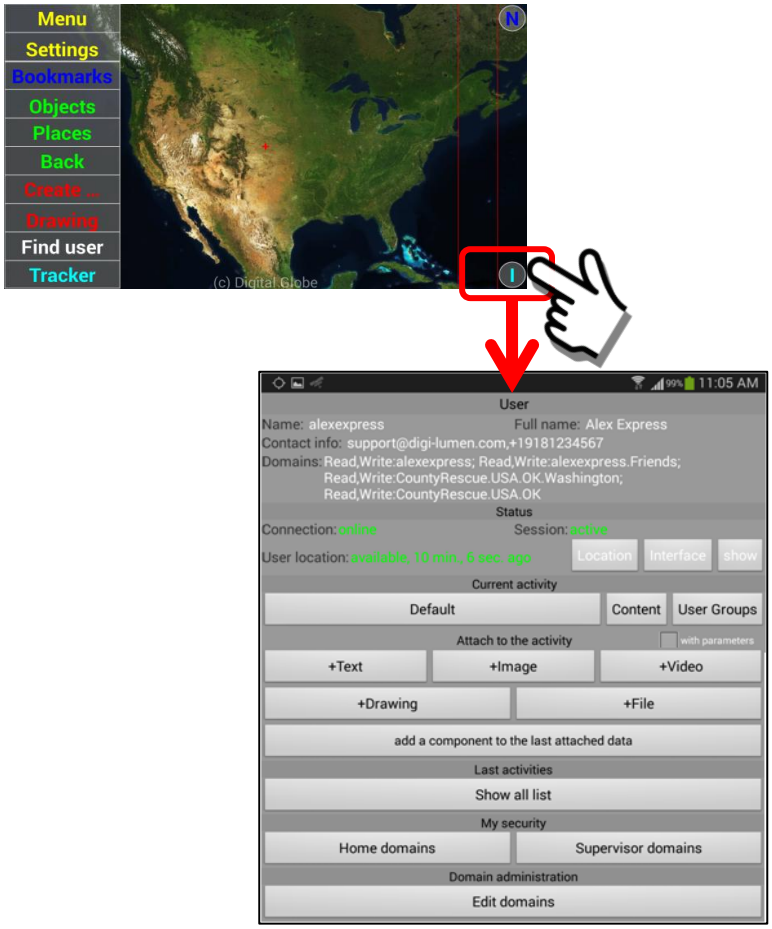
The SentryMDU System has a North Button with two functions.

a. Performing a “Short click” will align the display maps of the mobile device with the North Pole.
b. Performing a “Long click” will use the internal compass of the mobile device to provide continuous auto-orientation of the map screen to be in alignment with the North Pole (phone must have gyroscopic sensor).



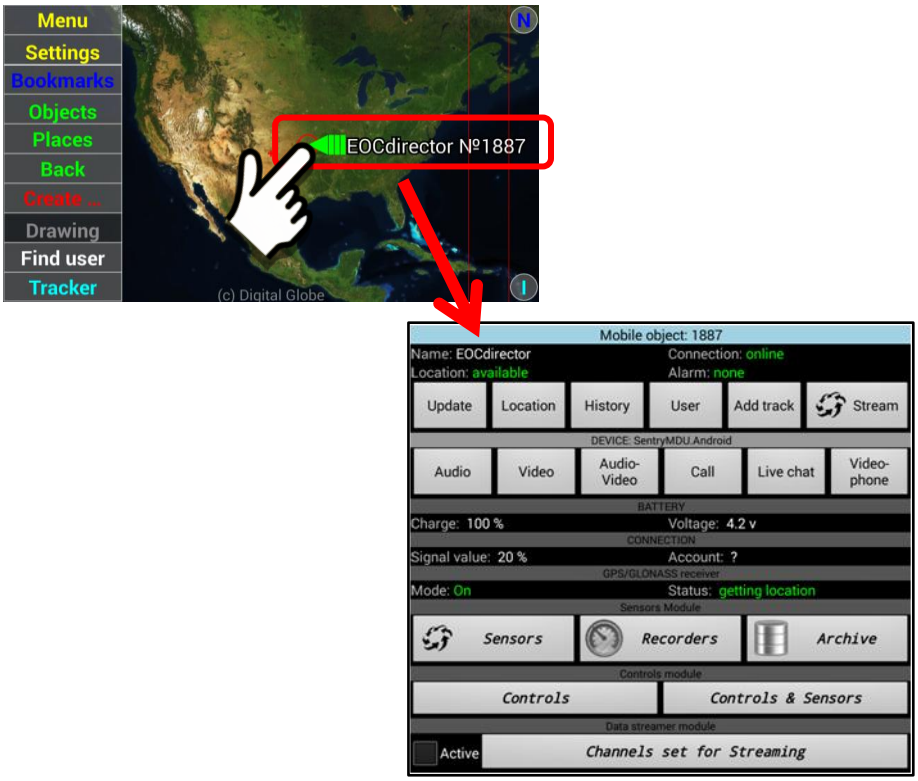
12. *User Information Icon -*

The User Information panel is where a user stores and retrieves “content” for future use. The content may be text, audio, video, images, drawings and data files. The content may be further arranged by activity classification if desired.



13. ***Mobile Object of User -***

All registered users on the Sentry MDU network will have a “mobile object” name that is displayed on the Main Screen by GPS location. Clicking on the Mobile Object of a user will open the Mobile Object Panel for the user (assuming that Security Domain and access privileges are sufficient).



4.5. Program "Hints" displayed at the bottom of a screen panel

Overview:

The Sentry MDU App is designed to include helpful "hints" at the bottom of many of the panels. These bits of help text provide a refresher to the user on the features of the particular panel. Once you are familiar with the program, these "hints" may be removed if they are no longer needed. This section will describe the "hints" feature, how to remove the hints and how to reinstall them should you need to.

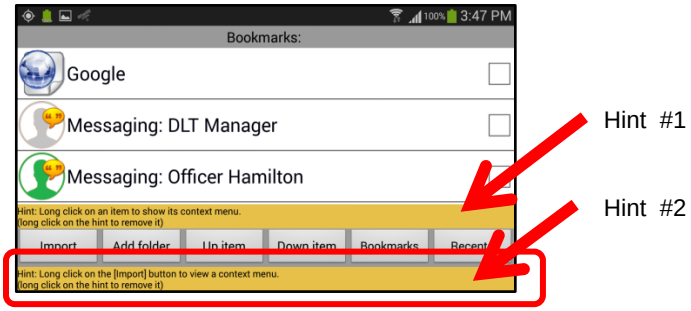
Layout of the Sentry MDU panel with "Hints":

Many of the screen panels contain helpful "hints" on the available features. Below are shown a few of the screens that contain these hints. The "hints" will always be displayed against an orange colored background.

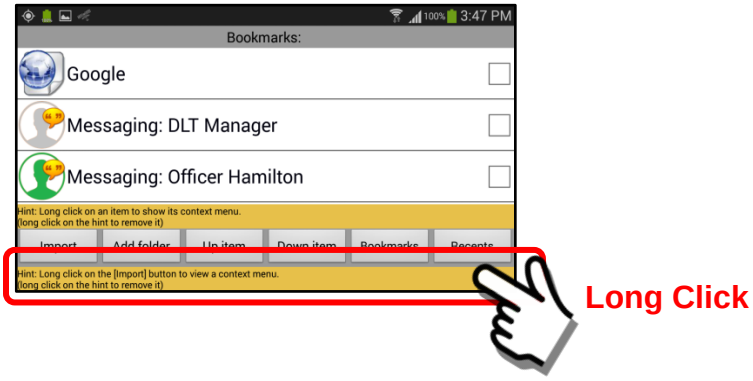
Review of “Hints” options:

1. ***Removing the “Hints” from the screen panel.***
   The text “Hints” may be removed from the screen panel if they are no longer needed. This removal is permanent. However, if you do make a mistake and remove a hint … we will show you a “manual” method whereby you can reinstall the hint. This will be described later in this section.

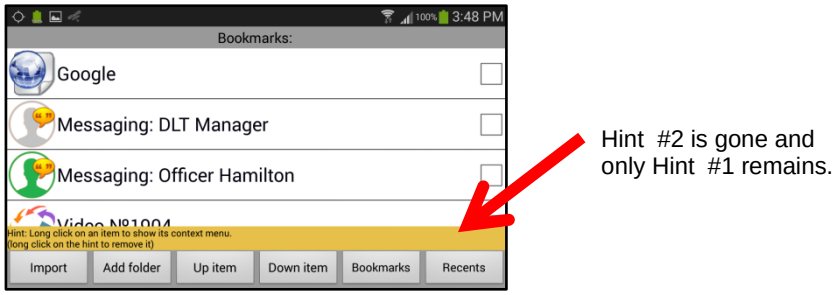
   To remove a hint, perform a “Long click” on the hint text. This is illustrated below. The Bookmarks panel contains two hints. We will remove the bottom hint.



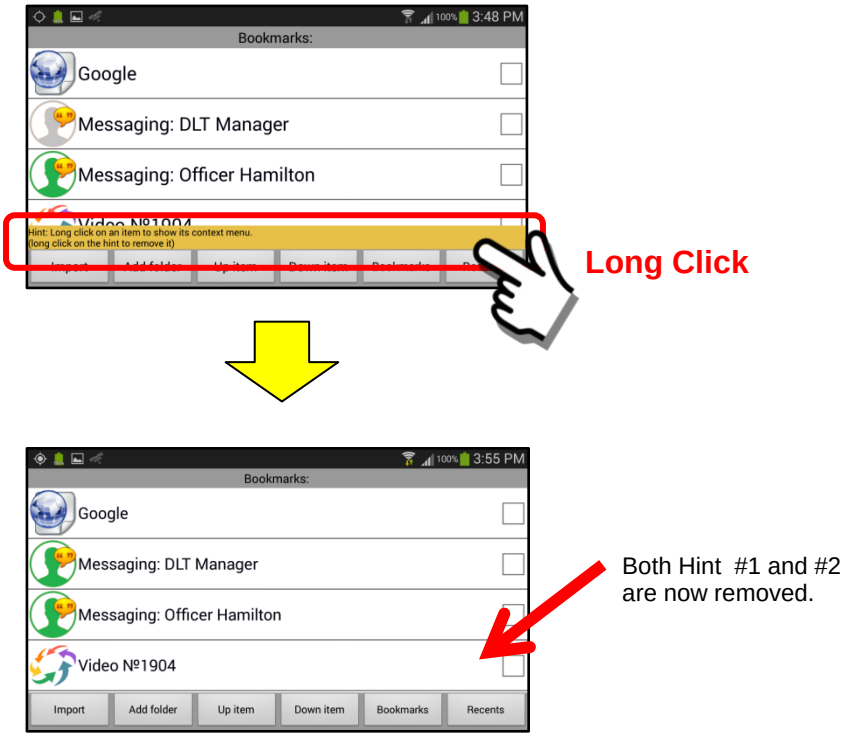
   Perfrom a “Long click” on Hint #2.



   Hint #2 has now been removed.



To remove Hint #1, perform a “Long click” on Hint #1 text. Hint #1 is now removed.



2. ***The manual procedure to reinstall ALL hints.***

The removal of help text “hints” is designed to be a permanent removal. However, we will show a way that you can “restore” the help text “hints” by manually editing the file system of the Sentry MDU App. This is generally not recommended for the average user. However, if you are familiar with file systems, then the removal of “hints” can be reversed.

<u>Discussion of the procedure</u>

Many screens on the Sentry MDU System contain hints. When a hint is removed, the system keeps track of which hints have been removed by storing the information in a text file. To restore the hints, we will simply “erase” (delete) this text file from the SentryMDU file system.

The Hint information filename = **DisabledHints.txt**

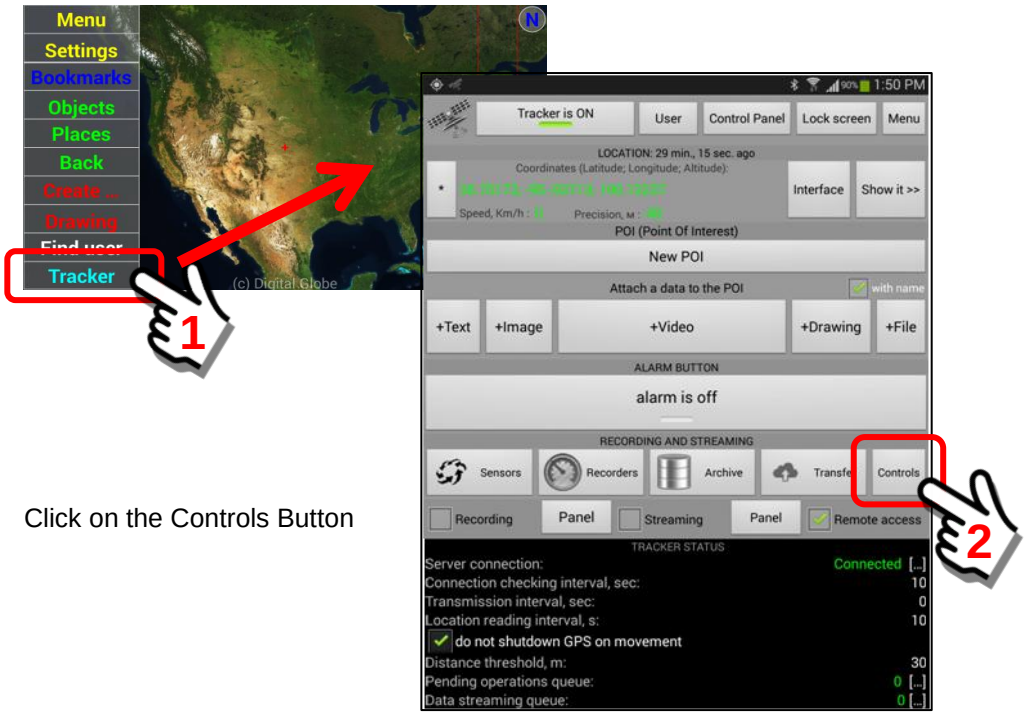
Directory path to file = **SentryMDU/.HELP**

Note that the file is stored in a “hidden” folder (.HELP). Hidden folders are designated with a “period” (.) in front of the name. You will need to go to the “Settings” App of your mobile device and make sure that the preferences are set to allow you to “see” hidden folders. Likewise if you plug your phone into a USB port and use a computer to access the file

system … please note that MS Windows computers cannot see dotted files (ie .HELP). Linux and Mac computers can see the files.

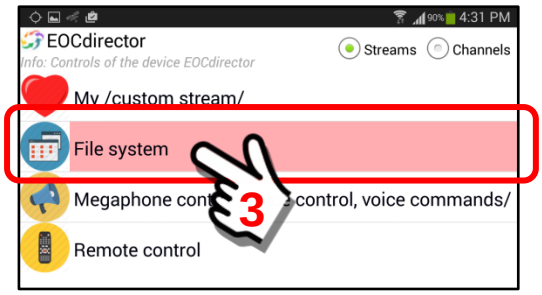
3. ***Perform a "manual" reinstall of ALL hints.***
Shown below is a step-by-step procedure for reinstalling hints.

Start at the Main Menu Screen. Open the Tracker Panel.

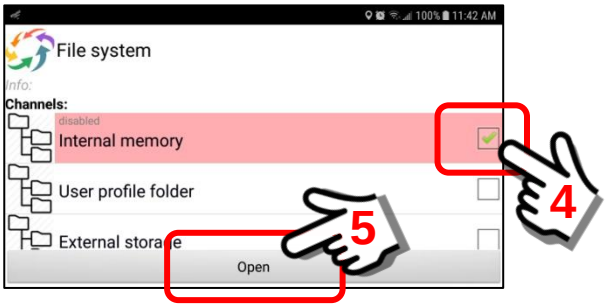


Click on the Controls Button

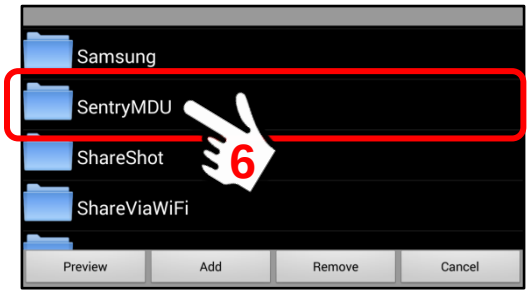
At the Controls Panel, select and click on the "File Systems" heading.



Select the "Internal Memory" control feaure. Put a checkmark in the checkbox and click on the Open Button.

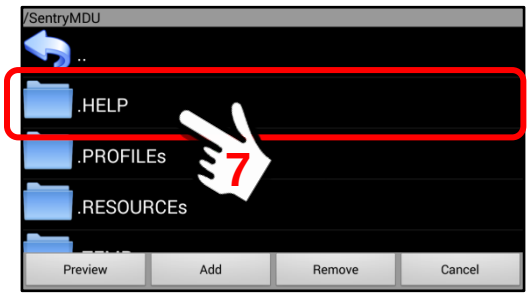


You will be presented with the file system of the mobile device. You will be at the Root level (top level). Scroll down the list of directories until you find the SentryMDU directory. You are now at the top level of the SentryMDU App folder. Click on the SentryMDU folder.

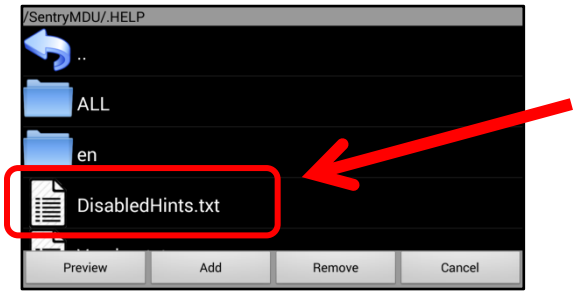


Open the SentryMDU folder. Assuming you have adjusting your file settings so that you can see “hidden folders” you will see a list of directories (both hidden and not hidden).

Click on the .HELP folder (this is a hidden directory).

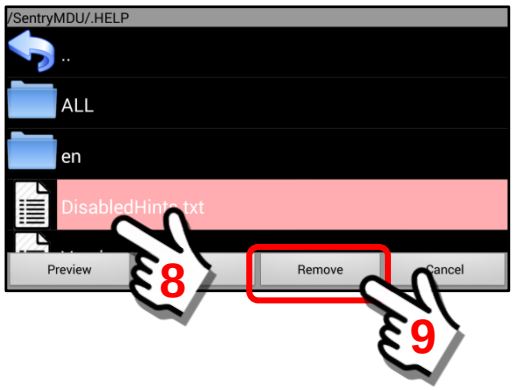


Within the .HELP directory you will see a few folders and some files. Locate the ***DisabledHints.txt*** file in the list.



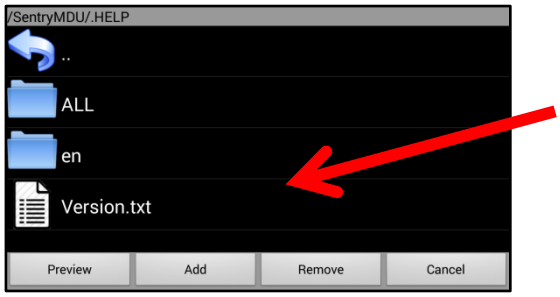
This is the file where the information on “Hints” is stored. We will remove this file.

Select the ***DisableHints.txt*** file from the list. It will be highlighted as shown below.



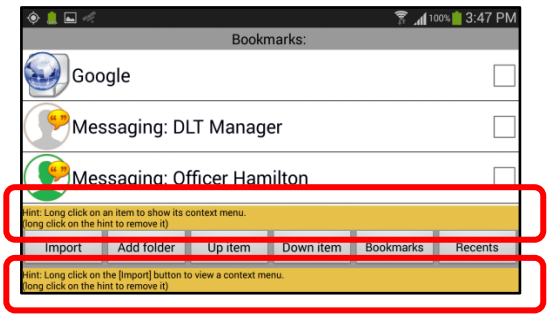
Click on the "Remove Button" to start the process of erasing (deleting) the file from the directory. When the system asks to "confirm" the removal … click on the "Yes" Button.

The ***DisabledHints.txt*** file has now been removed.



The "**DisabledHints.txt**" file has now been removed.

Return to the screen panel and notice that the "Hints" are now restored.



Hint #1

Hint #2

5. Configuration settings on a Mobile Device

5.1. Initial device configuration after App installation

The default settings of the Sentry MDU Application are appropriate for most users. However, depending on the hardware (phone or tablet) and the intended use, it is important for a user to review the primary configuration settings to ensure they meet your needs.

The following are several examples of situations where further configuration is needed:

a. If you are a Licensed Group and run your own Data Server instance, then you will have a different network address (IP address or domain name) than the default "public" address listed in the current setup.
b. The default setting of the App is to operate unencrypted. If you want data encryption turned on, then this is a setting you will need to change. See **Section 5.5** for details.
c. If you are a First Responder and wish to use the Tap Control or Voice Activation features of the device, then these will also need to be turned on (they are "off" by default). The voice activation feature requires an "optional" voice recognition package (CMU.Sphinx) be loaded on the mobile device. **Section 15.2.6** of this guide will show you how to install this package (it is free).
d. If you are a First Responder and wish to use the Object Recognition features of the device, then these will also need to be turned on (they are "off" by default). The Object Recognition feature requires an "optional" package (TensorFlow) be loaded on the mobile device. **Section 15.2.6** of this guide will show you how to install this package (it is free).
e. The Sentry MDU System uses specific communications "ports" in various features. If you have a private network with a router/firewall that blocks these ports, then you will need to make changes to the ports used. (see DLT Tech Support for more information)
f. Depending on the mobile device and hardware capability ... there are settings for video framerate, bitrate, video size (ie 1920x1080, 1280x720, 640x480, etc.). All of these will need to be set depending on the device capability, available bandwidth and application requirements. See **Section 15.2.17** for details.
g. If you are a Subscription User, you should create several "personal" Security Domains including those for family, friends, hobbies, travel and more. You may have up to 100 security domains. See **Sections 6.4 – 6.7** for details.
h. Review the "factory default" settings of your mobile device. Some of these may interfere with the SentryMDU features. See **Section 3.14** for details.
i. If the mobile device you are using is most often connected to a permanent power source (desktop charger), there are several settings that will optimize the device. See **Section 3.14** for details.
j. Adjust **Picture Quality** of the display of satellite imagery. The default setting is suitable for most devices, but if you want the display very "crisp" then adjust the settings. See **Section 8.3** to adjust the picture quality to match your device.

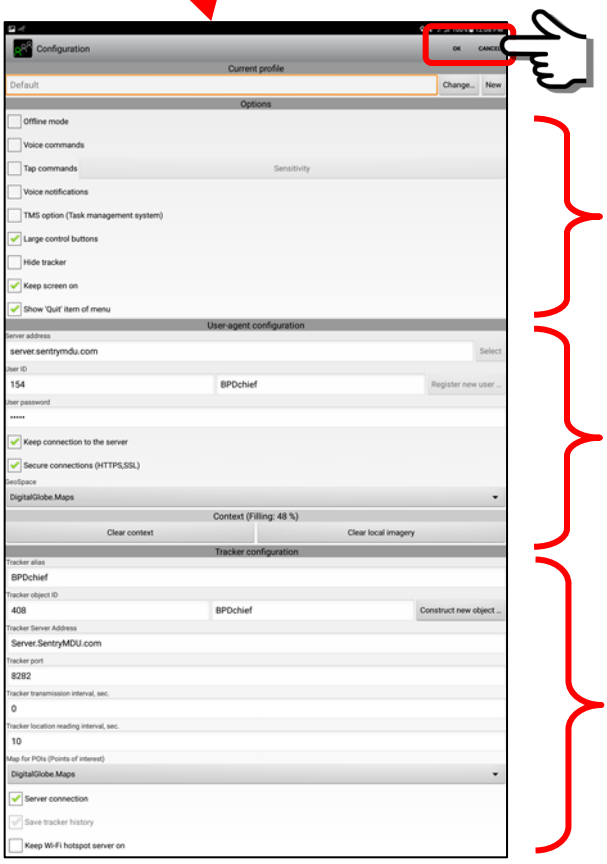
5.2. Main configuration panel layout

Overview:

The settings on the Main Configuration panel can be used to optimize the Sentry MDU System for your specific application. The layout is shown below.

Sentry MDU Main Configuration panel:

Launch the Main Configuration panel from the Menu Button on the main screen.



Once changes are made …. Click "OK" to SAVE the changes.

Options section:
To turn on/off Tap Commands, Voice Commands, put large control buttons, etc.

User agent configuration section:
Settings for network IP address, User ID and password and server connections.

Tracker configuration section:
Settings for the GPS tracking features, including Tracker Server IP, network port address and tracking update intervals.

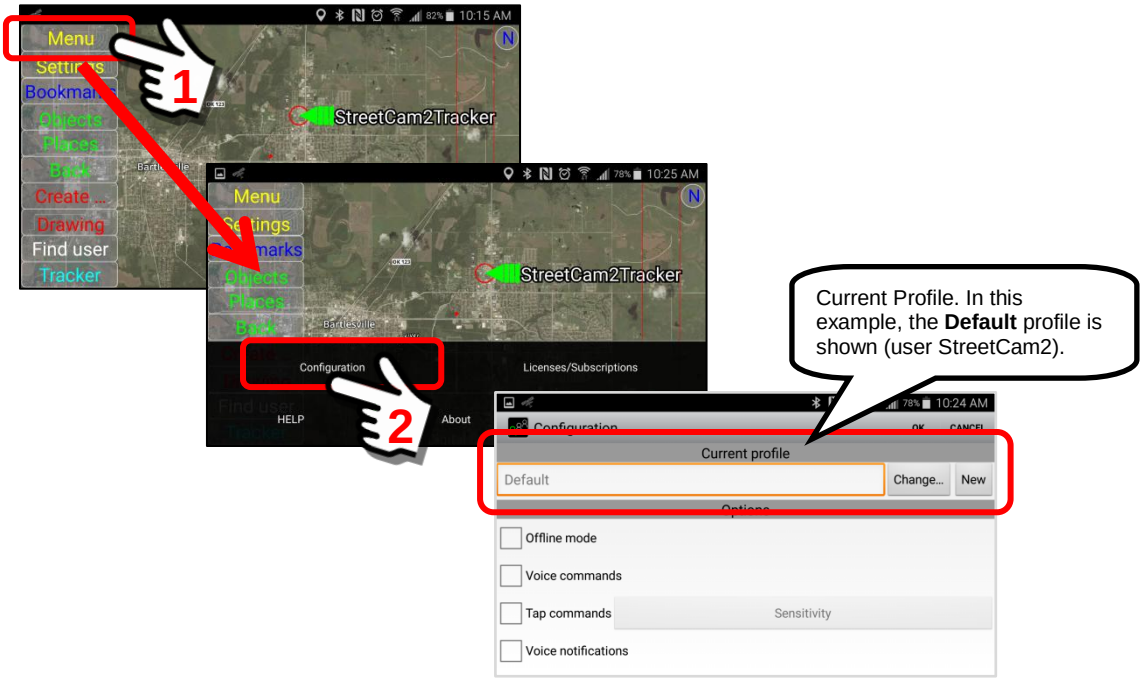
5.3. User Profile – One device, Multiple Sentry MDU Systems

Overview:

Each device may have several different user "profiles" stored in memory. These different profiles may have settings to access different Sentry MDU server instances. This section will explain how the User Profile feature works.

When a user installs the SentryMDU App on their device and does an initial ***General User Registration***, the system creates a "default" user PROFILE. This profile will adopt the configuration settings that the user has designated for the application.

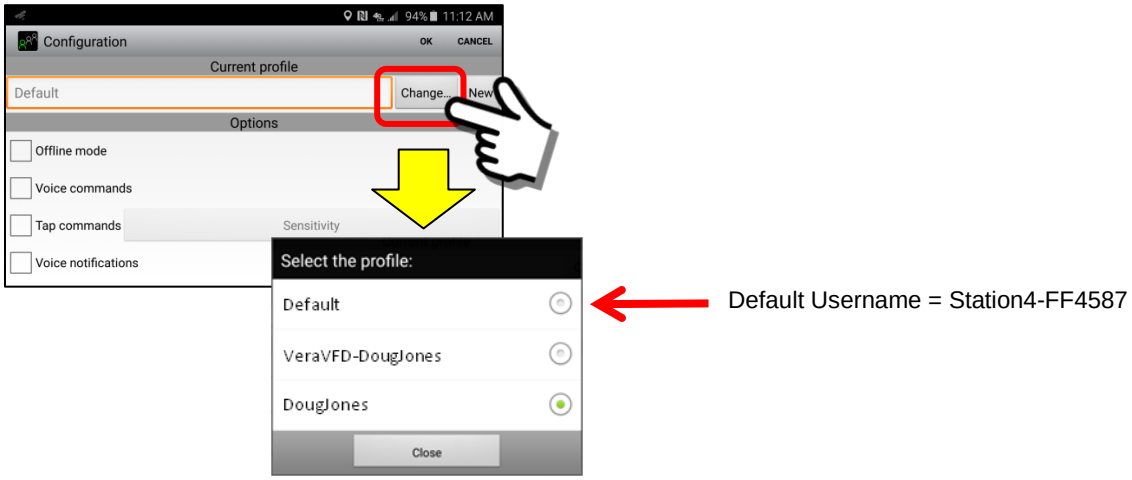
Access to the **Profiles Feature** is found on the Main Configuration Panel, as shown below.



Additional NEW profiles may be created with different configuration settings that are specific to an application task. To illustrate, we will assume a scenario where you could have three (3) user profiles on your mobile device.

1. Let's assume that as your "day job" you are a Firefighter for the City and your mobile device (cell phone) is configured to access a SentryMDU Licensed Server that is operated by the City. For this profile your Username is "**Station4-FF4587**" (Fire Station No. 4, Firefighter No. 4587).
2. You are also the member of a rural Volunteer Fire Department. Your VFD is part of a county-wide Mutual Aid Group where all volunteer fire departments have access to a SentryMDU Licensed Server that is operated by the County. For this profile, your Username is "**VeraVFD-DougJones**".
3. You have also configured your device for your "personal" family group. You have created a family "security domain" for your wife and two children and have subscribed to a "Level 1 Access" subscription. For this profile, your Username is "**DougJones**".

In this example, you will have three DIFFERENT user PROFILES on your mobile device. You may select whichever profile you want to be the “active” profile. This would be analogous to switching a radio to a different frequency channel. In this case, each of your three profiles has access to a completely different SentryMDU Data Server, security domains and set of configuration options.



During initial “General Registration” the system created a default user profile based on the Username you selected. This section will describe the steps necessary to create a second User Profile. For purposes of illustration, the second User Profile we create will also be a user that purchases a “Level 1 Access” Subscription.

<u>The following 19 steps will be covered in detail:</u>

1. Preparation for the exercise
2. Create a “new” User Profile name
3. Submit to create the NEW user Profile
4. Verify the NEW user for the device
5. Create a new user for the device (stored under a new user profile)
6. Register for a Subscription Account
7. Review data entry … submit to create a new account
8. Successful registration of a Subscription Account
9. Next steps after a Subscription Account registration
10. Sign up for a Subscription
11. Enter your Credit Card information
12. Credit card information is validated and processed
13. Close the Browser panel
14. Subscription validation and return to the Main Map Screen
15. Dialog box displayed after successful validation
16. System will install satellite imagery for the current map view
17. Change settings to display YOUR user GPS location on Map Screen
18. Review the NEW user profile you have added (StreetCam3s)
19. Removing a User Profile (permanently delete)

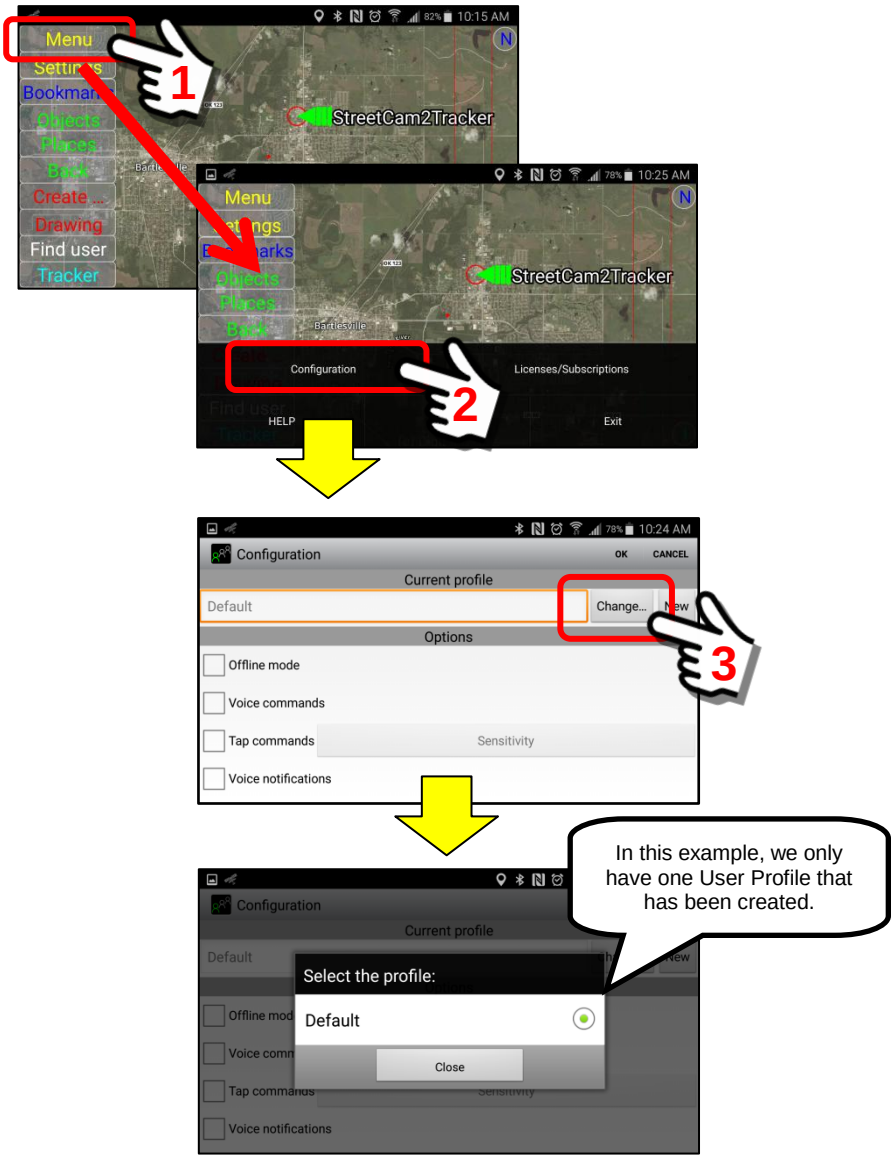
Process to create additional User Profiles:

1. ***Preparation for this exercise … complete these steps first.***
   In this example, we will assume you have completed the following steps. We want to start with a device that has a User License already installed that provides access to a SentryMDU Licensed Server. If you need a "refresher", please review **Section 3.7**.

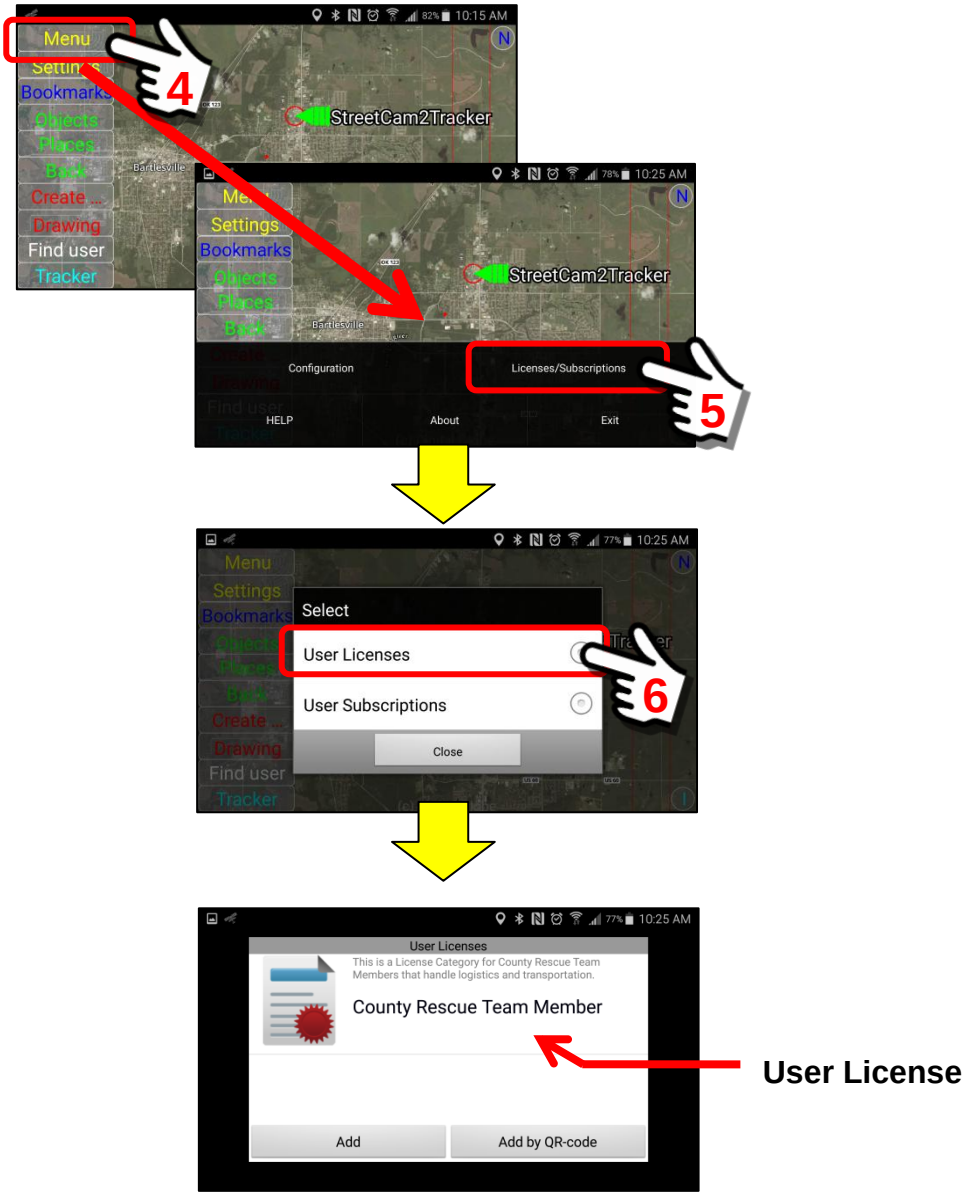
   <u>Steps to Complete</u>

   a. Install the SentryMDU App on our mobile device
   b. Register as a User on a Licensed Server
   c. Create a "default" Username (ie our example is "StreetCam2")
   d. Add a User License to our device

   Once these steps are complete, you should see a User Profile similar to the following screens.

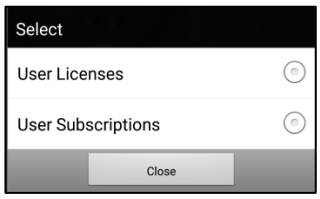


We see that we have the one “Default” Profile. Now, let’s review this default profile and verify that we have an active User License.



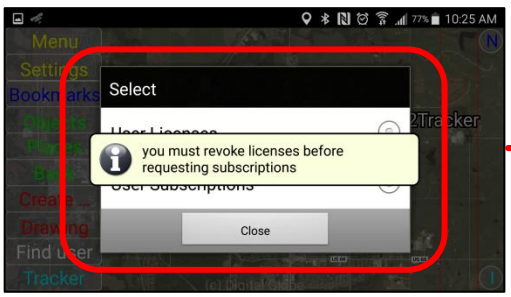
As shown above, we have an active User License for this device (County Rescue Team Member).

As illustrated above, when we navigate to the Licenses/Subscription Menu item, we have two choices.



When working with User profiles … remember that a User Profile can have a **User License** OR a **User Subscription** … but NOT BOTH at the same time.

In our example above, if you were to "click" on the ***User Subscriptions*** menu option, you will receive an error message as below.



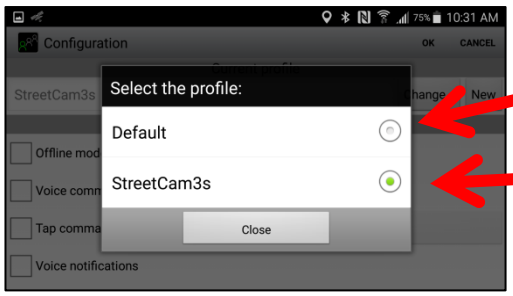
Error Message

If we have a User Profile that has an active User License … we cannot also activate a Subscription for this same user profile.

An individual User Profile cannot have BOTH a User License and a Subscription … at the same time.

In this exercise, since we already have a profile with a User License, we will create an additional User Profile for a Subscription. This is the purpose of this section.

This is how the ***Profile Select Menu*** will look when we are finished.



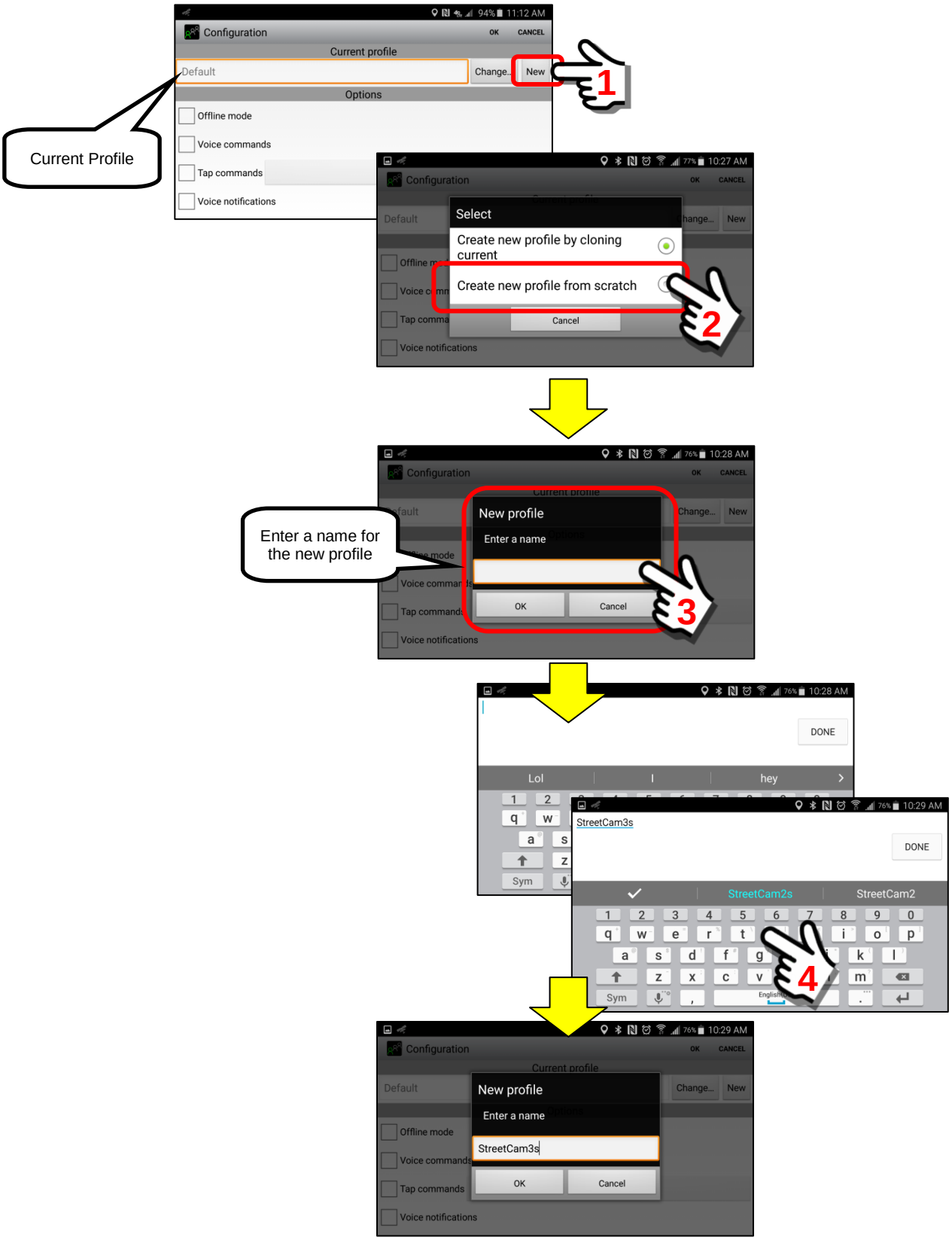
Profile with a User License

Profile with a Subscription

The next parts of this section will provide the steps necessary to create an additional User Profile that will have a SentryMDU Subscription.

2. ***Create a "new" User Profile name***

Navigate to the Main Configuration menu and select "New" under the Current Profile section. Create a NAME for the new profile as shown below.

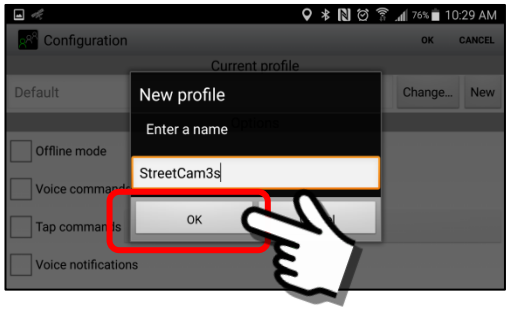


3. ***Submit to create the NEW user Profile***

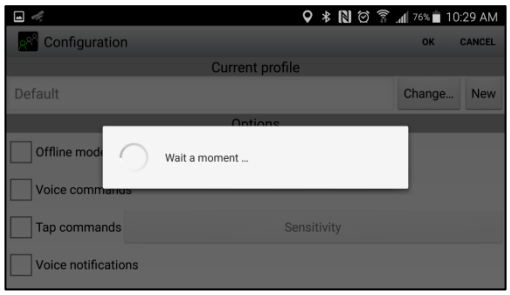
Once we have decided on a "name" for the new profile, we must submit this name. Since our choice was to "***Create new profile from scratch***" this means we will create a complete NEW User.

> **Important Note: The Profile Name does NOT have to be the same as the Username you will select when registering this new User. However, it is usually better if you make them the same as it is easier to remember.**

When you are ready, click the "OK" Button to continue.

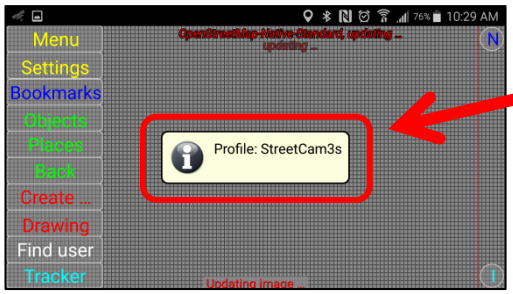


The mobile device will contact the SentryMDU Data Server and create a "new" Anonymous User with the User Profile name of "StreetCam3s".



It may take 20 – 30 seconds as it creates a new profile on the Data Server.

You will see a pop-up message that indicates that a new Profile has been created.

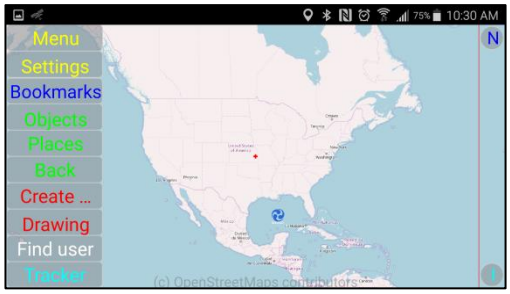


Profile Success Notification (3 secs)

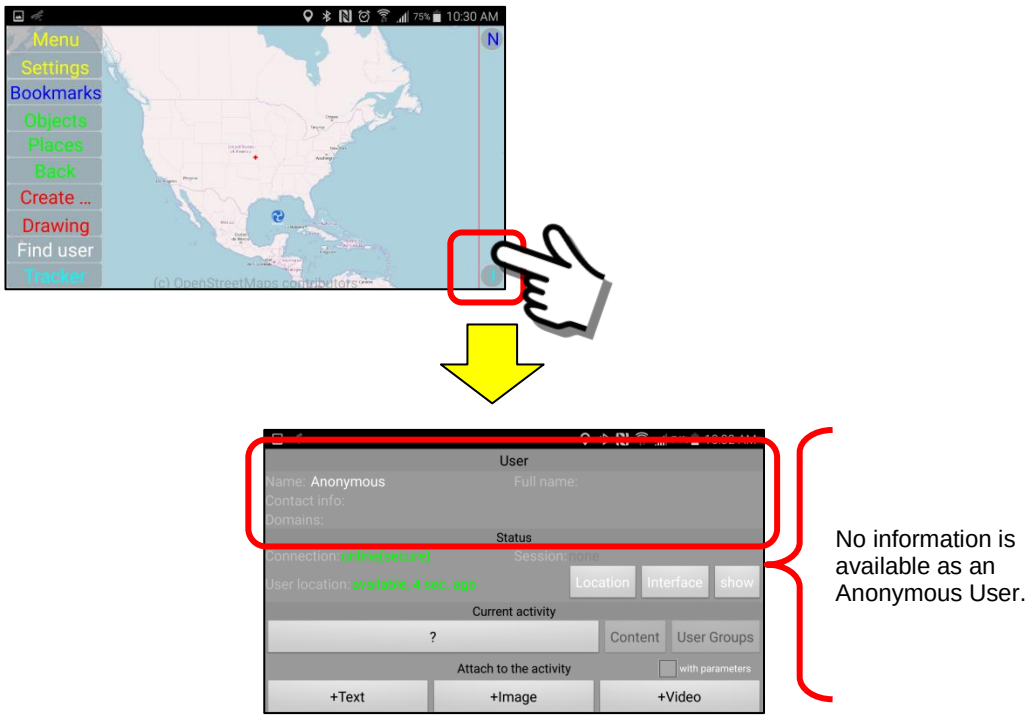
4. ***Verify the NEW user for the device***

The system will now create an Anonymous “new” user under the profile name that you entered (ie StreetCam3s). The device will revert to the OSM (OpenStreetMaps) map imagery just as if this was a new initial install.

The screen will display the Main Map Screen with OpenStreetMaps data.



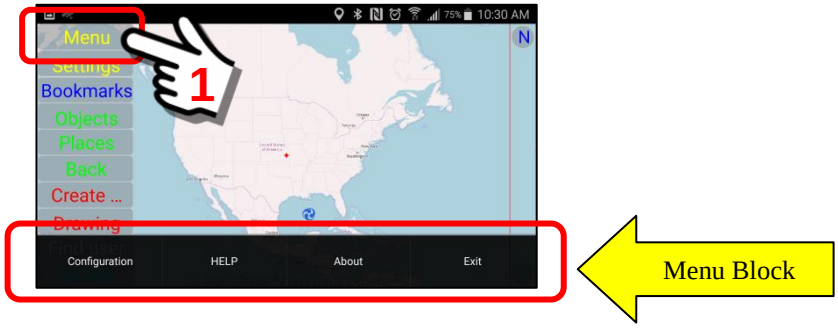
To view your “status” as an Anonymous User, click on the ***User Information*** button on the lower right-hand side of the Main Map Screen.



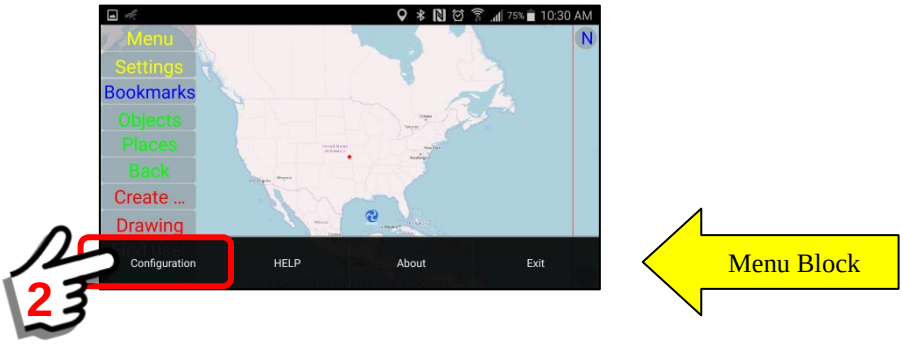
As an Anonymous User, since you have not yet established an account on the Data Server, you will not have a security domain or other account data.

5. ***Create a NEW user for the device (stored under new profile)***
Since this “new” User Profile is an Anonymous User (with no access), we shall create a new user.

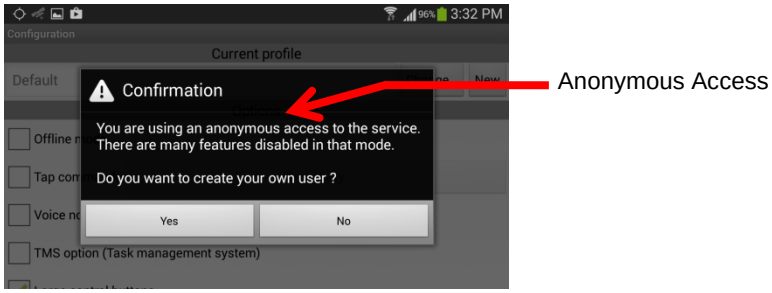
Click on the Menu Button to display the Menu Block.



Select the “Configuration” Button from the Menu Block.

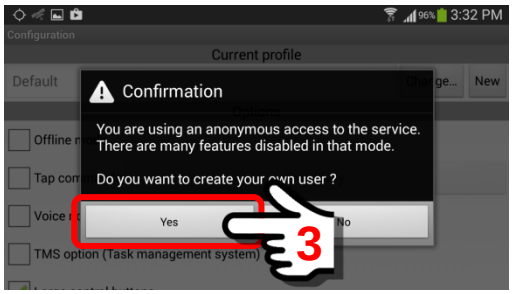


As the Configuration screen begins to display, a “pop-up” box appears and explains that prior to registration you ONLY have Anonymous user access to many of the features.



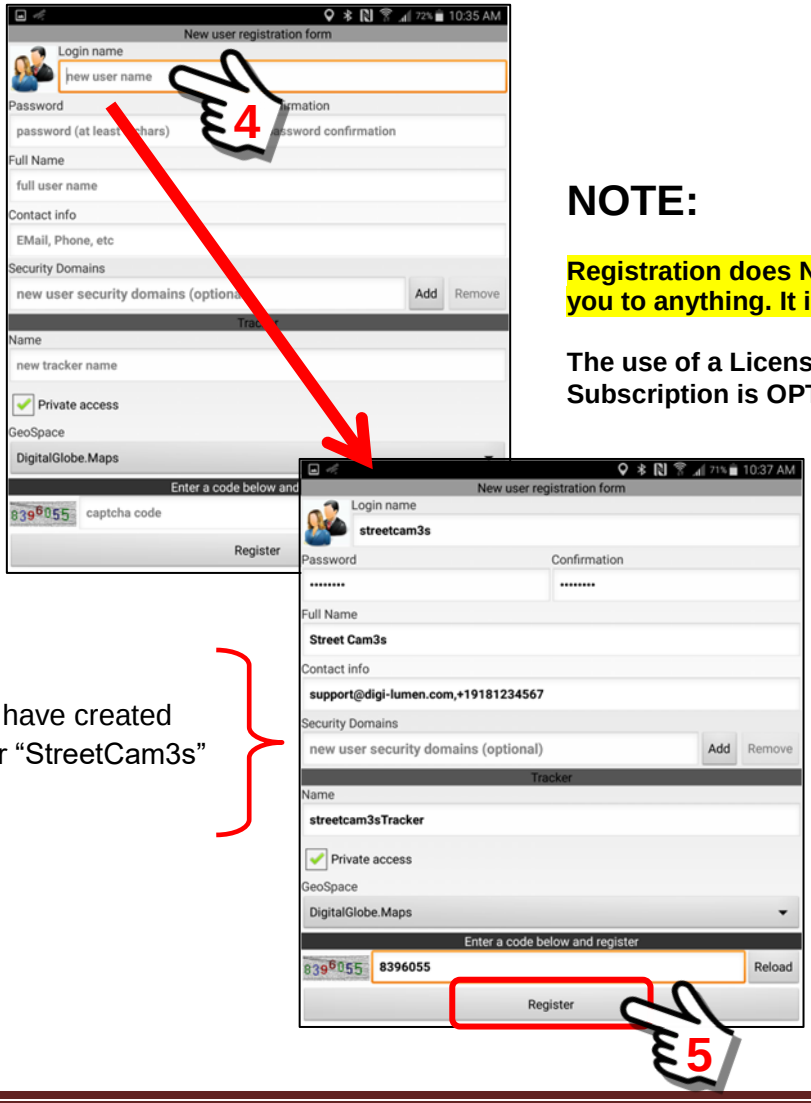
In order to have access to many of the SentryMDU features, you will need to register as a User. The registration process creates an “account” for you on the SentryMDU Data Server, identifies the mobile device, and creates a security profile. **Registration is free.** This is necessary if you wish to interact with other mobile devices on the network.

Click the “Yes” Button to continue.



By clicking on the “Yes” button, the “***New user registration form***” will be presented. Depending on the type of device you are using (phone or tablet), as you touch one of the data entry boxes, the device will show a screen “keyboard” so you can enter the required text. Please follow the rules in **Section 3.5** when filling out the form.

Fill out the Form. When finished, click the “Register” Button.



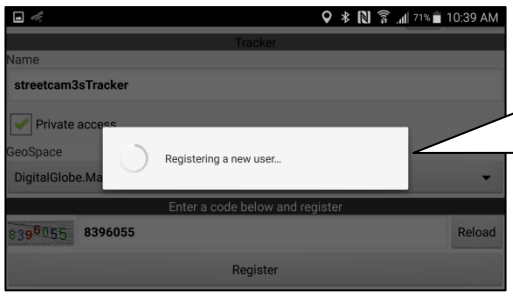
We have created user “StreetCam3s”

NOTE:

Registration does NOT obligate you to anything. It is FREE.

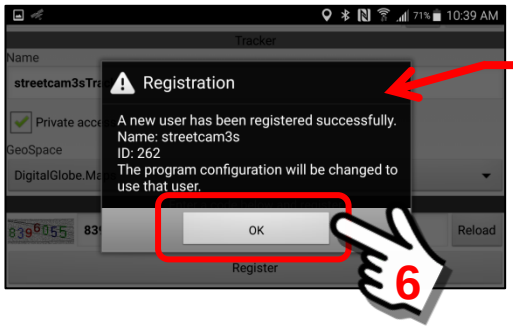
The use of a License Key or Subscription is OPTIONAL.

When the “Register” Button is clicked, the mobile device will contact the SentryMDU Data Server and set up an account for you. You will need to have either a cellular or WiFi connection such that the mobile device can contact the SentryMDU Data Server network. This may take 10 – 20 seconds to complete. This account will set the security profile for you as a User of the SentryMDU System and will register your “device” as an authorized device.



The “**Registering a new user …**” message will be displayed for about 10 seconds as the User is validated.

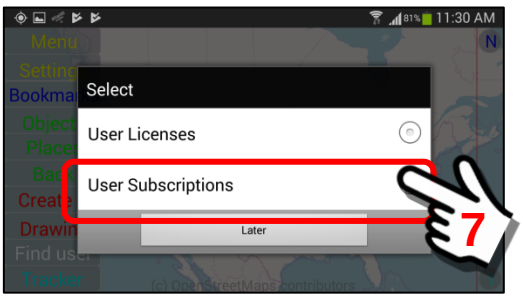
Once the “registration” is successful, you will get a message stating that an account has been created for you on the network and that your security profile has been changed from Anonymous to a registered user (in this example, **StreetCam3s**).



New User **StreetCam3s**

Once the “OK” Button is clicked, the screen will return to the Main Menu Screen. A pop-up box will be displayed allowing you to select either a *User License* or *User Subscription*.

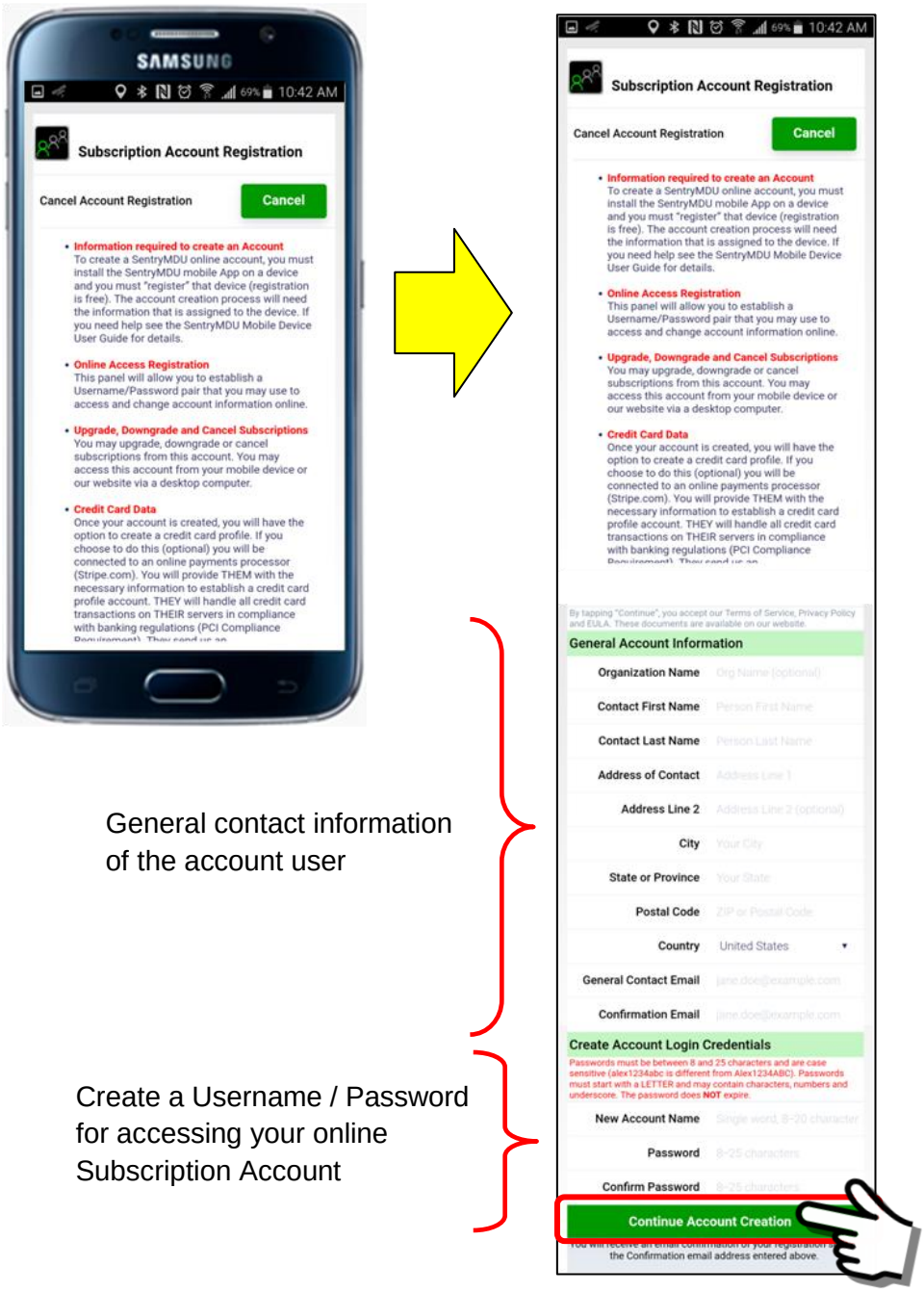
For this example, since we want to add a Subscription Account, we will be selecting the “***User Subscriptions***” menu option.



6. ***Register for a Subscription Account***

The next step in this example, is to register for an “online” Subscription Account. Since this is a new user and we do not have an existing Subscription Account, the system will display the ***Subscription Account Registration*** form. When finished, click the “Continue Account Creation” Button to continue. You will have a chance to review your entries before the final submit.

When you establish an account “Login” name, you may use the same username as your mobile device … or a different name. We recommend a different name. You will have options to change BOTH the Username and Password of this Subscription Account, as you desire



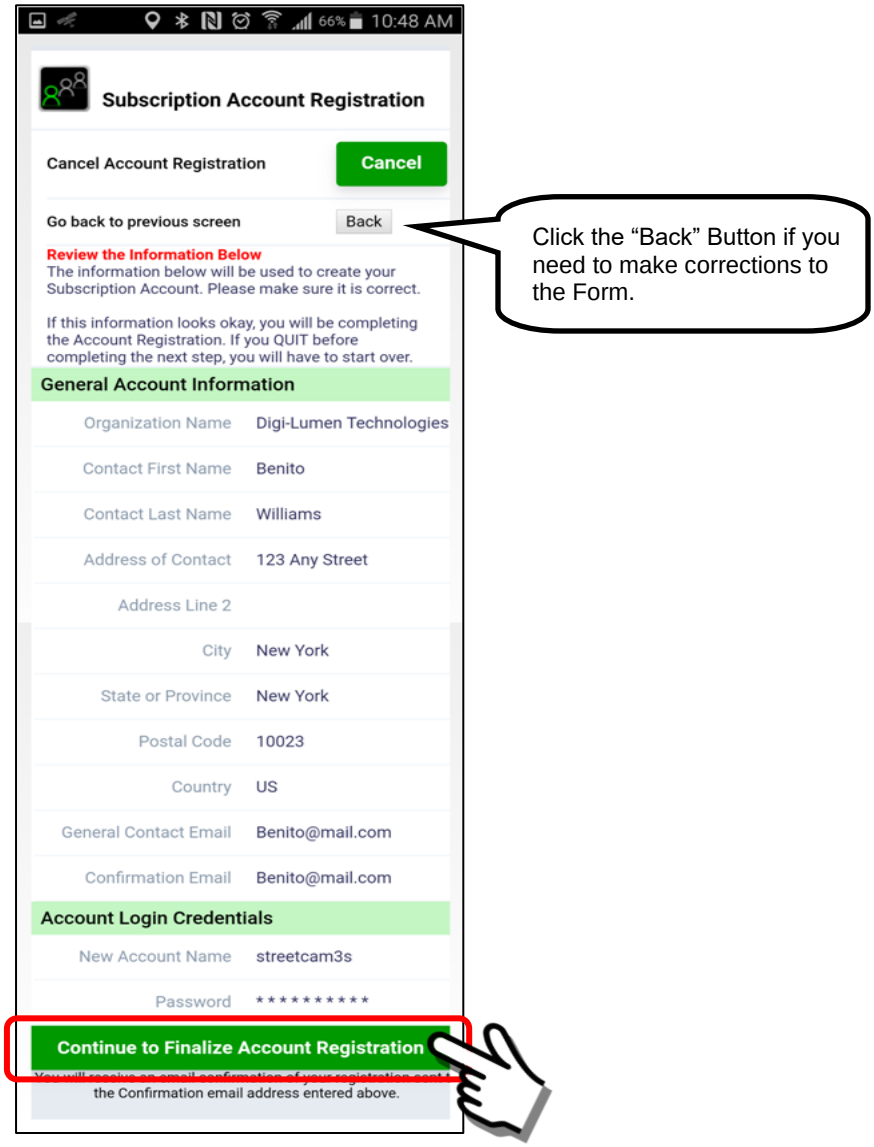
General contact information of the account user

Create a Username / Password for accessing your online Subscription Account

7. ***Review data entry … submit to create a new account***
This panel will provide a review of the data you entered. If you need to correct something, use the “Back” Button at the top right side of the panel to return to the previous screen.

> **Important Note: Make a note of your password and store in a secure place. Passwords do NOT expire and are encrypted on our Servers. If you lose your password, we cannot help you.**

When you are ready to proceed, click the “Continue to Finalize Account Registration” Button at the bottom of the panel.

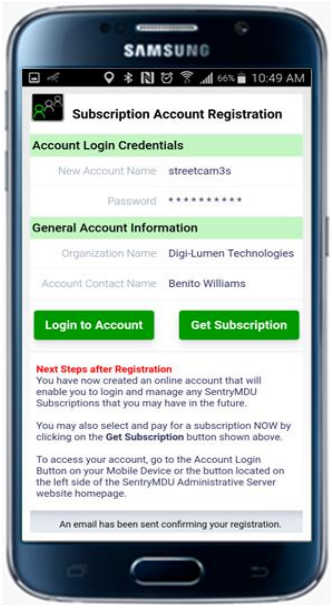


You will receive a confirmation email of your registration.

8. ***Successful registration of a Subscription Account***

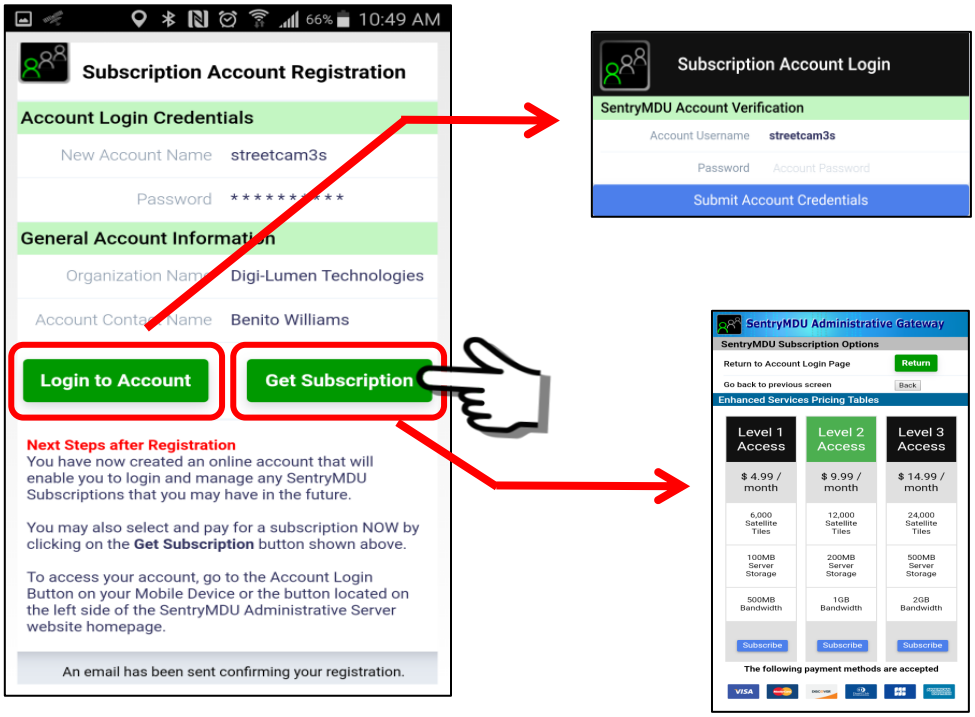
When you submit the Registration Form, the system will check the data you entered for errors and incorrect formatting. In addition, your Username must be “unique” in our system … if someone else has already selected that Username, you will be prompted to choose another name.

If all is well, you will see the following panel.



9. ***Next steps after a Subscription Account registration***

Upon a successful initial Account Registration, you will be presented with two options … (1) Go to the Account Login Screen, (2) Sign up for a subscription.

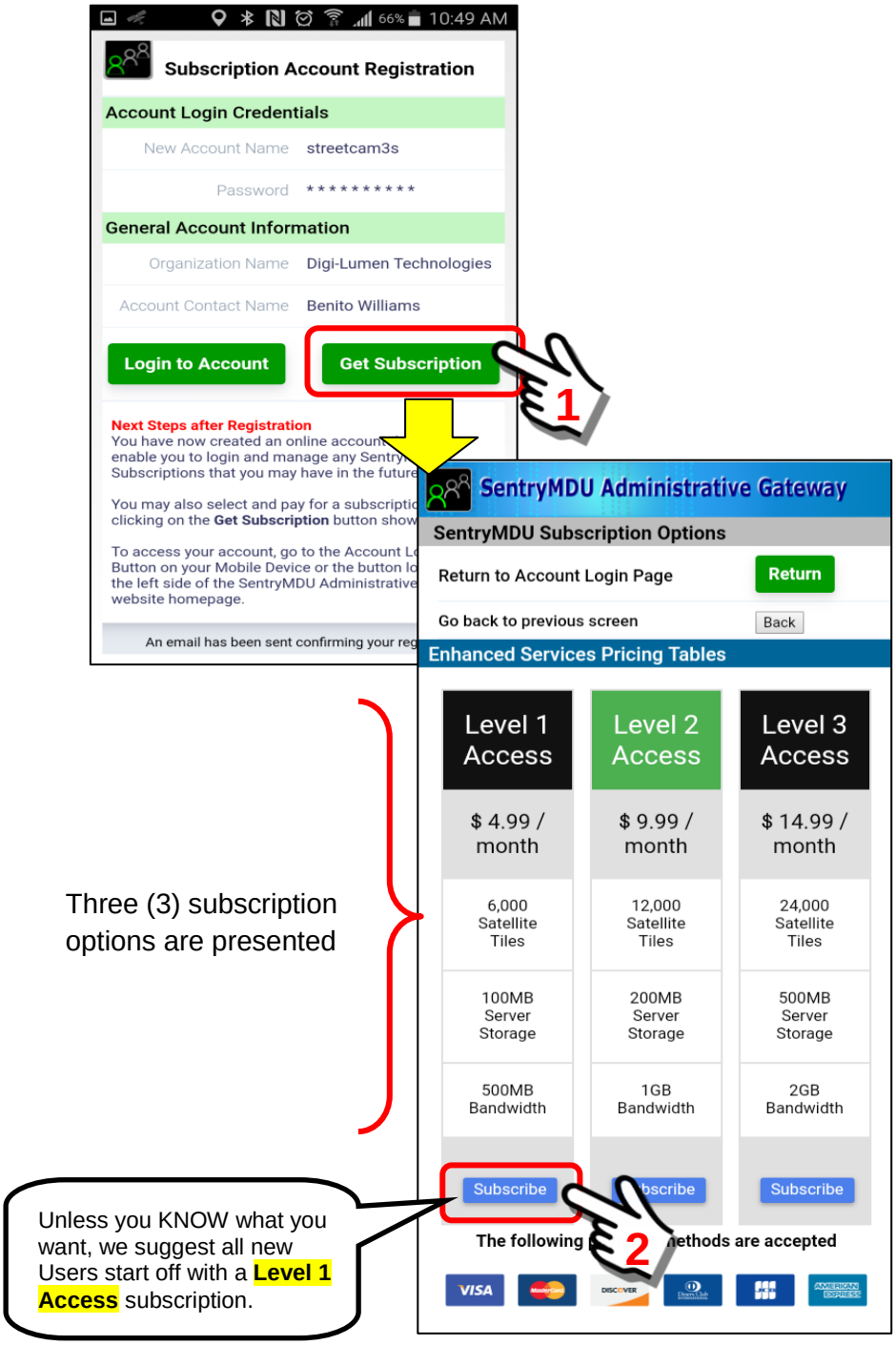


10. *Sign up for a Subscription*

In this example, we are selecting to sign up for a subscription option NOW. We could do it later, by logging into our Subscription Account and signing up for a new subscription … but since we registered in order to get a subscription, we will do it now.

Select the “Get Subscription” Button.

Review the available subscription options and click the “Subscribe” Button for the subscription you want.

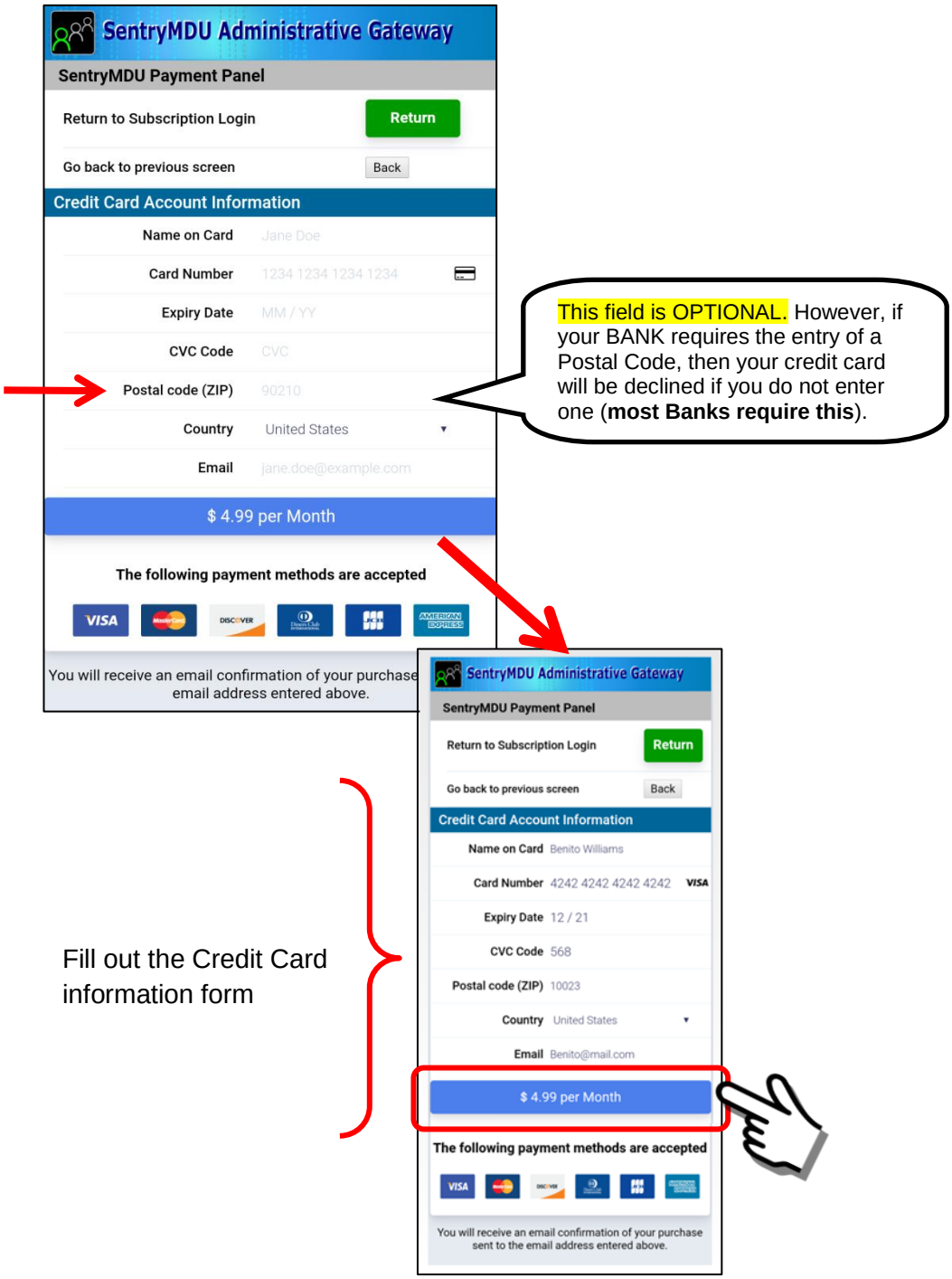


11. Enter your Credit Card information

The SentryMDU Payment Panel will be displayed. Enter your credit card information and an email address where you would like a “confirming email” to be sent. All fields are required (except Postal Code).

For those countries that do NOT have postal codes (ZIP), leave this field blank.

When finished, click on the subscription price at the bottom of the form.

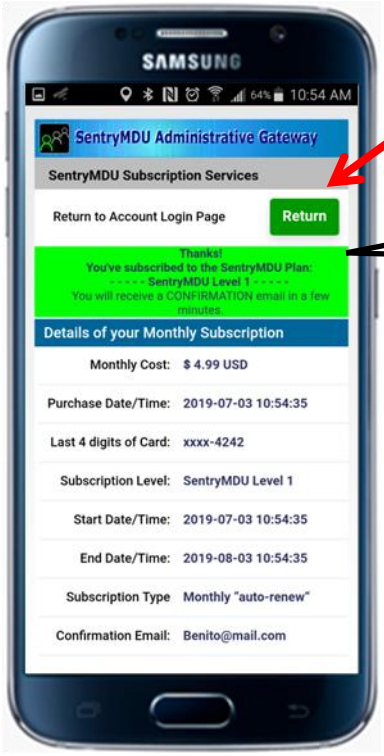


12. ***Credit card information is validated and processed***

The validation process may take anywhere from a few seconds to a minute or more depending on your internet speed and your location in the world.

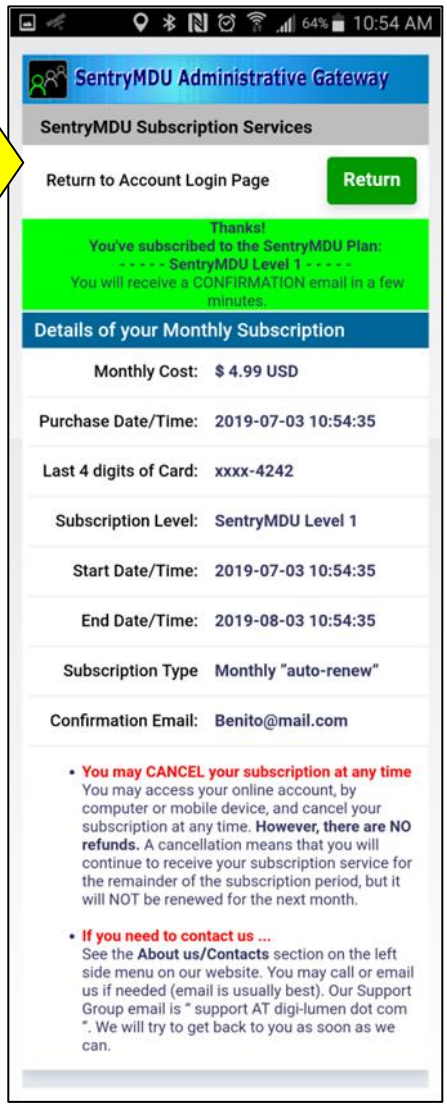
Do not "re-click" the button a second time, lots of things are happening in the background … you will get an error message if things are not working correctly.

If the transaction is successful (card is charged and subscription is validated) you will see the following summary panel.



Click this button if you want to go to your online account and review card and subscription details.

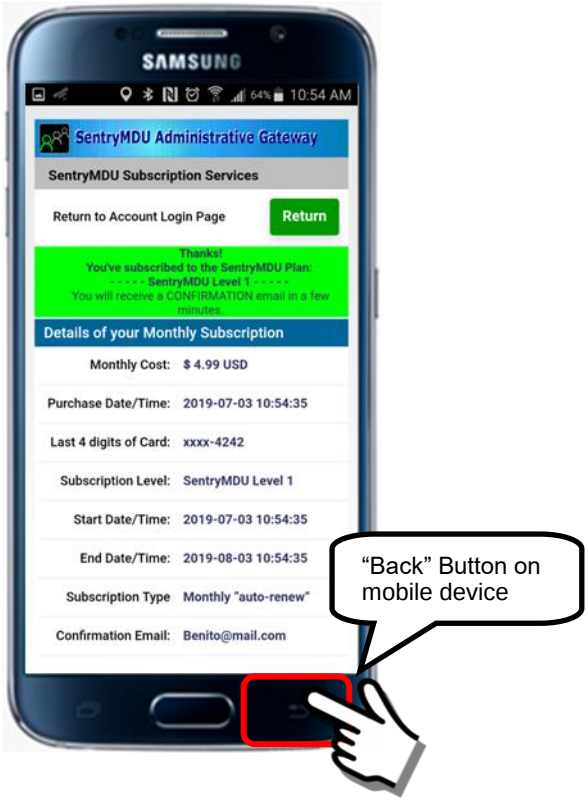
Note that transaction was successful



Summary of the SentryMDU Subscription you have purchased

13. *Close the Browser Panel*

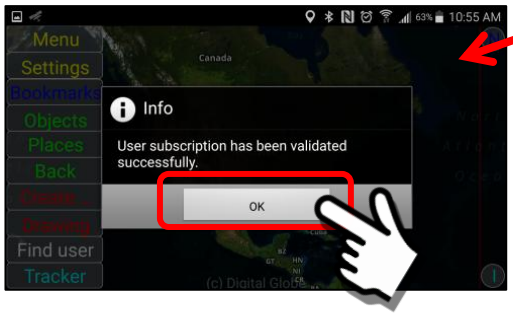
To “activate” the subscription you have just purchased, close the screen panel. Generally, clicking the “back” button on your mobile device will do it.



14. *Subscription validation and return to the Main Map Screen*

The mobile device will contact the SentryMDU Administrative Server and receive validation that a successful transaction has occurred. Depending on your internet speed and location, this action may take 10 -20 seconds.

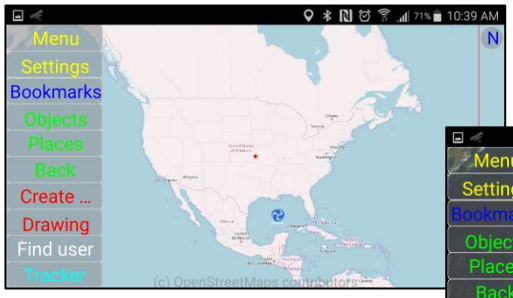
15. ***Dialog box displayed after successful validation***
Upon subscription validation and contact with the SentryMDU Administrative Server, the system will display a pop-up dialog box. Click “OK” to continue.



Satellite imagery will begin to fill the background

16. ***System will install satellite imagery for the current map view***
Satellite imagery will now be installed on the device and the Main Map Screen will change from an OpenStreetMaps street view map to satellite images. In addition, the Data Server will be configured for the data storage and data streaming parameters you selected with the Subscription.

Street Map Screen

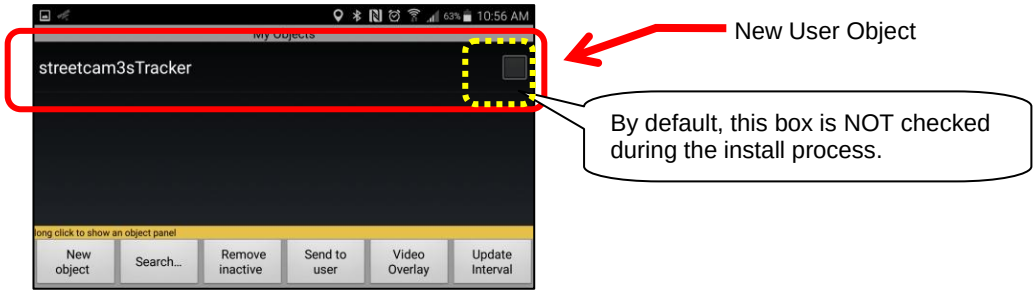


Satellite Map Screen

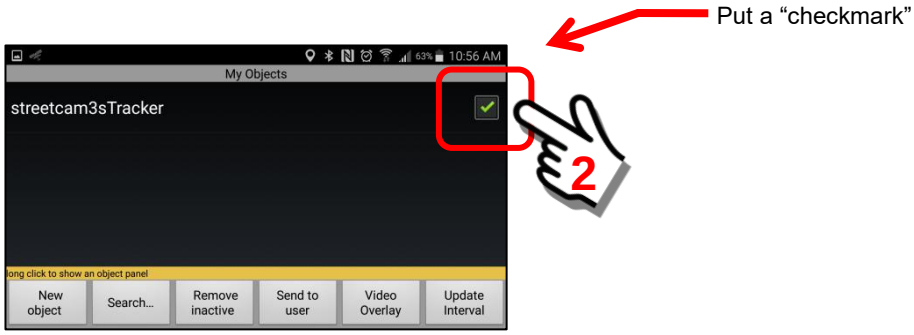
17. ***Change settings to display YOUR user GPS location on Map Screen***
A subscription has now been installed on your mobile device under the Username of “StreetCam3s”. If you would like to display the current GPS location of this mobile device on the Main Map Screen, follow the directions below.

Start at the Main Map Screen, click the **Objects** Menu Button.

At the ***My Objects*** panel, notice that the mobile object “streetcam3sTracker” (which is the NEW user you created) is the only object listed (for now).



Put a “checkmark” in the Checkbox to activate this mobile object so it will display on the Main Map Screen. See **Section 10.5** for details of the Object Marker.



Return to the Main Map Screen and observe that the GPS location of the device is now shown. You may “zoom” down to street level if desired.

18. Review the NEW user profile you have added (StreetCam3s)

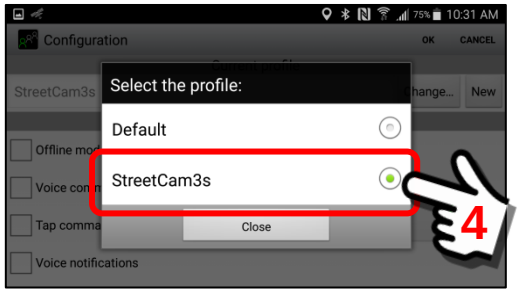
In this example, we have added the “StreetCam3s” user Profile to the initial “Default” user Profile (StreetCam2) which was created on a Licensed Server.

We will now review the two profiles installed on our device. We will assume that the “Default” Profile (StreetCam2) is the active profile.

Access to the **Profiles Feature** is found on the Main Configuration Panel, as shown below.

To activate a different profile than the one you are currently using … simply select the profile from the list.

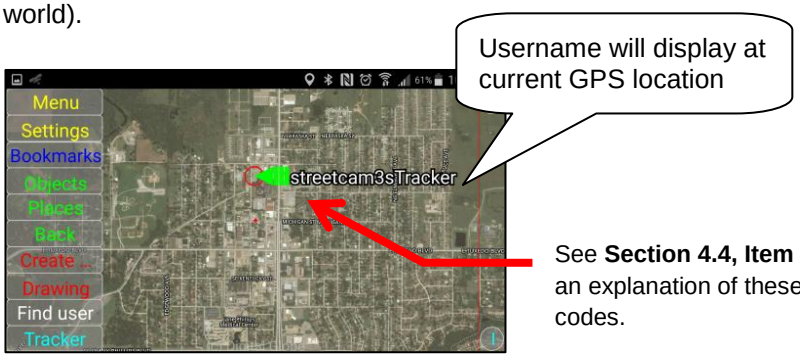
To illustrate, we will select **StreetCam3s** to be our "active" profile.



The SentryMDU screen will "refresh" and re-launch the App under the NEW selected profile.

We will review the "Main Configuration" panel to review the settings for the ***StreetCam3s*** user.

As a “registered” User (with a Subscription), the device will now display your Username at the GPS coordinates of your current location. You may need to zoom in/out to find your location (depending on where you are located in the world).



Note:

You have now REGISTERED … AND created a new Subscription for the device … but you have NOT COMPLETED CONFIGURATION for the user “StreetCam3s”. See Sections 3.14 and 5.4 for additional settings that you will need to make. This is important if your device is to provide a good user experience and to perform optimally (ie audio/video streaming, map images, etc.) for your specific hardware.

19. Removing a User Profile (permanent delete)

By “design”, a User Profile (ie Registered Username) will remain on a SentryMDU Data Server until removed by a user with access to the SentryMDU Manager Desktop Client (Microsoft Windows Application).

A typical “user” does NOT have access to the Desktop Client. For most organizations this is reserved for an IT Person with Administrative Access.

This section will describe a “method” by where a User may delete a User Profile from their mobile device. This only removes the profile from their device and NOT the Data Server. In addition, the Username (since it is unique to the system) cannot also be used again.

The removal of a User Profile involves “deleting” a file system “folder” from the mobile device. This is an action that, although not difficult, does require some level of technical “skill” on the part of the User. If you make a mistake and delete the wrong part of the SentryMDU file system, you may “break” the application (and would have to do a uninstall and re-install).

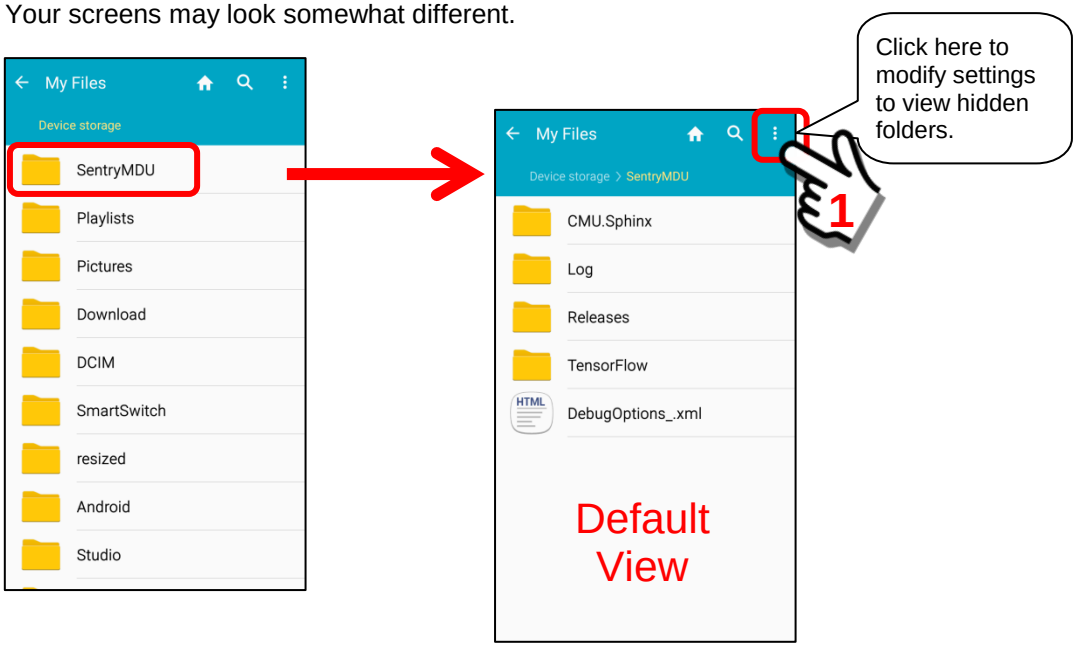
Overview of the File System:

The Sentry MDU App creates one main folder on the mobile device with 8 sub-folders. The primary program folder is called ... ***SentryMDU***.

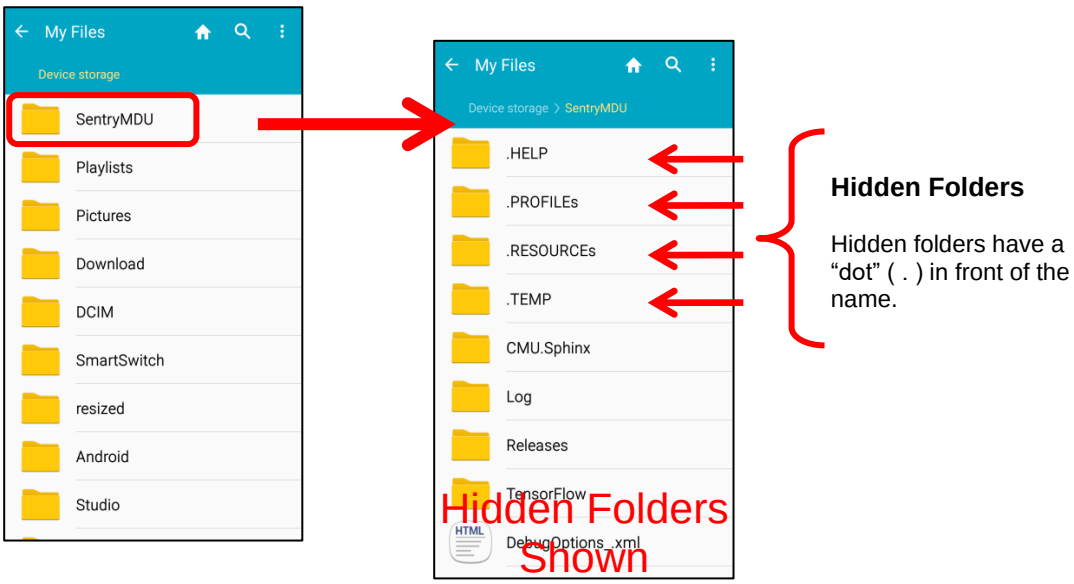
Most mobile devices have a setting (in File Folders menu) that conceals what are called “hidden folders”. These are file folders that a general user does not need to know about. The Sentry MDU System installs 4 visible folders and 4 hidden folders. If you want to see the hidden folders, then adjust your device settings to allow you to see the hidden folders.

Folders installed by the Sentry MDU Application:

The example screens shown below are from a Samsung Galaxy smartphone. Your screens may look somewhat different.



When the “hidden” folders are displayed, the display will look as follows:

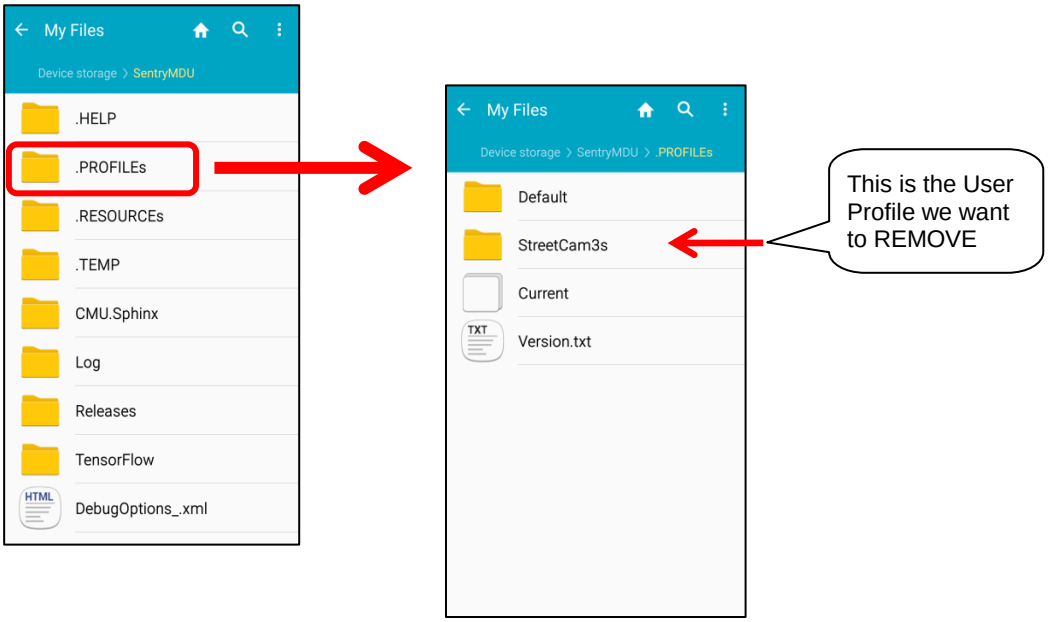


Preparation to DELETE a User Profile folder:

In order to permanently remove a User Profile, we must remove a folder from the ".PROFILEs" hidden directory. However, you must make sure that the User Profile that you want to REMOVE is NOT the current "active" profile that is currently in use by the SentryMDU App.

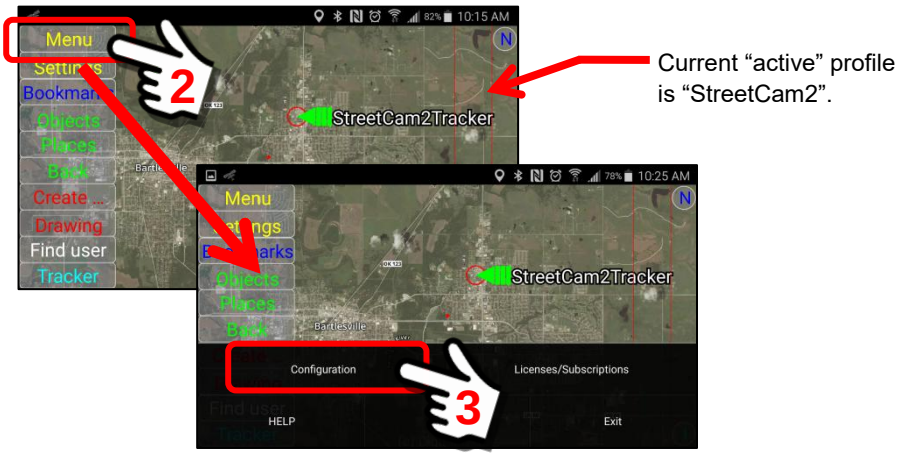
> **Important Note: Make sure the User Profile you want to REMOVE is NOT the current active profile.**

In this example, we have the following file system view.

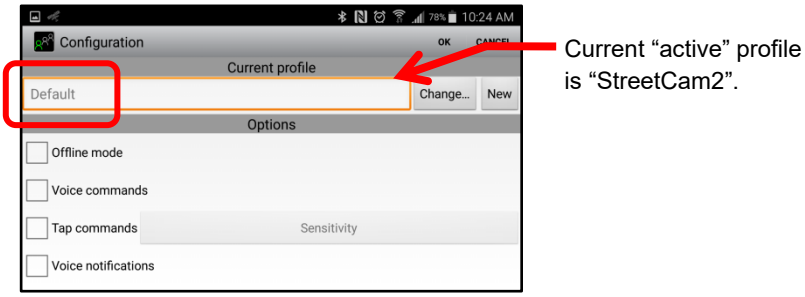


Now that we know what to do, let us verify that the user profile "StreetCam3s" is NOT the active profile. We will review the Profiles Feature.

Access to the **Profiles Feature** is found on the Main Configuration Panel, as shown below. We have switched to the "Default" Profile which is StreetCam2.



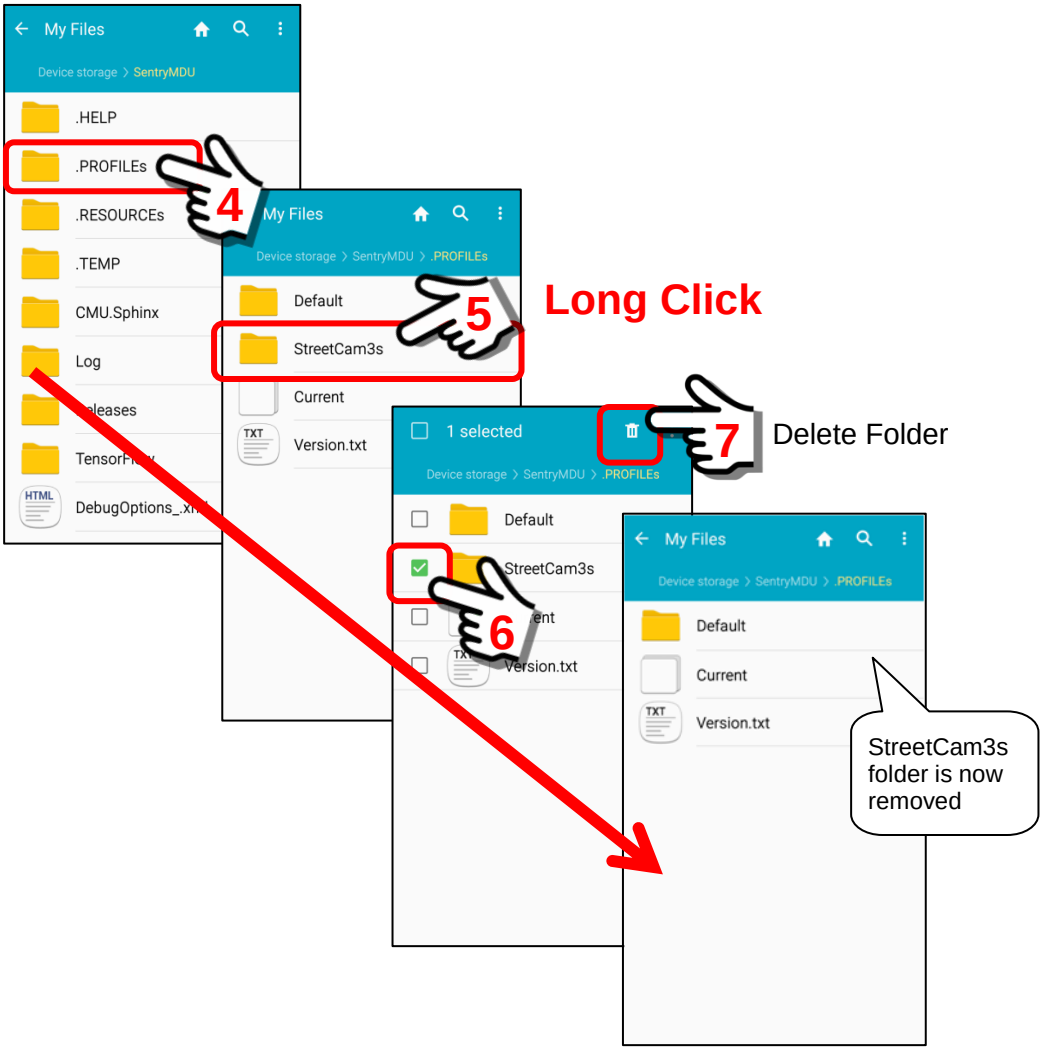
Navigate to the Main Configuration Panel and we can verify that the “Default” profile is the current active profile (Default is User = StreetCam2).



Delete a folder from the .PROFILEs folder:

Now that we have verified that it is “OK” to remove the “StreetCam3s” User Profile, navigate once again to the “.PROFILEs” folder.

We will delete the “StreetCam3s” file folder. The screens shown below are from a Samsung Galaxy smartphone … the process on your mobile device may be different.

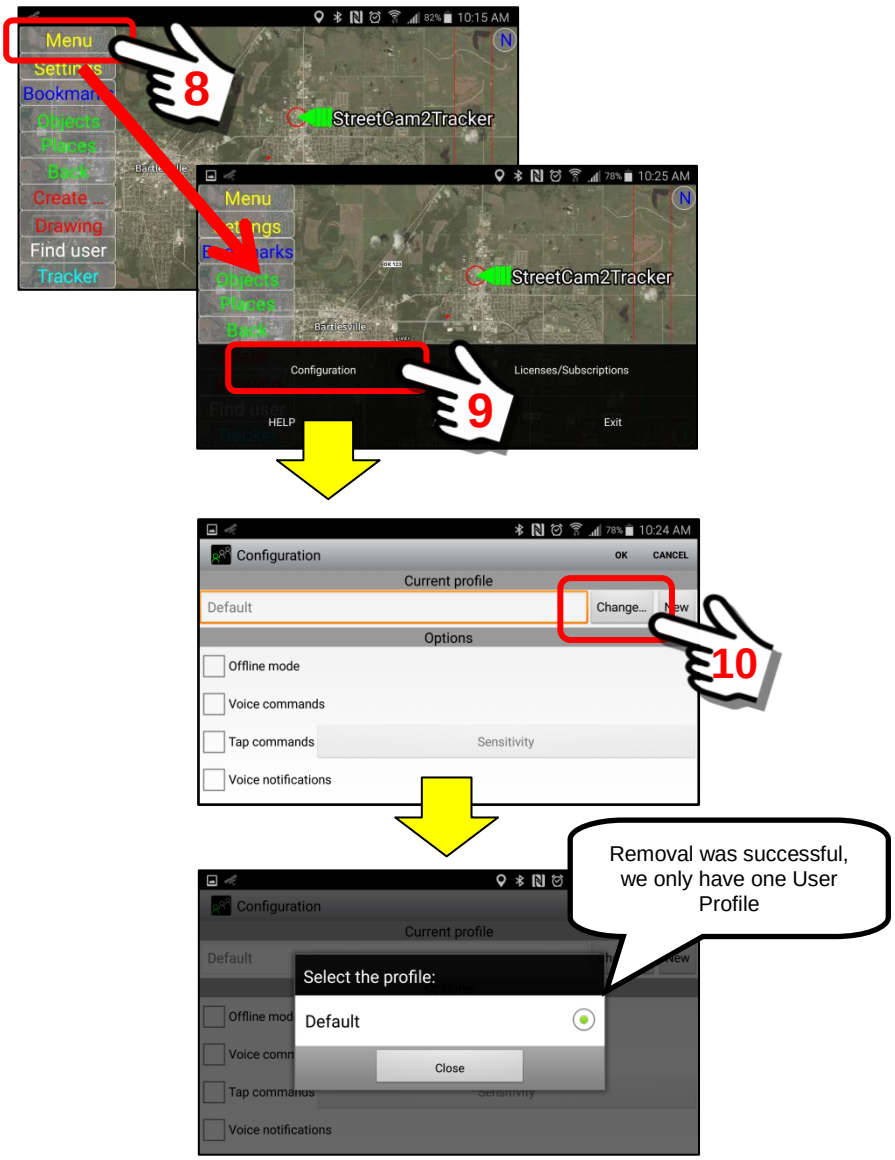


We have now REMOVED the “StreetCam3s” User Profile FOLDER from the .PROFILEs hidden directory.

Verify the “StreetCam3s” User Profile has been removed:

Starting on the Main Map Screen, navigate to the Main Configuration panel. Click on the “Change” Button and view the available User Profiles.

The “StreetCam3s” has been removed. Success!

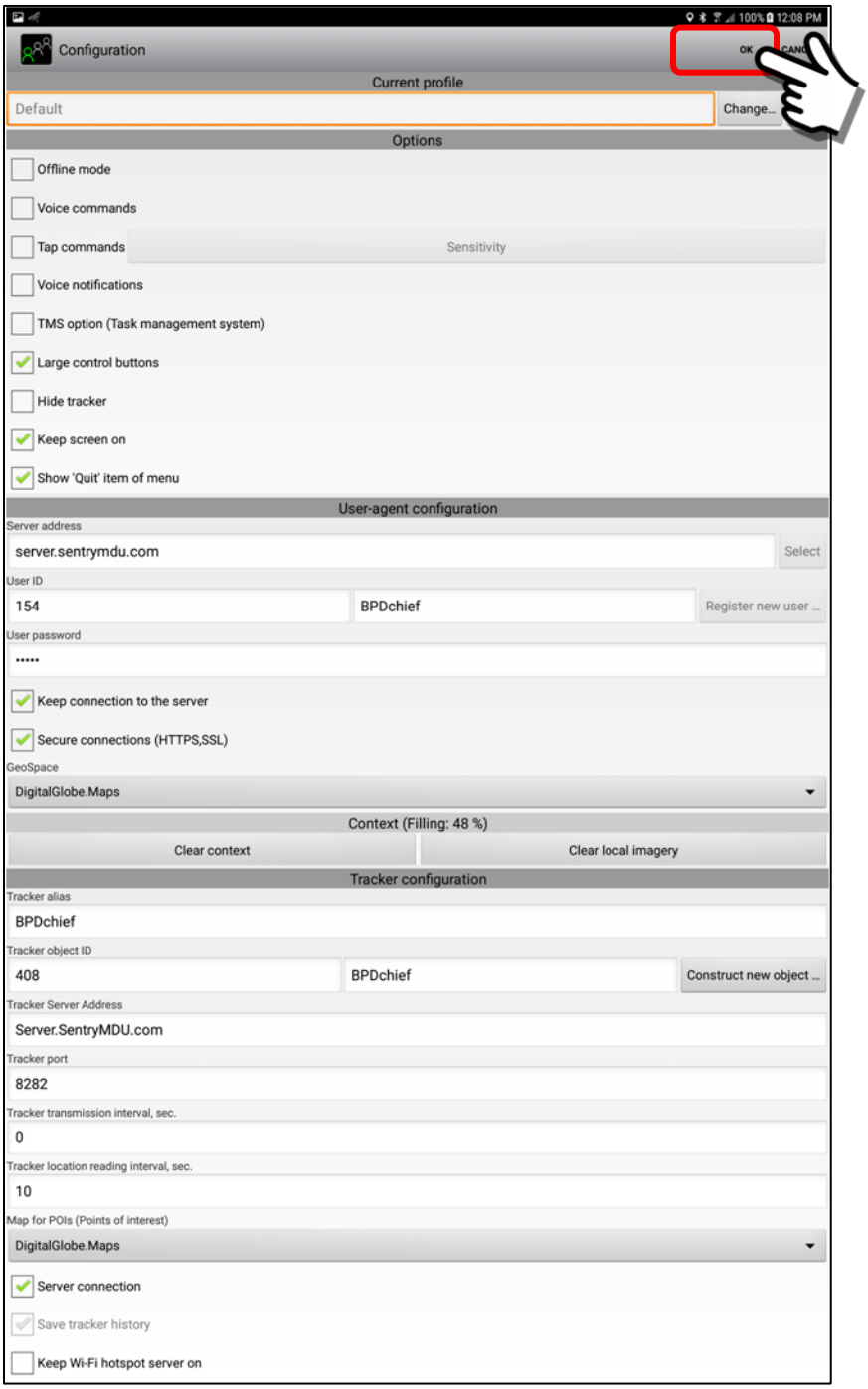


We see that we have the one “Default” Profile, which is User = StreetCam2.

5.4. Main configuration panel settings

Overview:

The Main Configuration panel is where most of the Sentry MDU configuration options are selected. This section will explain each of the settings.



Once changes are made. Click “OK” to SAVE the changes.

Description of Main Configuration panel settings:

1. Offline Mode

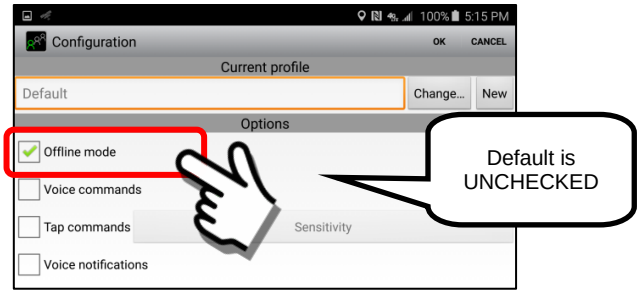
The Offline Mode feature is used for two specific functions:

a. Operating the Mobile device in a “standalone” mode without a Data Server connection.

b. Implementing the Planet-Satellite aggregation feature (together with the “Tracker alias” parameter).

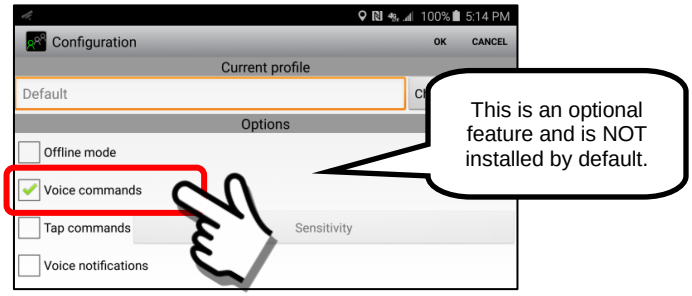
The Planet-Satellite feature enables a single Sentry MDU device (the Planet) to capture all of the sensor data from a group of other Sentry MDU devices (the Satellites). Up to 255 Sentry MDU devices can be monitored by a single Sentry MDU Device.

Both of these features will be described in other sections of this User Guide.

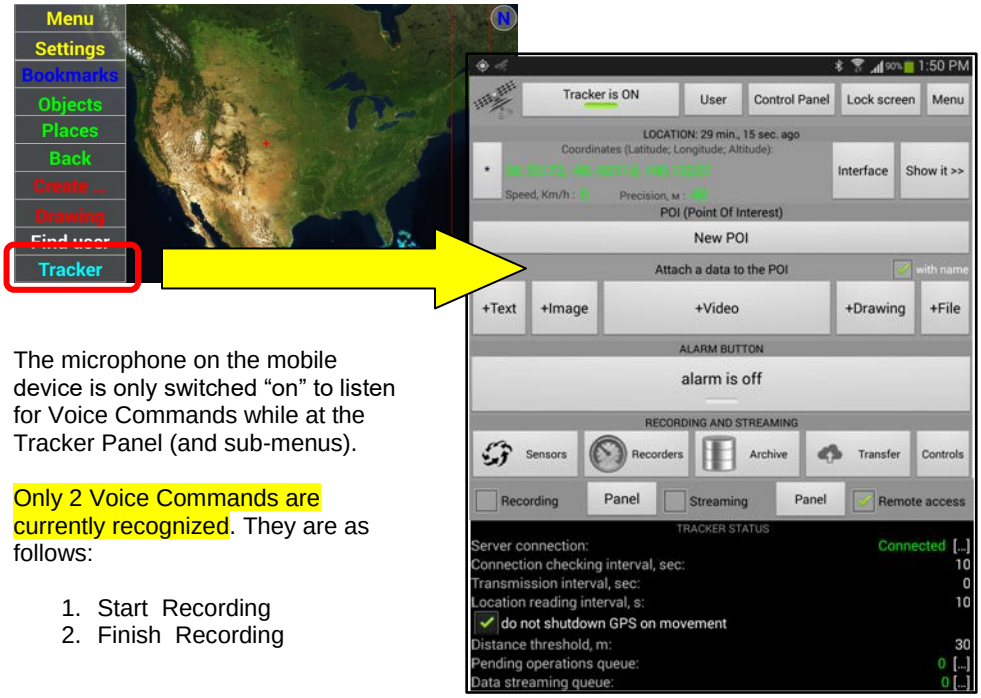


2. Voice Commands (optional free module)

By default, the Voice Commands feature is not visible. This option requires that the “CMU.Sphinx” voice recognition engine is installed in the application folder. By default, we do not install the CMU.Sphinx module due to its size (15Mb). However, **it is free to download/install** and we have instructions in **Section 15.2.6** of the User Guide on how to install this option. The Voice Commands option, when checked, will allow a user to control the start and stop of the various “Recorders” by voice command.



When the Voice Command feature is installed, it is only active once the user is at the Tracker Panel.



The microphone on the mobile device is only switched "on" to listen for Voice Commands while at the Tracker Panel (and sub-menus).

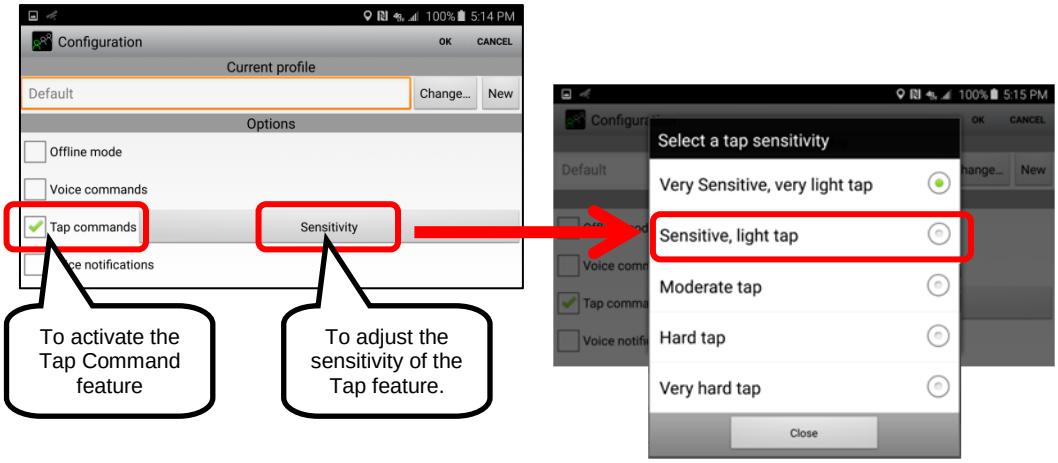
Only 2 Voice Commands are currently recognized. They are as follows:

1. Start Recording
2. Finish Recording

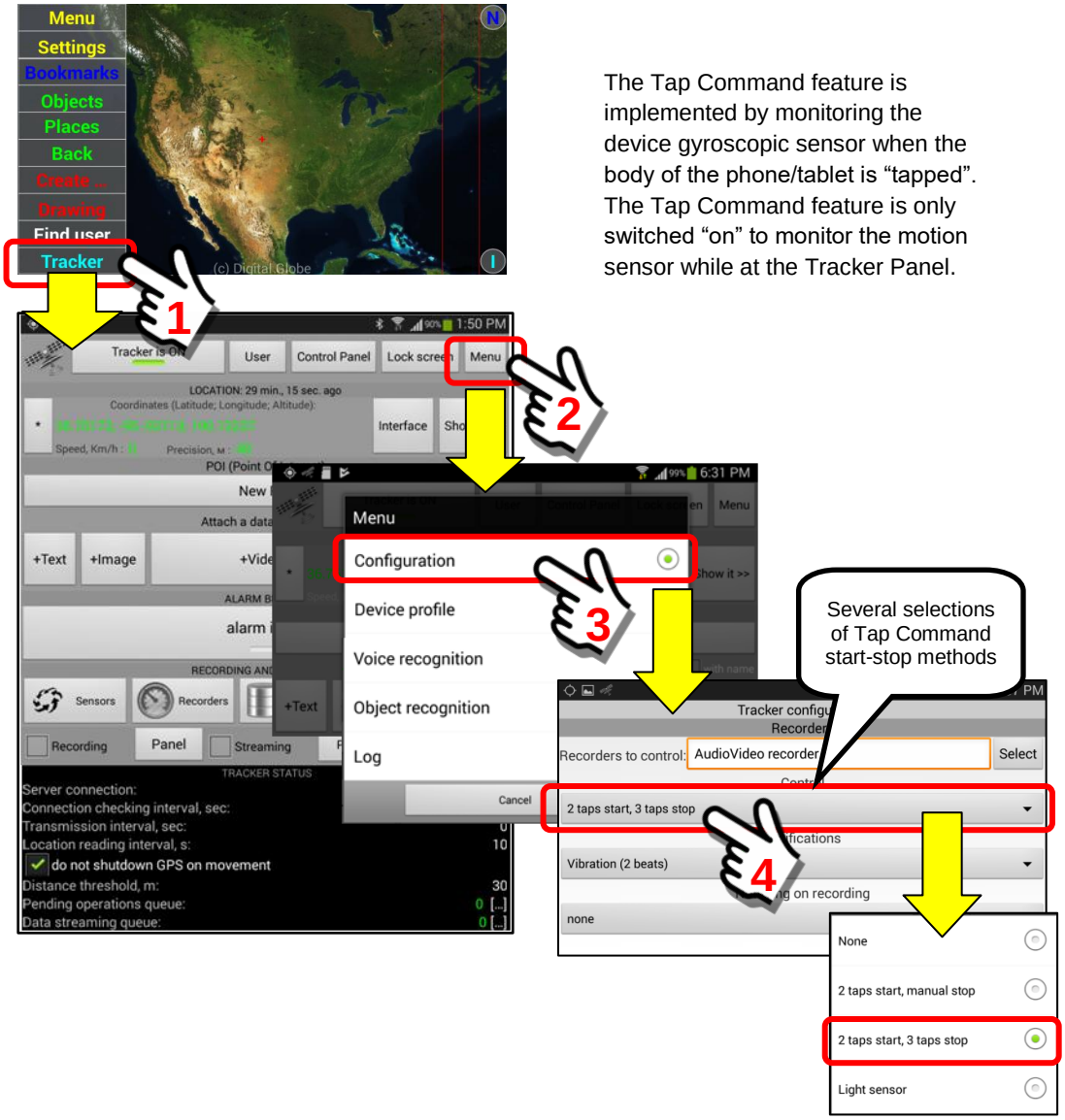
3. *Tap Commands*

The Tap Command feature provides a user the ability to turn the "recording mode" on/off by tapping on the back of the phone with a finger. The tapping on the device causes the built-in gyroscopic sensor to register an input. Different mobile devices have varying qualities of gyroscopic sensors. To compensate for this, we have provided a method whereby the user may adjust the sensitivity of the device to the "tap" provided by the user. Each user will need to experiment with their device to arrive at the correct setting for their application. Some devices may only require a "light" tap and others a "hard" knock.

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, you will NOT HAVE the Tap Command option.

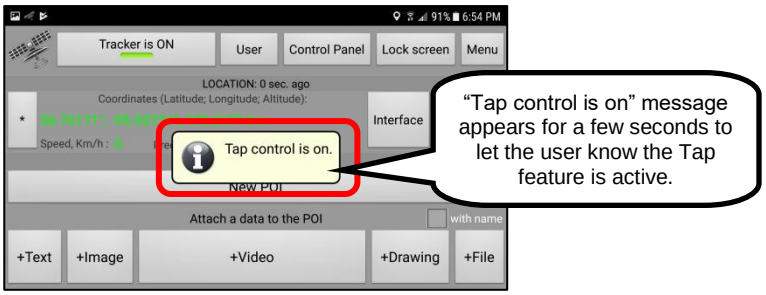


The Tap Command feature is only active once the user is at the Tracker Panel.



The Tap Command feature is implemented by monitoring the device gyroscopic sensor when the body of the phone/tablet is "tapped". The Tap Command feature is only switched "on" to monitor the motion sensor while at the Tracker Panel.

When the Tap Command is activated, a message will appear on the initial opening of the Tracker Panel. The use of the Tap Command would typically be when a User carries a mobile device (phone) in the front shirt pocket, with the camera facing outward. The user simply "taps" the phone while in their pocket and the device begins recording audio/video.

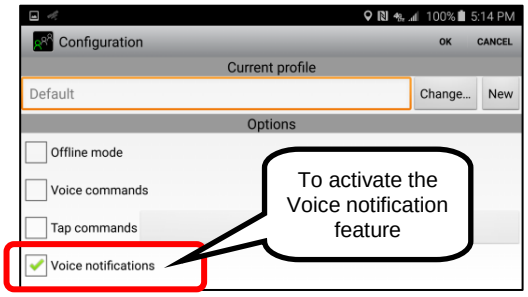


4. *Voice Notifications*

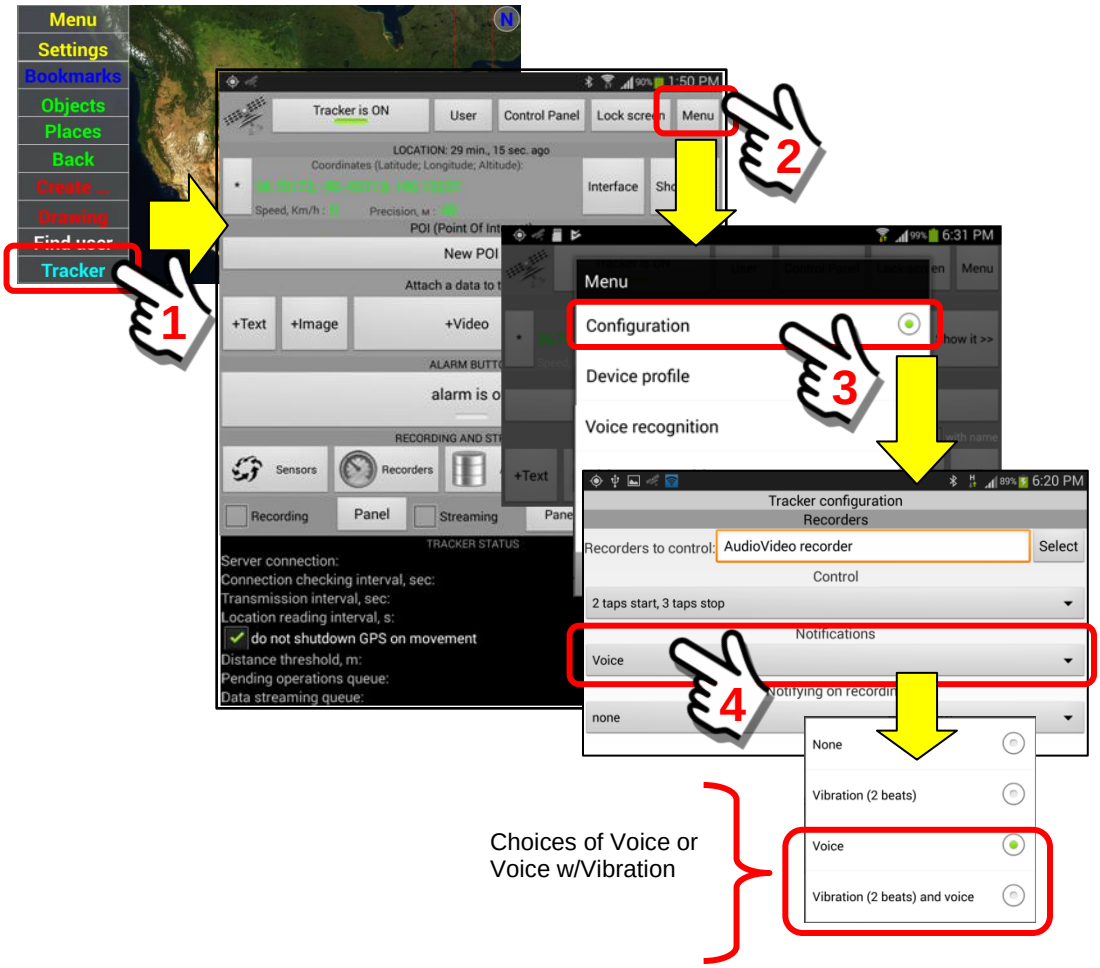
The default is “unchecked”. The Voice Notification feature provides for a verbal notification to the User when recording has started. There are several different notification types … including voice, a beeping sound, and vibration. This feature activates the “Voice” notification. The Tracker Panel has settings to allow combining several of these notification methods.

Voice notification has six possible notifications:

a. Voice notification for Manual recording (both start and stop)
b. Voice notification for Voice Activated recording (both start and stop)
c. Voice notification for Tap Command recording (both start and stop)

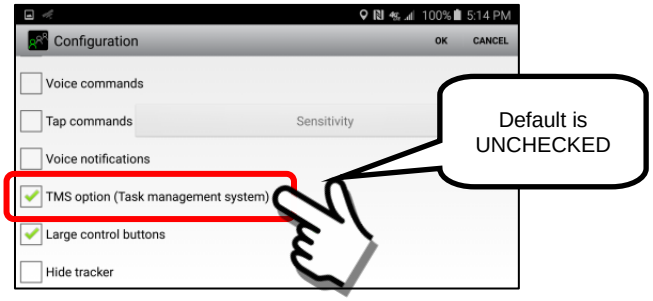


In addition to the Voice Notification setting above, the settings on the Tracker Panel must also be set.



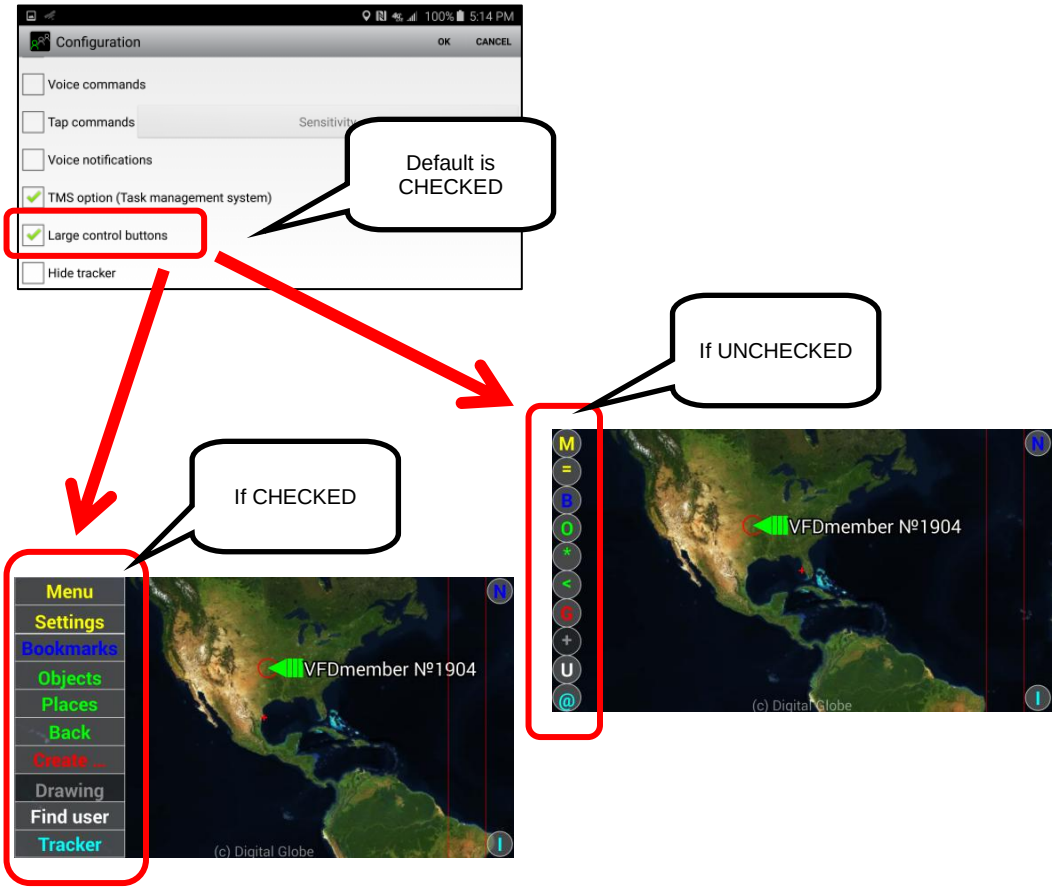
5. ***TMS option (Task Management System)***

The Task Management System is a feature that allows a User (or group of users) to coordinate and provide notification for work tasks. The default setting is “unchecked” (off). When activated, additional options are available on the User Panel. To take advantage of TMS features a SentryMDU Server License and Desktop Client License are necessary (additional setup and configuration is required).



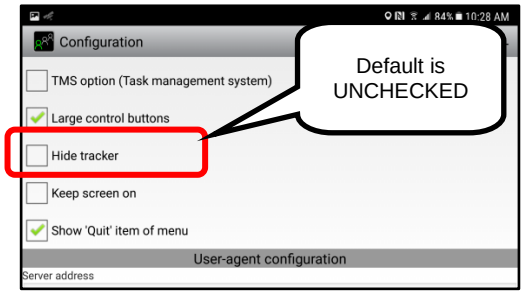
6. ***Large control buttons***

This feature allows the Sentry MDU App main menu to use either text descriptions of the menu choices or character-symbol descriptions.

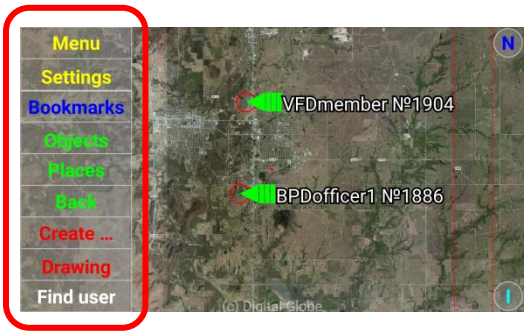


7. *Hide Tracker*

The “Hide Tracker” configuration setting allows a user to hide the Tracker Panel so that the menu choice does NOT appear on the Main Screen.



If CHECKED, notice that the Tracker menu item does NOT appear on the menu

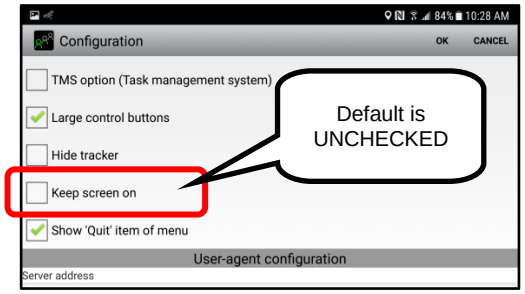


Tracker menu item is gone

8. *Keep screen on*

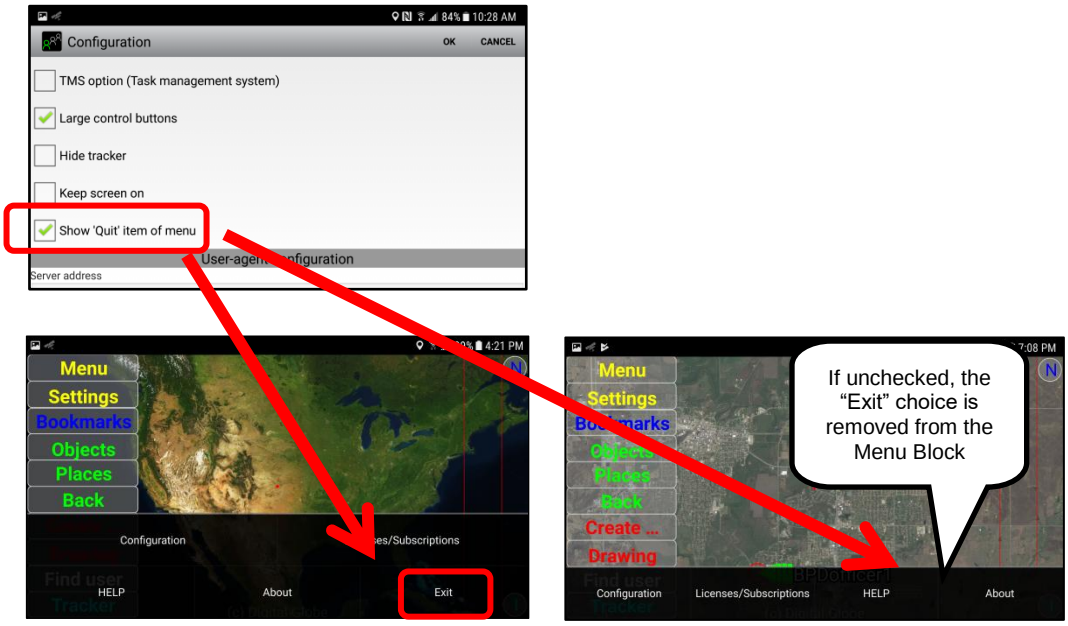
The “Keep screen on” configuration setting allows a user to “override” the phone/tablet display settings that turn off (timeout) the display screen after a few minutes. There are situations (ie Emergency Operation Center Dispatchers) where is it desireable to monitor the screen on a continual basis without having to interact with the display (Tablets).

The default is “unchecked”. Screen turns off based on device settings.



9. *Show "Quit" item of Menu*

The default setting is "checked". This allows the "Exit" choice to appear on the Menu Block as shown below.

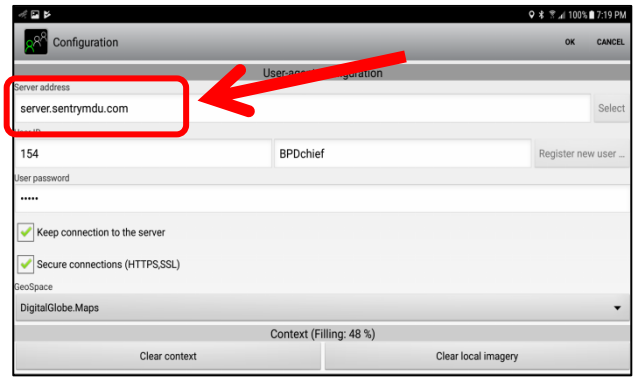


10. *Server Address*

The server address may be an IP Address (ie 24.117.17.7) or a domain name (ie server.sentryMDUname.com).

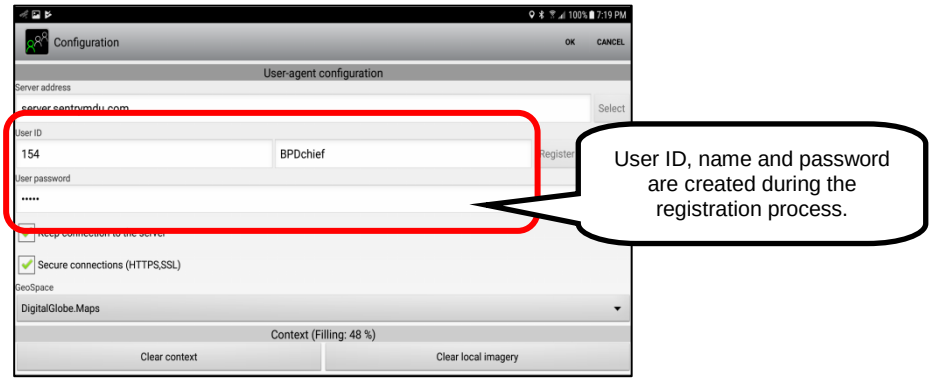
At the time of this manual writing, the default server address for the Sentry MDU App = server.sentrymdu.com (this may change in the future).

The default address is a Public Sandbox area that all users may access. For those that are members of a Licensed Group, your IP address should be taken care of automatically. If necessary, your IT Department will provide you with the address of the SentryMDU Data Server instance for your Group.



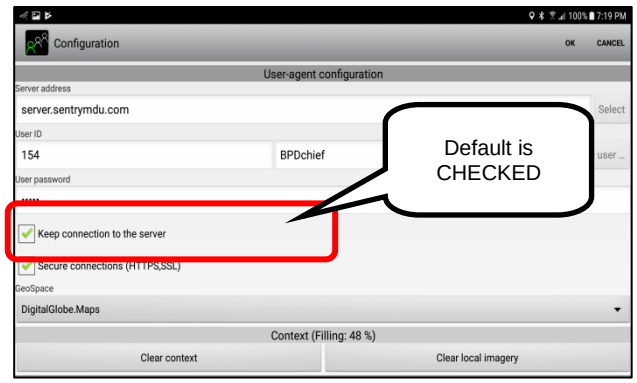
11. *User ID and Password*

The Username and Password will be created during the initial registration process. They will be displayed in this area of the form.



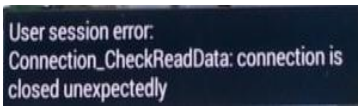
12. *Keep connection to Server*

This setting keeps a permanent session to the Data Server and ensures that the mobile device is sent "notifications" immediately. If unchecked, notifications and instant messaging would be sent at 5 minute intervals.



IMPORTANT NOTE:

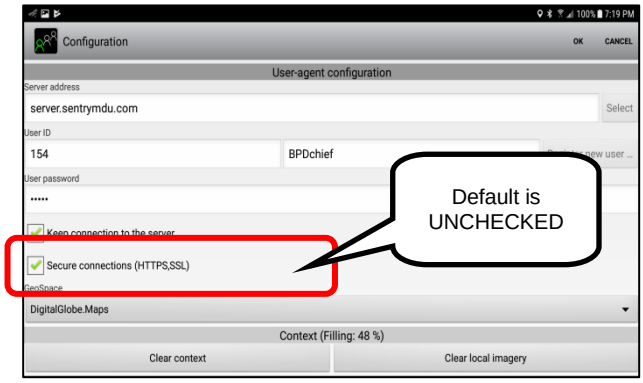
A User may have several different devices all registered with the SAME User ID. However, if a user has multiple devices all registered with the same User ID, only ONE of them should have the ☑ ***Keep connection to the server*** "checked" as active. If more than one device has this option checked the following error message will appear.



The error is generated because the system does not know "which" device to send the messaging to since several devices all have the same User ID.

13. ***Secure connections (HTTPS, SSL)***

The default setting is “unchecked”. For encrypted communications, put a checkmark in this box.

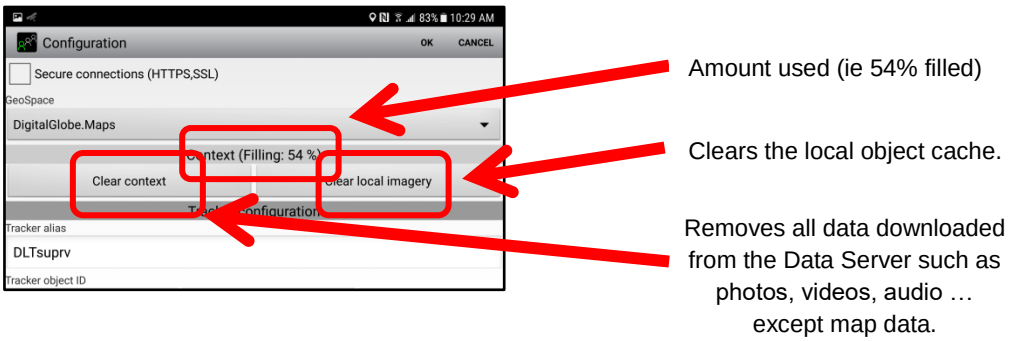


14. ***GeoSpace (Map selections)***

The default is “DigitalGlobe.Maps”. This will allow users the 3 options discussed previously (Street maps, Satellite image, Satellite image with Street maps overlay). The OpenStreetMaps option is a “street maps only” option (no satellite imagery). It is for those User organizations that would create/operate their own tile server using OpenStreetMaps tile data.

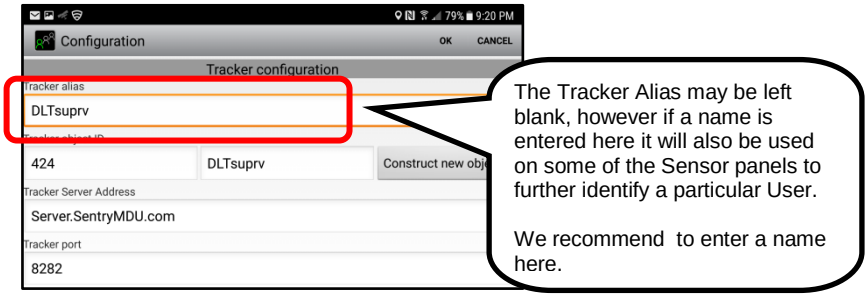
15. *Context Storage Space (Storage on mobile device)*

Provides a measure of how much memory storage space is used on the device. User may remove/delete data and imagery if desired.



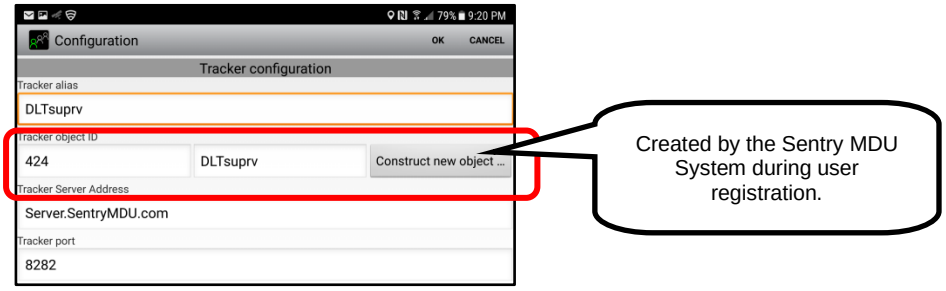
16. *Tracker Alias*

The Tracker Alias is used in the "Offline mode" when implementing the Planet-Satellite Feature. This is an alternate name by which the Tracker Object is monitored on other devices since it is not connected to the Data Server. See a further description of this feature in other sections of the manual.



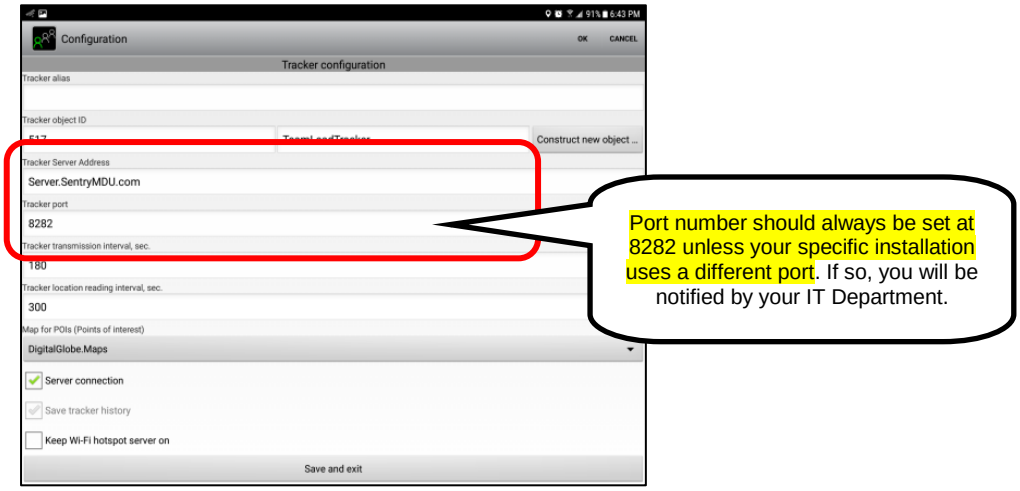
17. *Tracker Object ID*

These are created by the system during registration. Options do exist to "manually" create a new object (although only in special circumstances and the SentryMDU Desktop Client is required). See other sections of the manual for a discussion of this option.



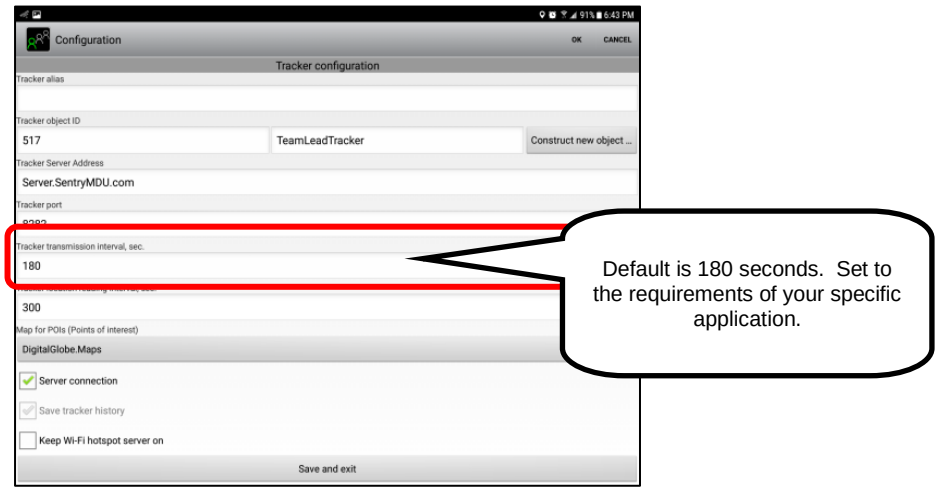
18. *Tracker Server Address and Tracker Port*

As installed, the SentryMDU App uses an IP address of the Public Sandbox Server (shown below as Server.SentryMDU.com). Licensed users will see a different Tracker Server Address as issued by their IT Department for their specific Sentry MDU Data Server instance.



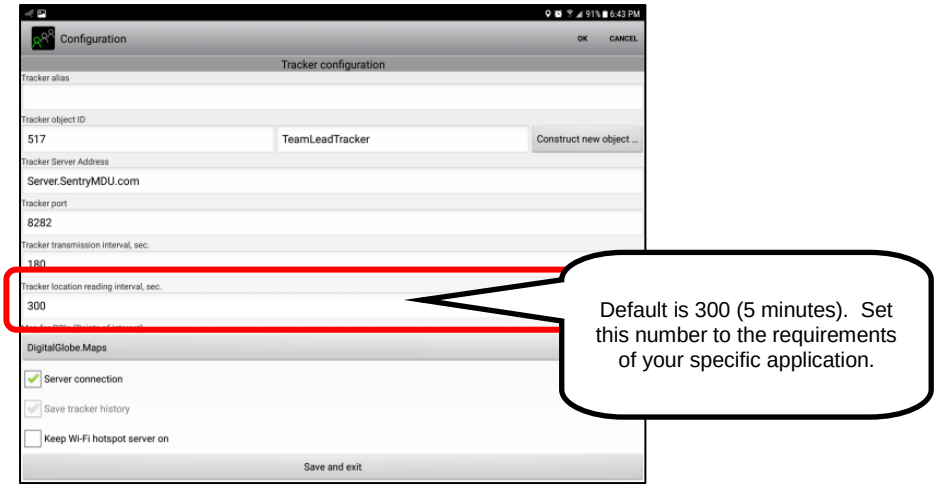
19. *Tracker transmission interval, sec*

The Tracker transmission interval is the time interval, in seconds, of how often the device events (such as GPS locations, battery level, cellular signal strength, etc.) are transmitted to the Data Server. When set to “0” (zero) then the transmission is “continuous”. For first responders, a setting of “0” is appropriate, for most other applications a setting of 180 (3 minutes) is good enough.



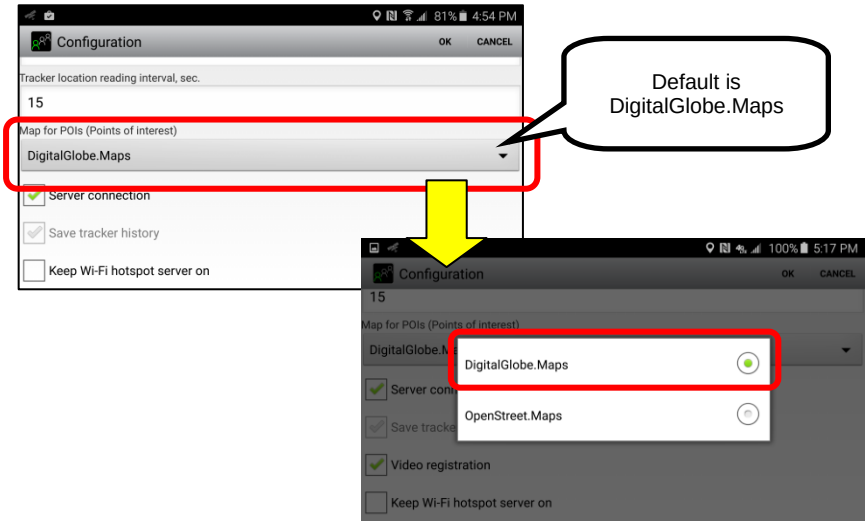
20. *Tracker location reading interval, sec*

The location reading interval is how often the mobile device reads the internal GPS location from the available satellites. The default is 300 seconds (5 minutes). In practical terms, a good number to use is 10-20 seconds for First Responders. This is a good balance between accuracy of location and battery usage.



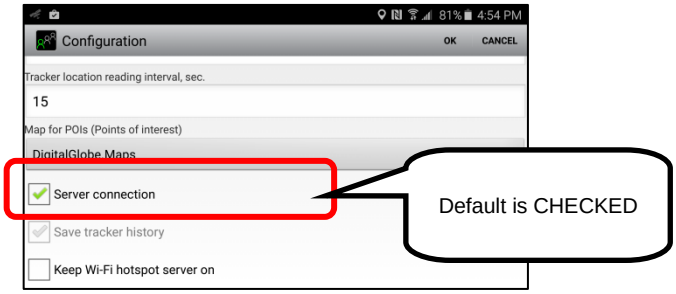
21. *Map for POI's (points of interest)*

The default is DigitalGlobe.Maps. This will allow users the 3 options discussed previously (Street maps, Satellite image, Satellite image with Street maps overlay). The OpenStreetMaps option is a "street maps only" option (no satellite imagery). It is for those Licensed User organizations that would create/operate their own tile server using OpenStreetMaps tile data.



22. ***Server connection***

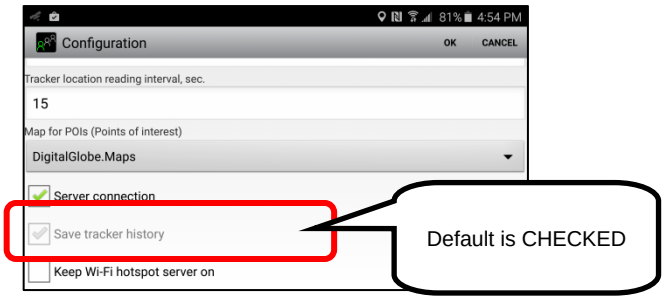
The default is to maintain a Server Connection for the Tracker Object. Without this option checked (and with “Save tracker history” checked) the tracker feature works as a “Black Box” that records all device events into an internal disk queue (not transmitted to the Data Server).



23. ***Save tracker history***

This option is specifically for the “Black Box” mode. If the “Server connection” box above is “unchecked” then the “Save tracker history” checkbox becomes active (available). By default, when active, the “Save tracker history” checkbox is “checked” which means that all device events are recorded into an internal disk queue on the device.

Notice that the box is “checked” but grayed-out indicating that it is not active while the “Server connection” checkbox is “checked”.

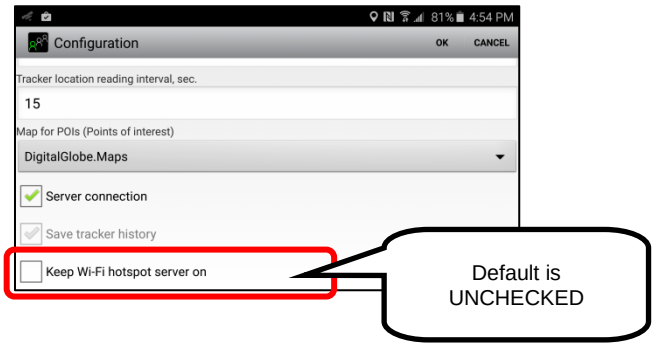


24. ***Keep Wi-Fi hotspot service on***

This option allows the mobile device with Sentry MDU to work as a “host” for other satellite Sentry MDU devices in the local WiFi network. This means that the Sentry MDU device will ALWAYS keep running the WiFi hotspot service even if a user turns off the “Hotspot” feature on the phone settings. If a user turns it off (from the phone settings) the Sentry MDU App will turn it on again automatically after a short time.

Typically, this setting would be used where the Sentry MDU System is used in a “standalone” mode such as during remote Search & Rescue operations

where internet is not available and the Sentry Data Server is running on a local private network out of a Mobile Command Center using portable Wifi Towers.



5.5. Data Encryption Features for secure communications

Overview:

The SentryMDU System provides users with several data encryption features. This section will explain the options you have available to secure your data and communications.

General Setting (Main Configuration Panel)

On the Main Configuration Panel you may select Https/SSL encryption that will encrypt ALL communications from the device to other mobile devices and the data server.

Specific Encryption protocols for Messaging and Chat Features

For messaging, live chat and data streaming (audio-video) you have the option to further encrypt data transfers between two specific devices (end-to-end encryption). This encryption uses a cryptography key exchange with a refresh at 15 minute intervals. This results in a communications channel that is virtually unbreakable with current technology.

This section will explain these features.

SentryMDU data encryption protocols:

This following data encryption protocols are available.

HTTPS / SSL

SSL (secure sockets layer) is a standard security technology for establishing an encrypted link between a server and a client – typically a web server. In this case, the secure client(s) are the SentryMDU Data Server or the SentryMDU Administrative Server. For this encryption a SSL Certificate is required.

DH – AES

Data is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. “AES” refers to the “Advanced Encryption Standard” which has been adopted by the U.S. Government and is now used worldwide. The application will automatically update/replace session encryption keys at 15 minute intervals.

DH – AES – CBC

Data is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. “AES” refers to the “Advanced Encryption Standard” which has been adopted by the U.S. Government and is now used worldwide. “CBC” refers to “Cipher Block Chaining” where each ciphertext block depends on all plaintext blocks that have been processed up to that

point, thereby strengthening the cipher. The application will automatically update/replace session encryption keys at 15 minute intervals.

DH – AES – EIV

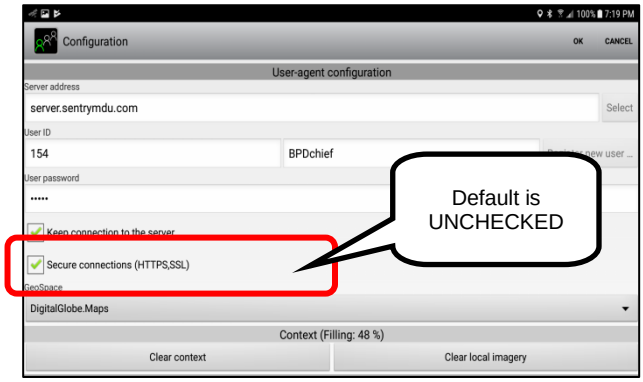
This is the "default" for messaging and secure chat. It is the newest method. Data is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. "AES" refers to the "Advanced Encryption Standard" which has been adopted by the U.S. Government and is now used worldwide. "EIV" refers to the encryption of IV with ECB to create EIV. The application will automatically update/replace session encryption keys at 15 minute intervals.

Data Encryption Features:

1. ***General encryption using https/SSL.***

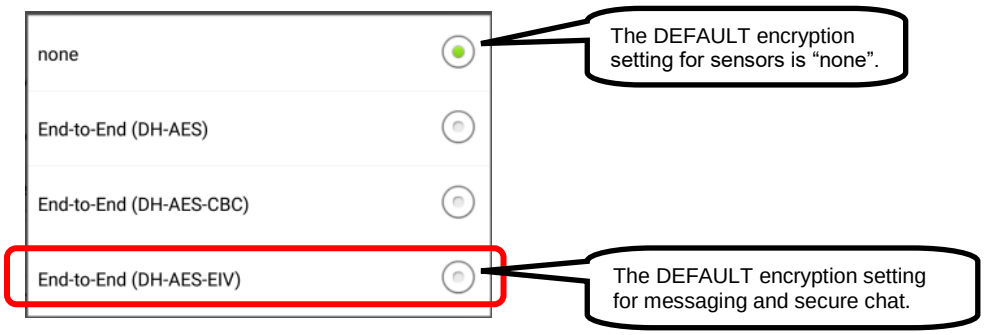
   If you have sensitive data or communications it is recommended to turn "on" the HTTPS / SSL option in the Main Configuration Panel as shown below.

   The default setting is "unchecked". For encrypted communications, put a checkmark in this box.



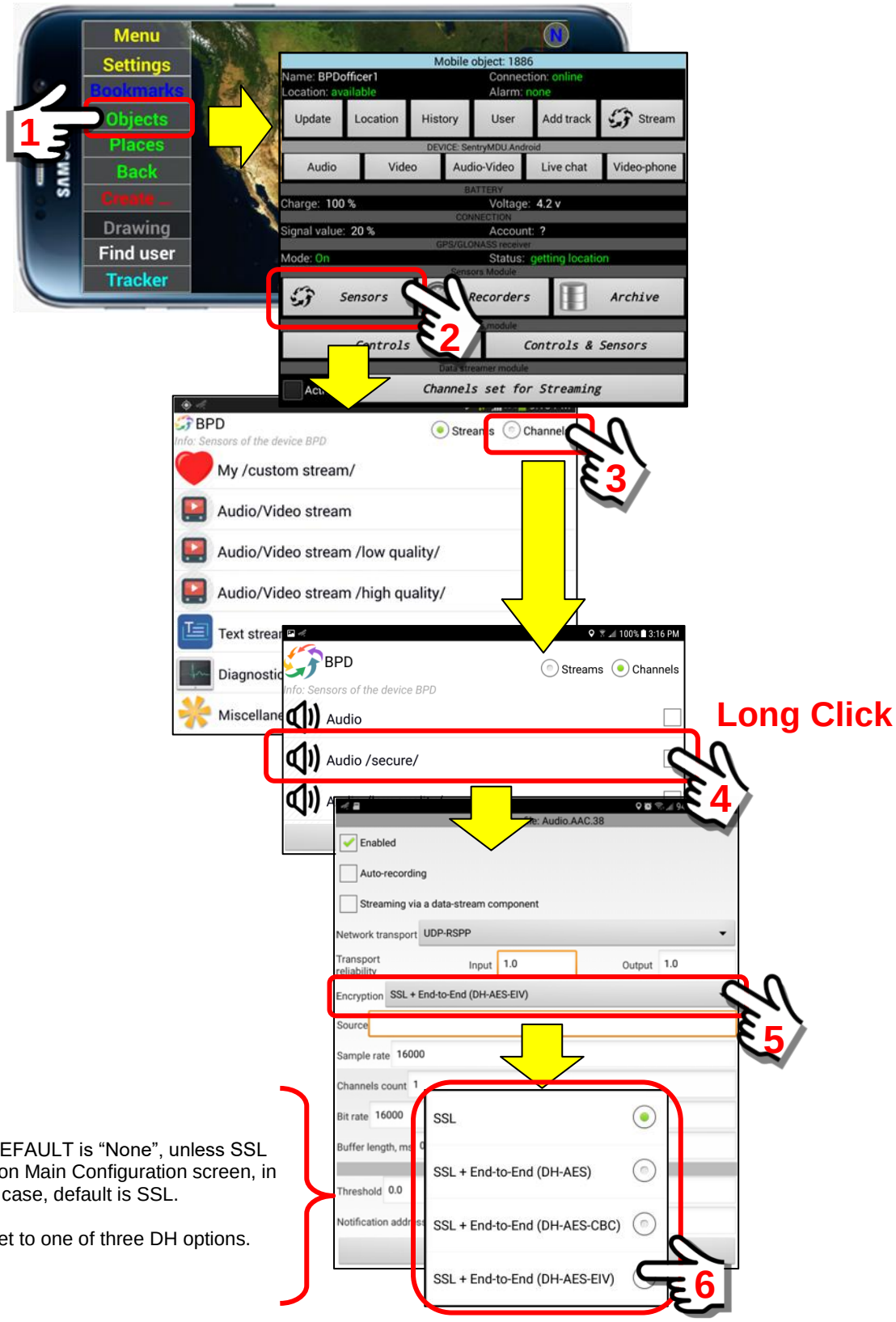
2. ***Review of various Diffie-Hellman (DH) encryption options.***

   The SentryMDU System includes 3 Diffie-Hellman encryption options for messaging, chat and sensor data transmission (ie audio, video). The selection list will look as follows:



3. *Configuring sensors for encryption.*

In order to encrypt the various data sensors for end-to-end encryption it will be necessary to change the “default” setting in the sensor configuration files. The following steps will show how this is done.



The DEFAULT is “None”, unless SSL is set on Main Configuration screen, in which case, default is SSL.

Can set to one of three DH options.

5.6. Reliable UDP connection protocol (RSPP)

Overview:

There are two types of Internet Protocol (IP) traffic generally in use. They are TCP or **Transmission Control Protocol** and UDP or **User Datagram Protocol**. TCP is a connection oriented protocol, which means that once a connection is established, data can be sent bidirectional. UDP, on the other hand, is a simpler connectionless internet protocol. Multiple messages are sent as packets in chunks using UDP.

TCP is a more reliable connection since it manages message acknowledgement and retransmissions in case packets are lost. With TCP there is absolutely NO missing data. UDP does not ensure that communication has reached the receiver since concepts of acknowledgement, time out and retransmission are not present.

UDP is a lightweight transport layer designed on top of an IP, there are no tracking connections or ordering of messages. The UDP protocol supports error detection via checksum, but when an error is detected, the packet is discarded. However, UDP is faster than TCP and for time sensitive applications like voice transmissions, audio-video and things like “gaming” where error recovery and retransmission would be pointless because the time the packet would be needed has now passed.

A review of sensor configuration in the SentryMDU System will show that a User has the option to specify either TCP (default in most cases) or UDP as the transmission protocol. One of the biggest problems with TCP when many users may be broadcasting data (one device to many) is the scenario where a congestion control algorithm (which treats packet loss as a sign of bandwidth limitations) may automatically throttle the sending of packets. This can cause significant latency on 5G/4G or WiFi networks.

In an attempt to address this issue, and build a more reliable UDP connection protocol, SentryMDU has developed a protocol we call “**RSPP**” which is **Reliable Secure Packet Protocol**.

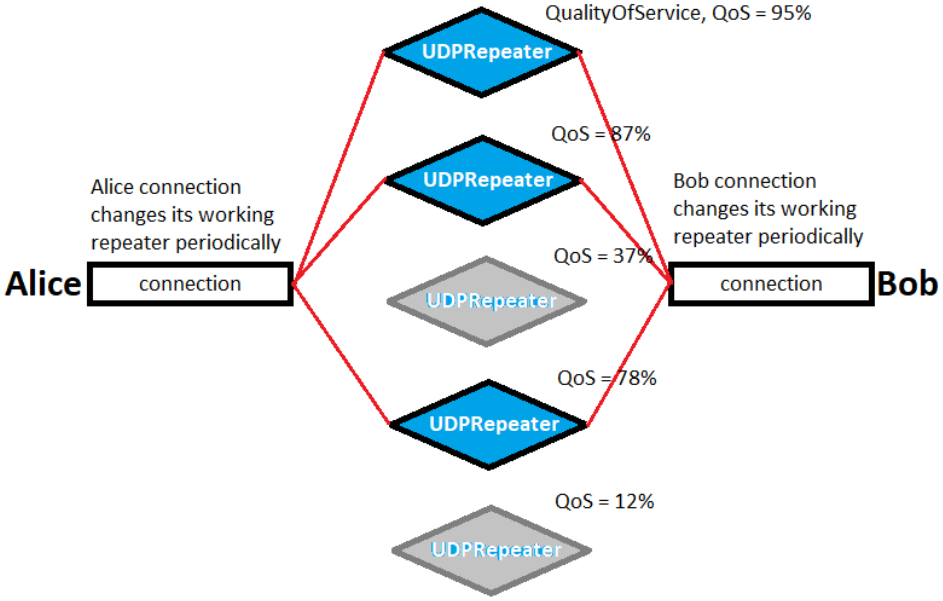
This section will describe how this protocol works within the SentryMDU System.

The UDP Repeater:

The SentryMDU System allows Users to send out and receive multiple streams of sensor data (ie audio-video, GPS, accelerometer, gyroscopic, etc.). Depending on the network bandwidth (Cellular, WiFi) this can increase server load and network latency. In order to improve overall system performance the SentryMDU system offer users the option of shifting TCP data transfers to the UDP protocol and route the data transfers to UDP Repeater Applications that do the bandwidth intensive work. These UDP Repeater applications may be running on standalone servers or SentryMDU Data Servers that have excess bandwidth capacity.

A single “random” UDP Repeater that has established a virtual reliable connection, would be represented as follows:

To improve reliability in the event a “random” repeater becomes unavailable, we have expanded the scheme to include multiple UDP Repeaters. This scheme is represented as follows.



The advantages of a distributed UDP Repeater model:

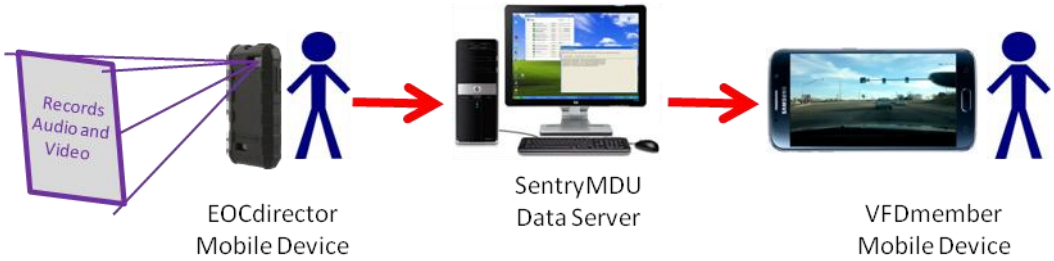
The advantages of this arrangement are described below.

1. A connection between Alice and Bob becomes very stable. If some amount of packets are lost on an offline repeater, they will be restored by sending them via a repeater with a good QualityOfService value. As an example, if we have two repeaters running as “Server01” and “Server02”. If we shutdown one of them, the packets will be re-routed through an available one (Server02).

2. An additional side effect is related to security. The SentryMDU **RSPP** changes the designated **UDP Repeater** every few packets. So that, the encrypted packets of an RSPP connection are distributed between various UDP Repeaters. If someone, between Alice-Bob, wants to intercept and try to decrypt “A”-”B” data packets, they would need to be listening at various “random” repeaters around the world. That would be a difficult task.

Using a “Direct Control” channel with the UDP Repeater model:

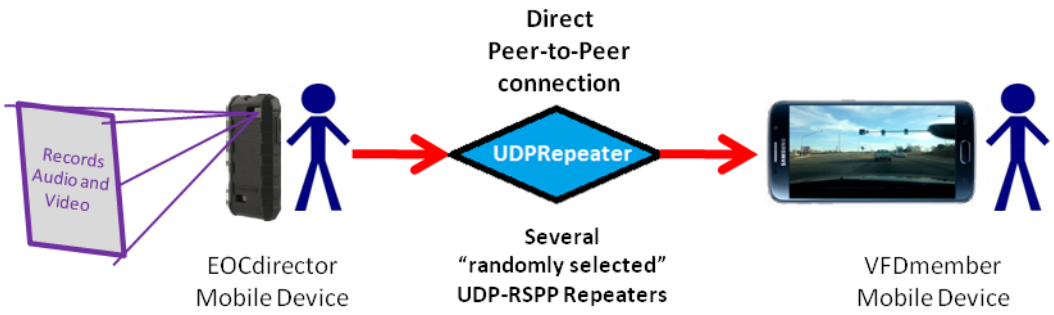
The SentryMDU System typically uses the SentryMDU Data Server as the connecting device between two communicating Client Devices.



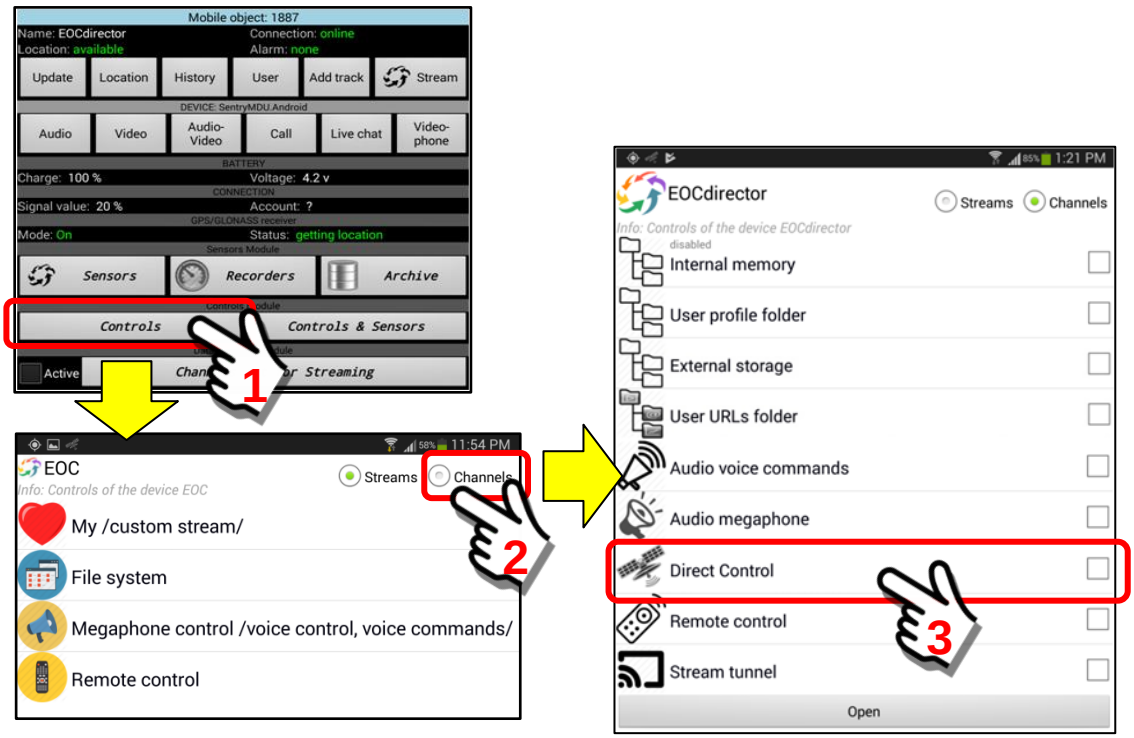
In addition to user authentication functions, the Data Server uses system resources to maintain the connection. Depending on the type of transmission (TCP or UDP), the effect on system resources can be considerable when large numbers of simultaneous connections are present. For situations where “real-time” encrypted transmission is important, such as audio-video, the increase in speed (by using UDP) and a reduction in bandwidth bottlenecks (via distributed UDP Repeaters) will decrease system latency and improve overall performance.

In the “Direct Control” scenario, system loads are shifted from the Data Server to the individual Client Devices and the distributed UDP Repeaters. All control traffic will be tunneled through a peer-to-peer UDP connection via the distributed UDP Repeaters. This “Direct Control” channel is based on the SentryMDU “UDP-RSPP” protocol.

This feature increases the security of a “Client-to-Device” link since it is practically impossible to know (as a Man-in-the-Middle) which operations a Client Device is using and at which time they are accessing their device.



Access to the “Direct Control” Feature is available from the Mobile Object Panel of any device. An implementation example is available in **Section 10.21** of this Manual.



Using the "Adjustable Delivery Reliability" mode with UDP RSPP.

In the transmission of audio-video over the internet there can often be a noticeable "delay" between the action taking place and the resulting video of the action. This is due to the internet bandwidth, the protocol used and the number of intermediate hops (servers) between the two devices (transmitting and receiving). Some of the latency is "built-in" and we can not do anything about.

However, in the processing of video, we can "tune" the system to allow dropping data packets that are "late" in order to speed up overall transmission. In some situations this may decrease latency and shorten the video delay by up to 2 seconds without significantly impacting video quality. The following applies:

100% = Full reliability, all data packets are delivered

0% = Unreliable transmission with possible skipping of old data frames. The RSPP protocol doesn't re-deliver any lost data packets in this mode.

1% - 99% = Conditional reliability interval. By design, the maximum time for delivery of a single data packet is 60 seconds. So, setting reliability to 99% means that the RSPP Codec will try to re-deliver a packet during 60 seconds. Setting to 10% causes delivery during 6 seconds (10% of 60), and so on.

If the UDP RSPP protocol has been configured for the sensor channel you will see an "Adjustable Reliability" Button located on the display panel, as shown below.

In order for the "***Adjustable Reliability***" Button to be active, you must ensure that the "UDP-RSPP" protocol has been selected as the **Network Transport** in the Profile. An example is shown below.

UDP-RSPP Mode must be selected

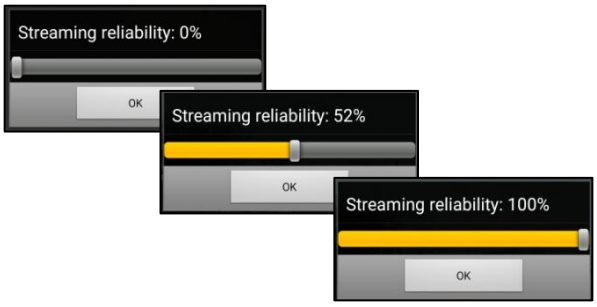
Button to Start/Stop the UDP RSPP mode on the remote mobile device

Adjustible Reliability Mode "On" (Short click)

Adjustible Reliability Mode "Off" (Short click)

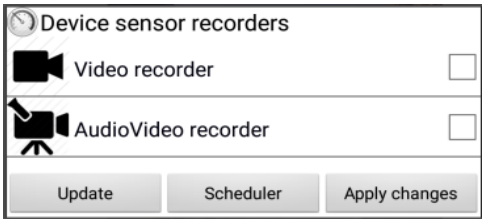
Button to adjust the SETTINGS of the UDP RSPP mode

Adjustible Reliability Settings (Long click)



Button to open the Sensor Recorder panel to activate or schedule recording

Click to open Recorder Panel on remote device



Button to Start/Stop recording and store files on the remote mobile device

"Off" position, click to turn on (Short click)

"On" position, click to turn off (Short click)

5.7. Internal Memory access configuration (file system access)

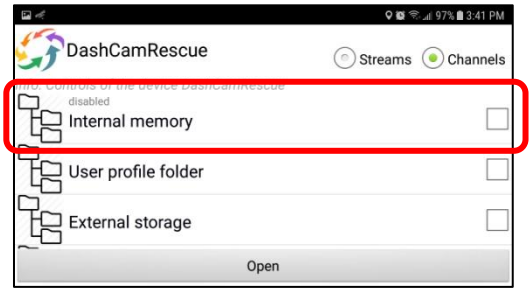
Overview:

In order to transfer large data files between mobile devices, the devices must explicitly ALLOW access to their file systems. This Internal Memory configuration option can only be implemented by the User of the local device (cannot be overridden by the system).

This section will explain this feature and provide instructions on setting up file access.

Sentry MDU file access configuration:

This section will illustrate how to set the Internal Memory access configuration located in the Tracker Panel, Controls section.



Steps to configure file system access:

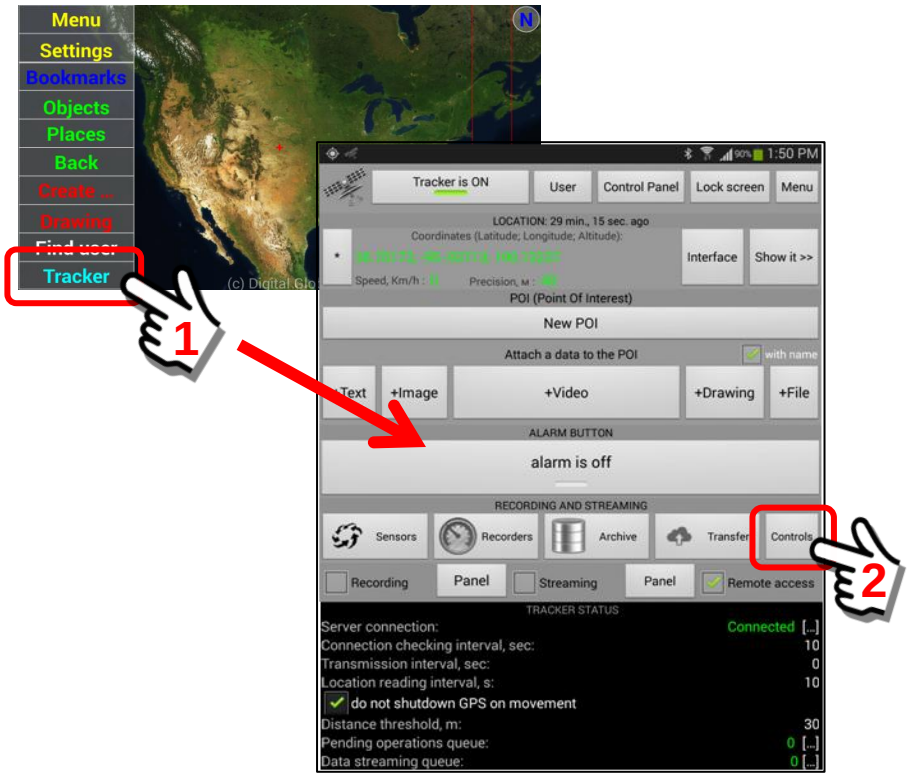
1. ***Set the "Internal Memory" channel profile to enable file access.***
   In order to do peer-to-peer file transfers, both mobile devices (sending and receiving) must allow access to the file systems on the devices. The "Internal Memory" channel profile is the place where these changes are to be made.

   Important Notes:

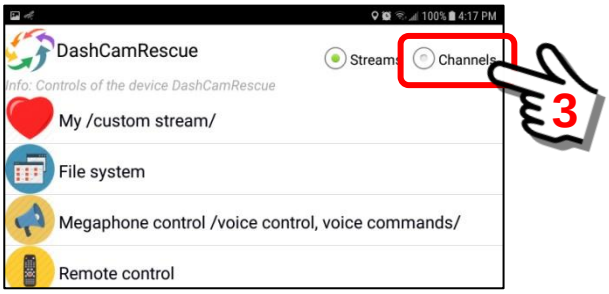
   a. This feature is turned "off" by default.
   b. It must be explicitly turned "on" (Enabled) by the User of the mobile device since it allows access to the internal file system of the mobile device by others. Do you trust them?
   c. This feature CANNOT be changed by another user or by the system. Only the local user can adjust this setting.
   d. For YOU to access this feature on another persons mobile device you must have security credentials that allow access AND they must have turned it "on".

   Both users (sending and receiving) will have to make sure that the "Internal Memory" Channel is "Enabled". Generally, this would be set up during the mobile device initial configuration. The process to set this parameter is shown below.

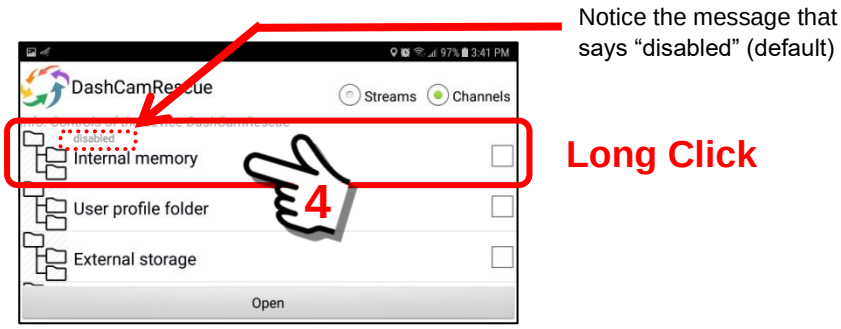
Open the Tracker Panel, click on the Controls Button



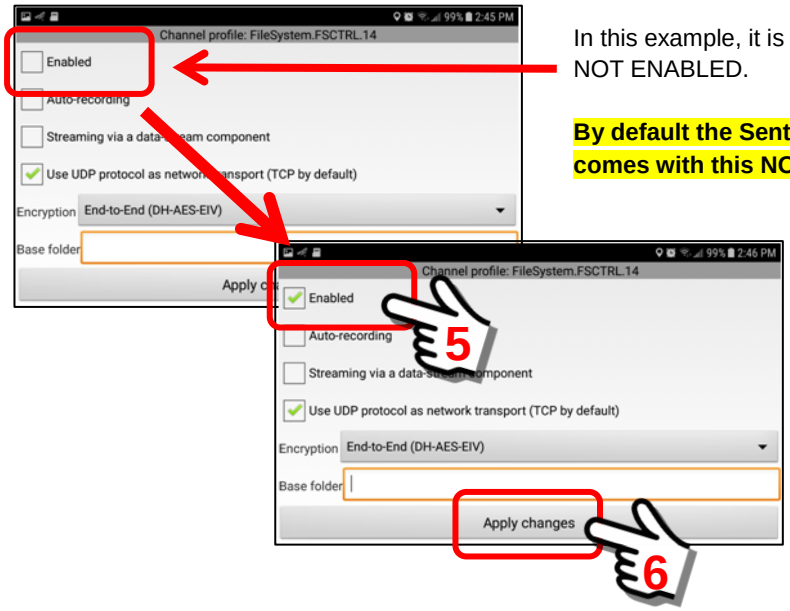
Select the Channels Option in the upper right corner of the Panel.



At the Controls Panel channels listing, perform a “Long click” on the Internal Memory option.



Make sure that the channel is “Enabled”.
The Channel Profile for the “Internal Memory” parameter will be displayed. Put a checkmark in the enabled box (if there is not one there already) and click “Appy changes”.



In this example, it is shown as NOT ENABLED.

By default the SentryMDU App comes with this NOT enabled.

The “Internal Memory” filesystem feature is now enabled. This means that the Sentry MDU System and users with sufficient security credentials can now access the file system on the mobile device (upload and download files).

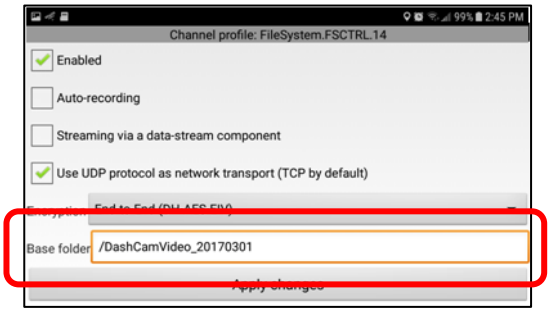
Note about “Base Folder” configuration

The default “Base folder” is the Root Directory (/) of the device file system. As an option, Users can specify a different Base Folder default value. This can be used to allow access to specific parts of the file system (and exclude others).

The entry would be specified as follows:

Path = <InternalMemoryRootFolder>/BaseFolder

A different Base Folder might be used if a user created a custom channel and wanted to specify a custom path that had direct access to that folder.



Example of a custom path

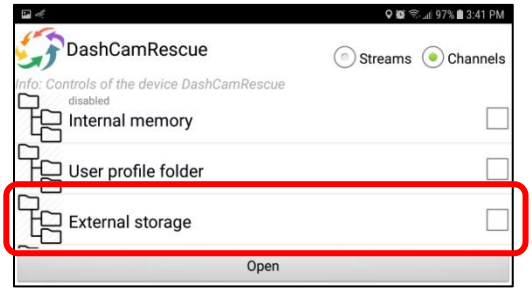
5.8. External Storage access configuration (SD-Card access)

Overview:

Some mobile devices come equipped with SD Card slots to expand the storage of the device. Depending on the device, you may have 16GB, 64GB, 128GB or more of possible external storage. If you have stored large Audio/Video files on the “external” storage of your mobile device (SD-Card), this feature will allow you to access and “download” these large files directly to another mobile device. You may choose to use this feature if the recording device is “remote” from your location (other side of the world) and/or you want to make a back-up copy and store for safekeeping. The “External Storage” channel profile is the feature you will use to access these stored files.

Sentry MDU file access configuration:

This section will illustrate how to set the External Storage access configuration located in the Tracker Panel, Controls section.



Steps to configure file system access:

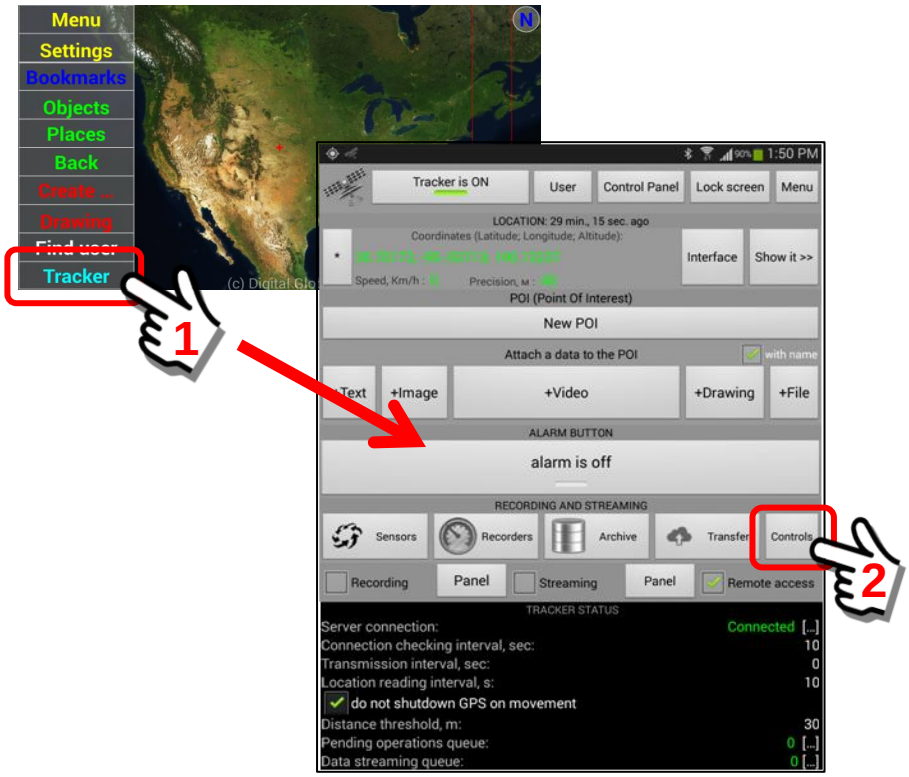
1. ***Set the “External Storage” channel profile to enable SD Card access.***
   In order to access an SD Card for file transfers, you must allow the SentryMDU App access to the file systems on the SD Card. The “External Storage” channel profile is the place where these changes are to be made.

   Important Notes:

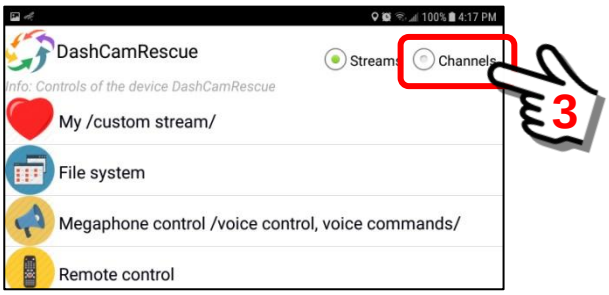
   a. This feature is turned “on” by default (SD Card can be used).
   b. It must be explicitly turned “off” (disabled) by the User of the mobile device if you do not want others to have access to the SD Card on the mobile device. Do you trust them?
   c. This feature CANNOT be changed by another user or by the system. Only the local user can adjust this setting.
   d. For ANOTHER USER to access this feature on YOUR mobile device they must have security credentials that allow access.

   Generally, the SD Card is used to store audio-video files when you have a device recording 24/7 and you are generating many GB of files and would exceed the capacity of your internal memory. The process to set this feature up is shown below.

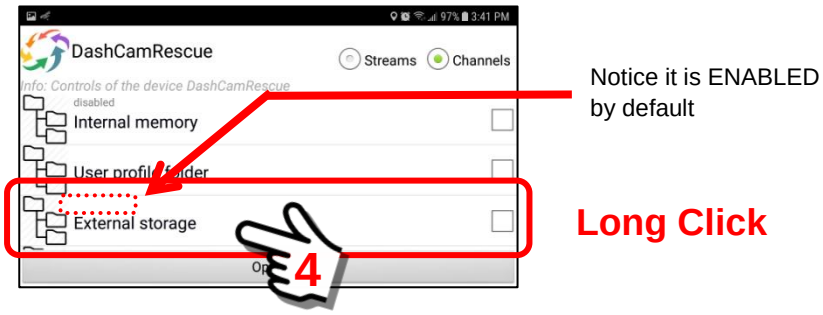
Open the Tracker Panel, click on the Controls Button



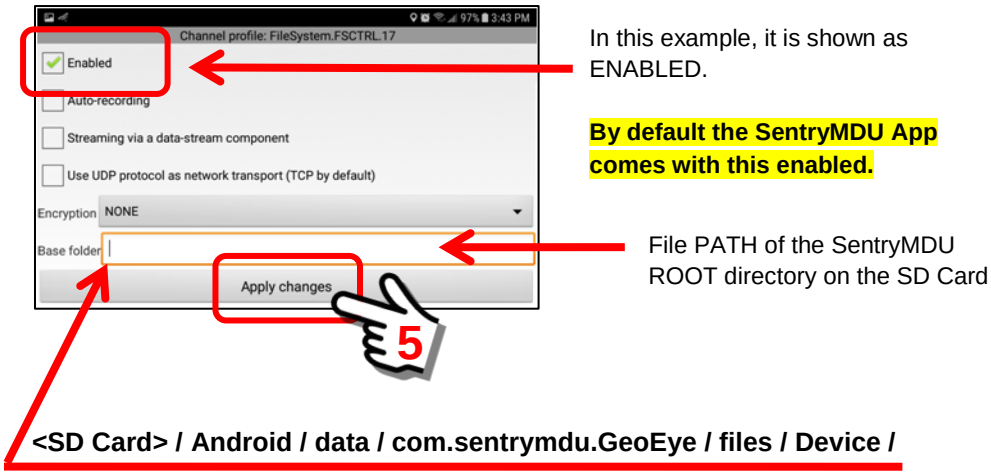
Select the Channels Option in the upper right corner of the Panel.



At the Controls Panel channels listing, perform a “Long click” on the External Storage option.



Make sure that the channel is “Enabled”.
The Channel Profile for the “External Storage” parameter will be displayed. By default it should be “enabled”. Put a checkmark in the enabled box (if there is not one there already) and click “Appy changes”.



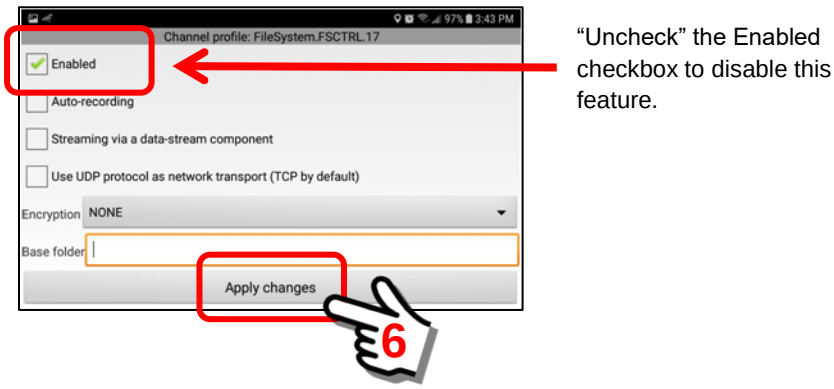
(Default PATH when field is blank)

The “External Storage” filesystem feature is now enabled. This means that the Sentry MDU System and users with sufficient security credentials can now access the SD Card file system on the mobile device to **view and download files**.

Files may not be “uploaded” to the SD Card by other users. Only the local SentryMDU App can put files on the SD Card.

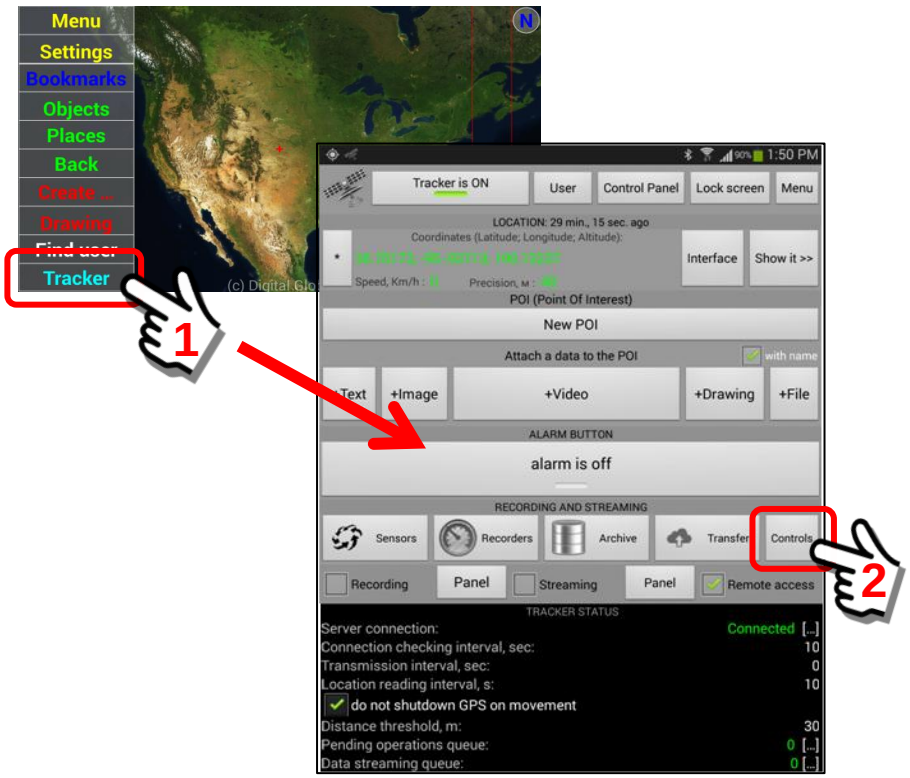
To disable the External Storage feature
The External Storage option is ENABLED by default. If you wish to DISABLE the external storage option, simply open the channel profile and “uncheck” the Enable checkbox as shown below.

Click “Apply changes” to confirm.

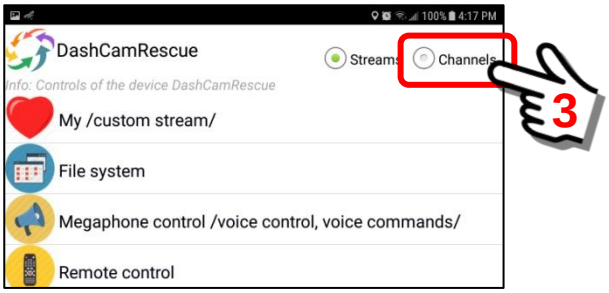


2. ***Review files stored in the External Storage (SD Card).***
In most cases, the external storage feature (SD Card) will be used to store recorded audio-video files for situations where you may be recording 24/7 or for extended periods of time (days-weeks-months). By default the system will create files that are 60 Minutes in length each (3600 seconds). This can be changed by the user (see **Section 15.2.18, Item #4**) into whatever length you desire.

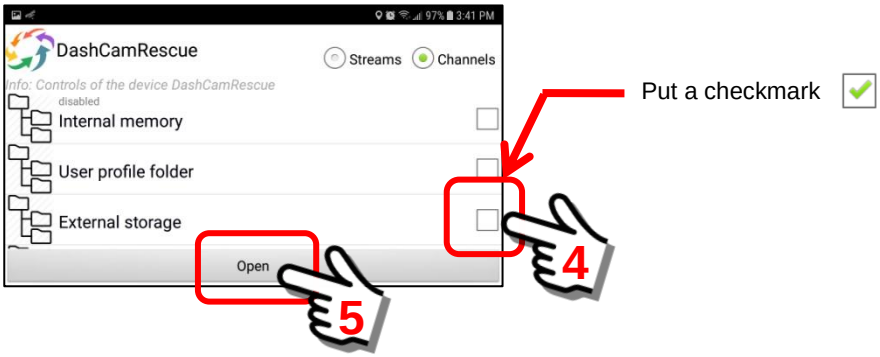
<u>Open the Tracker Panel, click on the Controls Button</u>



<u>Select the Channels Option in the upper right corner of the Panel.</u>

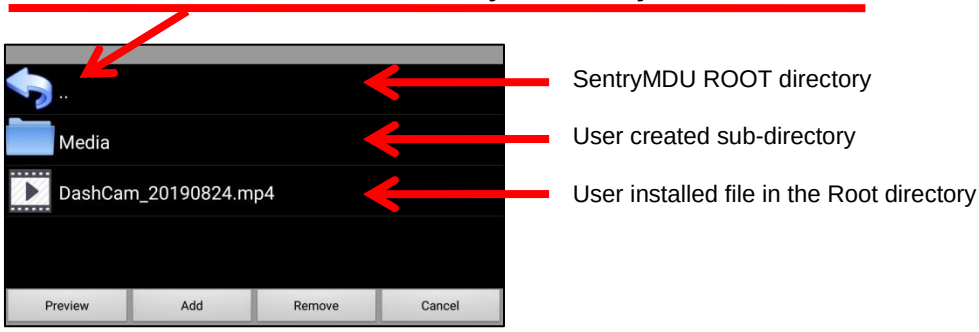


At the Controls Panel channels listing, locate the **External Storage** option.
Put a checkmark in the “checkbox” and click the “Open” Button.



Stored files will be displayed relative to the User Defined ROOT directory
When you “open” the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card.

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /



3. *General layout and structure of the SD Card file system*

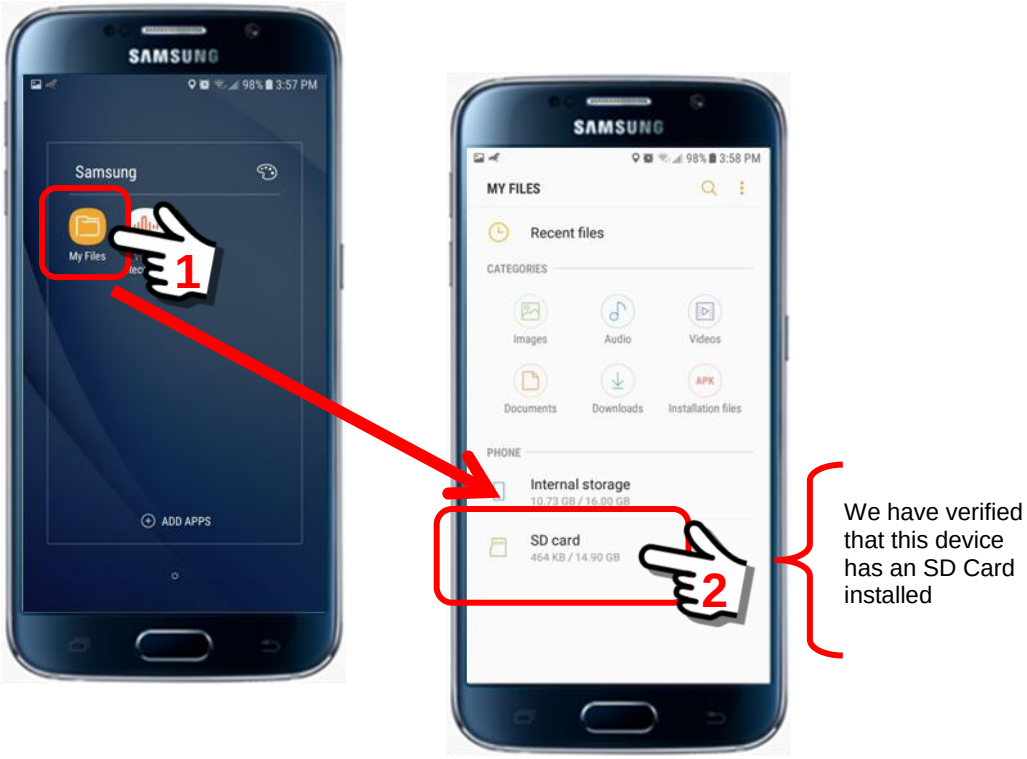
This section will describe the general layout of the file system on an SD Card and how it is created by the Android operating system. We will then describe how the SentryMDU App uses this file system to store data.

Android Operating System setup and permissions
The Android operating system has built-in protections (permissions requirements) on how “user” data is handled on SD Cards. This is to protect user data from one App being removed or overwritten by another App.

When a User installs an SD Card in their device, the Android OS creates a series of directories which it uses to manage data flow from the Apps installed on the device … assuming the User wants to store App data on the SD Card. In many Apps a user must provide specific authorization in order to store data on an SD Card. This is the case with the SentryMDU system, we must set up the App to store audio-video recordings.

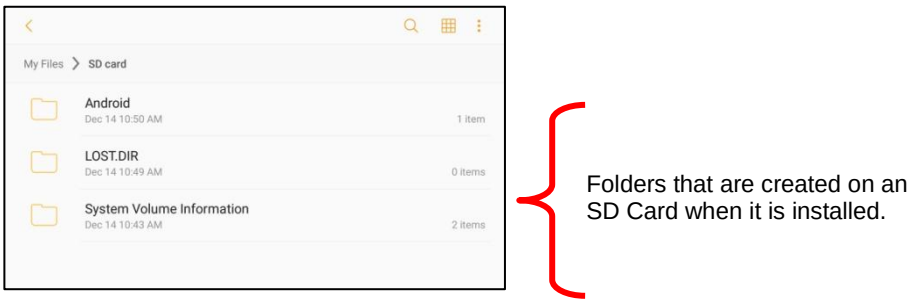
Access the file system on the device and verify the SD Card

In this example, we will navigate the Android file system to review the files on the SD Card. Use the native tools on the device. In this case we are using a Samsung phone and the “Files” App on the phone.

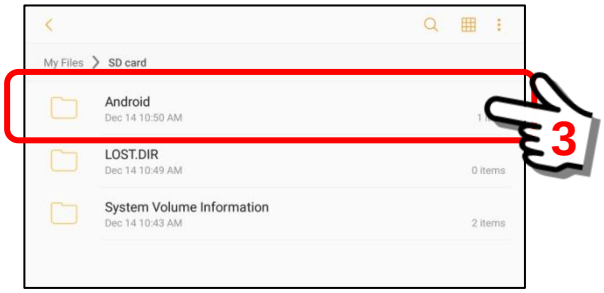


We now access the file system on the SD Card

Click on the “SD card” heading to open the file system on the SD Card.

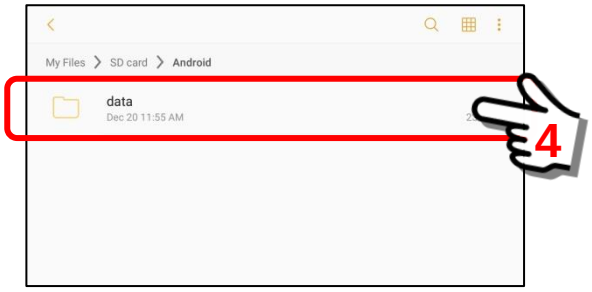


Open the Android Folder. This is where the SentryMDU files are stored.



Within the Android Folder, a “data” folder is created by the operating system. This is to hold data for any Apps that will be using the SD Card.

Click to open the “data” folder.



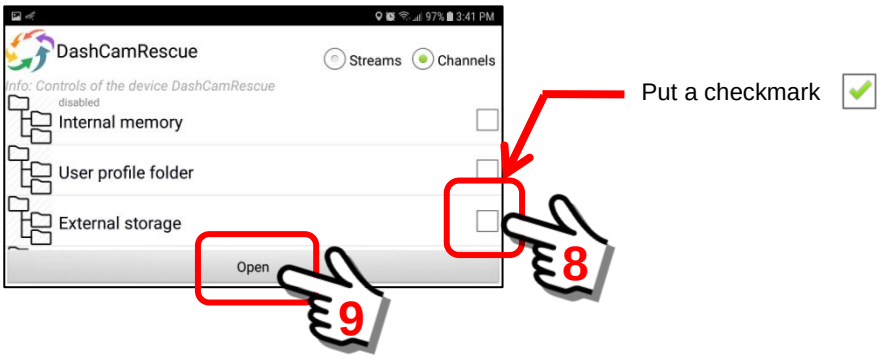
<u>The next step is to open the “***com.sentrymdu.GeoEye***” Folder</u>
Within the Android Folder, the operating system organizes an additional folder for each App on the device. In this example, we scroll down the list and locate the **SentryMDU App** in the list. Notice the format that Android uses to identify the SentryMDU App folder (ie ***com.sentrymdu.GeoEye***).

The SentryMDU App uses the ***com.sentrymdu.GeoEye*** folder (generated by the Android operating system) as the base directory for the SentryMDU external storage area. Within this folder, the SentryMDU System creates two additional file folders … a “files” folder and a “cache” folder as shown below.

The “files” folder is the directory where data will be stored.

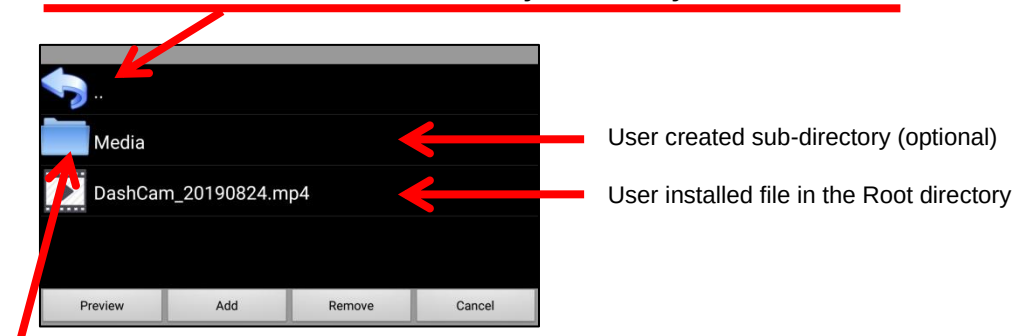
Open the “files” folder as we drill down to the SentryMDU ROOT folder
Within the “files” folder is a “Device” Folder. The “Device” folder is the ROOT folder for the External Storage feature.

When we “open” the External Storage channel, we are opening the “Device” Folder. Follow the example below.



Stored files will be displayed relative to the User Defined ROOT directory
When you “open” the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card (**Device** Folder). Folder names are “case sensitive”.

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /



<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device / Media

(PATH when a sub-folder is provided)

5.9. Automatic transfer of recorded data to an SD Card

Overview:

For mobile devices that have SD Card “external” storage, the SentryMDU System has features that allows the “automatic” transfer of files and data to an SD Card. This feature is useful when “remote” devices are used in surveillance applications where recording is performed 24/7. This can move multi-Gigabyte groups of audio-video files from internal memory to an installed SD Card on a periodic basis.

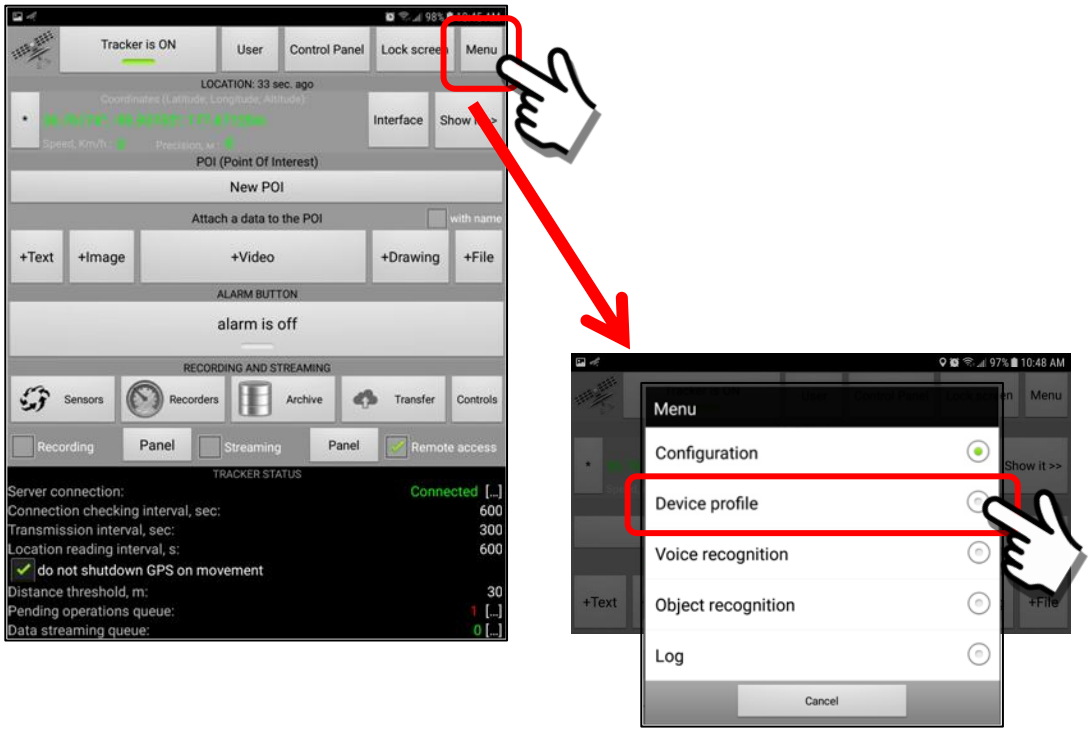
This section will describe how to configure a “recorder” to transfer files from internal memory to the SD Card for storage. This is often used to transfer files stored on an SD Card of a remote device to another SentryMDU enabled device for archiving/storage. In order to transfer large data files between mobile devices, the devices must explicitly ALLOW access to their file systems.

Important Note:

If you configure a device to transfer recording files from internal memory to the SD Card, note that if you are running out of “free space” on the SD Card, the system will automatically DELETE “old” files to make room for the “new” files to be transferred. The removal is based on date/time (First-in, First-out).

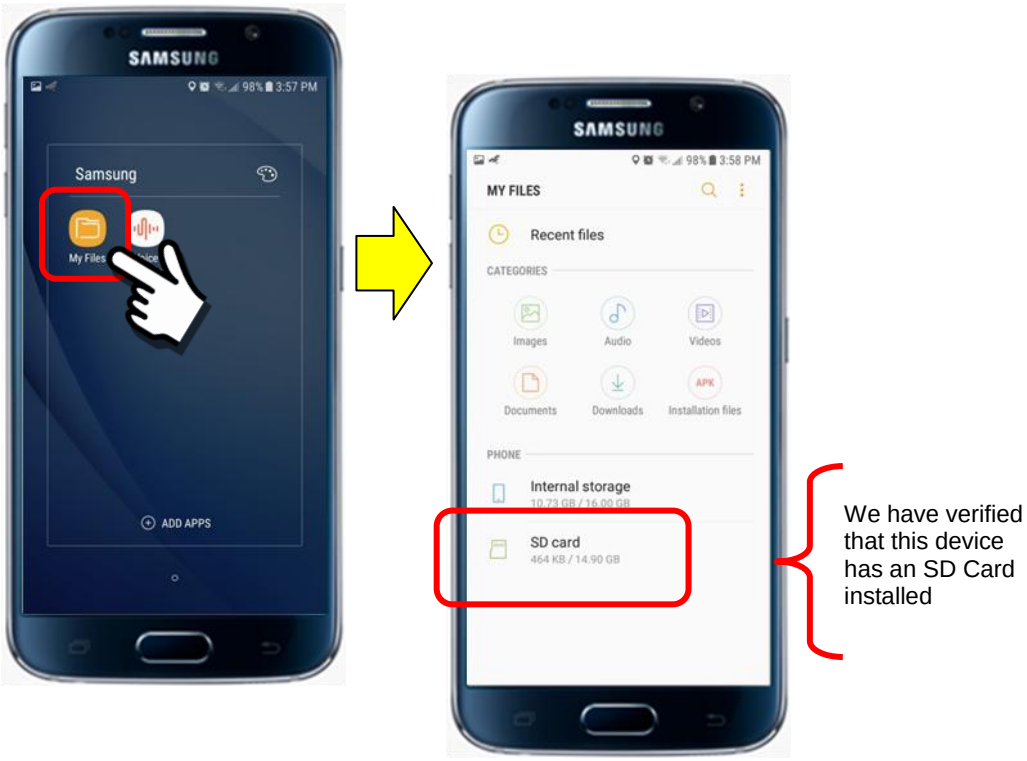
SentryMDU recorder configuration for SD Card transfer:

This section will illustrate how to set up the recorder configuration so that the SentryMDU System can automatically transfer data files from internal memory to the SD Card of a mobile device.



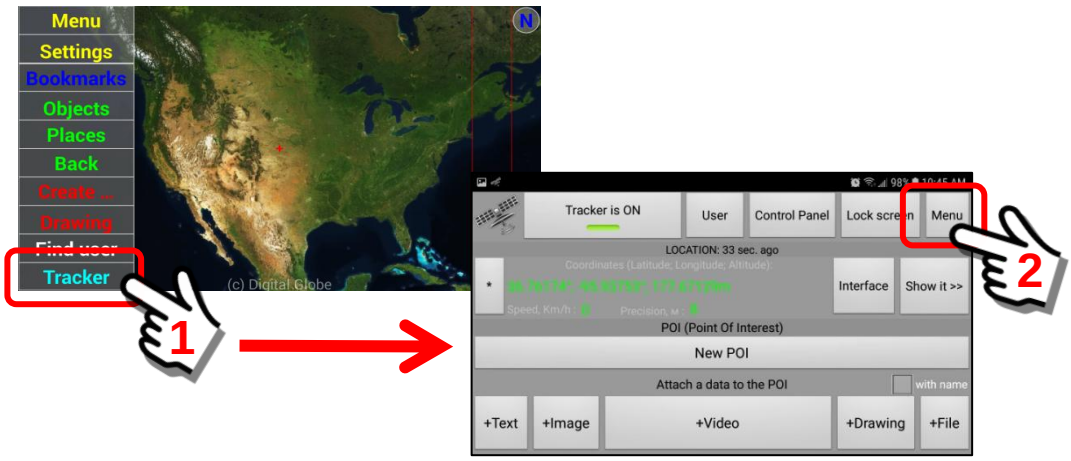
Steps to configure recorder transfer:

1. ***Install an SD Card in the mobile device (or verify one is installed)***
   Make sure you have an SD Card installed. Depending on your device manufacturer your screens may be different, but you should have something similar to the following (showing a Samsung phone):



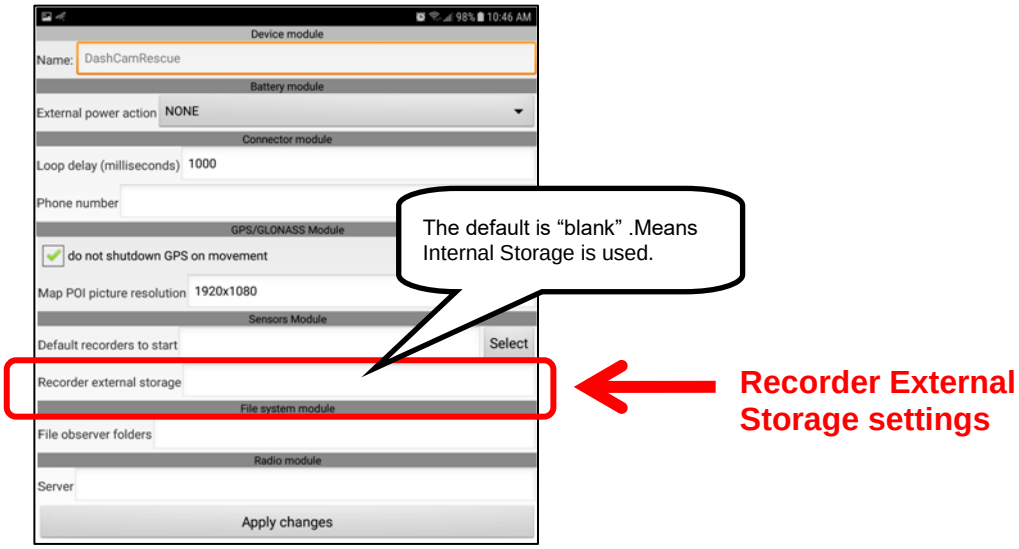
2. ***Set the "Device Profile" module for Recorder External Storage***
   By default, the SentryMDU App will record all data to files stored on the "internal" memory of the device. In order to store (transfer) files to external storage (ie SD Card) we must configure a setting in the Device Profile.

   <u>Open the Tracker Panel, click on the Menu Button</u>



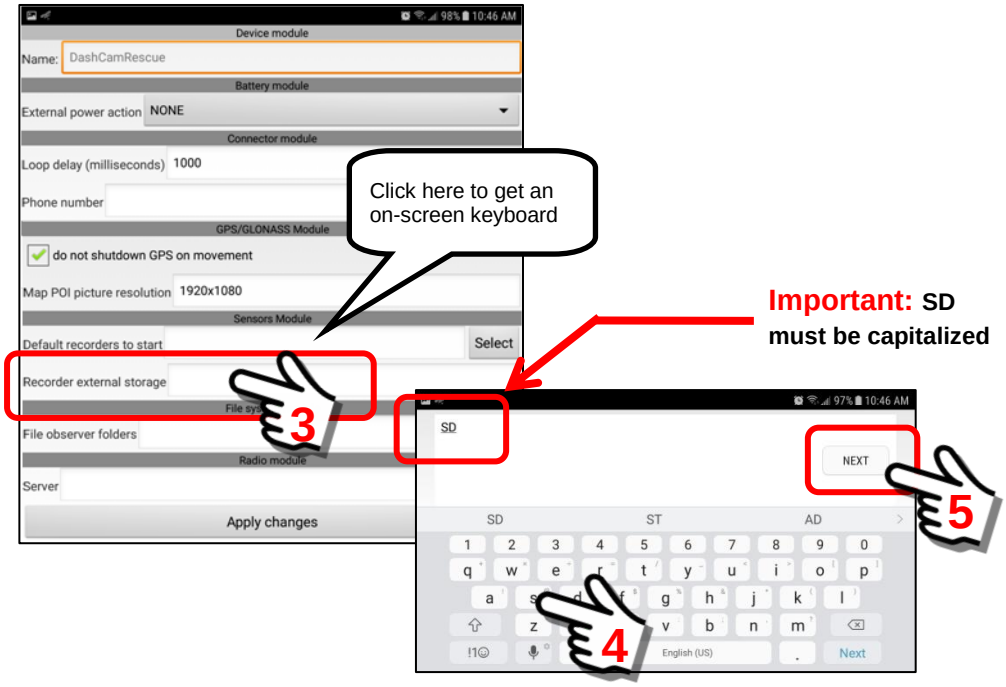
Review the **Recorder External Storage** Option on the Panel

By default, the “Recorder External Storage” option field is “blank”. This means that any data files that are stored are stored on the internal memory of the device. In order to use “external storage” (ie SD Card) we must indicate that an SD Card is to be used.



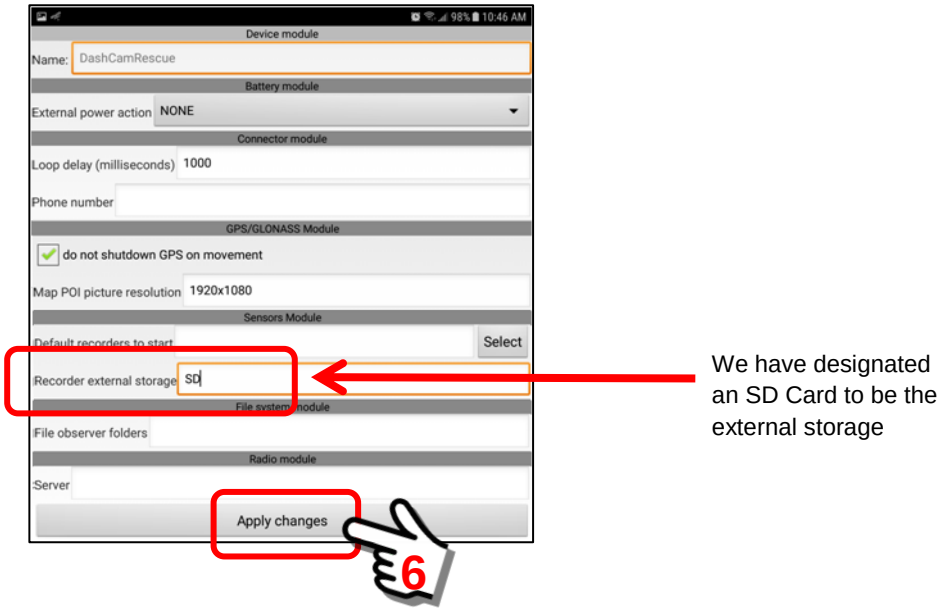
Edit the Recorder External Storage to designate an SD Card

Enter the letters … **SD** to indicate an **SD Card** is the external storage location for the files. It is **REQUIRED** that the letters **SD** are capitalized.



Save the changes to the Device Profile Panel

The Device Profile for the mobile device has now been changed to indicate that an SD Card will be used for Recorder External Storage.
Click “Appy changes” to save the settings.

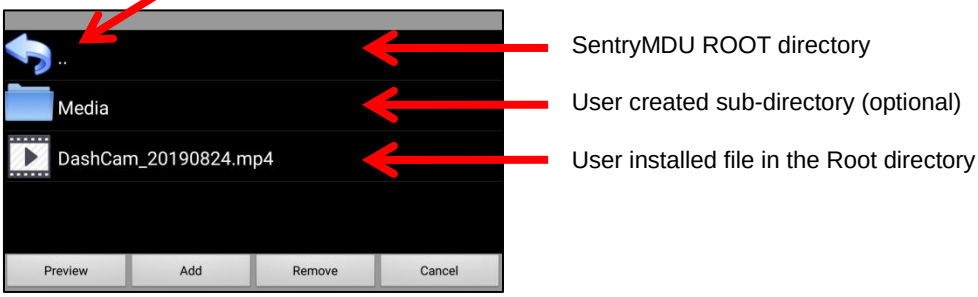


The “Recorder External Storage” feature is now enabled. This means that the Sentry MDU System will now store recorded files on the SD Card at specified intervals.

Stored files will be put into the User Defined ROOT directory

For a default configuration, the file location of the External Storage will be at the ROOT level of the SentryMDU file system on the SD Card as shown below.

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /



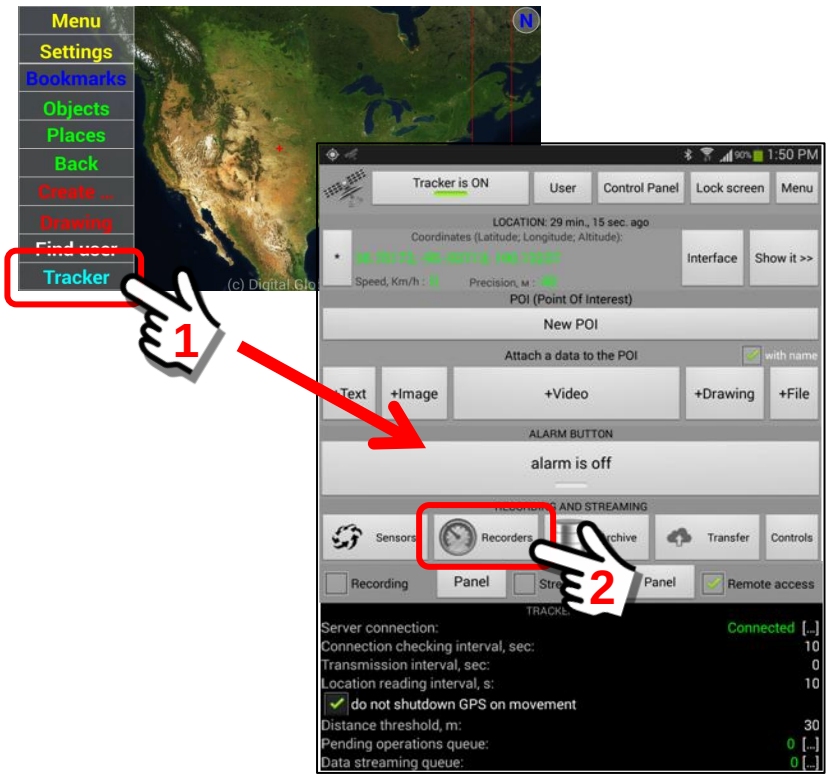
Later in this section we will describe how to create sub-direcories if you wish to segregate your files into logical folders.

3. ***Set the "File Transfer" interval to copy to the SD Card.***
There are two issues that must be considered when transferring files from internal memory to an SD Card.

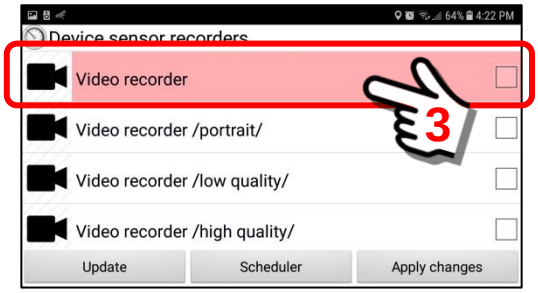
a. The length of the recording (ie 10min, 30min, 60min, etc.).
b. How often a transfer should be done (ie day, week, month, etc.)

Both of these issues are described in other sections of this User Manual, but we will briefly touch on them here. Please see **Section 15.2.18, Item #4** for additional details.

<u>Open the Tracker Panel, click on the Recorders Button</u>



<u>Select a "Device Sensor Recorder" to use</u>
In this example, the Video Recorder will transfer files over to the SD Card. We will edit the transfer interval from 30 days to daily.



Long Click

Review the Video Recorder configuration panel

The video recorder configuration panel contains settings for both the recorded “length” of each video file and the “life time” in days for when the file will be transferred or removed from internal memory. See **Section 15.2.18, Item #4** for a complete discussion of these features.

In this example, we leave the recorded length at 60 minutes (3600 seconds) but will change the “Life time, days” from 30 days to one day.

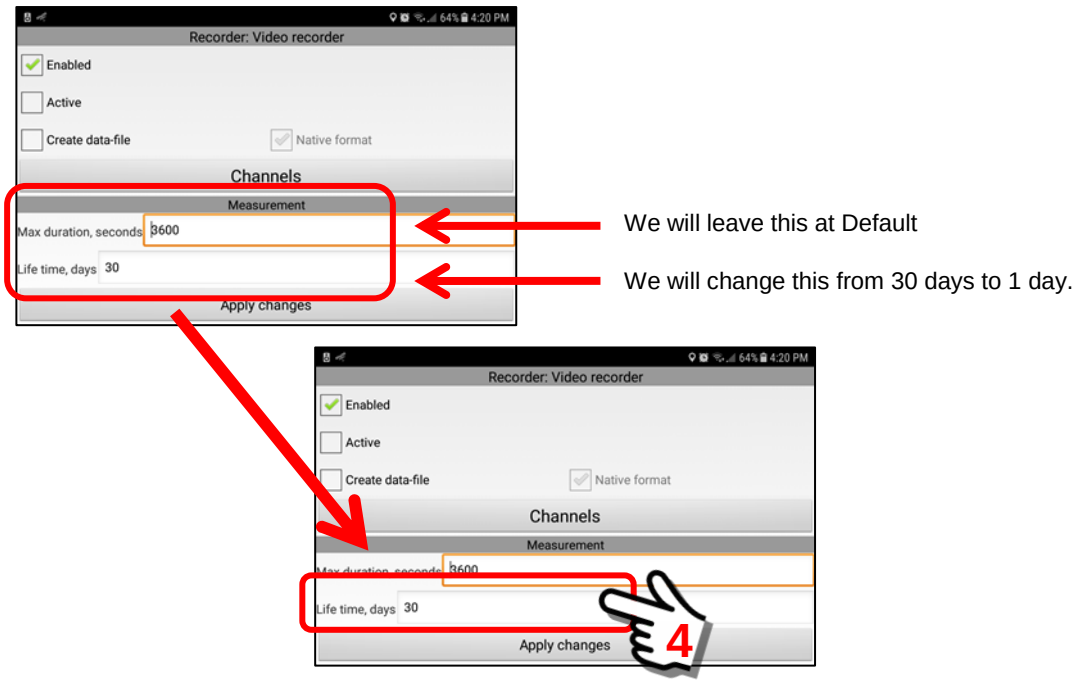
Max Duration, seconds:

This is the maximum length of a single data record in seconds. For example, the default is 3600 seconds (60 minutes). This means the application will record a single data file for a maximum of 60 minutes and then start a new file. If a recording is to last 3.5 hours, the resulting data files would be 3 files @ 60 minutes each and 1 file @ 30 minutes.

Life time, days:

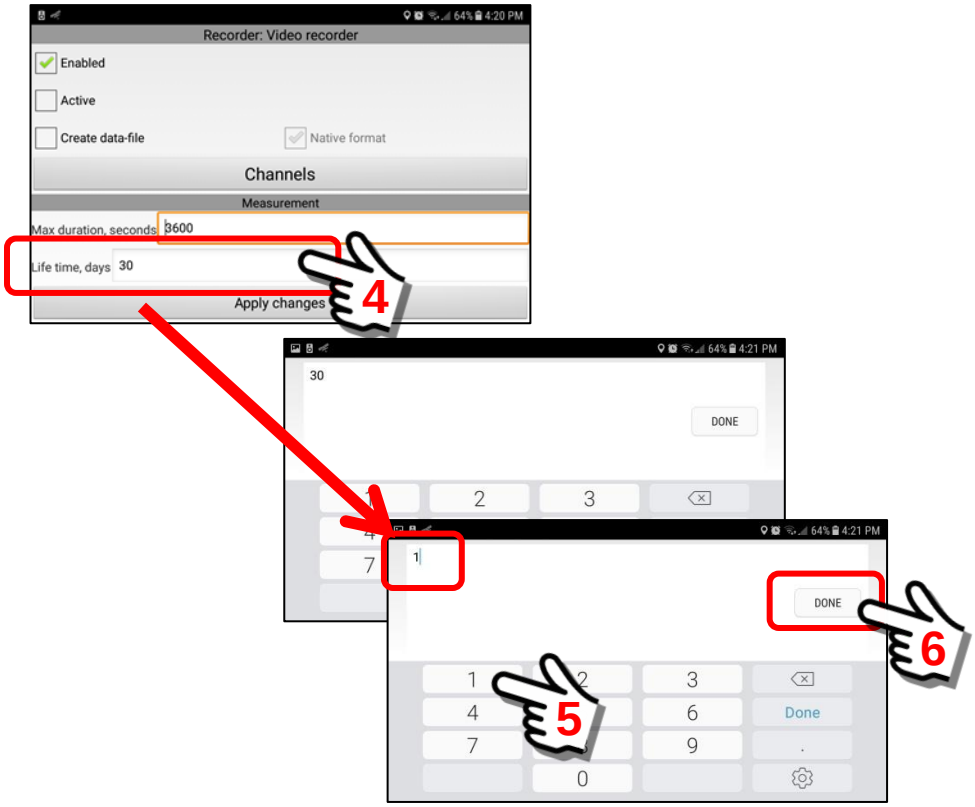
This is time period that a recorded file will stay on the mobile device before it is automatically removed. When time is expired, the file will either be (1)removed, (2)transferred to the Data Server (if you have a License or Subscription) or (3)transferred to an available SD Card.

The Sentry MDU System has settings for the mobile device and the Data Server. They are set independently. This setting is for the mobile device and the default is 2 days. If a record is not saved to the Data Server it will be automatically removed after this time interval setting unless it is transferred to the SD Card.



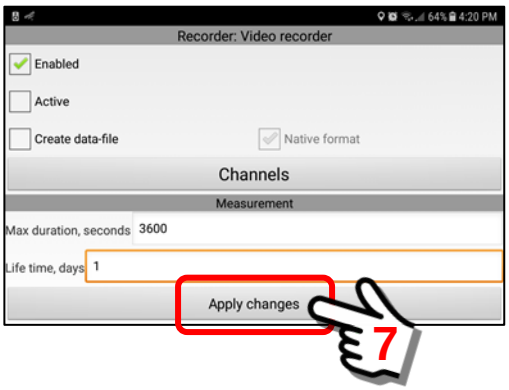
Configure the “Life time” for 1 day

Click on the “Life time” field to access the on-screen keyboard and make changes.



Accept changes and save

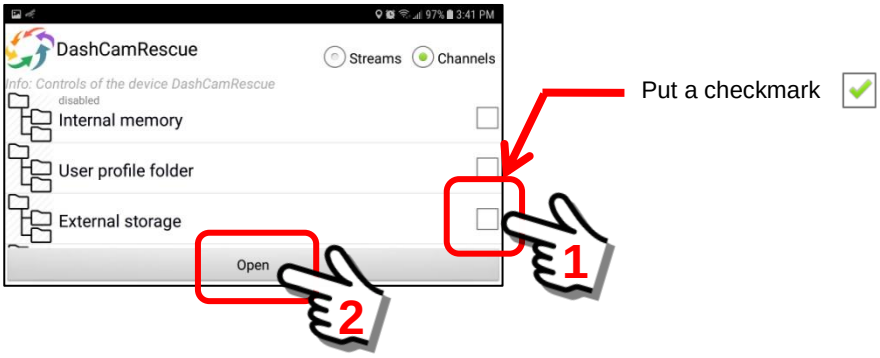
Click the “Apply changes” Button to save the new configuration.



With the “Life time” set for one day, and the Recorder External Storage set to transfer files to the SD Card, we have now configured the SentryMDU App to record Video and do a daily transfer of video files from internal memory storage to the external SD Card.

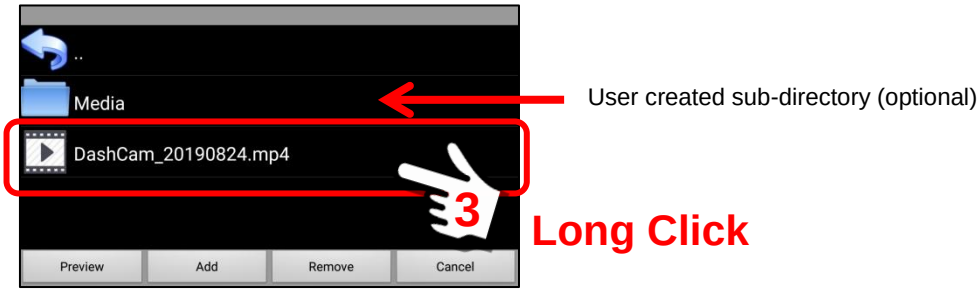
4. ***Access to data and files on the SD Card.***

This section will describe the access available to users for the data stored on the SD Card. We begin with access to the file structure of the card.

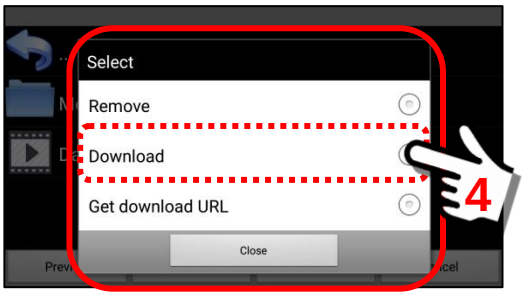


When you "open" the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card (**Device** Folder).

Navigate the file system and locate a file. Perform a "Long click" on the selected file name.



A "Long click" on the file name will open a pop-up menu that provides options to Download or Remove a file. If you have "remote" access, you may also download the file to your device (assuming you have security credentials).



6. Security Domain of Mobile Device

6.1. The purpose of a Security Domain

Overview:

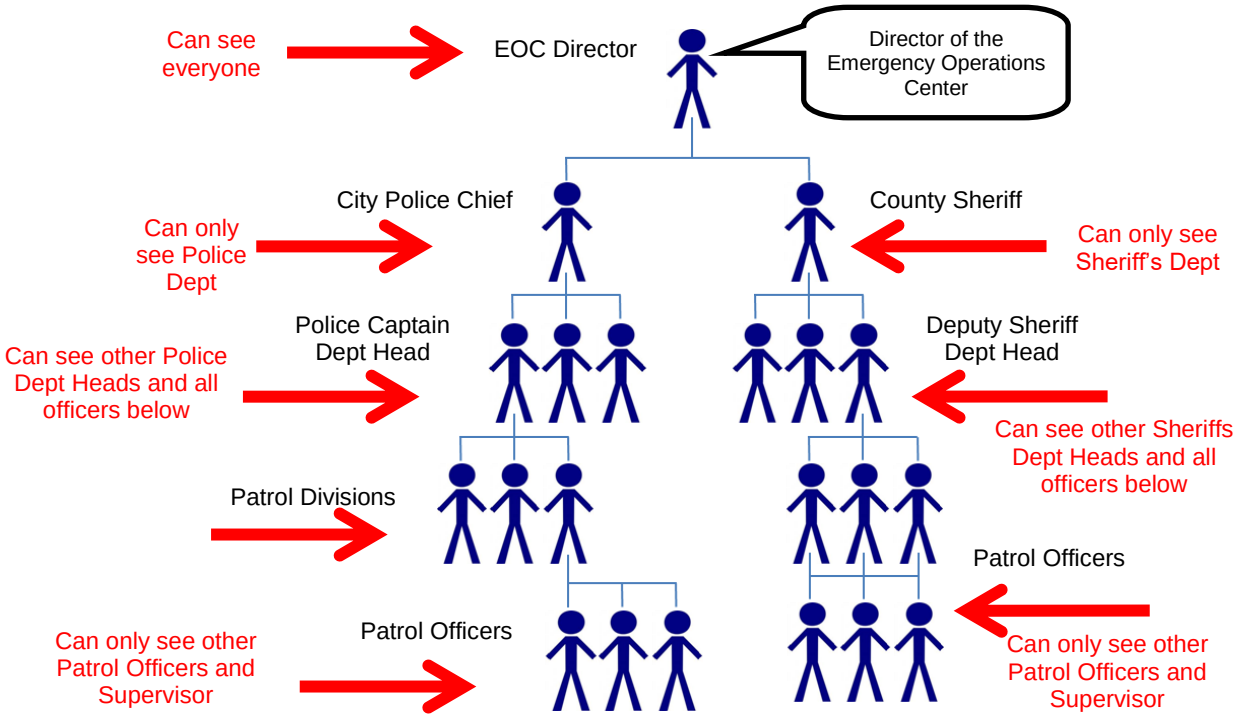
Each user that "registers" in the Sentry MDU System has "private" access. This means that other users can only view and control those functions that they are specifically "allowed" to access/control. This is controlled by the settings of the Security Domain.

Important Note: Security Domain settings are for a specific Data Server instance. Users on different Data Servers CANNOT communicate.

All Users may create "personal" security domains and assign existing domains (from other users) to themselves by using a Domain Name / Password pair. In addition, a Security Domain may be configured by users with Administrative privileges to a Data Server instance. Security Domains are controlled in the following manner:

a. Licensed users on a dedicated Data Server instance. They will be set up and administered by the group's IT Department.
b. Licensed users on a "shared" Data Server instance. They will be set up and administered by Digi-Lumen Technologies support personnel.
c. All Registered Users will have the ability to add other users to their "personal" security domain. Must be on the same SentryMDU Data Server instance.
d. Anonymous users (not registered), will only have "view" access of other users within the Public Sandbox since they are not part of a security domain "group".

Security Domains can be configured in both hierarchical and parallel configurations which allow a virtually unlimited combination of options. The following diagram illustrates one possible configuration of a group Security Domain with 5 levels.



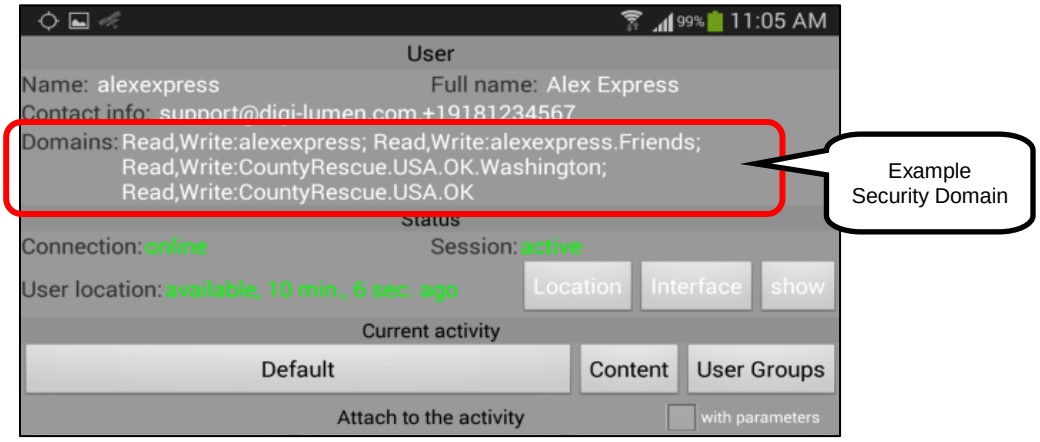
6.2. The Security Domain format

Overview:

One of the security features of the SentryMDU System is the concept of Security Domains. This is an important concept that the User should understand ... as this controls "who" can interact with their mobile device and "what" access is allowed. A security domain is organized in "levels" of parent-child relationships.

The Security Domain is comprised of three (3) parts:

1. Personal Security Domain
2. Home Domains
3. Supervisor Domains



In the sample shown above, the three parts are shown as follows:

Personal Domain = Read,Write:alexexpress; Read,Write:alexexpress.Friends

Home Domain = Read,Write:CountyRescue.USA.OK.Washington

Supervisor Domain = Read,Write: CountyRescue.USA.OK

Three parts of the Security Domain feature:

1. ***Personal Domain***
   All user accounts have "personal" security domains created automatically upon registration. The personal security domain uses the "username" as the root context of the security domain. In addition, the system will create a "Friends" sub-domain (ie Read,Write:alexexpress.Friends). Users may create additional sub-domains for work, play, civic groups and so on. Users may invite "other" users to join them in their personal security domain by providing them with a password. More on this later in **Sections 6.4 – 6.5**.

2. ***Home Domains***

   This is the type of security access assigned to YOUR UserID. The first component establishes Read/Write provisions of "your" account. These domains are used for creating "objects" that are owned by the User (pictures, audio-video, places, bookmarks, etc.). Also for accessing objects created by "other" users on the same Data Server instance, with the same security domain. A user may have many "Home" security domains. One for family, another for work, another for play, another for a civic group and so on.

   This allows who can see your location (ie GPS), monitor the sensors on your mobile device and remotely access/control your mobile device.

3. ***Supervisor Domains***

   This is the access you have to view/change OTHER USERS mobile devices. The second component contains security domains that the User uses only for viewing/supervising "other" users and the "objects" that other users create. A user may have many "Supervisor" security domains.

   This establishes the access and control YOU have over other user devices. This determines whether or not you can view/monitor/control another user's mobile device.

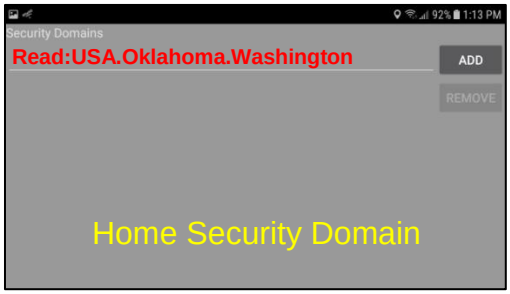
Access Permissions within a Security Domain:

The SentryMDU System uses two types of permissions.

1. **Read:** This means you may only "view" (Read) data from another Users device.
2. **Write:** This means you may "change/modify" another Users information or data. For example, if you want to monitor the camera on another user's device, you will need "Write" permission because you are turning "on" their camera (changing a setting on the other device).

<u>You may use a "Read" by itself in a domain access statement such as:</u>

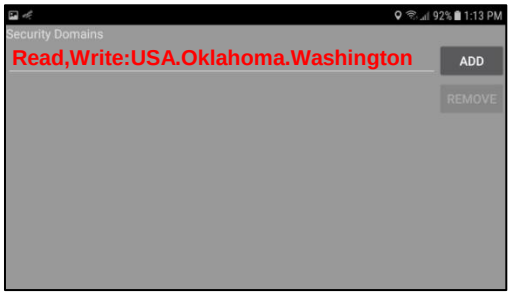
Read:*USA.Oklahoma.Washington*



When using a “Write”, you must use BOTH as:

Read,Write:*USA.Oklahoma.Washington*

(You must be able to “read’ it first, before you can “write” to it.)



If you attempt to access another User’s mobile device and receive an “Access Denied” error message, this is most likely a case where you do NOT have sufficient security credentials to perform the action (do NOT have Read/Write access).

Security Domain hierarchy:

The SentryMDU System uses a domain structure organized in a parent-child relationship. Together with “Read,Write” permissions, this format provides enhanced user access and control.

Read,Write:Country.State.County.City.Organization.User

In the following example (USA.Oklahoma.Washington.Bartlesville.EOC.EOCdirector) we establish the hierarchical relationship within the overall Security Domain system.
The hierarchy is as follows:

- Country (USA)
  - State (Oklahoma)
    - County (Washington County)
      - City (Bartlesville)
        - Organization (Emergency Operations Center)
          - Individual user position within organization (EOC Director)

Read,Write:USA.Oklahoma.Washington.Bartlesville.EOC.EOCdirector

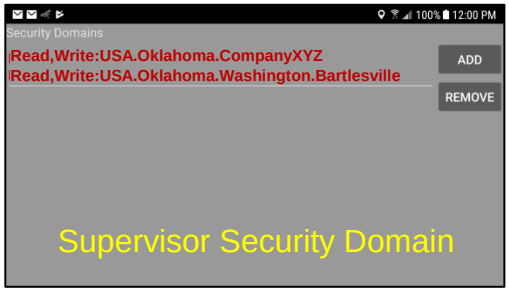
Important Concept: Each “parent level” within a domain hierarchy has access to all “child levels” below. In the example above, a User with a domain at the “City” Level ...

Read,Write:USA.Oklahoma.Washington.Bartlesville

will have access to ALL devices at the “City.Organization.User” levels.

- Country (USA)
  - State (Oklahoma)
    - County (Washington County)
      - City (Bartlesville)
        - Organization (Emergency Operations Center)
          - Individual user position within organization (EOC Director)

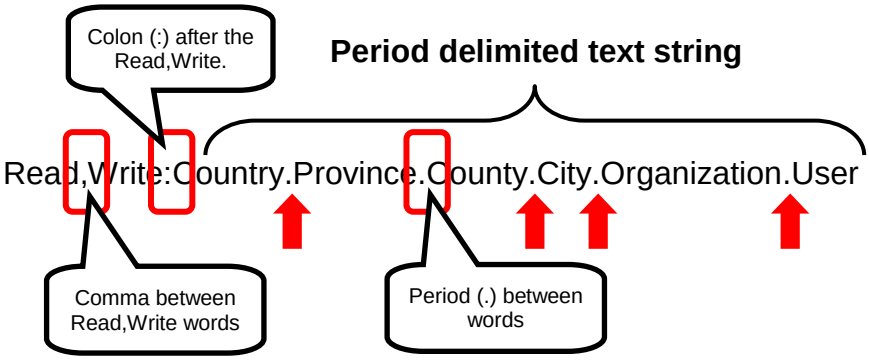
An example of a Supervisory Security Domain is shown below.



If you are aware of other "users" on the system, but you are not able to access them, check your security domain settings on the ***Supervisor Domains Panel***.

Format of the Security Domain statement:

1. ***The Read,Write statement.***
   The Security Domain format uses the capitalized words **Read** and **Write** separated by a comma (,) ending with a colon (:) as shown below:



<u>Rules to follow when constructing a Security Domain statement:</u>

a. "Read" must be the first word and must be capitalized.
b. If "Write" is used, it must be capitalized.
c. If BOTH Read and Write are used, they must be separated by a comma (,).
d. A Colon (:) is used after the "Read,Write" to separate it from the domain text entry.
e. The Domain text listing must be single words separated by a period.
f. The Domain text listing is case insensitive text, up to 100 characters.
g. NO whitespace or special characters in the Domain text string.
h. A "personal" Security Domain will ALWAYS start with the Username of the account creating the Security Domain.

2. Domain Text String format example for "Home" Domain

The next several examples assume you are an Admin User of a Licensed Data Server and have access via the SentryMDU Manager Desktop Client. This provides more flexibility in creating the text string of a Security Domain than is available from within the SentryMDU App. However, the principles are the same and can be applied in both user situations. To begin, give some thought on having your Users organized into "levels" of permissions (think parent-child relationships).

In the first example, we will assume the following … We want to create a "Home" Security Domain for a person who is the Director of the Emergency Operations Center located in the USA, State of Texas, Harris County, Office of Emergency Management. We might end up with something similar to the following:

Read,Write:USA.Texas.Harris.OEM.EOCdirector

Now, let's look at another example … We want to create a "Home" Security Domain for a person who is the Deputy Sheriff of the Sheriff's Department located in the USA, State of Texas, Harris County. We might end up with something similar to the following:

Read,Write:USA.Texas.Harris.Sheriff.DeputySheriff

Notice that BOTH are the same for the Country, State and County (USA, Texas, Harris) but after that, each has a unique Organization and Name.

Read,Write:USA.Texas.Harris.OEM.EOCdirector

Read,Write:USA.Texas.Harris.Sheriff.DeputySheriff

If we expand the ***Office of Emergency Management*** (OEM) group to other users we might have the following:

Read,Write:USA.Texas.Harris.OEM.member1
Read,Write:USA.Texas.Harris.OEM.member2
Read,Write:USA.Texas.Harris.OEM.member3

Additional OEM Members

If we expand the ***Sheriff's Department*** (Sheriff) group to other users we might have the following:

Read,Write:USA.Texas.Harris.Sheriff.officer1
Read,Write:USA.Texas.Harris.Sheriff.officer2
Read,Write:USA.Texas.Harris.Sheriff.officer3

Additional Sheriff Officers

Summary

In these two examples, we assume that an Administrative User of a Licensed Server has set up eight (8) users from two different Organizations.

Office of Emergency Management

User #1 = EOCdirector
User #2 = member1
User #3 = member2
User #4 = member3

Harris County Sheriff's Department

User #5 = DeputySheriff
User #6 = officer1
User #7 = officer2
User #8 = officer3

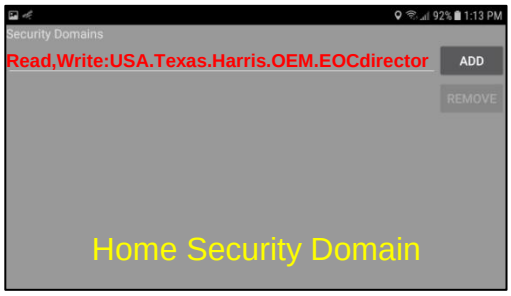
Each of these Users has a private "Home" Security Domain. In the next section, we will explore the "Supervisor" Security Domain that will allow these Users we have created to interact with each other.

3. Domain Text String format example for "Supervisor" Domain

As explained above, the "Supervisor" Security Domain will set the access permissions that a user will have to other User Accounts. When a domain text string is organized in a hierarchy this allows stepwise fine granularity in setting up access rules. We will look at some examples.

In our first example, we will use the EOCdirector. This user has a "Home" Security Domain as follows:

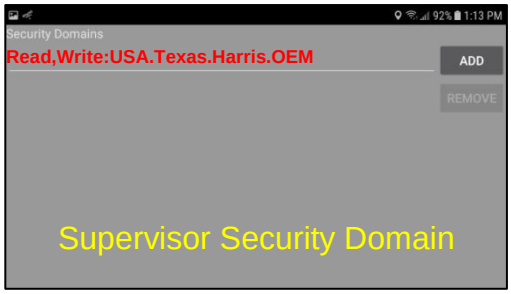
Read,Write:USA.Texas.Harris.OEM.EOCdirector



In this example, we want to set the "Supervisor" Security Domain such that the EOCdirector can "Read" and "Write" to ANY of the members of the

Emergency Operations Center mobile devices. To do this, we would set the "Supervisor" Security Domain as follows:

Read,Write:USA.Texas.Harris.OEM



Notice that the "Supervisor" Security Domain is now set such that it can access all devices in the OEM level (and below). This will include the following members.

Read,Write:USA.Texas.Harris.OEM.member1
Read,Write:USA.Texas.Harris.OEM.member2
Read,Write:USA.Texas.Harris.OEM.member3

In this scenario, we have configured the ***EOCdirector*** mobile device as follows:

<u>Home Security Domain</u>

Read,Write:USA.Texas.Harris.OEM.EOCdirector

<u>Supervisor Security Domain</u>

Read,Write:USA.Texas.Harris.OEM

If we want the members of the Office of Emergency Management (member1,2,3) to have full access to everyone in the OEM (including the EOCdirector's mobile device), then we would set their "Supervisor" Security Domain to the same.

<u>Home Security Domain</u>

Read,Write:USA.Texas.Harris.OEM.member1

<u>Supervisor Security Domain</u>

Read,Write:USA.Texas.Harris.OEM

However, if we only want the members to have “Read” access (view but not change) the EOCdirectors device, then we would set the members “supervisor” Security Domain with only “Read” access for EOCdirector.

Supervisor Security Domain

Read:USA.Texas.Harris.OEM.EOCdirector

Only “Read” Access

To carry this example further, we DO WANT ***member1*** to have “Read,Write” access to the other members (member2 and 3). To do that, we now create two additional “Supervisor” Security Domains. One for member2 and one for member3. The member1 device would now look like this:

Home Security Domain

Read,Write:USA.Texas.Harris.OEM.member1

Supervisor Security Domain

Read:USA.Texas.Harris.OEM.EOCdirector

Read,Write:USA.Texas.Harris.OEM.member2

Read,Write:USA.Texas.Harris.OEM.member3

Read Access for EOC director

Read,Write Access for member2 and 3.

The SentryMDU System will support up to 100 Security Domain entries. With combinations of “Read,Write” and hierarchy, you can customize the security settings to meet your needs.

4. Domain Text String format example for Organizational Access

As we have seen, by using combinations of “Read,Write” and hierarchy levels we can customize access. In the previous examples, all access was within the OEM Security Domain. The Office of Emergency Management was a secure “island” and other groups could not see (or access) any of the mobile devices. The Sheriff’s Department could not access any of the Office of Emergency Management (OEM) devices and vice versa.

This final example will show how to move access up one more level. In this example, we want the supervision of BOTH the Sheriff’s Department and the Emergency Operation Center to be able to see everything going on in Harris County. We set the “supervisor” Security Domain level to “Harris” for both.

Security Domains for EOCdirector

Home Security Domain

Read,Write:USA.Texas.Harris.OEM.EOCdirector

Supervisor Security Domain

Read,Write:USA.Texas.Harris

Security Domains for DeputySheriff

Home Security Domain

Read,Write:USA.Texas.Harris. Sheriff.DeputySheriff

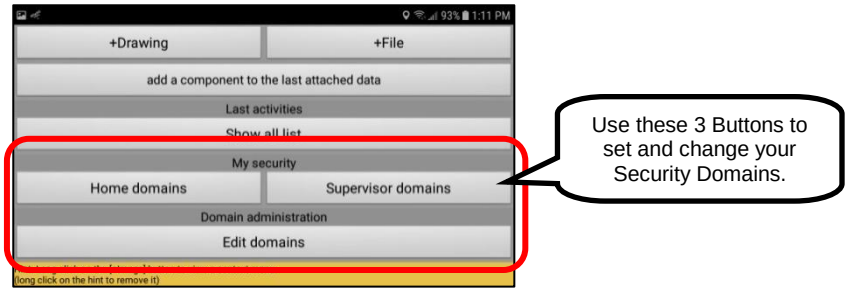
Supervisor Security Domain

Read,Write:USA.Texas.Harris

Format of the "personal" Security Domain statement:

1. ***The format of the "personal" Security Domain.***
   The format of the Security Domain that can be configured from within the SentryMDU App is similar to the configuration that is performed by an Administrative User via the SentryMDU Manager Desktop Client.

   If you (or your Organization) do not have a Licensed SentryMDU Server instance, then you must use the "personal" Security Domain that is assigned to your User. This would be the case if you are a Subscription User.



   A "personal" Security Domain will ALWAYS start with a Username. For example, if we had a User by the name of ***Sam Express*** … and a registered Username = "samexpress", then the ROOT value of the "Home" Security Domain would default to the following:

   Read,Write:samexpress

When a new user is created, the SentryMDU System will create one personal security domain and a sub-domain:

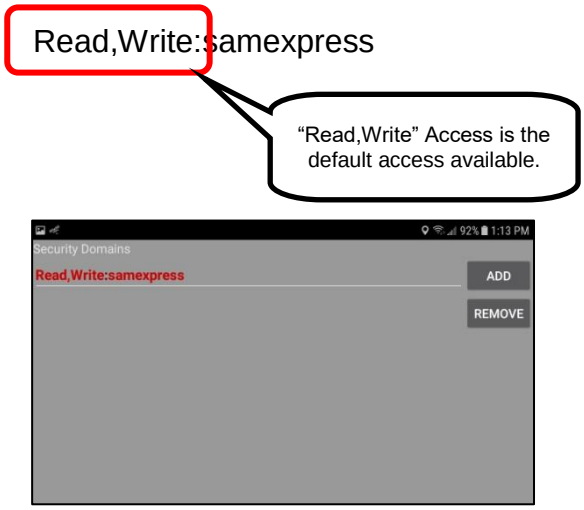
Read,Write:<username>
Read,Write:<username>.Friends

As shown in the previous examples, you may also create additional security domains for your account. A few examples showing the “personal” Security Domain are as follows:

Read,Write:samexpress.work
Read,Write:samexpress.family
Read,Write:samexpress.family.children.alex
Read,Write:samexpress.hobby.sailing

Notice that ALL “personal” security domains have the same ROOT context of “samexpress”. This would be the system default for this user.

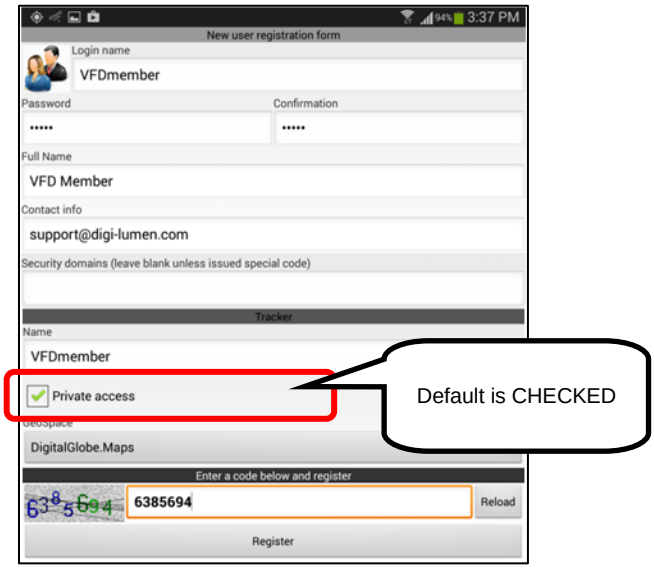
2. ***Personal Security Domain will have “Read,Write” permissions***
All personal security domains will be created WITH a “Read,Write” permission. During initial setup you do not have the option to do only a “Read” permission (you do have the ability to change it later).



6.3. Adding and removing Security Domains

Overview:

During the registration process, it is recommended that a user put a checkmark in the "Private access" checkbox. This allows the user to establish a private security domain that can only be viewed/accessed by others also in the same security domain.



How Security Domains are created:

In most cases, a User of a Licensed SentryMDU Data Server will be assigned a Security Domain category that has been set up by their IT Department. The System Administrator for the organization can assign any security domain to any User on the server instance.

All Users will have a personal security domain created for them by the system **AND** may create additional "personal" security domains and assign personal security domains of other users to themselves (assuming they have permission). However, a User can only assign a "personal" Security Domain by using a DOMAIN_NAME / PASSWORD pair. To assign a personal Security Domain to yourself that was created by another User, you must be given the Domain Name and Password by the other User.

Users may create multiple Security Domains to cover work, play, family, specific activities and so on. Users may have up to 100 security domains.

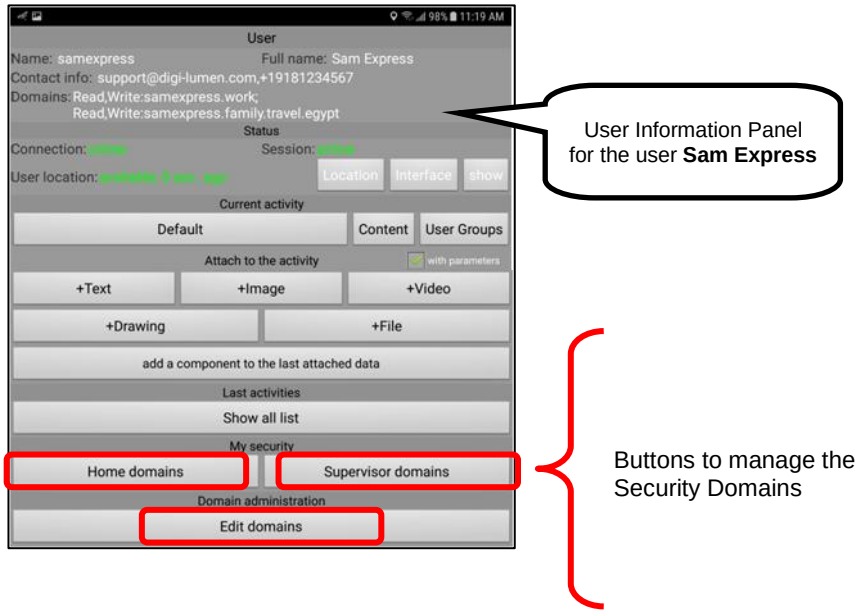
Guidelines for using a "personal" Security Domain:

1. Users may create multiple Security Domains to cover work, play, family, specific activities and so on.
2. Security domains may be created and used for short periods of time and then removed when no longer needed.
3. "Personal" security domains are password protected.

Domain Security and Administration Buttons:

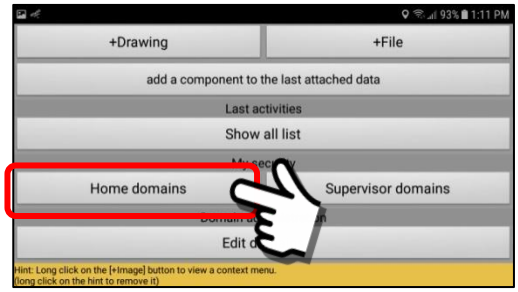
1. ***In-App Features to manage Domain Security.***
   On completion of the User Registration Process, by default, a Security Domain is created with the same name as the "Username" that was selected by the User. The SentryMDU System provides 3 Menu Items for managing "personal" Security Domains.

   <u>Menu Items for Administration:</u>
   a. Home Domains Button
   b. Supervisor Domains Button
   c. Edit Domains Button



2. ***The "Home Domains" Button***
   The "Home Domains" Button will open a panel that will display the Home Domains that this mobile device has access to. This can be a combination of security domains. If you are on a Licensed Data Server, it can be security domains installed by your IT Department and it can also be personal security domains you have installed yourself.

   To access, click on the Home Domains Button.



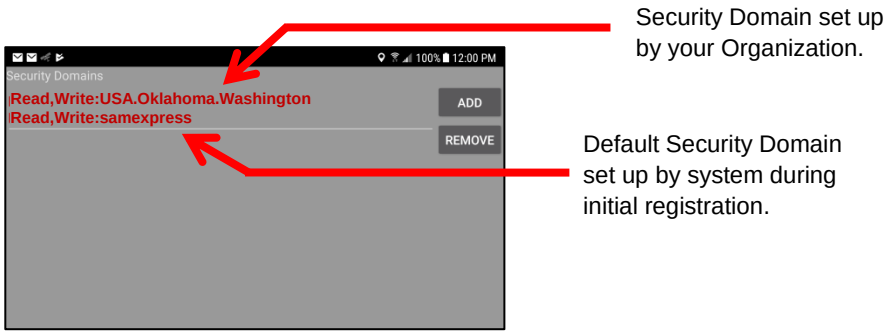
A pop-up “Security Domains” Panel will appear. After a “new” install of the SentryMDU App, you may see screens similar to the following.

<u>We will look at several Home Security Domain scenarios</u>

a. You are part of an Organization that has a Licensed Server
b. You have a Subscription Account (not on a Licensed Server)
c. Registered Account only (no Subscription, not on a Licensed Server)

<u>You are part of an Organization that has a Licensed Server</u>

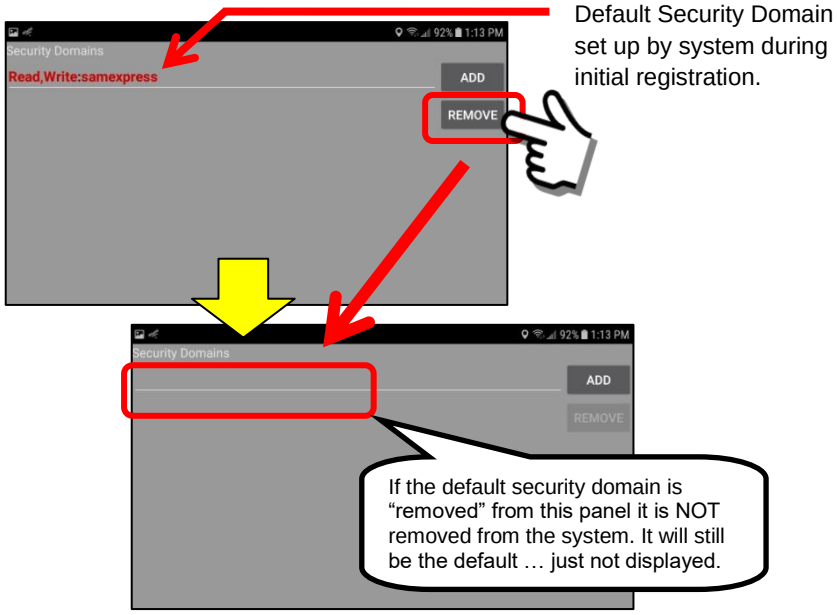
As part of an Organization that has a Licensed Data Server, you will have one (or more) security domain entries made by your IT Department. In addition, you will have the system “default” personal security domain.



<u>You have a Subscription Account (not on a Licensed Server)</u>

A Subscription Account user will have the system “default” personal security domain (and a sub-domain). This is set up during registration. There will be NO custom security domains since a Subscription User does not have administrative access to the SentryMDU Data Server.

This user WILL be able to create additional security domains that reflect the parent-child relationship to their default domain.

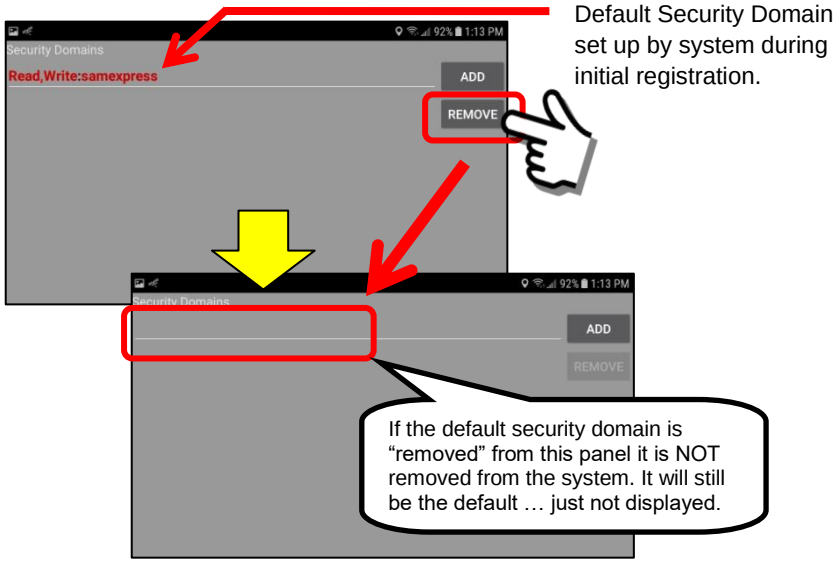


The default security domain that is set up during registration may be removed from the Security Domains Panel if desired. However, it is still the default, it is simply removed from the panel.

<u>Registered Account only (no Subscription, not on a Licensed Server)</u>

All registered accounts will have a system generated “default” personal security domain. This is set up during registration. There will be NO custom security domains since a General User does not have access to the SentryMDU Data Server.

This user WILL be able to create additional security domains that reflect the parent-child relationship to their default domain.

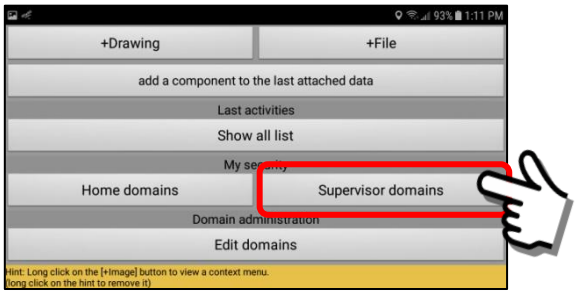


The default security domain that is set up during registration may be removed from the Security Domains Panel if desired. However, it is still the default, it is simply removed from the panel.

3. The “Supervisor Domains” Button

The “Supervisor Domains” Button will open a panel that will display the Supervisor Domains that this mobile device has access to. This can be a combination of security domains. If you are on a Licensed Data Server, it can be security domains installed by your IT Department and it can also be personal security domains you have installed yourself.

To access, click on the Supervisor Domains Button.



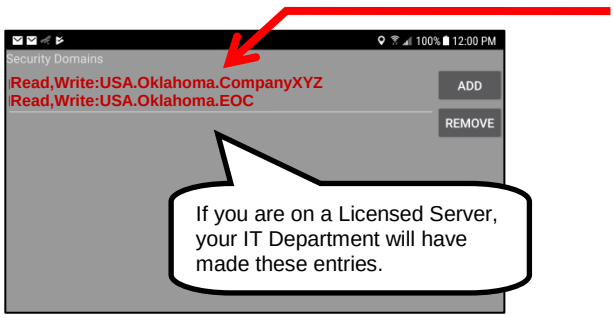
After a “new” install of the SentryMDU App, you may see screens similar to the following.

<u>We will look at several Supervisor Security Domain scenarios</u>

a. You are part of an Organization that has a Licensed Server
b. You have a Subscription Account (not on a Licensed Server)
c. Registered Account only (no Subscription, not on a Licensed Server)

<u>You are part of an Organization that has a Licensed Server</u>

As part of an Organization that has a Licensed Data Server, you will have one (or more) Supervisor security domain entries made by your IT Department.

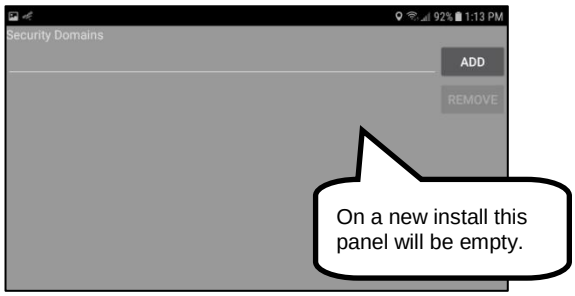


Security Domains set up by your Organization.

<u>You have a Subscription Account (not on a Licensed Server)</u>

A Subscription Account user will have NO custom security domains since a Subscription User does not have administrative access to the SentryMDU Data Server. This field will be empty.

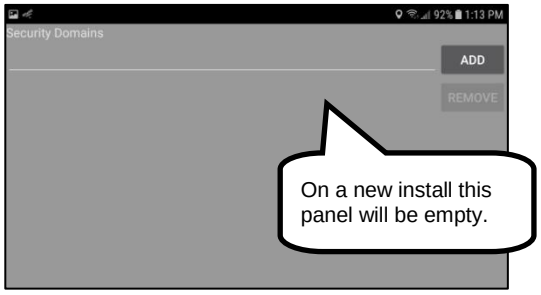
This user WILL be able to install Supervisor security domains provided by OTHER users using the DOMAIN_NAME / PASSWORD pair. This will be described later in this section.



Registered Account only (no Subscription, not on a Licensed Server)

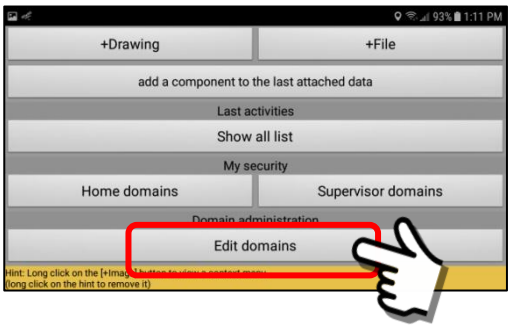
General registered accounts will have NO custom security domains since a User does not have administrative access to the SentryMDU Data Server. This field will be empty.

This user WILL be able to install Supervisor security domains provided by OTHER users using a DOMAIN_NAME / PASSWORD pair. This will be described later in this section.

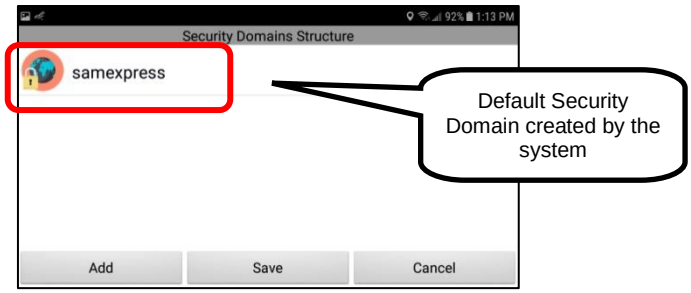


4. The "Edit Domains" Button

This feature allows ALL USERS to create additional "personal" sub-domains that can be used to organize a parent-child domain hierarchy on their device. As part of the process, a User will create a DOMAIN_NAME / PASSWORD pair that can be provided to OTHER users to create "private" groups. This will allow private groups of 2 – 100's of people.



To access, click on the "Edit Domains" Button. The ***Security Domains Structure*** Panel will open. It will display the default "personal" security domain that has been set up for this User.



The ***Security Domain Structures*** Panel has 3 buttons. These will be described in detail in later sections. They are as follows:

<u>Add Button</u>

Opens a series of screens that will enable you to create additional sub-domains that are password protected. These sub-domains can then be provided to OTHER users to create private groups.

<u>Save Button</u>

This button will “Save” any changes that have been made to this panel.

<u>Cancel Button</u>

This button will “cancel” this panel and return to the previous screen.

6.4. Creating a personal Security Domain

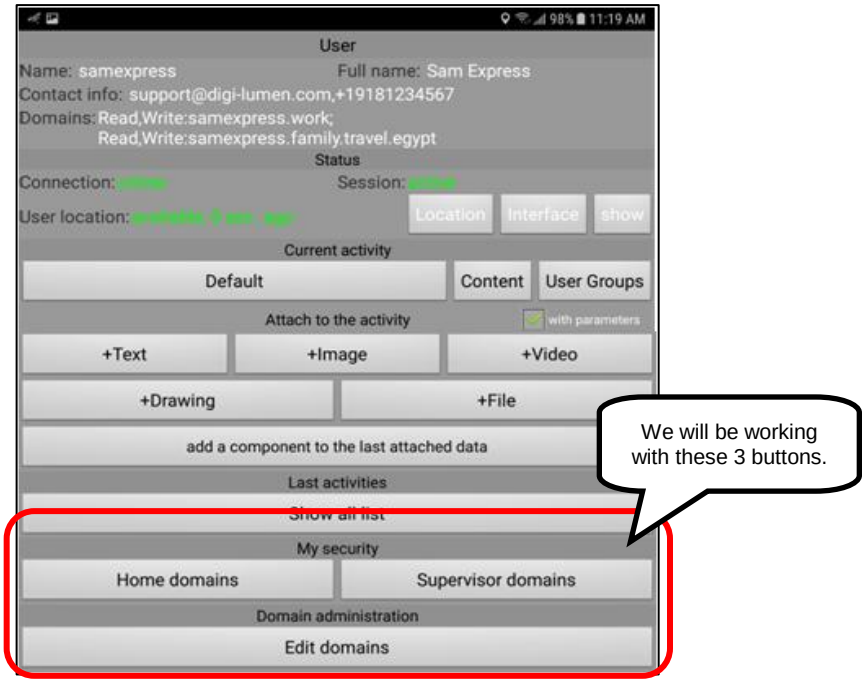
Overview:

All Users may create “personal” security domains and assign personal security domains of other users to themselves (assuming they have permission). However, a User can only assign a “personal” Security Domain by using a DOMAIN_NAME / PASSWORD pair. To assign a personal Security Domain to yourself that was created by another User, you must be given the Domain Name and Password by the other User.

Steps to create a new “personal” Security Domain:

1. The “private access” checkbox must be checked during registration.
2. During registration, a default “personal” security domain is created by the SentryMDU System. This domain will use the “username” of the registered user.
3. Verify that the default “personal” security domain was created.
4. Decide on a naming scheme for sub-domains of your personal security domain. These should reflect a parent-child relationship.
5. Review the current Security Domains that are available to your user account.
6. Create a new “child” security sub-domain for your “parent” domain.
7. Create a password for this new security sub-domain.
8. Provide the DOMAIN_NAME / PASSWORD pair to other Users so they may become part of your personal security domain.

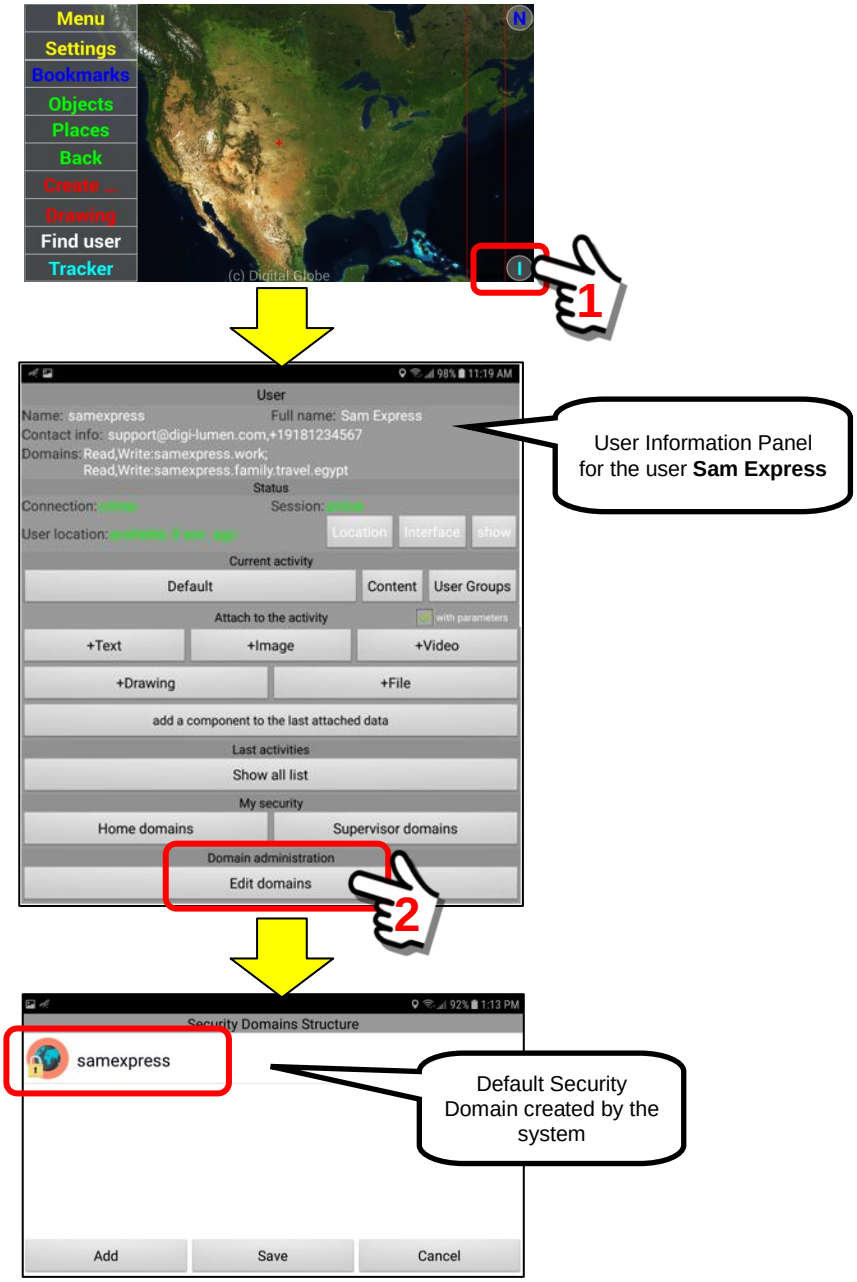
Users may create multiple Security Domains to cover work, play, family, specific activities and so on. Users may have up to 100 security domains.



How to create personal Security Domains:

1. ***Personal security domain created during registration.***
   On completion of the User Registration Process, by default, a Security Domain is created with the same name as the “Username” that was selected by the User (and a .Friends sub-domain).

   In the example shown below, if during registration, a user by the name of ***Sam Express*** created a Username = “samexpress”, a security domain of the same name is created.



2. ***Decide on a naming "format" for your Security Domain.***

As outlined in **Section 6.2** "The Security Domain Format" it will be necessary for you to select a naming format for your personal security domains. A little thought now will make it easier on you later in the event you expand your number of private groups.

You may have up to 100 security domains. This can cover family, work, play, civic clubs, neighborhood watch groups and more. In addition, you may create a personal security domain for a short period of time and then remove it. For example, assume your town has a 3-day Festival and you will be taking a group of children (they all have phones now). So they don't get lost, you could create a security domain for this group, just for the Festival, and then remove it once the Festival is over. This way, you could know where everyone is located during the time of the Festival.

The "default" ROOT personal domain for this User is "samexpress" as shown below. All new security domains will start with this "samexpress" name.

Examples of "new" potential security domain names:

Read,Write:samexpress.family
Read,Write:samexpress.family.travel.egypt
Read,Write:samexpress.family.children.school.fieldtrip
Read,Write:samexpress.family.children.alex.sports.soccerteam
Read,Write:samexpress.family.children.maria.sports.gymnastics
Read,Write:samexpress.work
Read,Write:samexpress.work.companyxyz.shift.paintcrew
Read,Write:samexpress.play
Read,Write:samexpress.play.hiking.trip.yellowstone
Read,Write:samexpress.play.bicycle.trip.natcheztrace

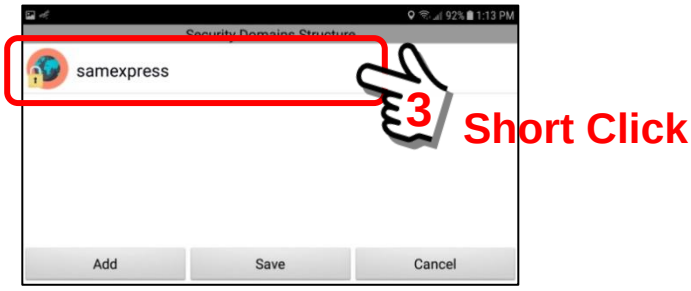
The following sections will show how to create a security domain for a family vacation trip to Egypt. This will be installed on family members mobile devices.

Read,Write:samexpress.family.travel.egypt

3. Select the "parent" security domain.

Security domains are arranged in a linear parent-child relationship format. In this example, since we have not created any other security domains, we only have the system default of "samexpress".

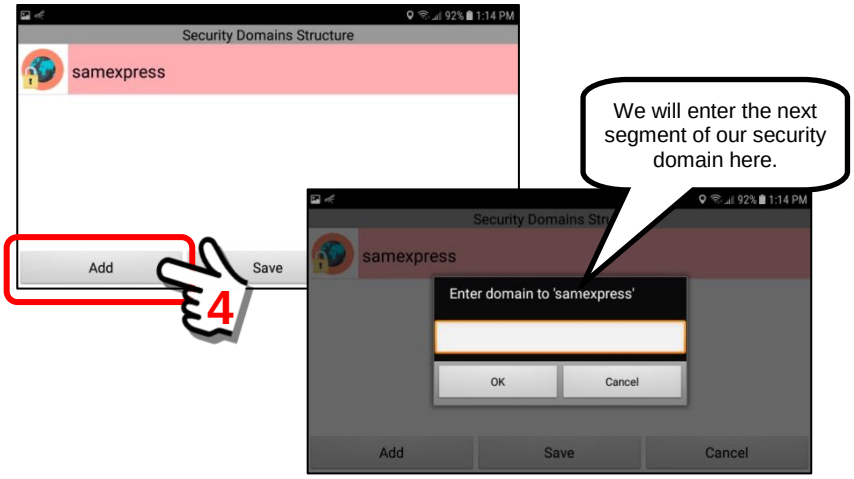
Perform a "short click" on the ***samexpress*** domain name.



Highlight the "samexpress" domain name. This will make it ACTIVE for the next step.

4. Construct a "new" personal security domain.

With the "samexpress" name highlighted, click on the ***Add Button***. This will open a series of screens to create a new personal security domain.

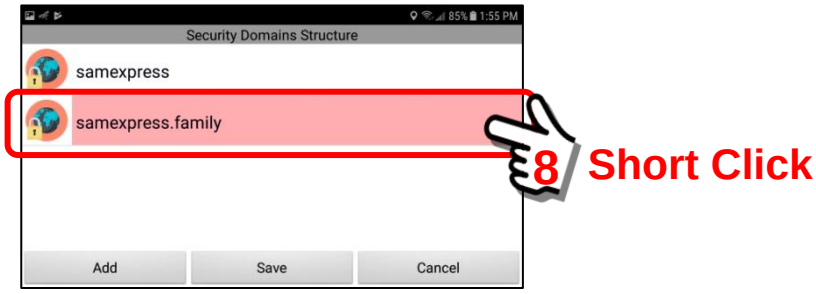


We are wanting to construct a new personal security domain as:

Read,Write:samexpress.family.travel.egypt

Our next step is to add the “family” segment to the domain text. Click inside of the text box to open the “on-screen” keyboard.

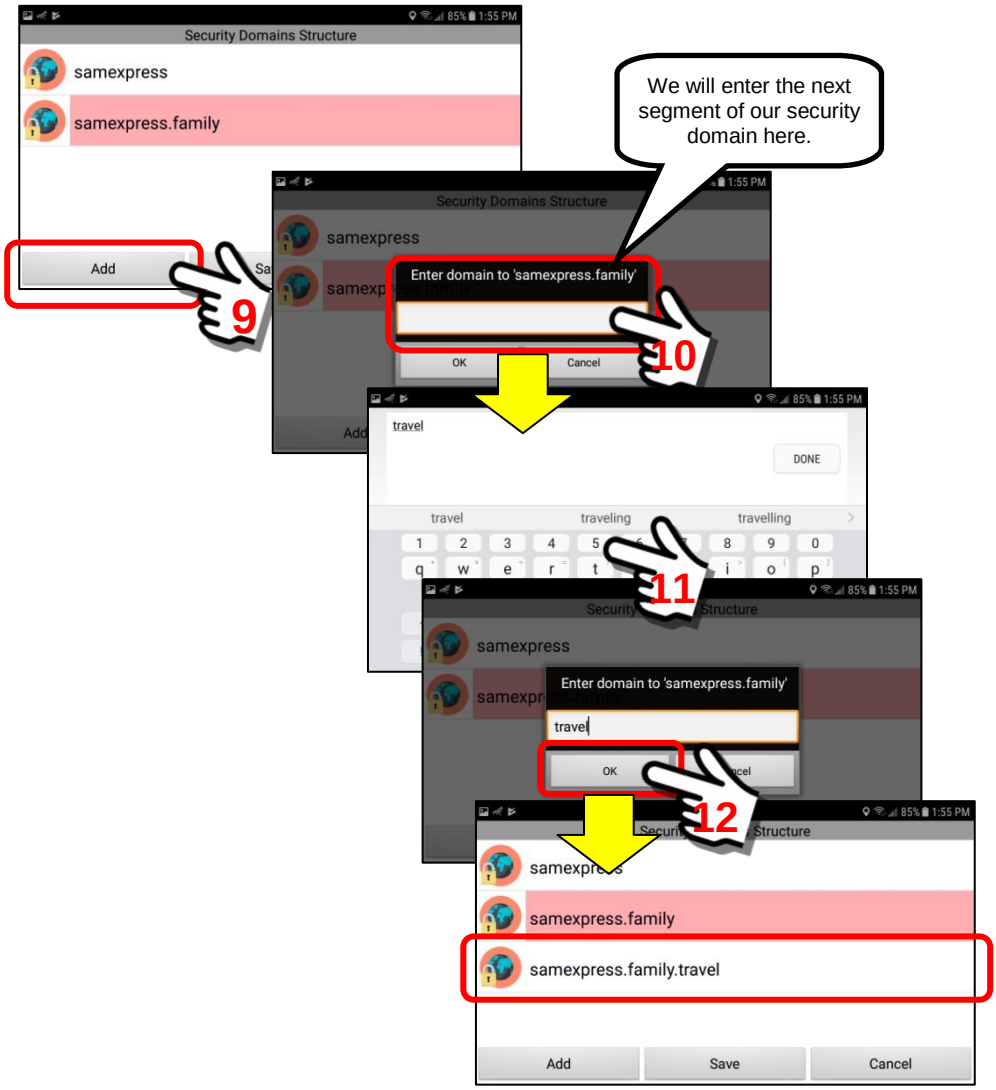
We have now created the “family” portion of the new personal security domain. Perform a “short click” on the ***samexpress.family*** name to make it the ACTIVE one to work on.



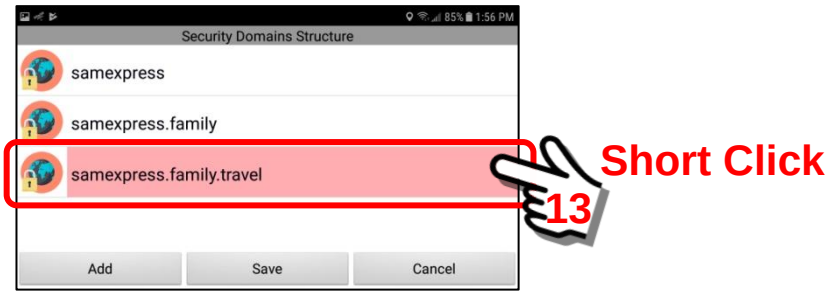
We have added the “family” segment, now to add the “travel” segment of the security domain.

Read,Write:samexpress.family.travel.egypt

Click the Add Button again and then click inside of the text box to open the “on-screen” keyboard. Enter the “travel” segment for the domain.



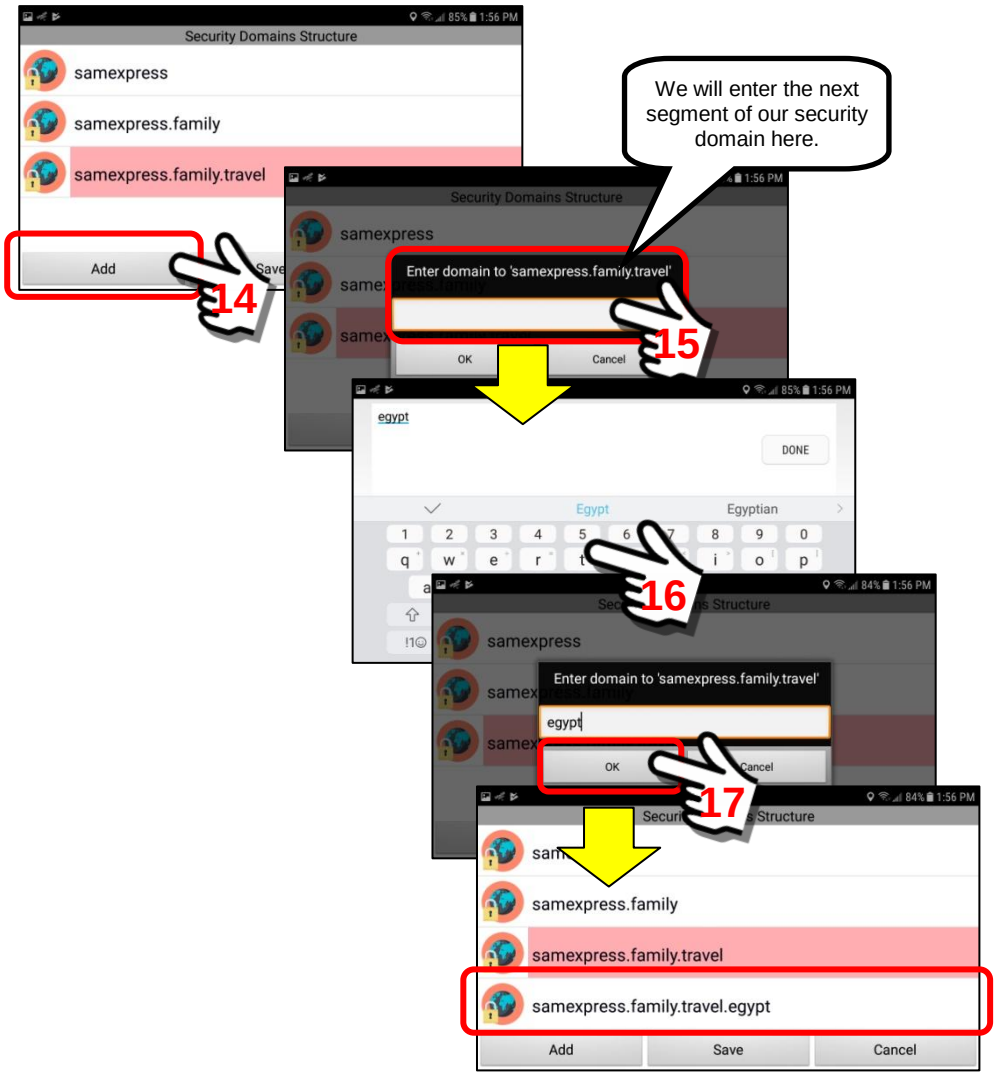
We have now created the “travel” portion of the new personal security domain. Perform a “short click” on the ***samexpress.family.travel*** name to make it the ACTIVE one to work on.



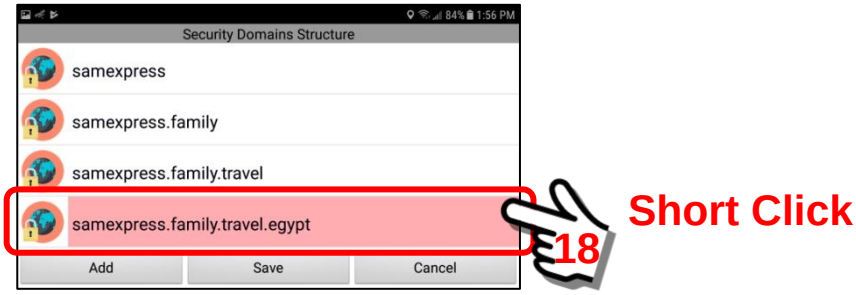
We have added the “travel” segment, now to add the “egypt” segment of the security domain.

Read,Write:samexpress.family.travel.egypt

Click the Add Button again and then click inside of the text box to open the “on-screen” keyboard. Enter the “egypt” segment for the domain.

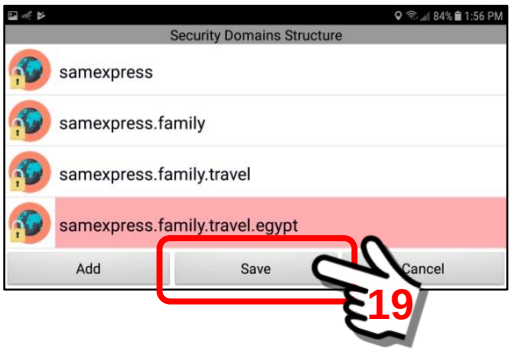


We have now created the “egypt” portion of the new personal security domain. Perform a “short click” on the ***samexpress.family.travel.egypt*** name to make it the ACTIVE one to work on.

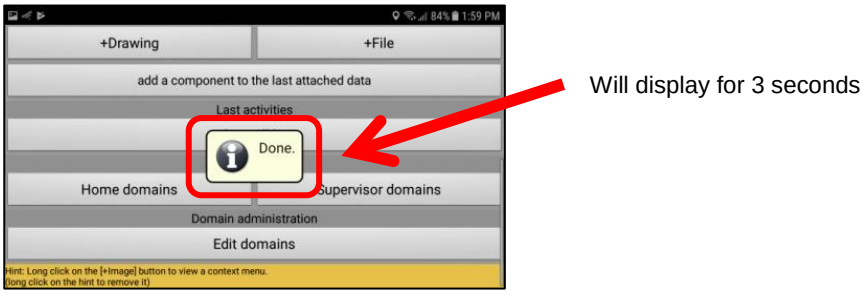


After completion of the “egypt” segment, the domain text string is now ready to be SAVED. Click on the ***Save Button*** to save this work. This save action will save all changes to the screen. It will save the following:

- samexpress.family
- samexpress.family.travel
- samexpress.family.travel.egypt

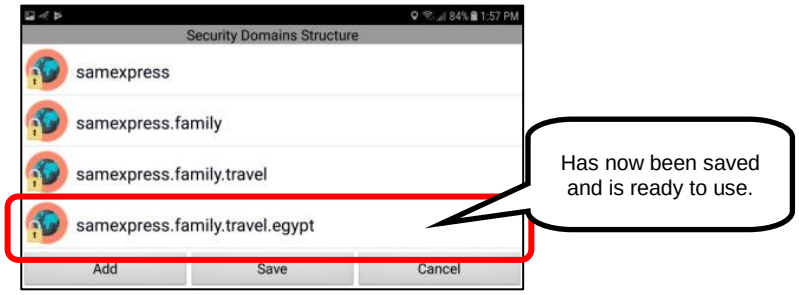


When the SAVE action is completed, the screen will return to the User Panel. A “Done” pop-up message will display for a few seconds.



The new personal security domain has now been completed. The next section will describe how to assign a password to this new security domain and make it available to other users (to form private groups).

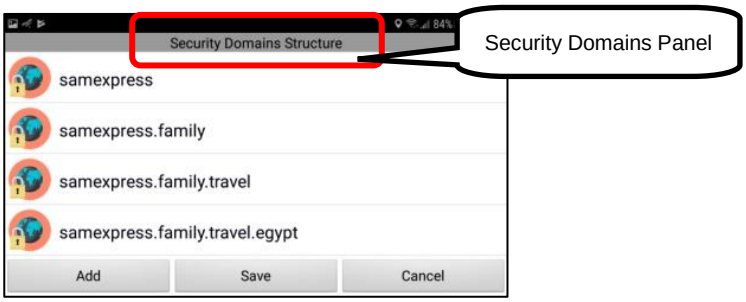
Read,Write:samexpress.family.travel.egypt



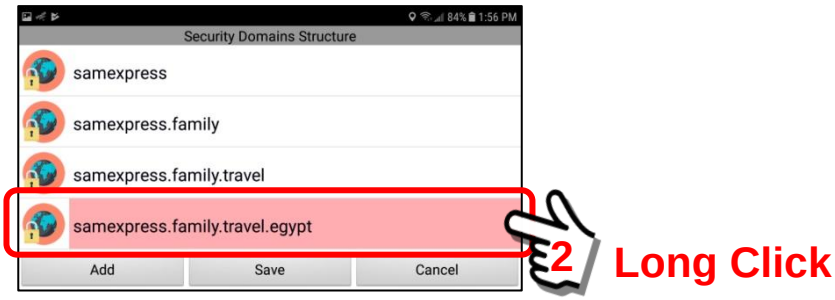
5. ***Assign a PASSWORD to the personal security domain.***

In order to share a "personal" security domain with another user (so they can become part of your private group) you must create a password that will authorize their access. This section will describe the process.

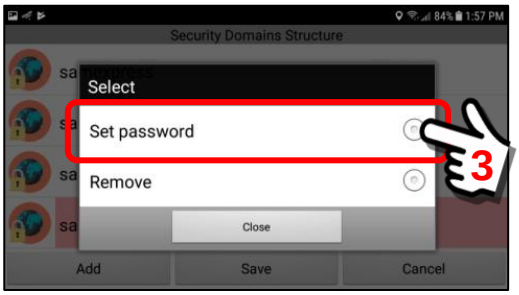
Open the User Panel, navigate to the bottom of the screen and click on the ***"Edit Domains" Button***. The Security Domains Structures Panel will be displayed.



Select the Security Domain that you want to create a password for.
In our example, we will select …. **samexpress.family.travel.egypt.**

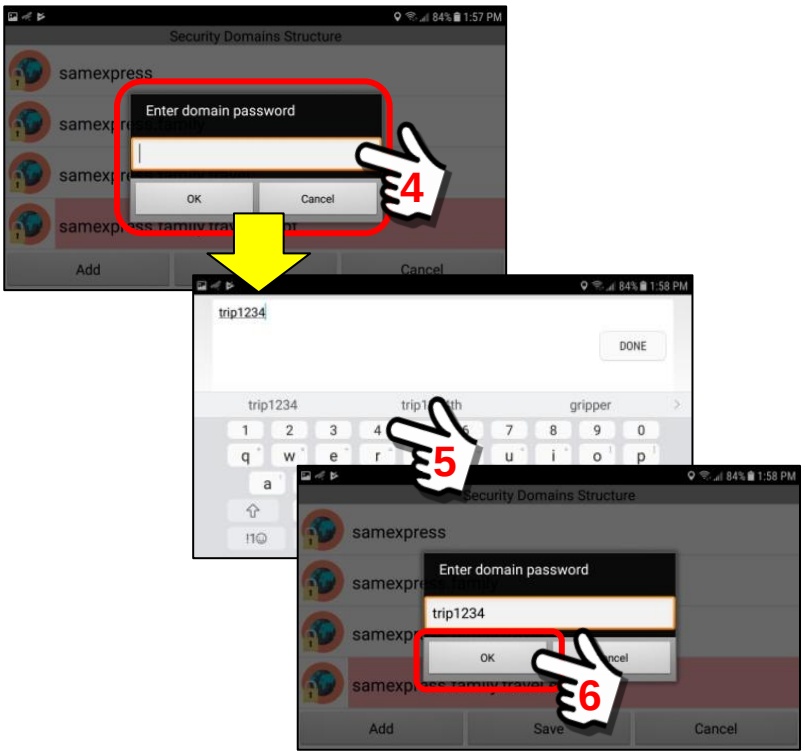


Perform a "Long click". This opens a Select Menu Box with options to set a password. Click on the "Set Password" option.

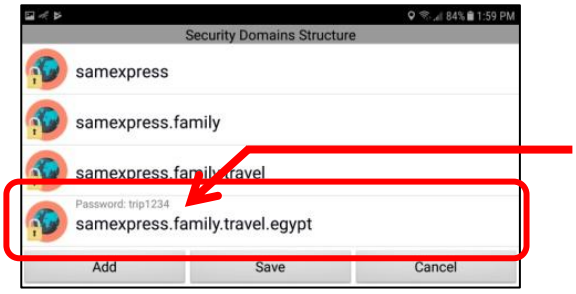


A pop-up box will appear where you will enter a domain password. This will be the password that will protect this particular personal security domain.

Click inside the text box. An on-screen keyboard will appear.

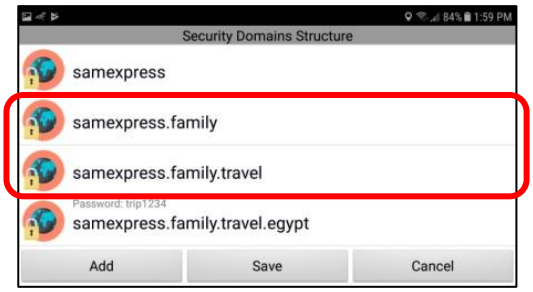


In this example, we have entered …. **trip1234** as our password for this security domain.



Notice that the PASSWORD is displayed above domain name

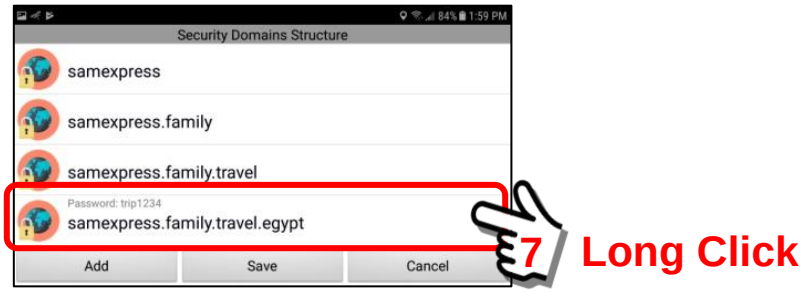
Notice that we have NOT created passwords for the other security domains. We could do that if we wanted. Those passwords would/should be different.



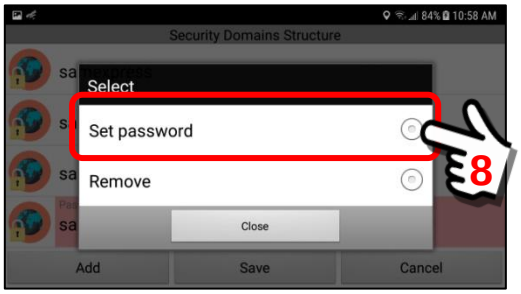
No passwords are created for these.

Important Note: Passwords may be CHANGED at any time. You may create a password ... allow new Users to use this password for a few days ... then change the password. The original password will no longer work and future new Users will now need the NEW PASSWORD in order to install the selected private security domain. Existing users that have already installed the private security domain are NOT affected, they continue to have access.

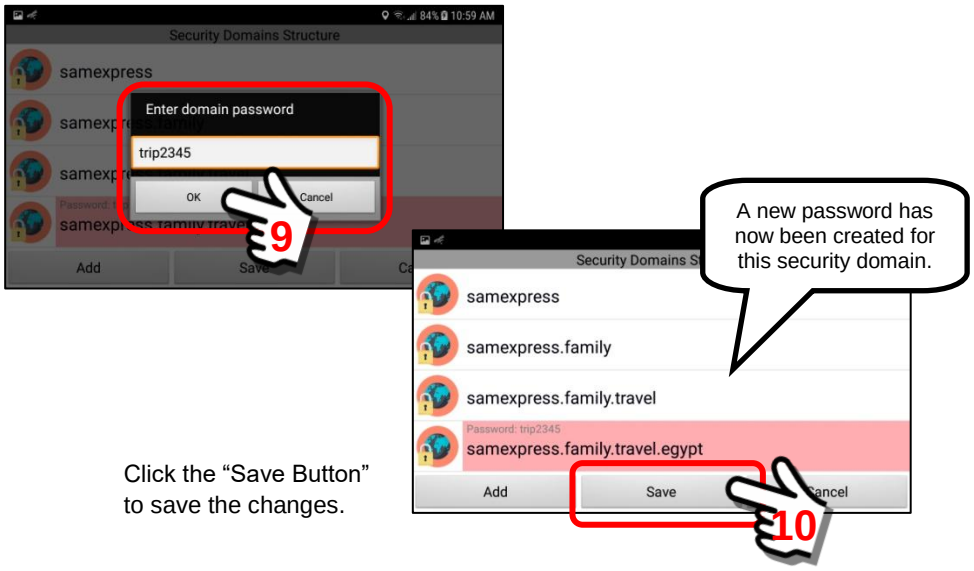
In this example, we will change the password from “trip1234” to “trip2345”.



A pop-up select box will appear. Select the ***Set Password*** option.



The ***Enter domain password*** text entry panel will appear. Enter a “new” domain password. Click “OK” when finished.



Click the “Save Button” to save the changes.

6.5. Sharing a personal Security Domain with other Users

Overview:

This section will describe the steps necessary to share one of YOUR personal security domains with other Users. This will create a private Group. A group may have 2 – 100's of members. A group member can only assign a "personal" Security Domain by using a DOMAIN_NAME / PASSWORD pair. You must provide the Domain Name and Password to the other User.

This example will use two (2) mobile devices:

Device #1 (your device) and Device #2 (another user's device)

Steps to share a "personal" Security Domain:

1. Create a personal security domain on Device #1.
2. Create a password for this new security sub-domain.
3. Install this personal security domain into the Supervisor Domain Panel on Device #1.
4. Provide the DOMAIN_NAME / PASSWORD pair to other Users (ie Device #2) so they may become part of your personal security domain.
5. Install the personal security domain into the "Home Domain" panel on Device #2.
6. Review "one way" access ... Device #1 can access Device #2.
7. Create "two-way" access ... BOTH devices can access each other.

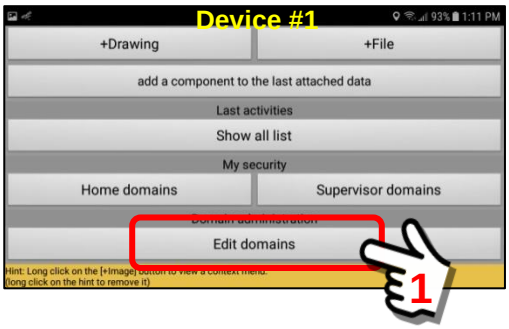
Users may create multiple Security Domains to cover work, play, family, specific activities and so on. Users may have up to 100 security domains.

Steps to share a personal Security Domain:

1. ***Create a personal security domain on Device #1.***
   Follow the steps in **Section 6.4** to create a personal security domain. In this example, we will be using:

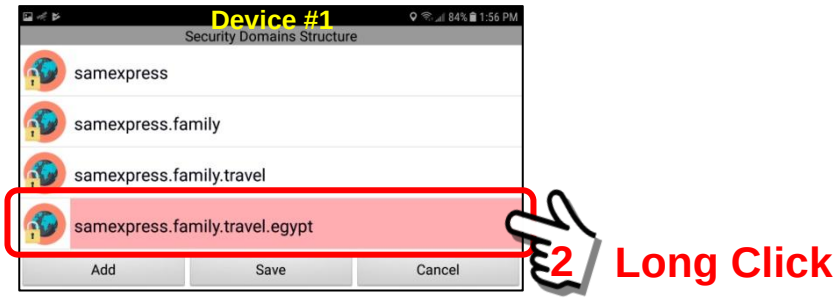
   Read,Write:samexpress.family.travel.egypt

2. ***Assign a PASSWORD to the personal security domain.***
In order to share a "personal" security domain with another user (so they can become part of your private group) you must create a password that will authorize their access. This section will describe the process.

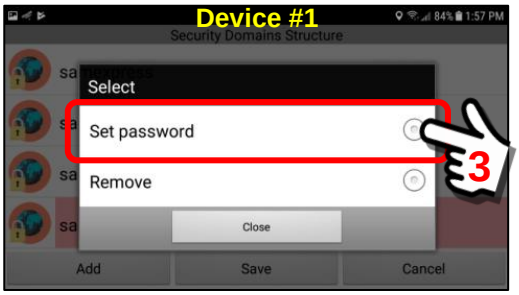


Open the User Panel, navigate to the bottom of the screen and click on the ***"Edit Domains" Button***. The Security Domains Structures Panel will be displayed.

Select the Security Domain that you want to create a password for.
In our example, we will select …. **samexpress.family.travel.egypt.**

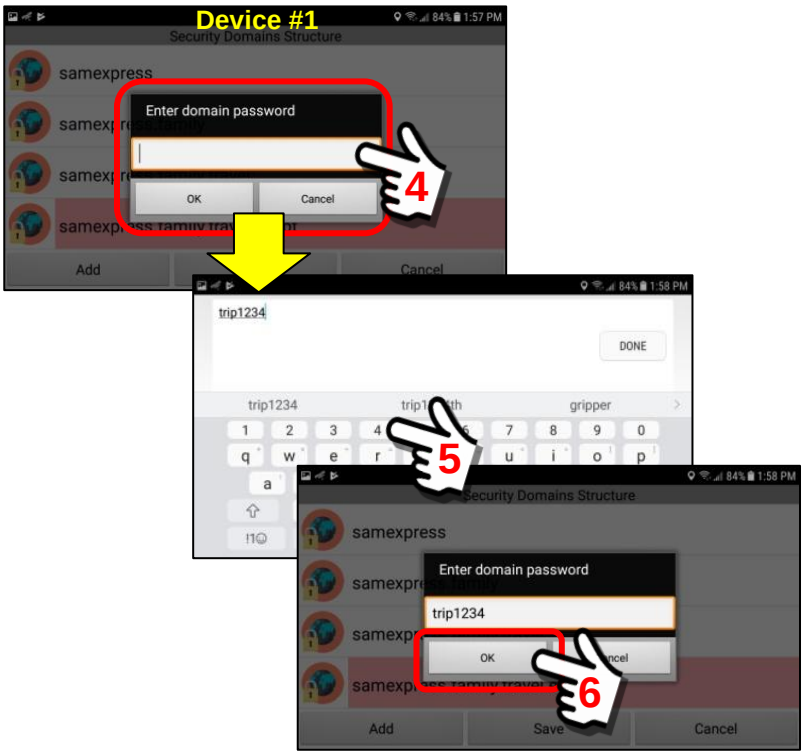


Perform a "Long click". This opens a Select Menu Box with options to set a password. Click on the "Set Password" option.

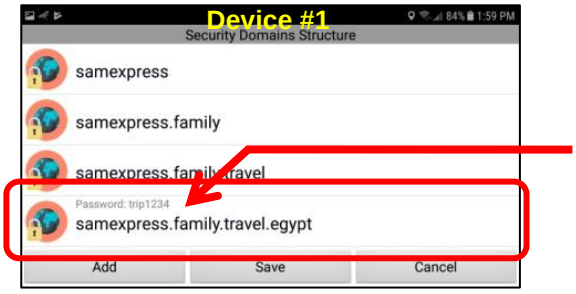


A pop-up box will appear where you will enter a domain password. This will be the password that will protect this particular personal security domain.

Click inside the text box. An on-screen keyboard will appear.



In this example, we have entered …. **trip1234** as our password for this security domain.



Notice that the PASSWORD is displayed above domain name

Notice that we have NOT created passwords for the other security domains. We could do that if we wanted. Those passwords would/should be different.

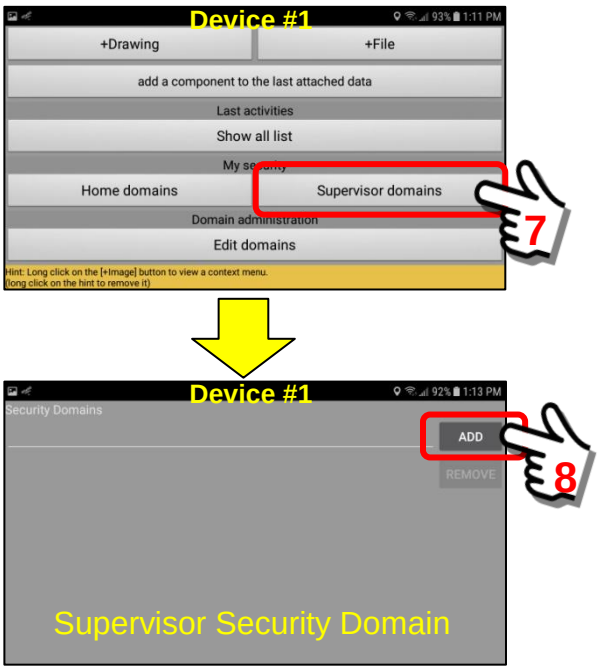
No passwords are created for these.

3. ***Install personal security domain into Device #1.***

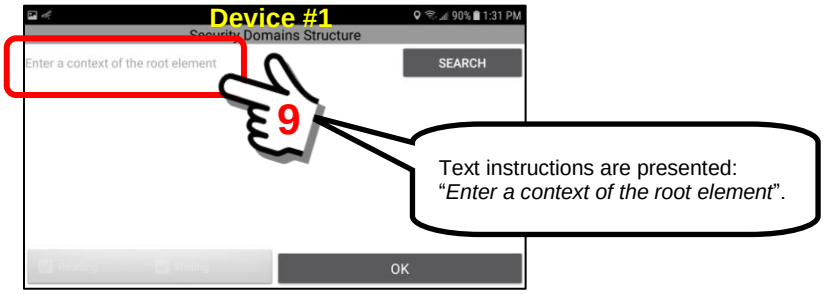
For the first part of this example, we will install the personal security domain into the Supervisor Domain Panel. This will allow Device #1 (the originating device) to access any/all members of the private group.

We will add the following:

Read,Write:samexpress.family.travel.egypt



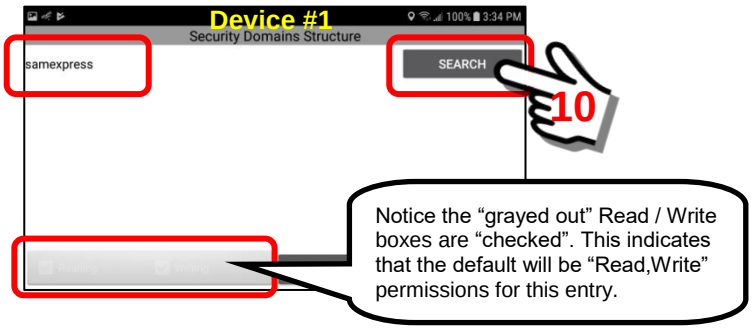
Click on the "ADD" Button. This will open a ***Security Domain Structure*** panel to search for available security domains.



To search for available security domains, click on the "gray" text. This will open an on-screen keyboard to enter the ROOT element of the personal security domain.

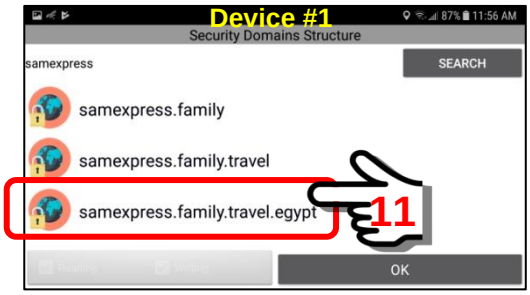
The root element of "*Read,Write:samexpress.family.travel.egypt*" is "samexpress".

Enter “samexpress” into the data entry field and click the ***Search Button***.

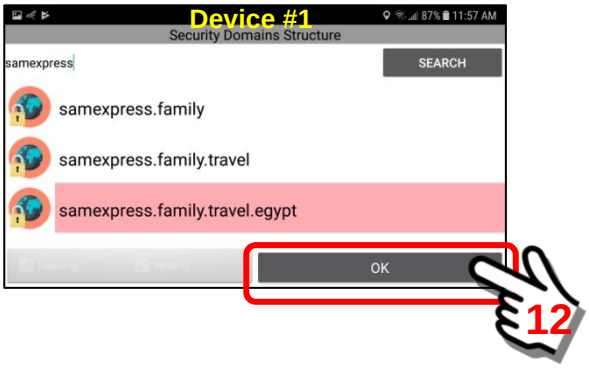


The system will search for ALL security domains with a root context of “samexpress”. In this example, we notice that 3 items were retrieved. These were the 3 additional security domains we created in **Section 6.4**.

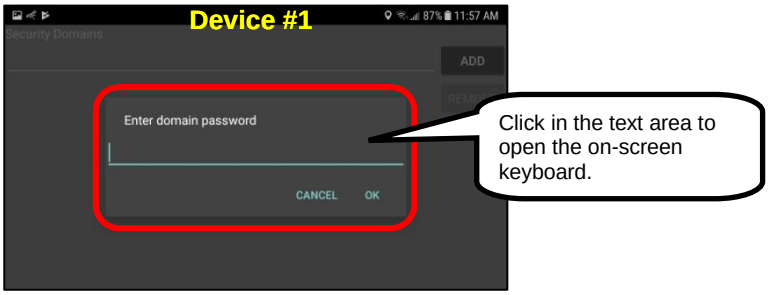
We are looking for … samexpress.family.travel.egypt



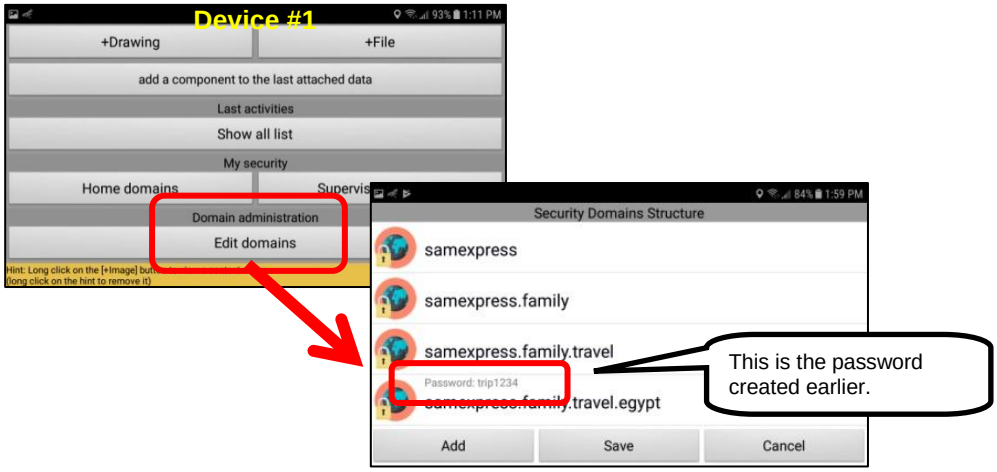
Select (click) on this item to activate the choice.
Then click on the “OK” Button.



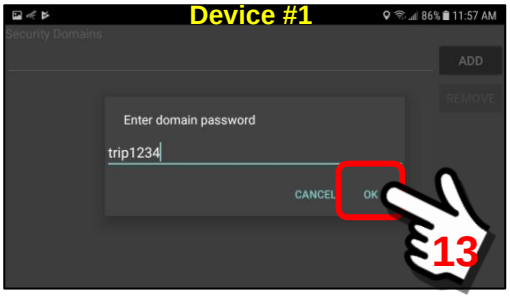
Now that you have selected the security domain that you want to add to your Supervisor Domain, the system will prompt for the password.



Enter the password for this security domain. This is the password that was created in Section 6.4 when we created the entry.



Enter the password, then click “OK” to accept.



Once the password is verified and authenticated by the system, the Supervisor Domain screen will refresh and now display the new personal security domain.

You have now successfully installed a new personal Security Domain in the Supervisor Domain panel of Device #1. The next sections will show how to install this same security domain on Device #2.

4. ***Provide DOMAIN_NAME / PASSWORD pair to Device #2.***

In order to create private "groups" (when NOT part of a licensed Server instance), it is necessary to create a DOMAIN_NAME / PASSWORD pair and provide this information to all users that would be part of this group.

In this example, you will need to provide the following information to everyone that you would like to have access to this private group. For this instruction, we assume you have provided it to the User of Device #2.

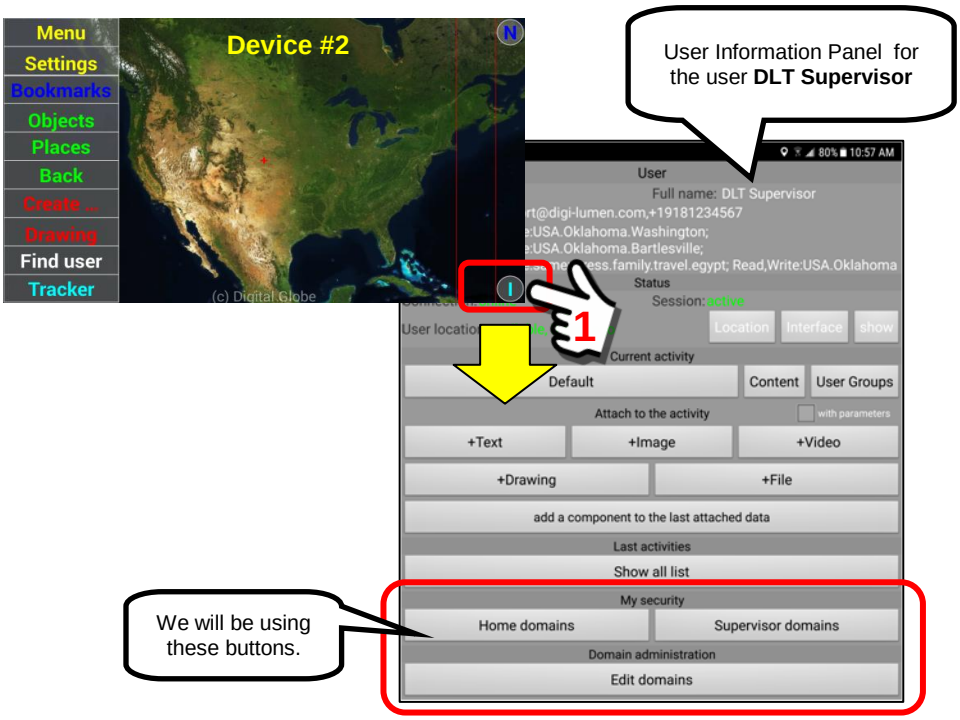
Domain Name: samexpress.family.travel.egypt

Password: trip1234

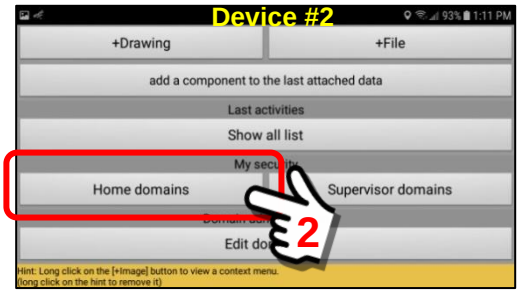
5. ***Install personal security domain into "Home Domain" on Device #2.***

We now assume we are the User of Device #2 and we have the DOMAIN_NAME / PASSWORD pair for the private group.

Starting at the Main Menu screen of Device #2, click on the "I" Button to access the User Information Panel.

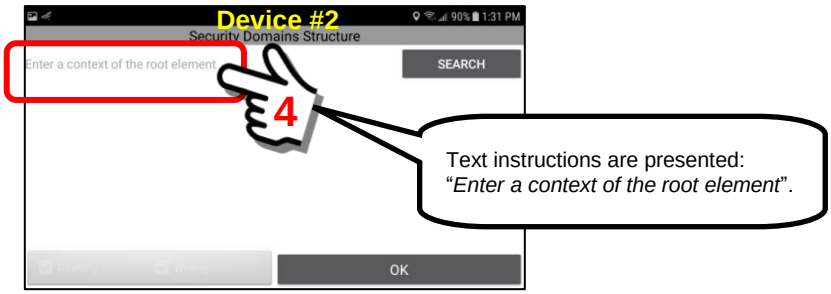


At the User Panel of Device #2, click on the “Home Domains” Button.



This will open the “Home Domains” Panel of Device #2. Notice that this mobile device currently HAS two other security domains listed.

Click on the “ADD” Button. This will open a ***Security Domain Structure*** panel to search for available security domains.



To search for available security domains, click on the “gray” text. This will open an on-screen keyboard to enter the ROOT element of the personal security domain.

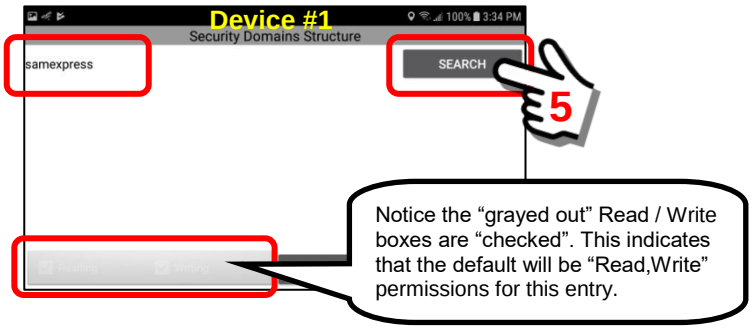
To create the security domain you will now need the DOMAIN_NAME / PASSWORD pair for the private group you want to create.

Domain Name: samexpress.family.travel.egypt

Password: trip1234

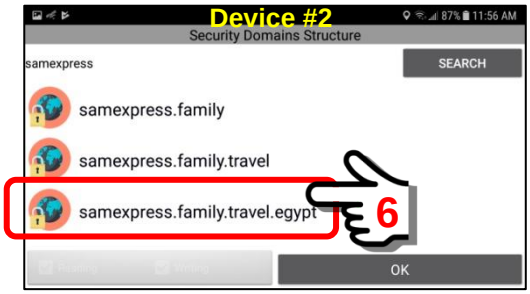
The root element of "*Read,Write:samexpress.family.travel.egypt*" is "samexpress".

Enter "samexpress" into the data entry field and click the ***Search Button***.

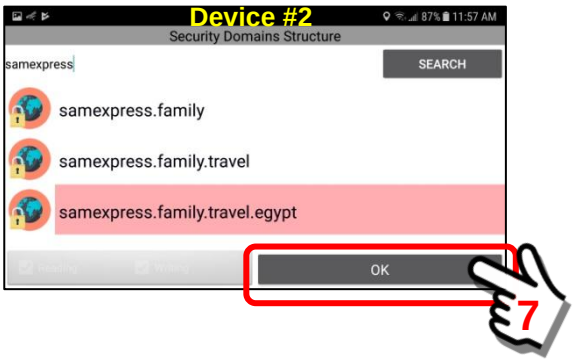


The system will search for ALL security domains with a root context of "samexpress". In this example, we notice that 3 items were retrieved. These were the 3 additional security domains we created in Section 6.4.

We are looking for … samexpress.family.travel.egypt



Select (click) on this item to activate the choice.
Then click on the "OK" Button.

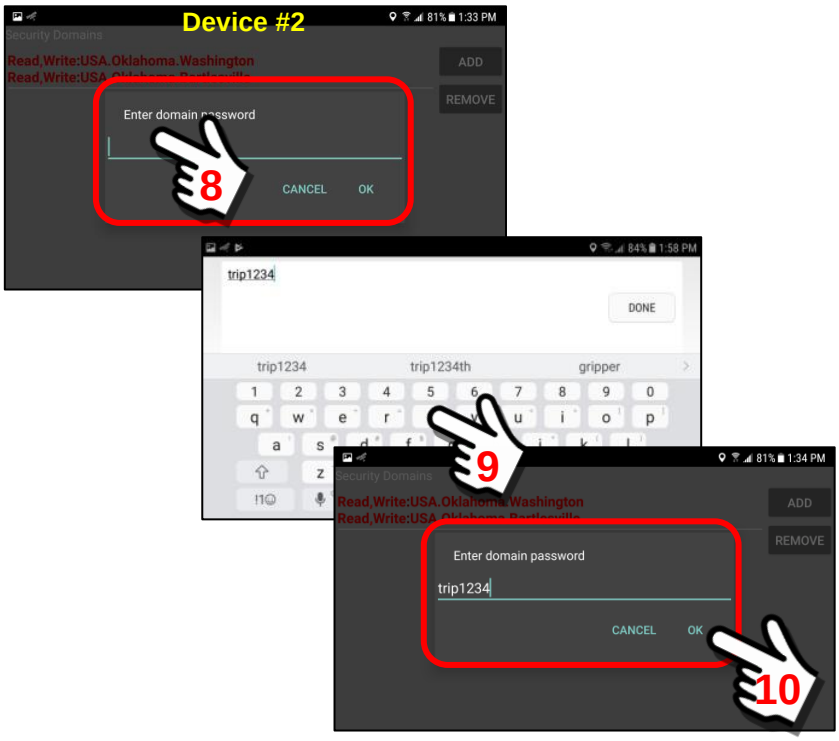


Now that you have selected the security domain that you want to add to your Home Domain, the system will prompt for the password.

Perform a “click” on the text entry area and the on-screen keyboard will appear. Enter the PASSWORD that was provided by the originator of the private group.

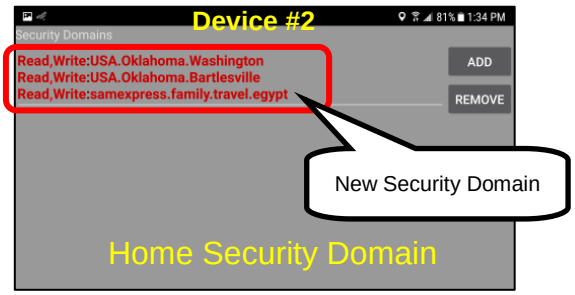
Password: trip1234

Click “OK” when finished.



Once the password is verified and authenticated by the system, the Home Domain screen will refresh and now display the new private security domain.

Read,Write:samexpress.family.travel.egypt



You have now successfully installed a new personal Security Domain in the Home Domain panel of Device #2.

6. ***Review the installed access (Device #1 can access Device #2).***

At this stage of our security domain configuration, we shall review what we have done and the results.

To create a one-way mode of access:

a. Installed a security domain in the Supervisor Domain of Device #1.
b. Installed a security domain in the Home Domain of Device #2.
c. **Result:** Device #1 can access Device #2, but Device #2 CANNOT access Device #1.

Devices	Home	Supervisor	Available Access
Device #1		X	Device #1 can see Device #2
Device #2	X		Device #2 cannot see Device #1

In this example, Device #1 can access Device #2 and turn on the camera of Device #2 and monitor real-time audio/video. However, if Device #2 tries to access Device #1, they will receive an "Access Denied" error message. It is only a one-way transfer of data.

To create a two-way mode of access (all members can access each other):

a. Installed a security domain in the Home Domain of Device #1.
b. Installed a security domain in the Home Domain of Device #2.
c. **Result:** All devices can access each other.

Devices	Home	Supervisor	Available Access
Device #1	X		Device #1 can see Device #2
Device #2	X		Device #2 can see Device #1

In this example, Device #1 can access Device #2 and turn on the camera of Device #2 and monitor real-time audio/video. Likewise, Device #2 can access Device #1 and turn on the camera of Device #1 and monitor real-time audio/video. It is a two-way transfer of data.

To create a two-way mode of access (with supervisory):

a. Installed a security domain in the Home Domain of Device #1.
b. Installed a security domain in the Supervisor Domain of Device #1.
c. Installed a security domain in the Home Domain of Device #2
d. Installed a security domain in the Supervisor Domain of Device #2.
e. **Result:** All devices can access each other.

Devices	Home	Supervisor	Available Access
Device #1	X	X	Device #1 can see Device #2 + Suprv
Device #2	X	X	Device #2 can see Device #1 + Suprv

In this example, the Home Domains are the same as before, however we have also “checked” the Supervisor Domains. **In the case of personal security domains (not set up via a licensed Data Server) the installation of a supervisory security domain setting will NOT provide additional access or control.** It is redundant to the Home Domain since it will have the same levels.

An originator of the security domain CAN create additional security domains at a higher level (ie samexpress.family.travel) if there are additional “travel” locations other than Egypt.

Important Note: Typically, we would leave the Supervisor Security Domain “blank” as shown below.

Devices	Home	Supervisor	Available Access
Device #1	X		Device #1 can see Device #2
Device #2	X		Device #2 can see Device #1

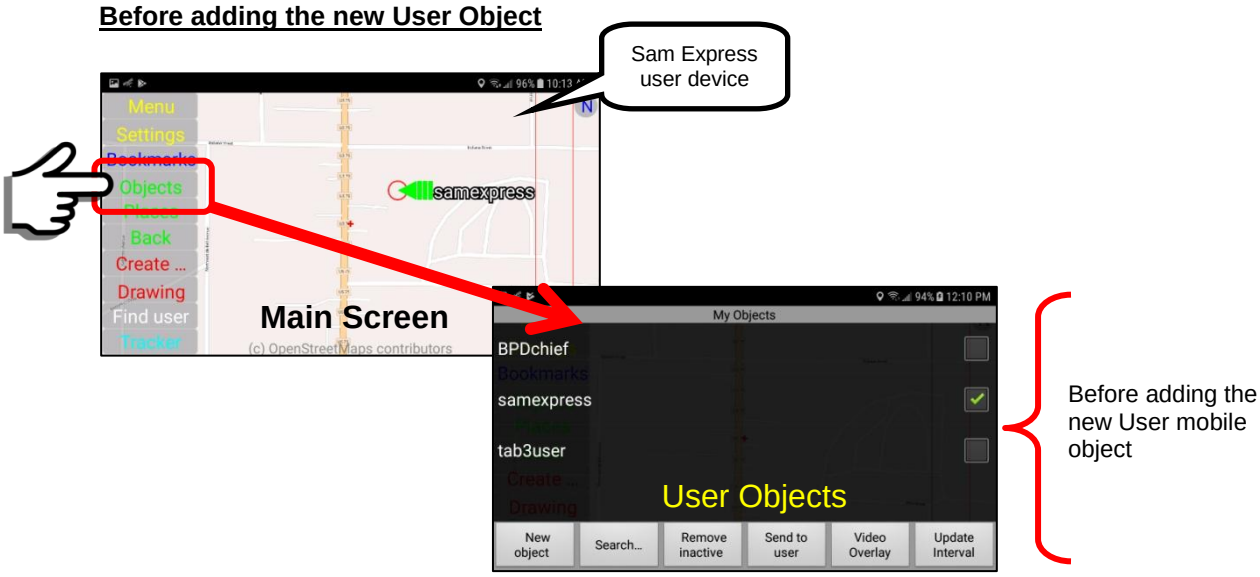
6.6. Adding another user's Mobile Object to our list.

Overview:

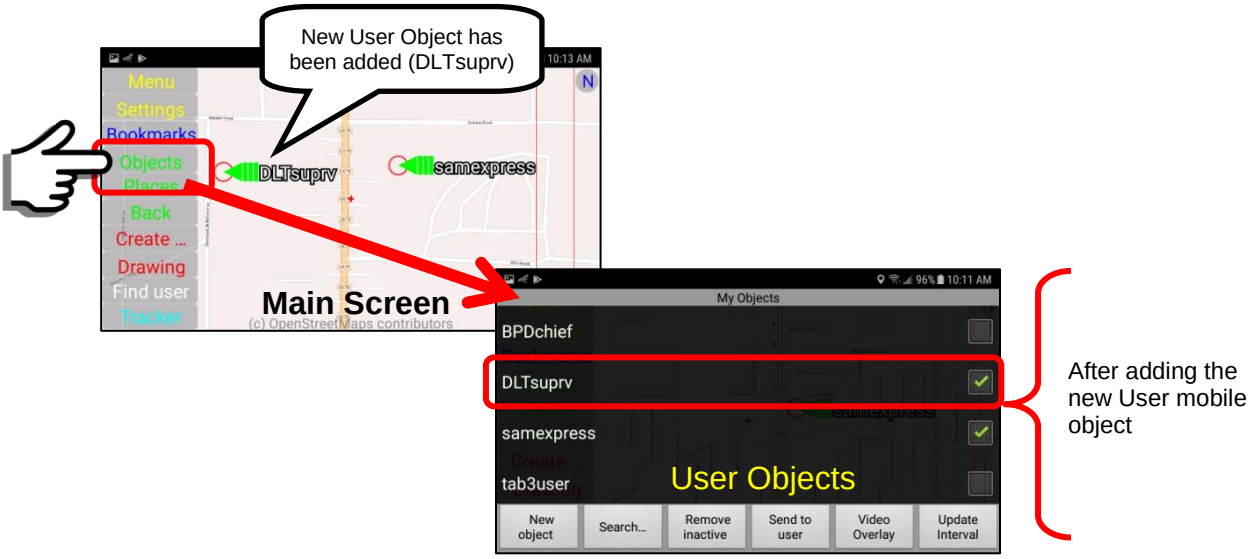
This section will describe the steps necessary to "add" another user's Mobile Object to your list once you have successfully created AND shared a personal security domain with that user (**Sections 6.4 and 6.5**) . You will need to have completed the previous steps in order to add another user. See **Section 10.5** for additional details on adding users to the "My Objects" Panel.

In this example, we are going to add user ***DLTsuprv*** to the My Objects Panel on the device of user ***samexpress***. We can do this because user ***samexpress*** has created a personal security domain and provided the credentials to user ***DLTsuprv*** who has installed them on HIS device.

Before adding the new User Object

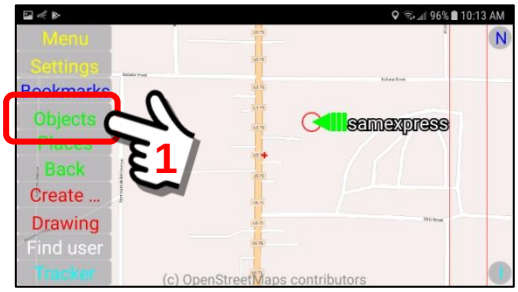


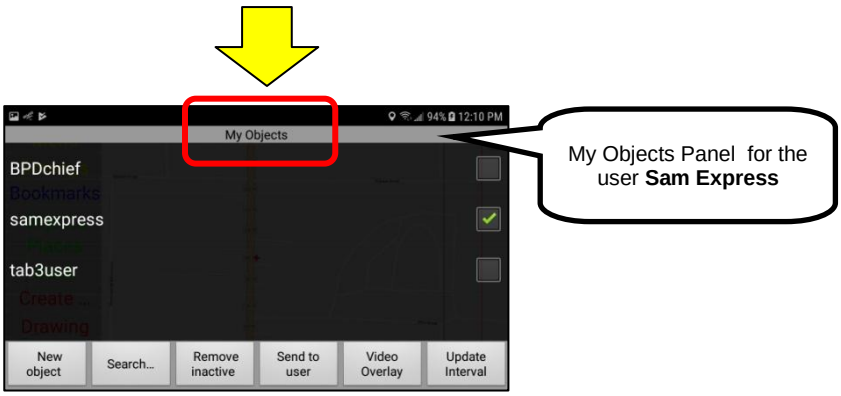
After adding the new User Object



Steps to add a new User Object to the "My Objects" Panel:

1. ***Navigate to the My Objects Panel.***
   Starting at the Main Map Screen, click on the "Objects" Menu item button located on the left side of the panel. This will open the "My Objects" Panel.



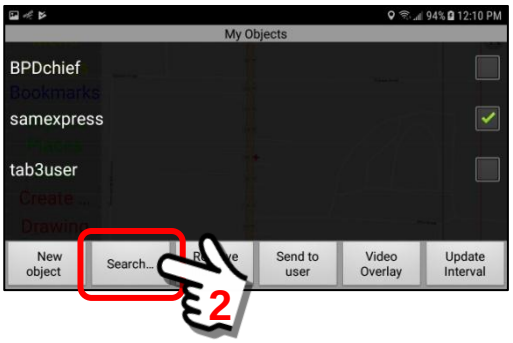


2. ***Search for the desired Security Domain of the user you want.***
   We need to locate the security domain of the user we want to add. From previous steps, we know that we created a security domain and shared it with user DLTsuprv.

   Read,Write:samexpress.family.travel.egypt

   As a reminder … this was the Security Domain we created

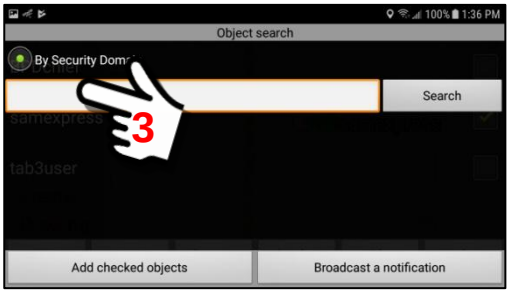
To continue, click on the ***Search Button***.



The Object Search Panel will appear showing a text entry box. This is where you will enter the personal security domain that you created earlier.

In this example, we want to enter the following security domain.

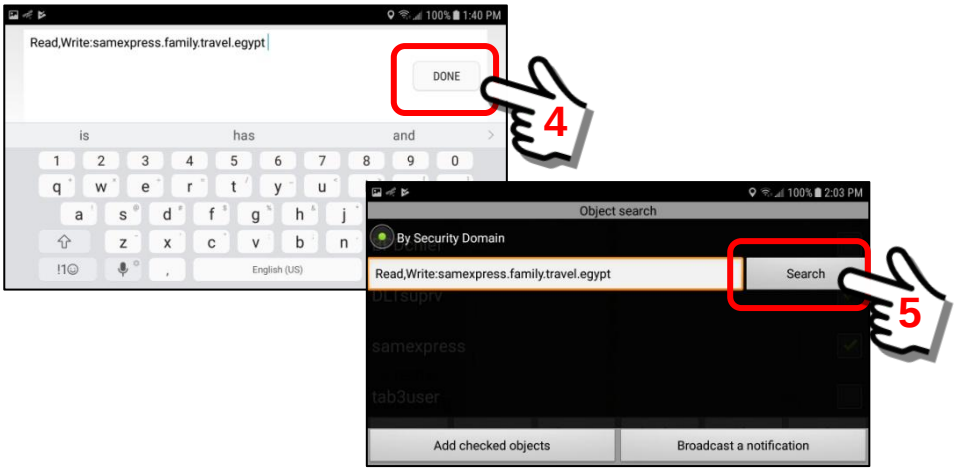
Read,Write:samexpress.family.travel.egypt



The security domain entry uses a specific format. See the section on Security Domains for instructions.

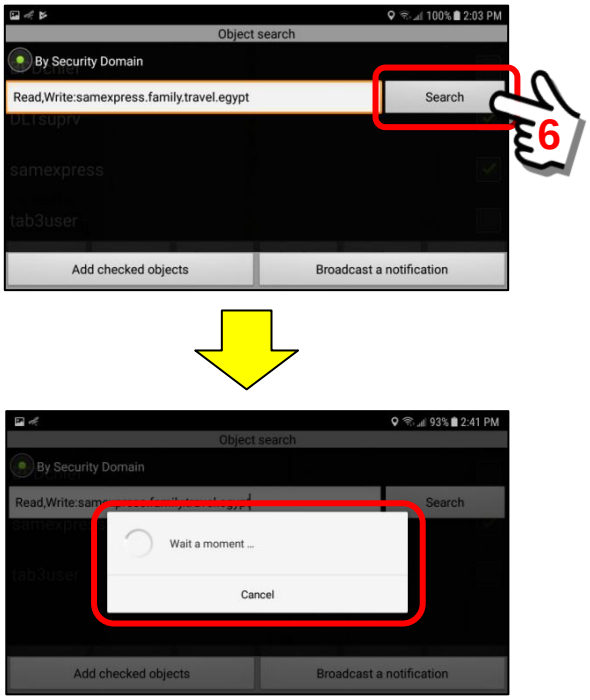
Click in the "text entry" box. An on-screen keyboard will open allowing the entry of text.

Enter the security domain that you want to search. Make sure the words "**R**ead" and "**W**rite" are capitalized and that there are no spaces (whitespace) in the text entry.



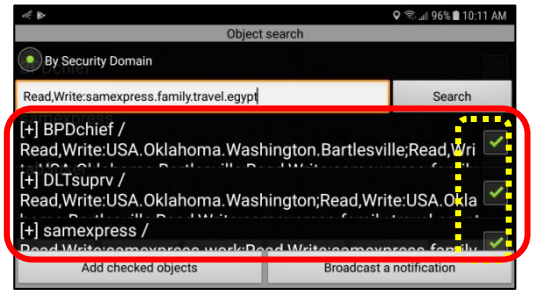
Click "Done" when finished or click the "Search" Button on the panel.

3. ***Select the desired User from the list of users within the Security Domain.***
The system will contact the SentryMDU Data Server and retrieve all users that have access in the specified security domain. Depending on the speed of your internet connection, this may take a few moments.



The screen will now display a list of users that have been given access to this security domain.

Read,Write:samexpress.family.travel.egypt

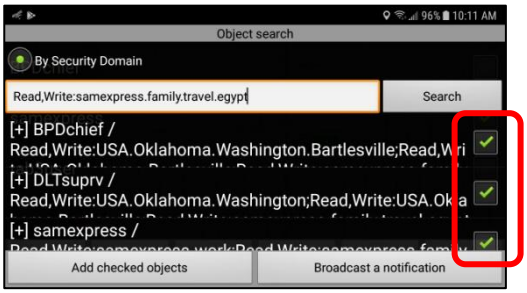


In this example, notice that we have 3 Usernames displayed. If you have many entries, simply scroll the list to see them all.

[+] BPDchief
[+] DLTsuprv
[+] samexpress

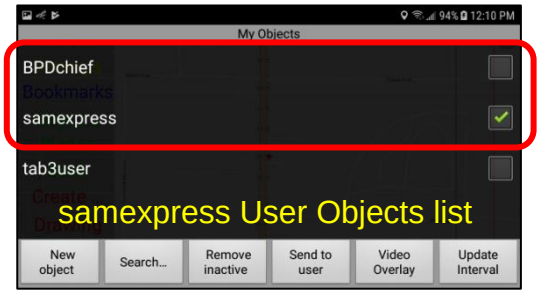
The [+] indicates that the mobile device is CURRENTLY active (online).

When the system retrieves other users in the security domain, by default, it "selects" (puts a checkmark in the box) of all users in the security domain.



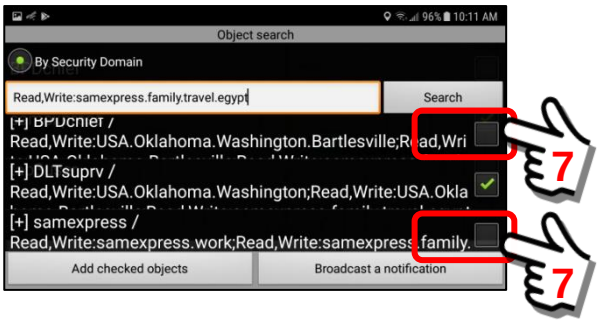
By DEFAULT, all users are selected to be added … even our own device. You will want to de-select those mobile objects you do NOT want to install on your device.

In this example, since we are currently on the ***samexpress*** device, and we already have ***samexpress*** and ***BPDchief*** mobile objects installed, we do NOT want/need them installed again.

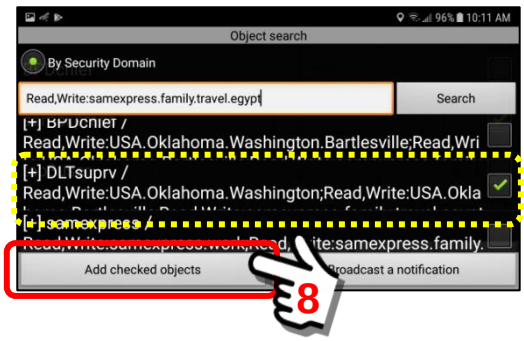


Since we already have these two mobile objects on our list we will de-select them from our list of mobile objects to copy..

De-select (uncheck) both ***samexpress*** and ***BPDchief*** mobile objects in the list. This will leave the ***DLTsuprv*** object as the one we want to install.



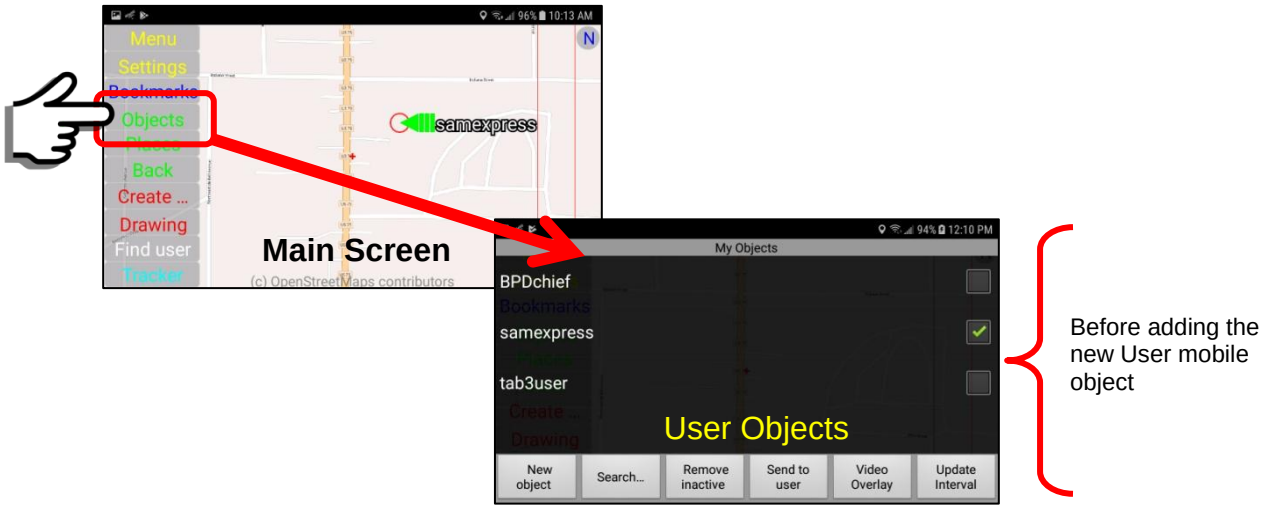
To install the ***DLTsuprv*** Object into our list of available Users, click on the "Add checked objects" Button.



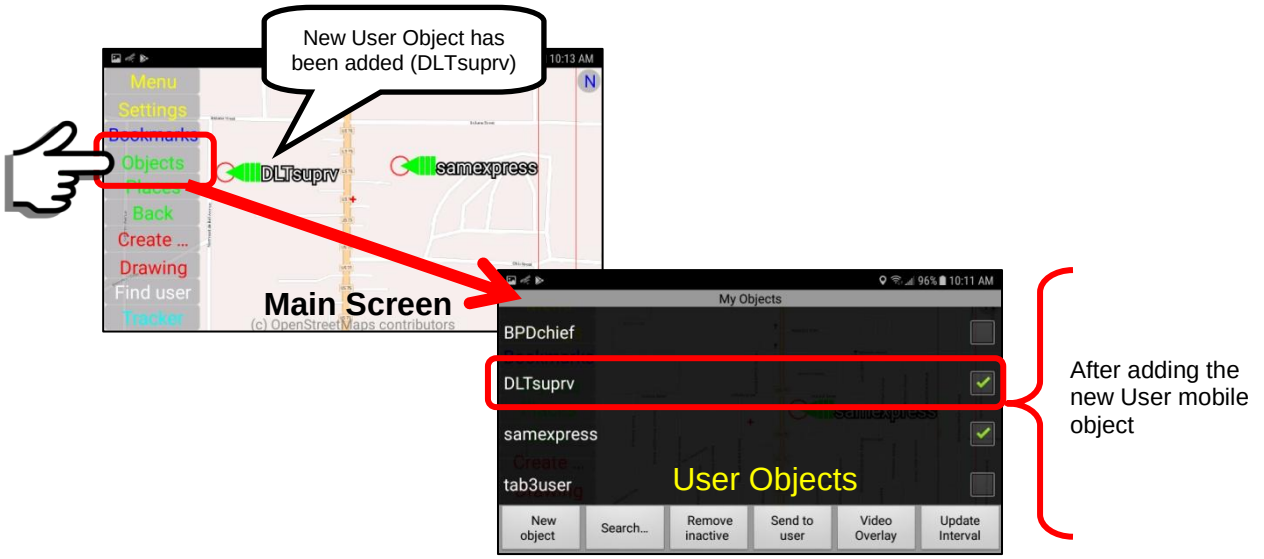
Review the User Objects installed on SAMEXPRESS mobile device.

We will now review what we have done. In this example, we have now installed the ***DLTsuprv*** mobile object on the ***samexpress*** mobile device.

Before adding the new User Object



After adding the new User Object



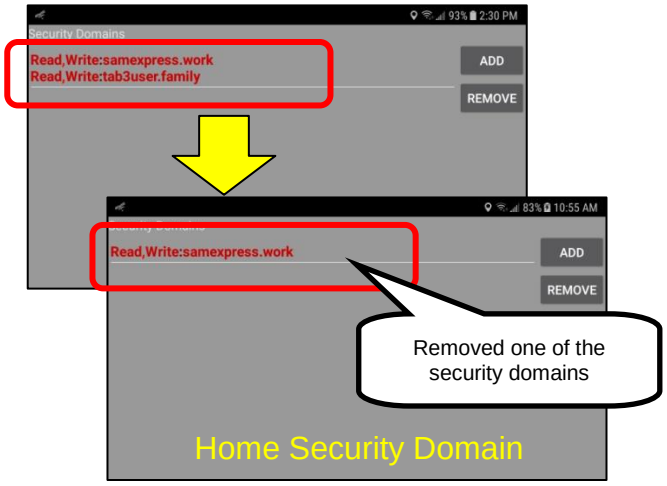
6.7. Removing a Security Domain and adjust permissions.

Overview:

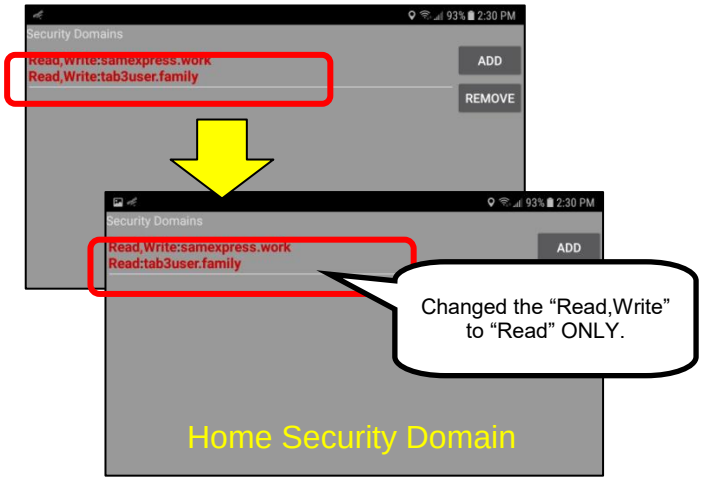
This section will describe the steps necessary to remove a security domain when it is no longer needed. Users have the option to create up to 100 security domains. These can cover work, play, hobbies and civic activities. You can create security domains to last for a few minutes or to last years ... it is up to you. In addition to removing a security domain, it is possible to alter the “Read,Write” permissions associated with a security domain. This section will cover these topics.

Topics covered in the Section:

1. How to remove security domains.

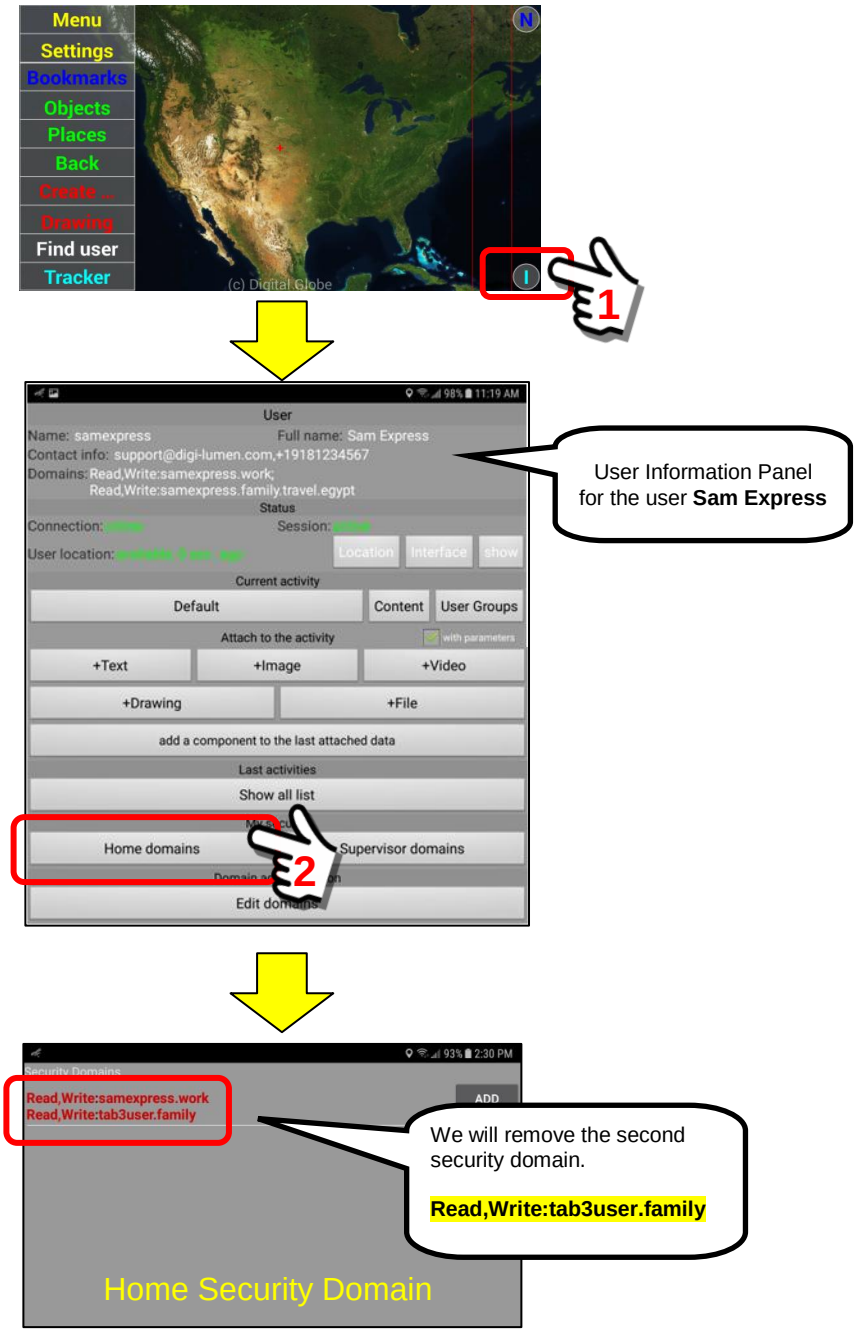


2. How to alter “Read,Write” permissions of security domains.



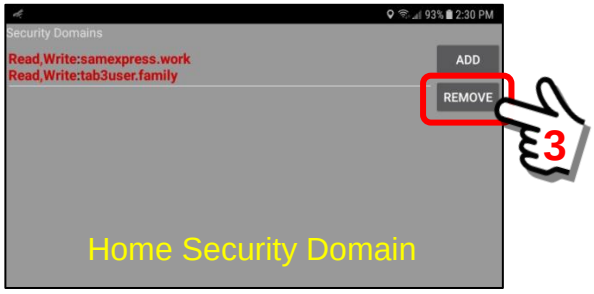
Removing security domains:

1. ***Navigate to the User Information Panel.***
   Starting at the Main Map Screen, click on the "I" Button located on the lower right hand side of the panel. This will open the User Information Panel. Select the ***Home Domains Button*** under the My Security Section.



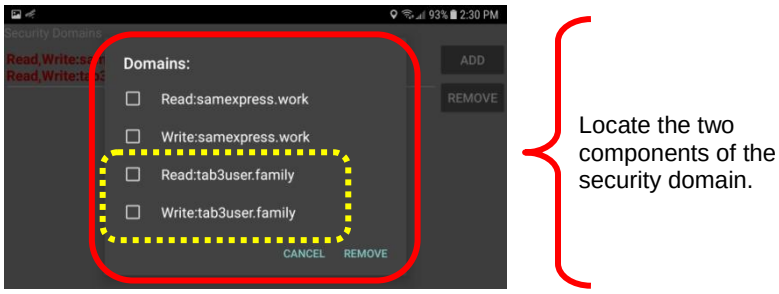
2. ***Select the security domain you wish to REMOVE.***

The Home Security Domains panel will display the available security domains. Click on the ***Remove Button***.



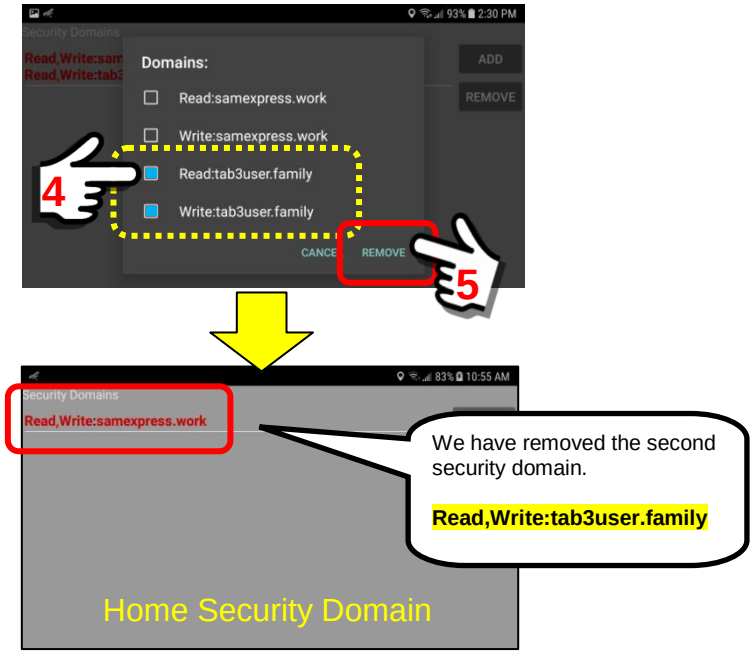
A pop-up panel will appear showing the available domains.
In this example, we want to remove the ***tab3user.family*** security domains.
Notice that the ***tab3user.family*** security domain is comprised to two parts:

Read:tab3user.family
Write:tab3user.family



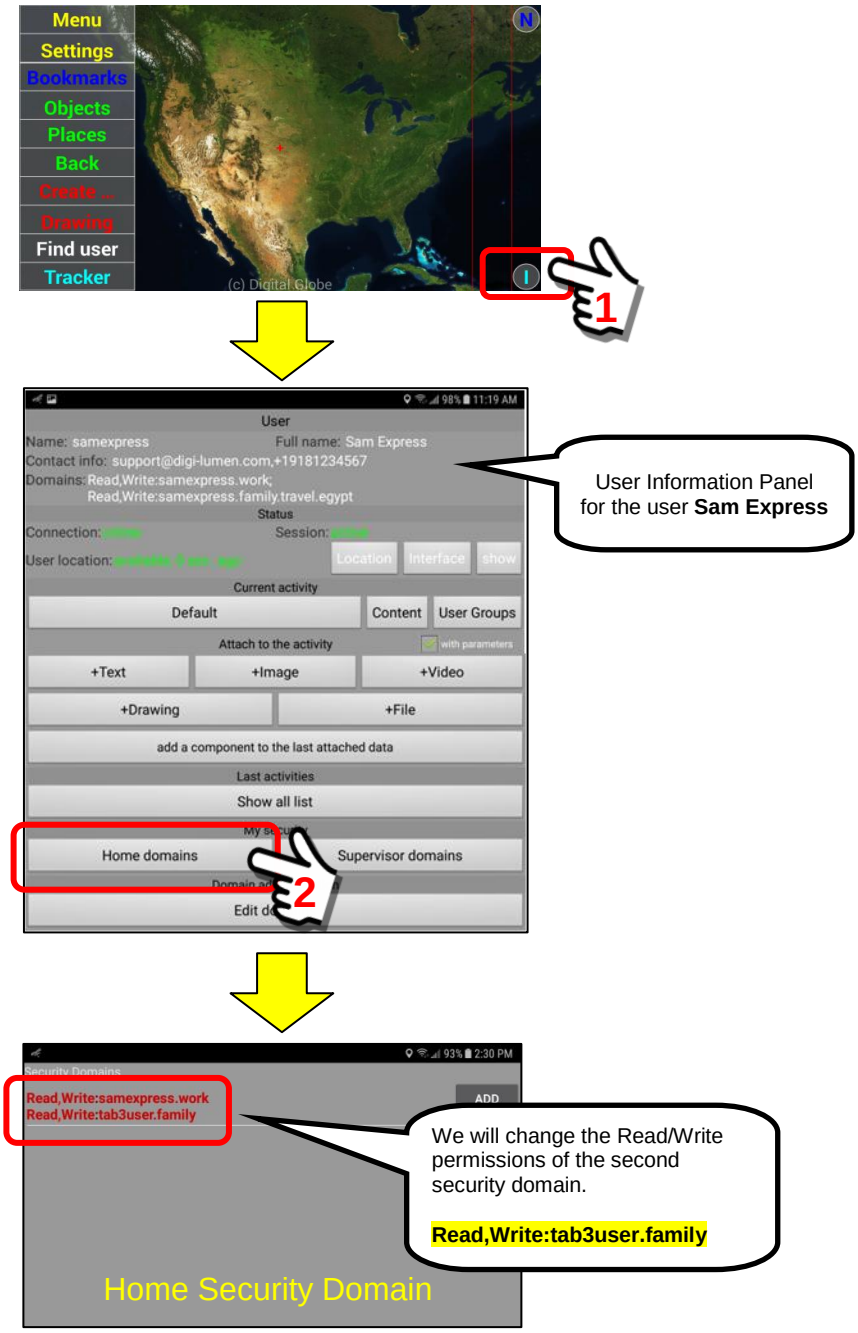
3. ***Remove the Security Domain.***

To remove the security domain, select the two (2) components of the security domain, then "click" the Remove Button.



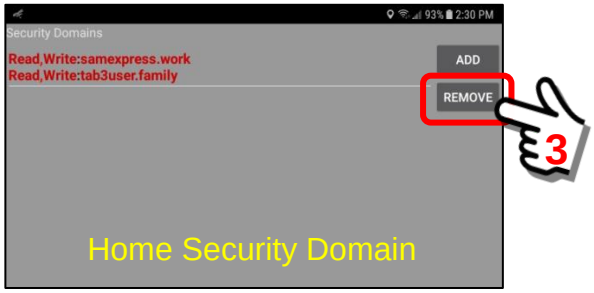
Changing “Read,Write” permissions of security domains:

1. ***Navigate to the User Information Panel.***
   Starting at the Main Map Screen, click on the “I” Button located on the lower right hand side of the panel. This will open the *User Information* Panel. Select the ***Home Domains Button*** under the My Security Section.



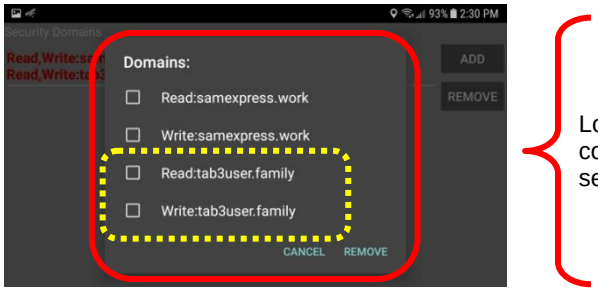
2. ***Select the security domain you wish to change.***

The Home Security Domains panel will display the available security domains. Click on the ***Remove Button***.



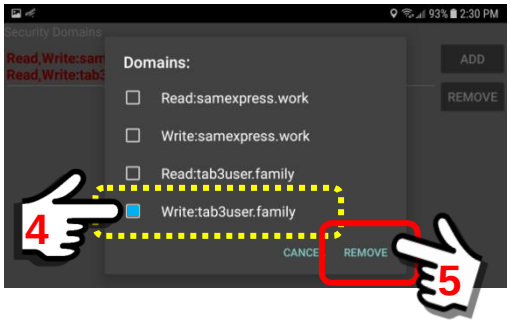
A pop-up panel will appear showing the available domains.
In this example, we want to change the "Read,Write" permissions of the ***tab3user.family*** security domain. Notice that the ***tab3user.family*** security domain is comprised to two parts:

Read:tab3user.family
Write:tab3user.family



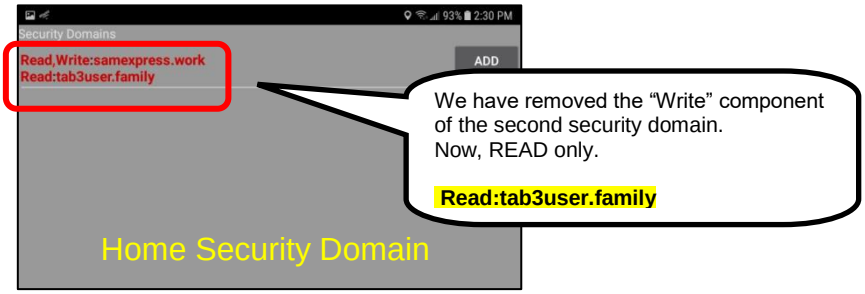
3. ***Remove the "Write" permission from the Security Domain list.***

In this example, we will remove the "Write" permission from the list … leaving the "Read" permission. Select the "Write" component of the security domain, then "click" the Remove Button.



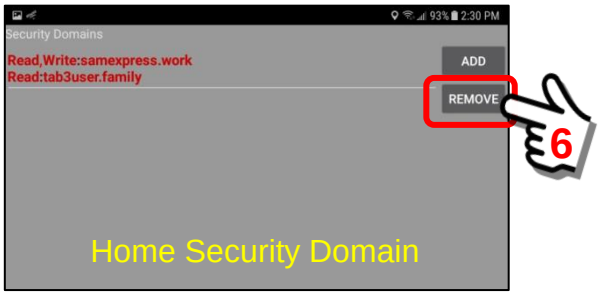
The screen will refresh and return to the Home Domains listing.

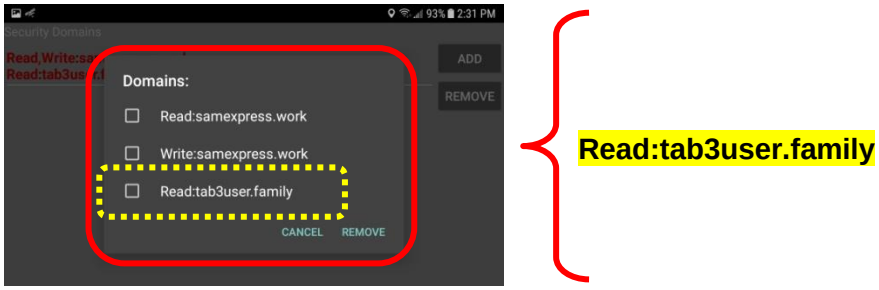
We have now removed the component of the ***tab3user.family*** security domain that allowed “Write” permissions.



If we open the listing of security domains again, you will see only a “Read” permission for ***tab3user.family***.

Read:tab3user.family



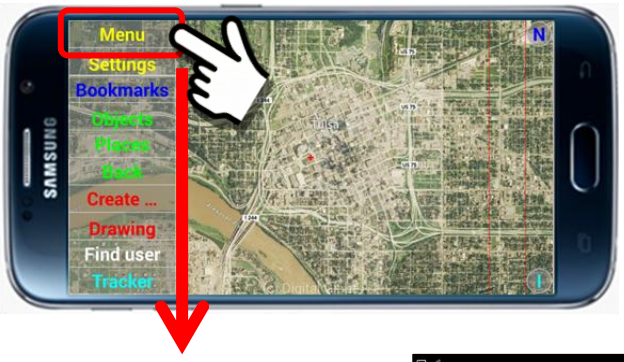


7. The “Menu” Button features

7.1. Elements of the Main Menu block

Overview:

The “Menu” Button launches a menu block at the bottom of the Main Map Screen. This menu block can have 4 or 5 options depending on the configuration settings. This section will describe the menu block and associated features.



In the “Default” mode, five options are available:

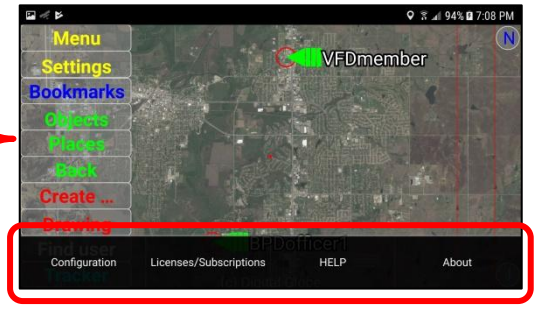
1. Configuration
2. Licenses/Subscriptions
3. HELP
4. About
5. Exit

Menu Block

If a User removes the “Exit” option from the Menu Block at the Configuration Panel, the following screen will display.

In the edited mode, four options are available:

1. Configuration
2. Licenses/Subscriptions
3. HELP
4. About



Menu Block

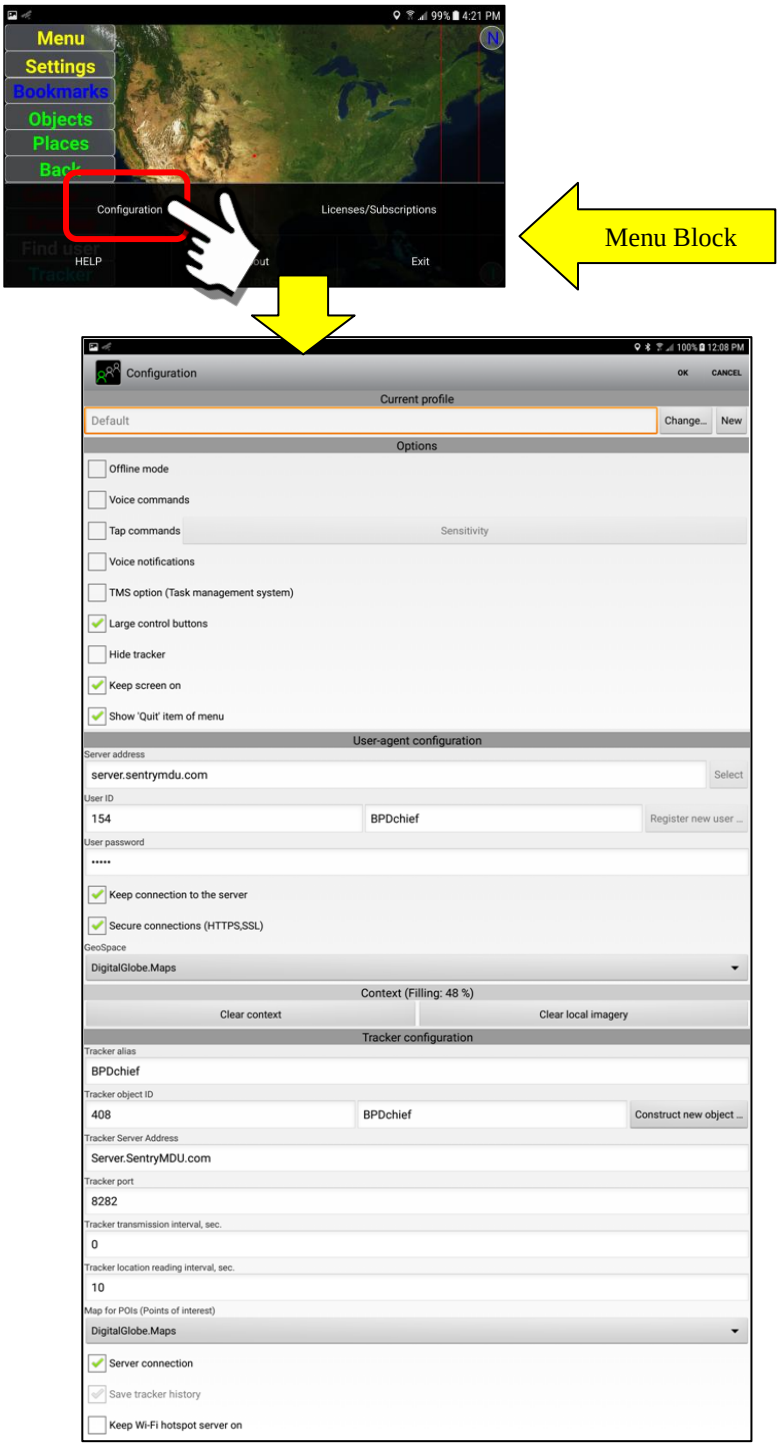
7.2. Configuration

Overview:

The “Configuration” Button launches the Sentry MDU configuration panel. This is the primary configuration panel for the mobile device.

Sentry MDU Configuration Panel:

To access the Configuration Panel, click on the “Menu” Button on the main map screen and then click on the “Configuration” Button on the Menu Block.



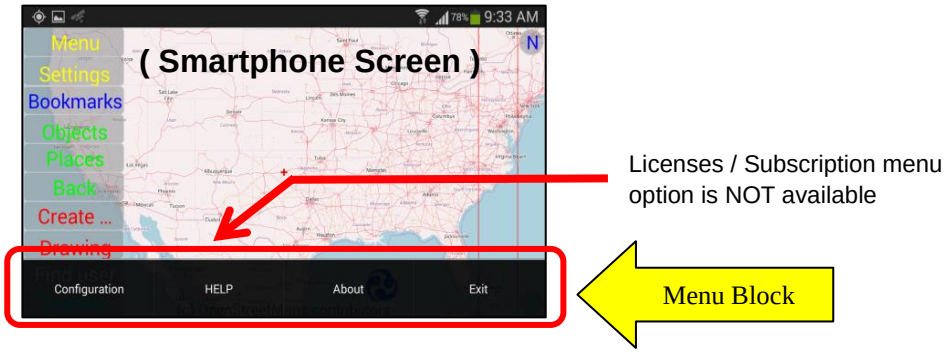
7.3. Licenses / Subscriptions

Overview:

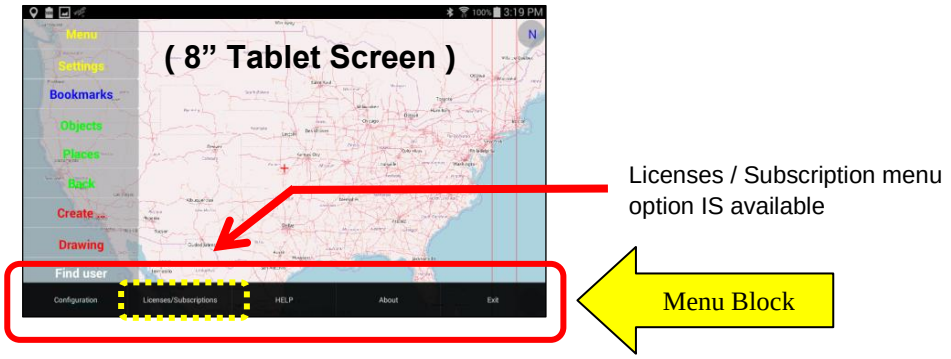
The **Licenses / Subscriptions** Button will only appear on the Menu Block AFTER you have completed Registration. Registration is required because you must have a Username/Password in order to have a License or Subscription. See **Sections 3.5 – 3.10** for a full discussion of the Licenses / Subscriptions feature.

If you are an Anonymous User (not yet registered) and you have downloaded and installed the App ... just to play with it ... **you will not have this menu option**.

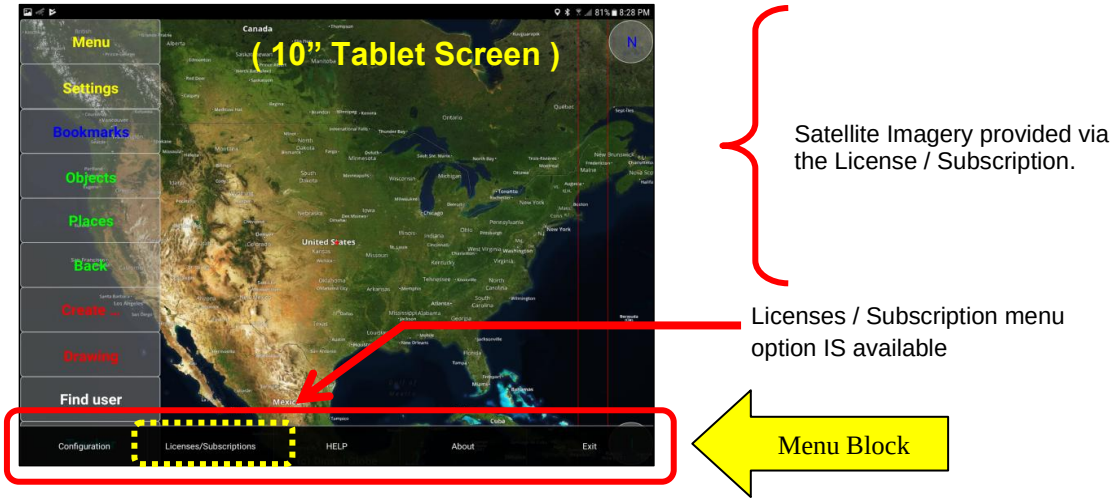
Main Screen as an ANONYMOUS User (not registered)



Main Screen of REGISTERED User (but not yet Subscribed or Licensed)



Main Screen of REGISTERED and LICENSED User (or with a Subscription)



Installing a User License on a Device:

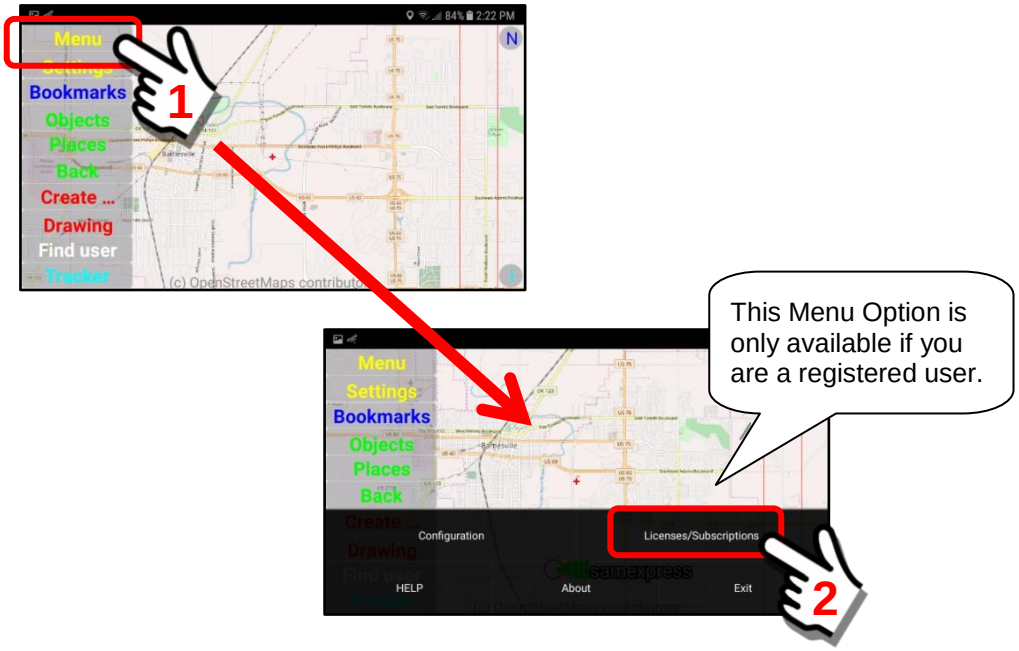
In this example, we have a registered user on the Licensed SentryMDU Server of our Organization. We are now going to illustrate how to INSTALL a User License on a mobile device. This section is an abbreviated version of **Section 3.7**.

We will need two pieces of licensing information provided to us by our organization.

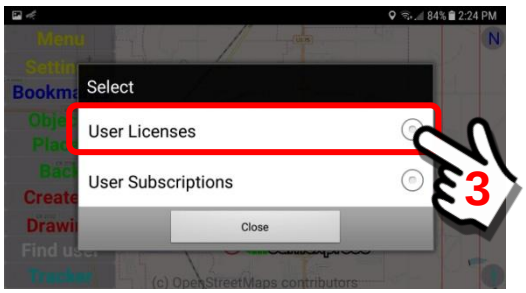
1) The **License Number** that has been given to the Job Classification for this User.
2) The temporary **License Access Key** that will be provided to the User for registration during a specific period of time.

We will now review the following 10 steps.

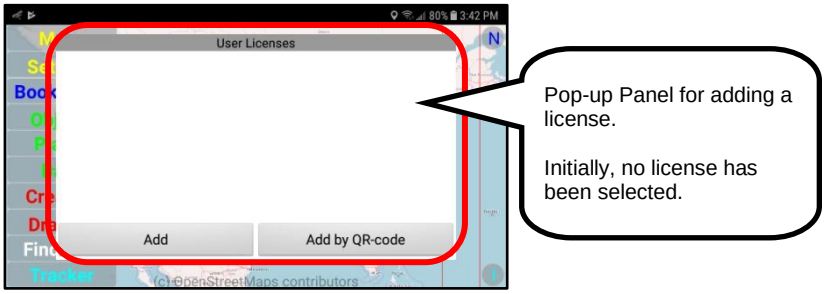
1. ***Open the Menu Panel and select the "Licenses/Subscriptions" Button.***



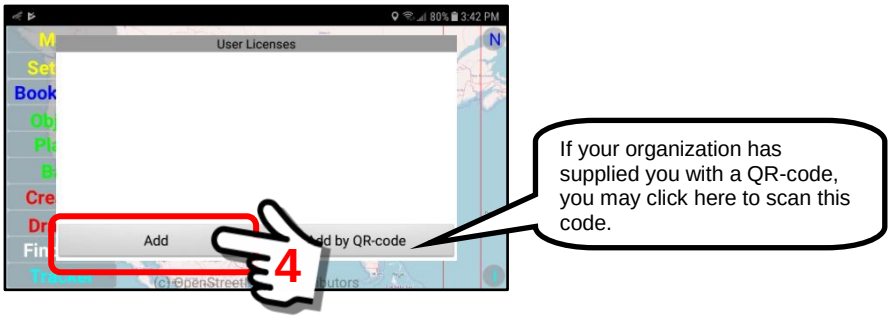
2. ***Select the "User Licenses" Option.***
   A pop-up panel will appear. Select the "User Licenses" option.



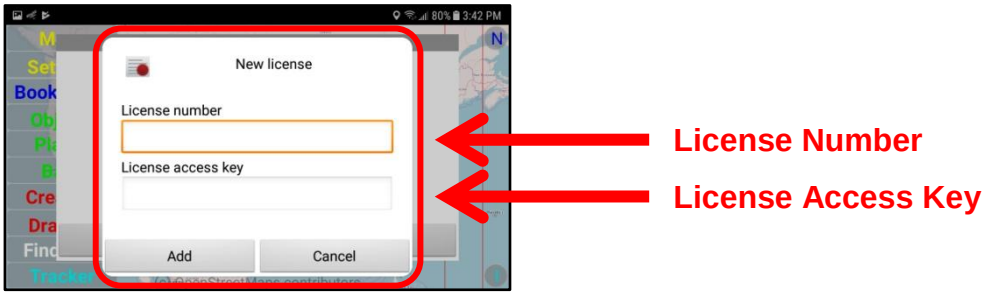
3. ***The "User Licenses" selection panel will appear.***



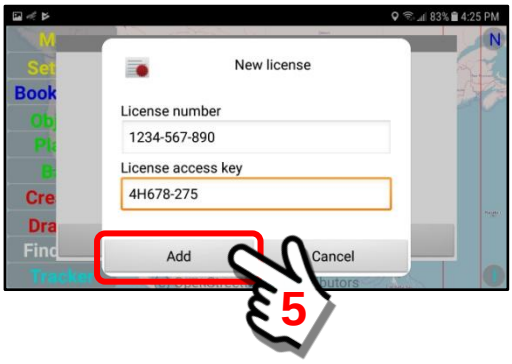
4. ***Click on the "Add Button".***
To display the license input screen, click the "Add" Button.



5. ***Data Entry panel for new license is displayed.***
A pop-up panel will appear with two (2) data entry fields.

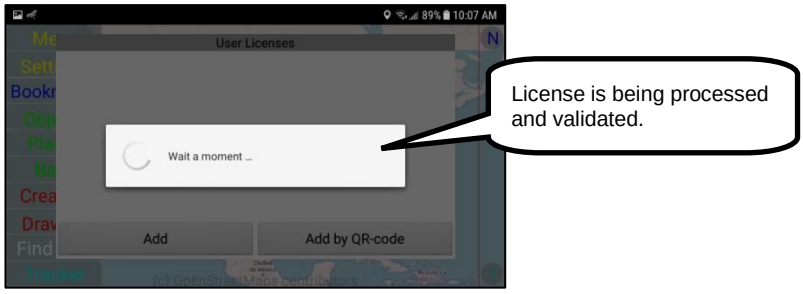


6. ***Enter the License Number and License Access Key.***
Click on the "Add" button when finished.

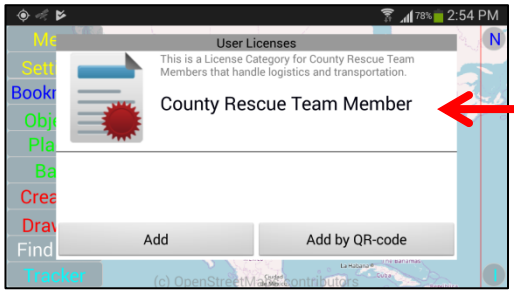


7. ***The submitted User License job classification will be validated.***
If the entered data is correct, and the temporary License Access Key is used during the time period set by your IT Department, the User License security domain for this job category (County Rescue Team Member) will be installed on the mobile device.

The mobile device will contact the SentryMDU System to validate the license and retrieve the User Category parameters.



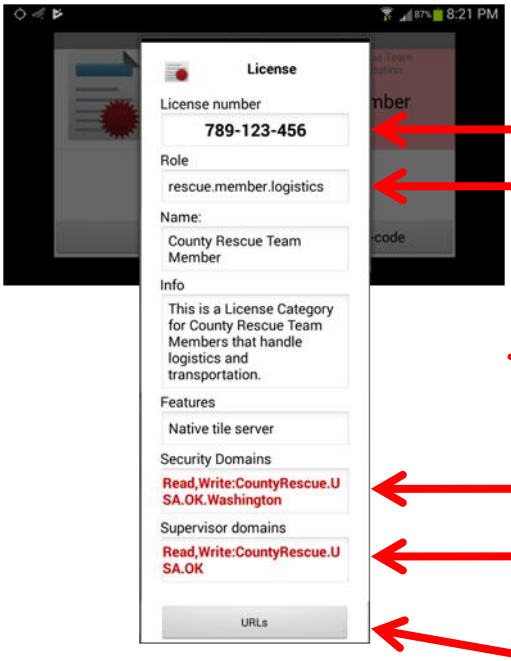
The validated License and User Category will be displayed on the panel.



License Category and Description.
Note:
Your Organization may have many license categories that will provide specific features for Team Members, Team Leaders, Managers, etc.

8. ***Review User License, job role and Security Domain***
Click on the User License name (County Rescue Team Member) to open a pop-up panel that will display the license parameters and the installed Security Domain.

The full listing may be displayed by scrolling the pop-up panel.



License Number

User role and classification as selected by Licensed Organization

Organizations with a Licensed Server have access to create, modify and remove User License parameters via a web portal into an Administrative Server.

Default Security Domain for all users in this classification

Supervisory Security Domain for all users in this classification

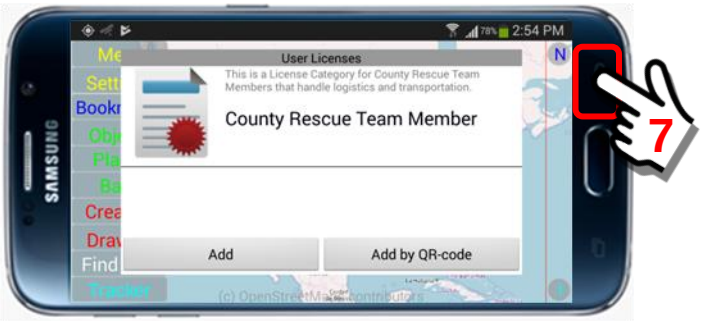
Listing of URLs provided to this User Class during initial installation.

Note:

This is a list of the Custom Bookmarks and Data References that are installed for this specific User Category. These are set by your Organization.

9. *Return to the Main Map Screen*

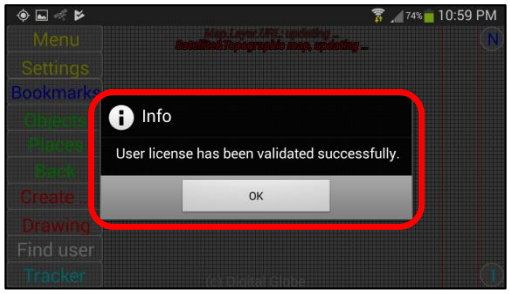
Click on the “Back” button on the device to return to the Main Map Screen.



When the “Back” Button is clicked, this starts the License Validation Process. This may take several seconds depending on your internet connection.

10. ***Main Map Screen is now displayed with Satellite Imagery***
As the mobile device processes the screen change, the satellite imagery for this User License is downloaded and installed on the device in accordance with the organization's imagery contract.

A pop-up message will display if the User License is valid.



Satellite imagery will now fill the screen

Note:

You have now REGISTERED and installed a User License … but you have NOT COMPLETED CONFIGURATION. See Sections 3.14 and 5.4 for additional settings that you will need to make. This is important if your device is to provide a good user experience and to perform optimally (ie audio/video streaming, map images, etc.) for your specific hardware.

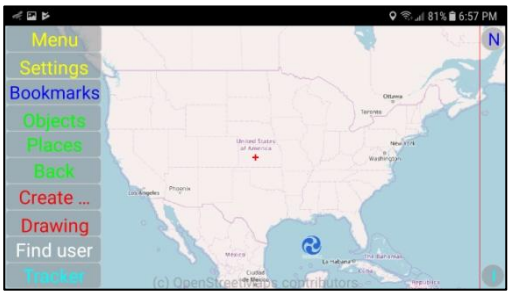
Options for changing the type of Map Imagery to display:

The Sentry MDU Application allows a user to select a number of options on how they would like the screen to display satellite imagery and maps. There are 3 primary image/map options and several overlay "layers" that can display additional symbols and icons. The 3 primary map options are as follows:

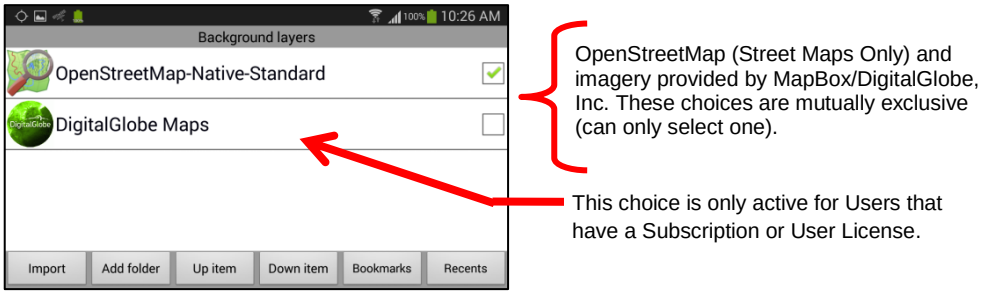
1. Satellite Image overlaid with a street map
2. Satellite Image
3. Street Map

The "default" setting is Item #1 – Satellite image overlaid with a street map.

After initial installation (and before registration) you will notice that the Main Map screen displays a "Street Map" (using OpenStreetMap data) and not a satellite image.



1. ***Location of the Map Layer display options.***
   The available Map Layers are installed in the Background Layers Folder on the Viewing Configuration Panel.



<u>OpenStreetMap-Native-Standard</u>

OpenStreetMaps is an "Open Source" set of map data supported by a worldwide community. DLT operates a tile server that delivers this "road/street" map data to the SentryMDU App.

<u>DigitalGlobe Maps</u>

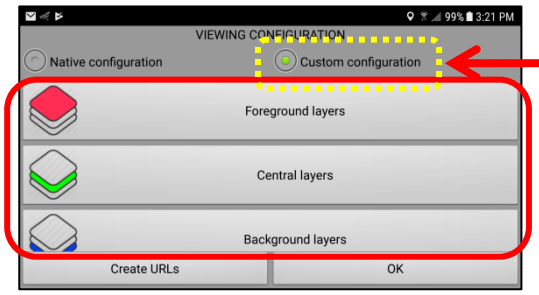
DigitalGlobe is a commercial provider of high resolution satellite imagery to governments and industry. They operate a constellation of satellites that scan the earth continually and provide updates to their imagery on a regular basis. The SentryMDU App retrieves imagery data from an "online reseller" MapBox, Inc, that gets the imagery from DigitalGlobe.

2. ***Select the "Custom Configuration" Option***

The "Custom" option is an alternate view mode of the Foreground, Central and Background Layers functions. To open this panel, click the ***Custom Configuration*** Button on the Viewing Configuration Panel.

<u>Three large buttons will be displayed</u>

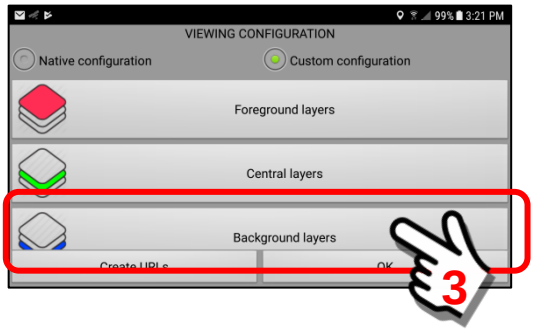
1. Foreground Layers
2. Central Layers
3. Background Layers



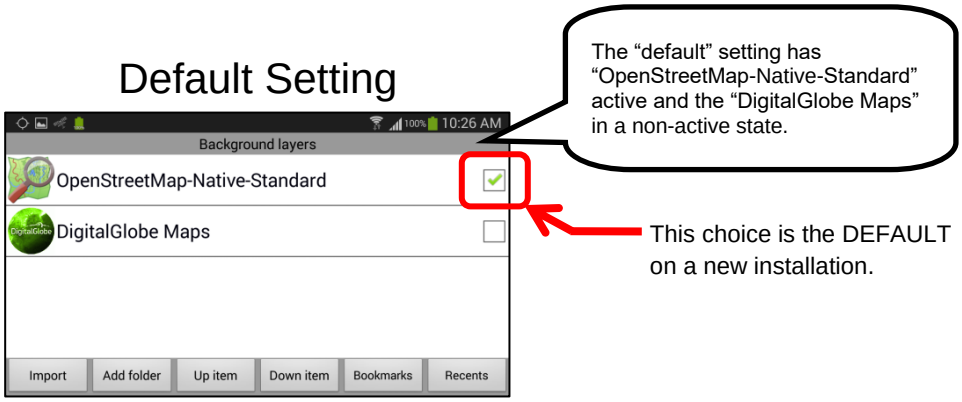
Custom Configuration mode is now activated

3. ***Select the "Background Layers" Folder***

Select the Background Layers folder for access to the imagery and maps that are available on the Mobile Device.



The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put “custom” maps of your own in this folder.



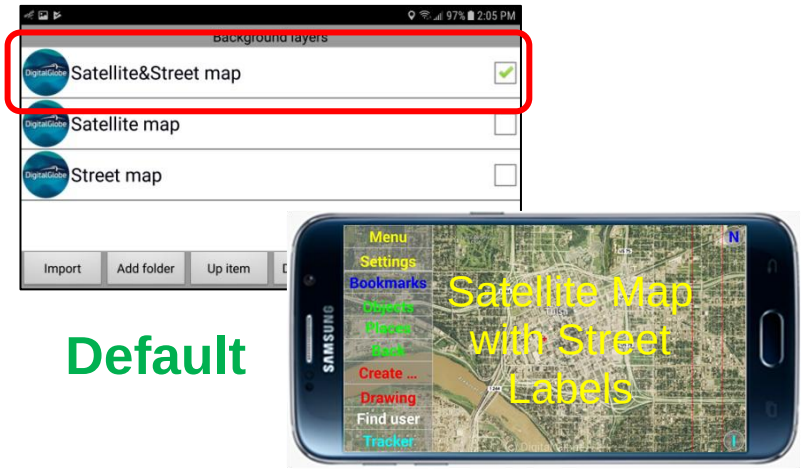
4. ***DigitalGlobe Maps for Users with a Subscription or User License.***
When a User device installs the MapBox/DigitalGlobe Map imagery by way of a Subscription or User License, the DigitalGlobe Maps menu item will become active.

To view the 3 different DigitalGlobe Map options, click on the Menu Item.

During an initial install of the DigitalGlobe Maps, the “**Satellite&Street map**” option will be installed by default.

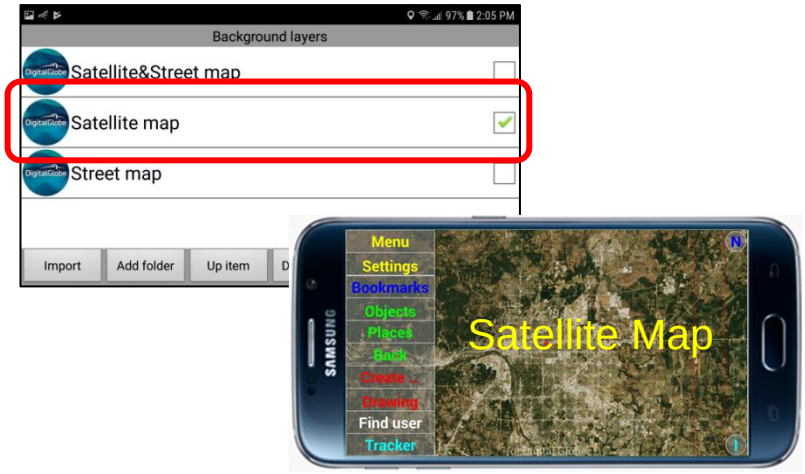
A User may select any of the other map options as indicated below.

1

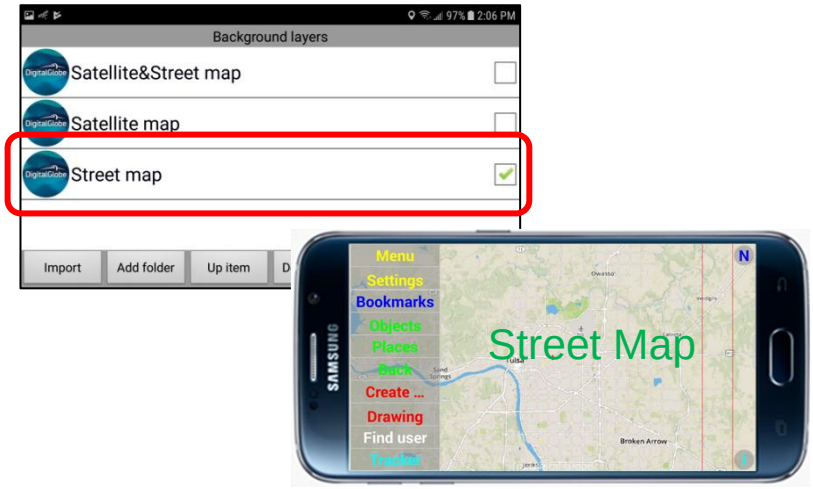


Default

2



3

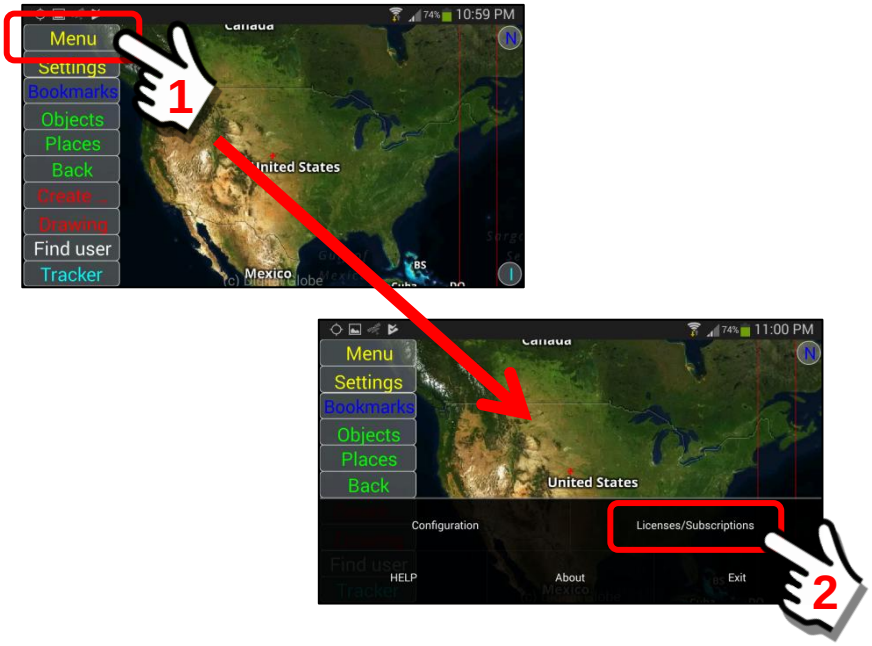


Removing a User License from the Device:

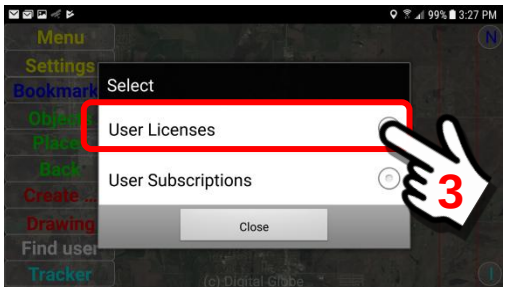
In the SentryMDU system an individual User Profile may not have BOTH a User License and a Subscription at the same time. You must be either one or the other (or none). However, a User may have several User Profiles on their device … some of which are User Licenses, Subscriptions, or none. See **Section 5.3** for a detailed step-by-step description on how to create multiple User Profiles.

In this example, we are going to illustrate how to REMOVE a User that has a User License on a SentryMDU data server. You may use this feature if you have a User License in a specific category and you will be moving to a "new" category of License. In this scenario you must remove the existing license and then install the "new" license.

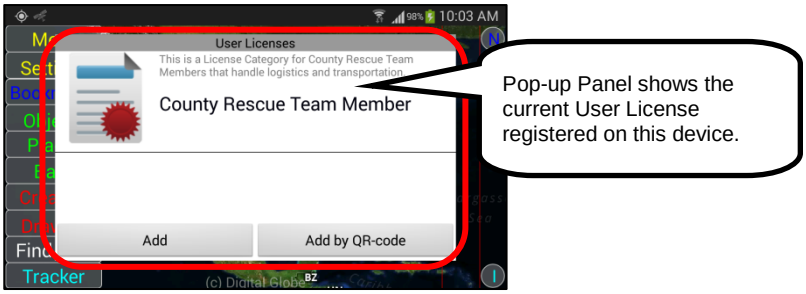
1. ***Open the Menu Panel and select the "Licenses/Subscriptions" Button***
   Click on the *Menu Button* on the Main Map Screen and then select the *Licenses/Subscriptions Button*.



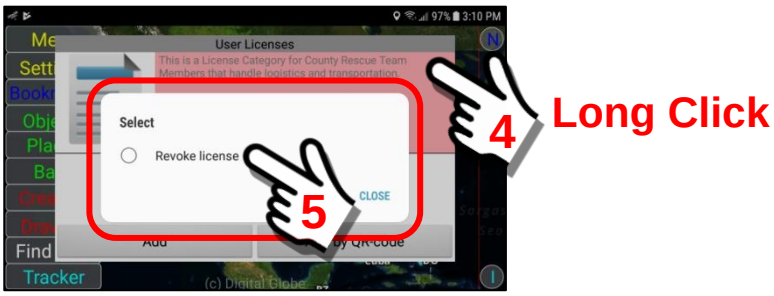
2. ***Select the "User Licenses" Option***
   A pop-up panel will appear. Select the "User Licenses" option



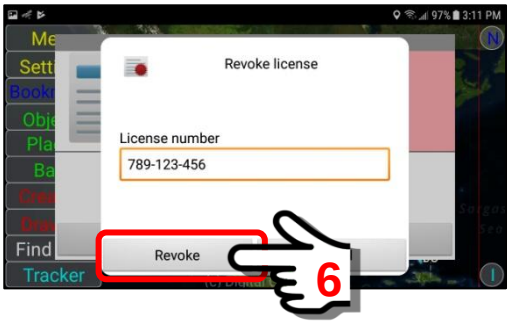
3. ***The "User Licenses" selection panel will appear***
The User Licenses Panel will show the active User License that is installed on this mobile device.



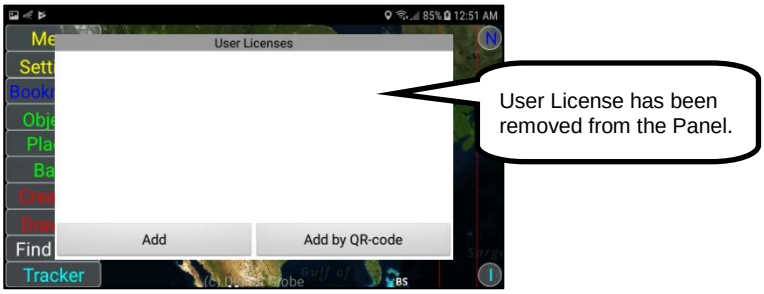
4. ***Select the User License, long click on the name***
Perform a "long click" on the User License name. A pop-up box will appear with a button to "revoke" the User License. Click on the Revoke Button.



5. ***Verify the correct License Number***
Verify the License Number for your Organization. Click on the **Revoke Button** to remove this license access from the mobile device.



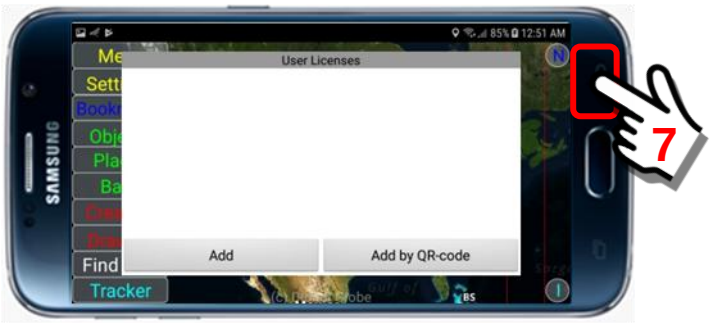
6. ***The User License will be removed from the device***
Notice that the User License (County Rescue Team Member) is no longer shown on the device.



7. ***Satellite Imagery will be removed from the device***
Without a User License, the mobile device "access" will be removed from SentryMDU Data Server of the Organization. You will still be "registered" on the particular server instance, but you will default to your personal Security Domain. You will no longer have access to others on the network until you select and install ANOTHER user license.

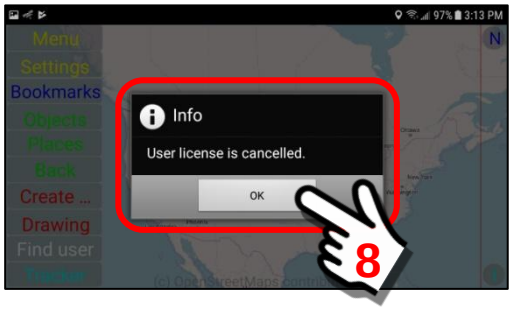
You will no longer have access to file storage, streaming and satellite imagery that is provided by that Server Instance.

Click the "Back" Button to return to the Main Map Screen.



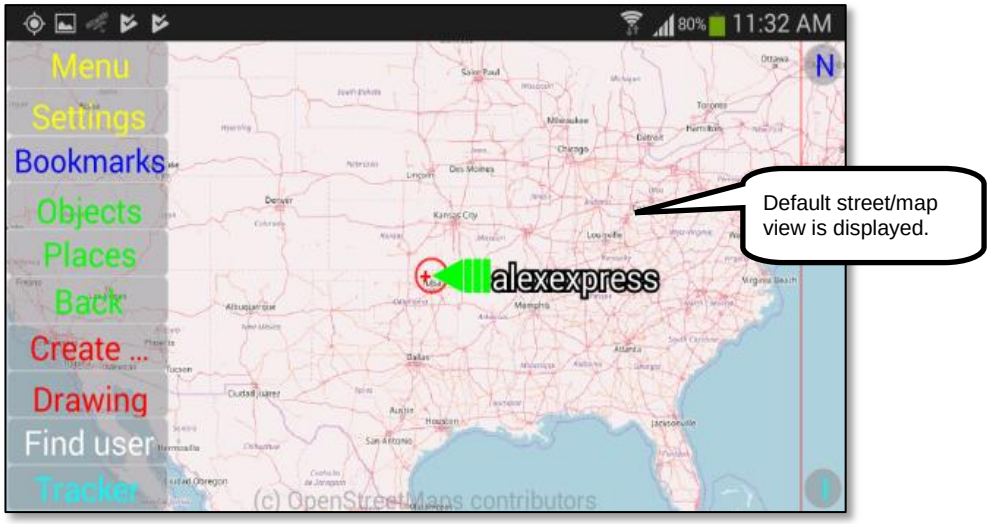
As you return to the Main Map Screen, the satellite imagery on the device will be removed.

Finally, a pop-up box will inform the User that the User License has been successfully cancelled.



Click the "OK" Button to continue …

8. ***The "default" OpenStreetMaps data will now be displayed.***
Notice that the screen has now reverted to the road map display. Since you are on a Licensed Server, in order to access the high resolution satellite imagery once again, you must input another **User License/Access Key** combination.

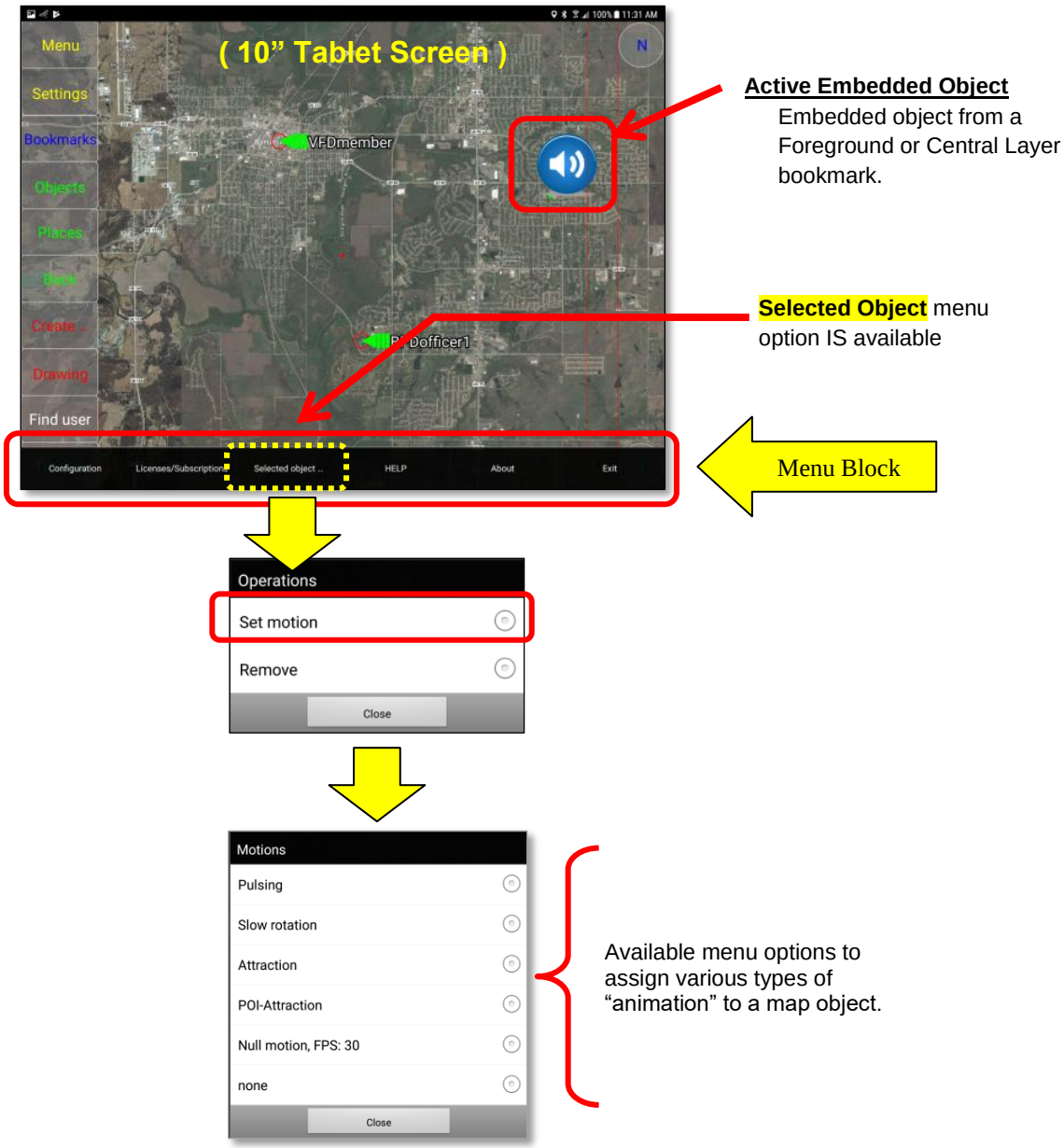


7.4. Selected objects …

Overview:

The **Selected Object** Button will appear on the Menu Block when "active" objects are present on the Main Map Screen AND they have been "selected" for actions. These active objects may be in the form of Bookmark items from Foreground and Central Layers. The Selected Object Button provides a range of menu options that allow for assigning "motion" to the embedded object.

This section will describe the "Selected object" Features.

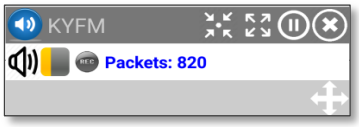


Review of “Selected Object” menu options:

1. ***How to select an embedded object.***
   An embedded object is a user created icon (image) that is linked to reference materials, audio-video sources, local file systems or remote internet sites. These links are created by the User and stored on the mobile device as a “Bookmark” object. These objects may then be “embedded” into map screens, tied to GPS coordinates or regions of map displays.

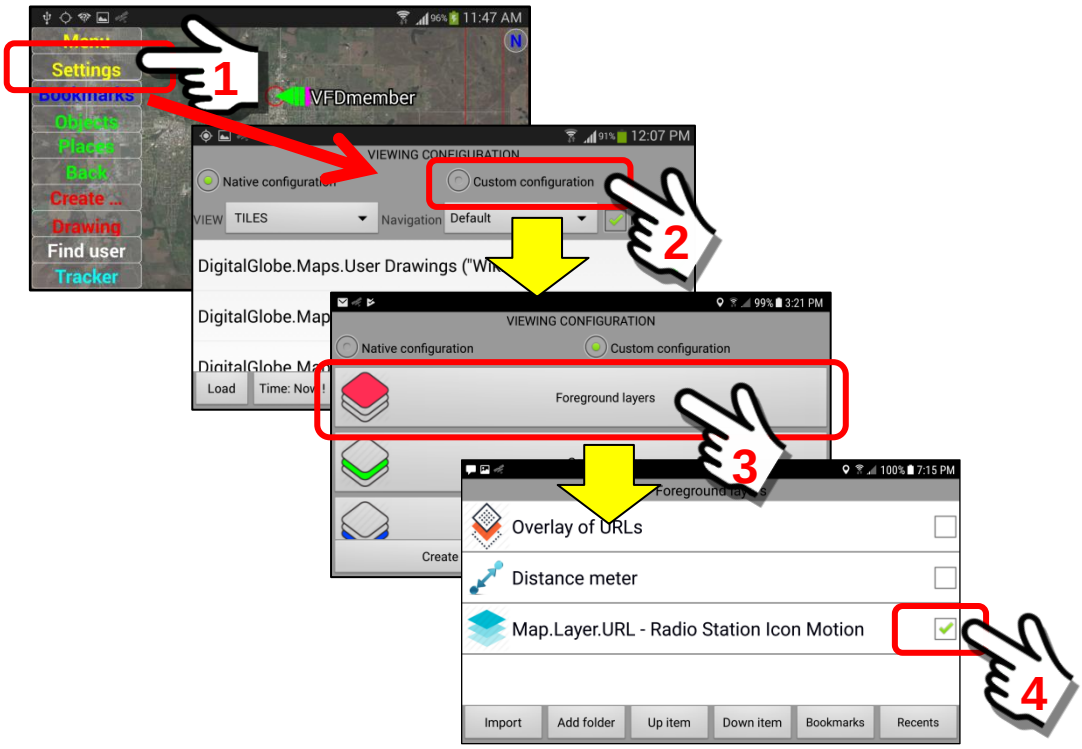
   The embedded objects may come from 3 sources within the App:
   a. General Bookmark List
   b. Foreground Layer custom maps
   c. Central Layer custom maps

   In this section, we will assume a User has selected a Radio Station object from a bookmark. This object has been configured to launch a floating window when active.



2. ***Launching a Foreground Layer map object.***
   In this exercise, we will designate the KYFM Radio Station, located in a Foreground Layer, to be our mobile object.

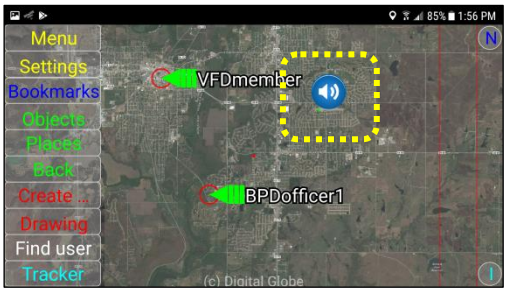
   To access this mobile object, we do the following:



3. ***Selecting the Mobile Object.***

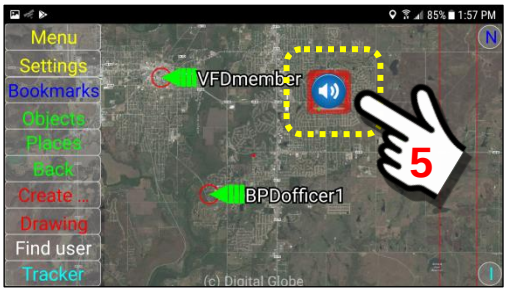
Once the Radio Station icon is selected (checkmark in the checkbox), return to the Main Map Screen. In this example, we are showing a single mobile object. However, you could have MANY mobile objects on the screen.

The next step is to "select" the desired mobile object.



Radio Station map object is displayed on the Main Map Screen as Foreground Layer.

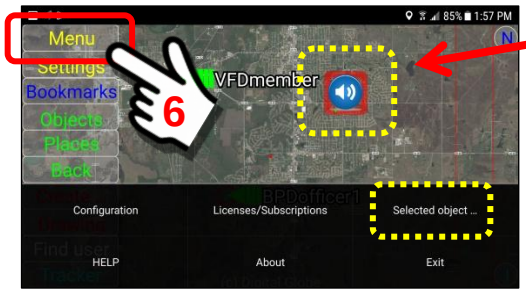
Click on the Radio Station icon to select it. Perform a "short click". You should see a "red box" surround the icon. The Radio Station floating window may open, if so, close the floating window (click on the "X" in the top right corner). We want to have the screen with the Radio Station icon "selected" with the red box surrounding it (means it is selected for further actions).



Short Click

4. ***Click on the Menu Button on the Main Map Screen.***

Now that we have "selected" the Radio Station icon as an active object (red box) we need to configure the motion animation features.



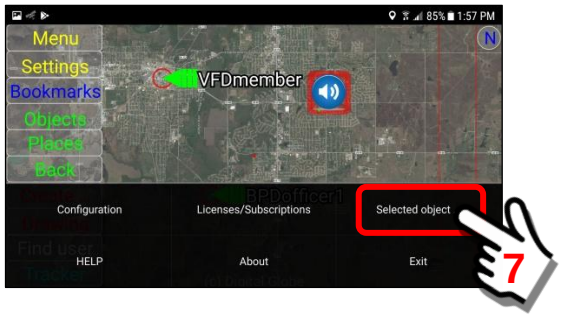
<u>Active Embedded Object</u>

Since the embedded object is active (red box), the Menu Block at the bottom of the screen now displays the "Selected object" option.

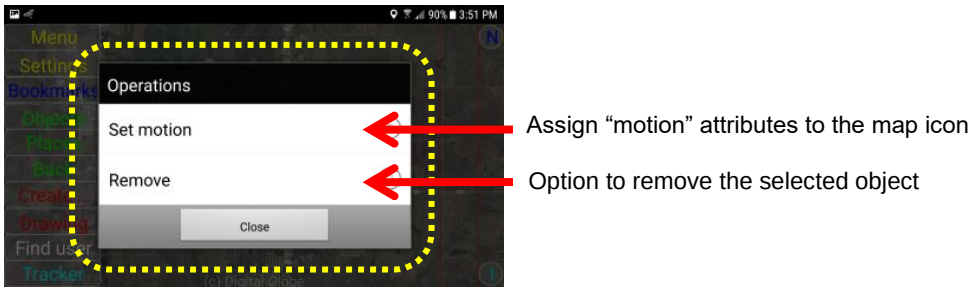
Menu Block

The Menu Button will open the Menu Panel at the bottom of the screen. The "selected object" menu option is now displayed.

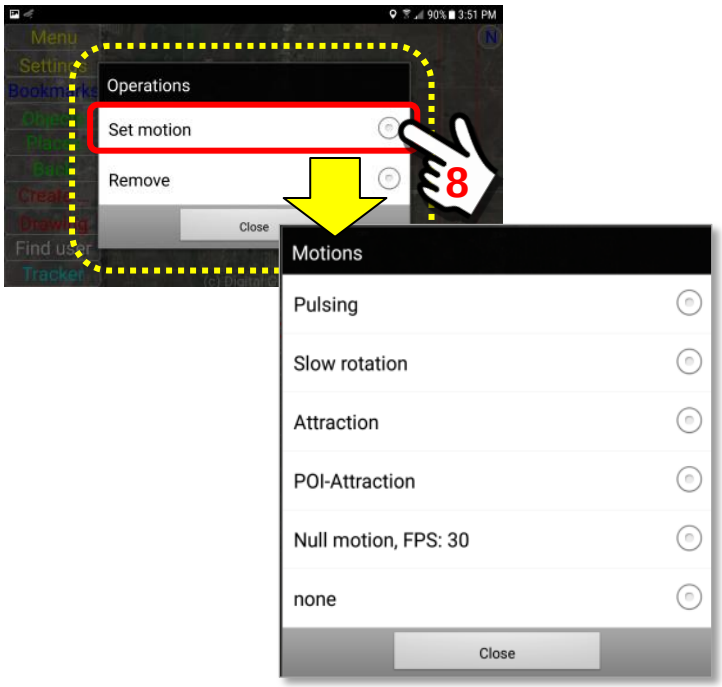
5. ***Click the "Selected object" Button located on the Menu Bar.***
To gain access to the Motion/Animation features, click on the "Selected object" Button. This will launch a pop-up Operations Menu.



The Operations Panel has two options. We will select the "Set motion" option.

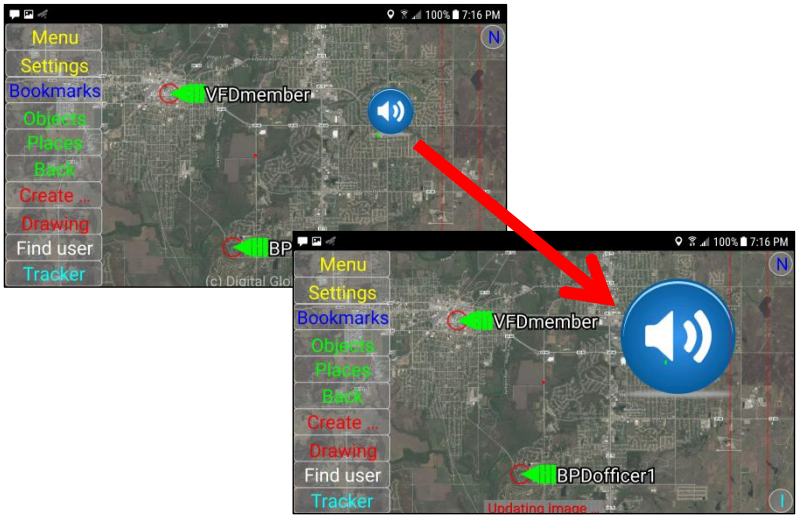


6. ***Review of Menu options on the Motions Panel.***
A Motions Panel will open with 6 menu options. We will discuss these 6 menu options in the following text.



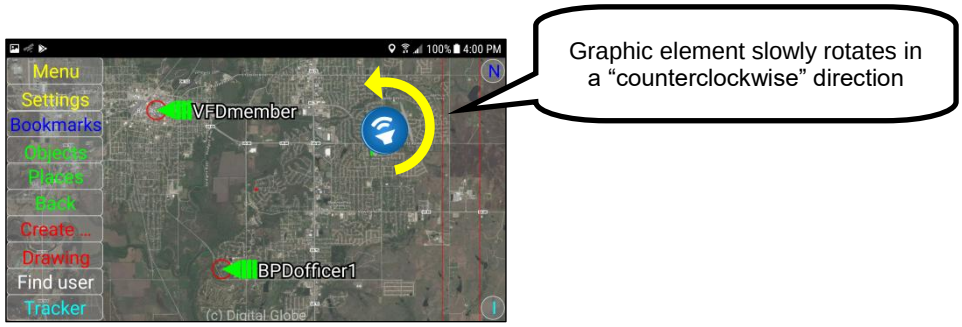
Pulsing

The Pulsing Option causes a map icon (graphic element) to “pulse” three times (get bigger and smaller) over a period of 6 seconds. This animation is designed to make the element more “noticeable” on the screen and easily recognizable (since it will get BIG). This has application where you may have many graphic elements on a display and want certain ones to stand out.



Slow rotation

The Slow Rotation Option causes a map icon (graphic element) to “rotate counterclockwise” on a continual basis. This animation is designed to make the element more “noticeable” on the screen and easily recognizable (since it is rotating). This has application where you may have many graphic elements on a display and want certain ones to stand out.



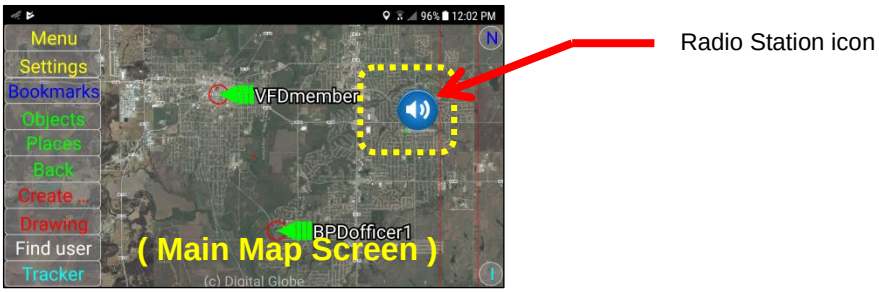
Attraction

The Attraction Option means that if an object (graphic element) is visible in a map window, it is displayed “as is”. However, as the object goes outside of the map window, the application “attracts” the icon to the border of the map window, reduces the size of the icon and maintains it in a relative position on the screen border. In this way, a User can recognize a

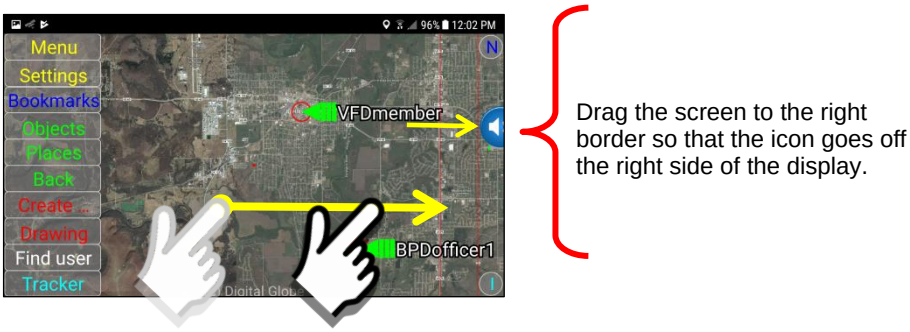
direction to move the screen in order to find the object … by following the attracted object.

Note that this can be used for “static” objects (objects that are fixed to a GPS point) and “dynamic” objects such as a “Live” video panel transmitted by another user that is moving in real-time (ie Dash Cam from a vehicle).

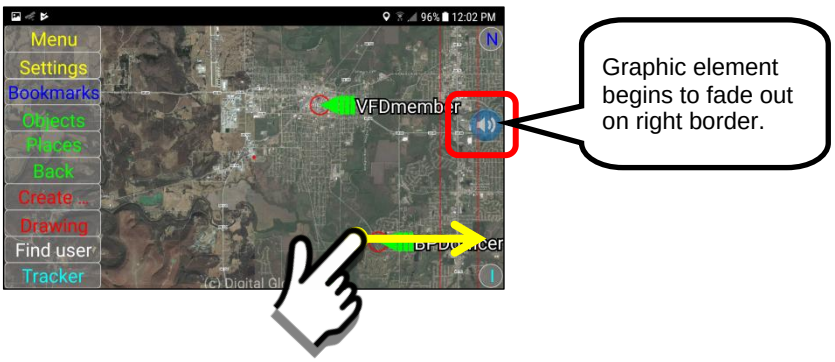
To illustrate the concept, we have a Radio Station icon that has the motion attribute set as “Attraction”. When the icon is displayed during use on the screen, it maintains the normal size as set by the user during setup.



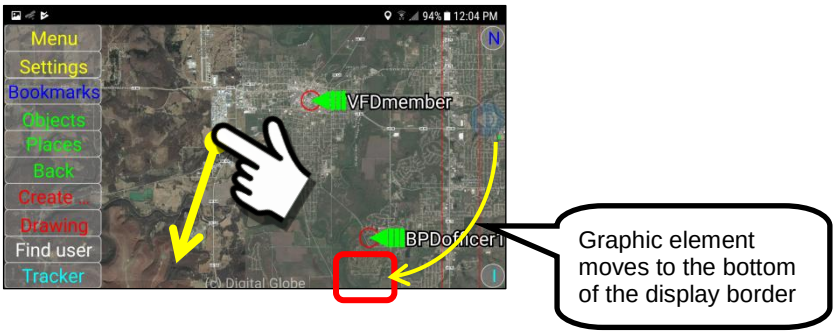
Drag the screen to the right such that the icon bumps into the right border of the display. The icon reduces in size.



As the Radio Station icon bumps into the right side of the screen, it will reduce in size and maintain a relative position on the right border of the display.



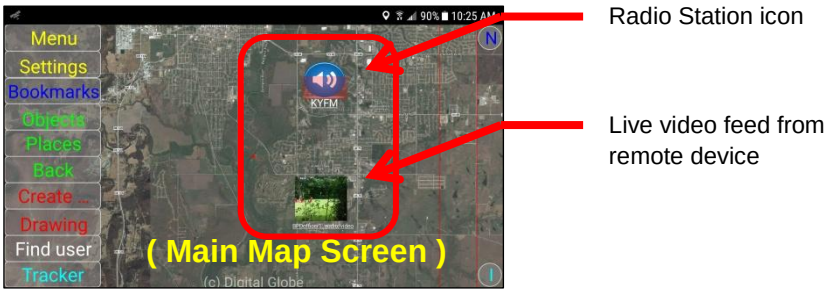
If the Map Screen is further moved “down” and to the “left”, notice that the Radio Station icon will follow in a relative position around the border of the screen. This provdes a user with an indication of “where” the Radio Station URL link is located relative to the current map location.



POI-Attraction

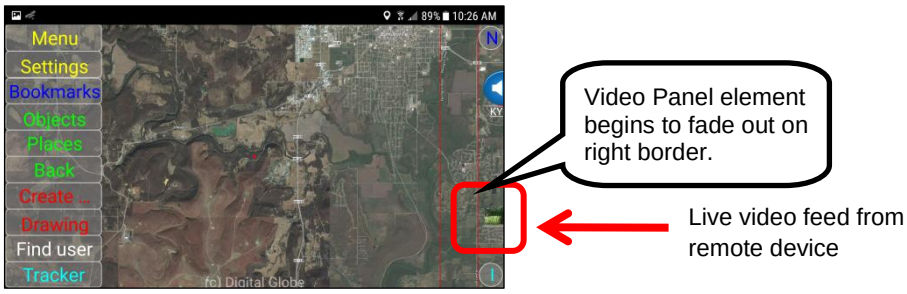
The POI-Attraction Option refers to an object that is constant width/height in a map window, such as remote video monitoring. However, as the object goes outside of the map window, the application “attracts” the video panel to the border of the map window and keeps it there. In this way, a User can recognize a direction to move the screen in order to find the object … by following the attracted object.

To illustrate this concept, we have a Foreground Layer panel with two objects. A radio station (KYFM) and a remote video feed (BPDofficer1) showing on the panel. The remote video feed has been set to a motion attribute of “POI-Attraction”.

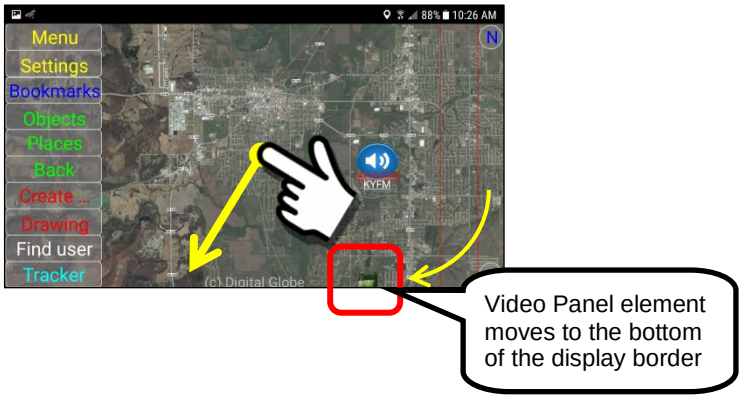


Drag the screen to the right such that the video panel bumps into the right border of the display.

As the video panel bumps into the right border of the display, the size of the video panel reduces in size and the picture begins to “fade” out. The **POI-Attraction Feature** allows the video panel to remain at the correct height/width ratio.



If the Map Screen is further moved “down” and to the “left”, notice that the Video Panel element will follow in a relative position around the border of the screen. This provdes a user with an indication of “where” the video feed URL link is located relative to the current map location.



Null Motion, FPS:30

The Null Motion, FPS:30 Option means that there will be NO motion for the selected object … however, the screen will refresh at 30 times per second. This option would typically be used by Developers as a “frame rate driver” trigger for the display. If a map shows an object that has the “Null Motion, FPS:30” motion attribute, the map view will be updated 30 times per second.

None

The None Option means that NO motion attributes are assigned to the selected object. If you have an object that has motion and you want to remove that motion (make static again) you would select “None” as the motion option choice.

7.5. HELP

Overview:

The “HELP” Button launches the Help Panel on the mobile device. This is a brief help reference.

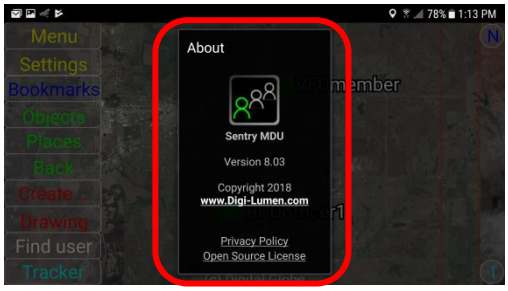
Sentry MDU Application:

To access the Help Panel, click on the “Menu” Button on the main map screen and then click on the “HELP” Button on the Menu Block.

7.6. About

Overview:

The “About” menu block selection will display copyright information and a website link to Digi-Lumen Technologies, the creator of the Sentry MDU Application.



www.Digi-Lumen.com

Link to *Digi-Lumen Technologies, LLC* website. Additional SentryMDU information and documentation is available.

Privacy Policy

Full text of Privacy Policy for the SentryMDU System

Open Source License

Description of the Open Source Licenses used in the SentryMDU App

7.7. Exit

Overview:

The “Exit” Button allows a user to completely exit from the Sentry MDU Application and stop ALL background processes (notifications, messaging, everything).

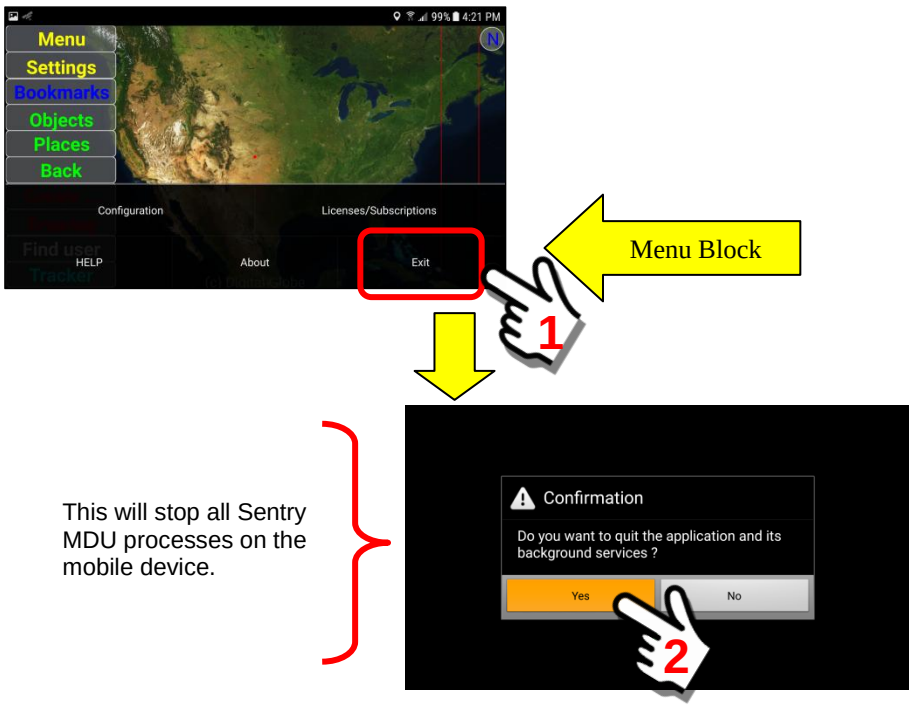
The SentryMDU App has a “memory” function that provides for automatic start of the application, when the phone is turned on, if desired by the User.

<u>This function works in the following manner:</u>

- If the SentryMDU App is “running” when the phone is turned “off”, the application will start automatically and run in the “background” the next time the phone is turned on.
- If the SentryMDU App is NOT “running” when the phone is turned “off”, the application will **NOT** start automatically when the phone is turned on again.

When the SentryMDU App is running in the background (you have not clicked on the Icon) a few background processes will continue to run. These include GPS location and messaging features. To turn off all of these functions and “go dark” a User must click on the “Exit” button and then confirm that they wish to turn off all background processes.

To turn off all Sentry MDU processes:

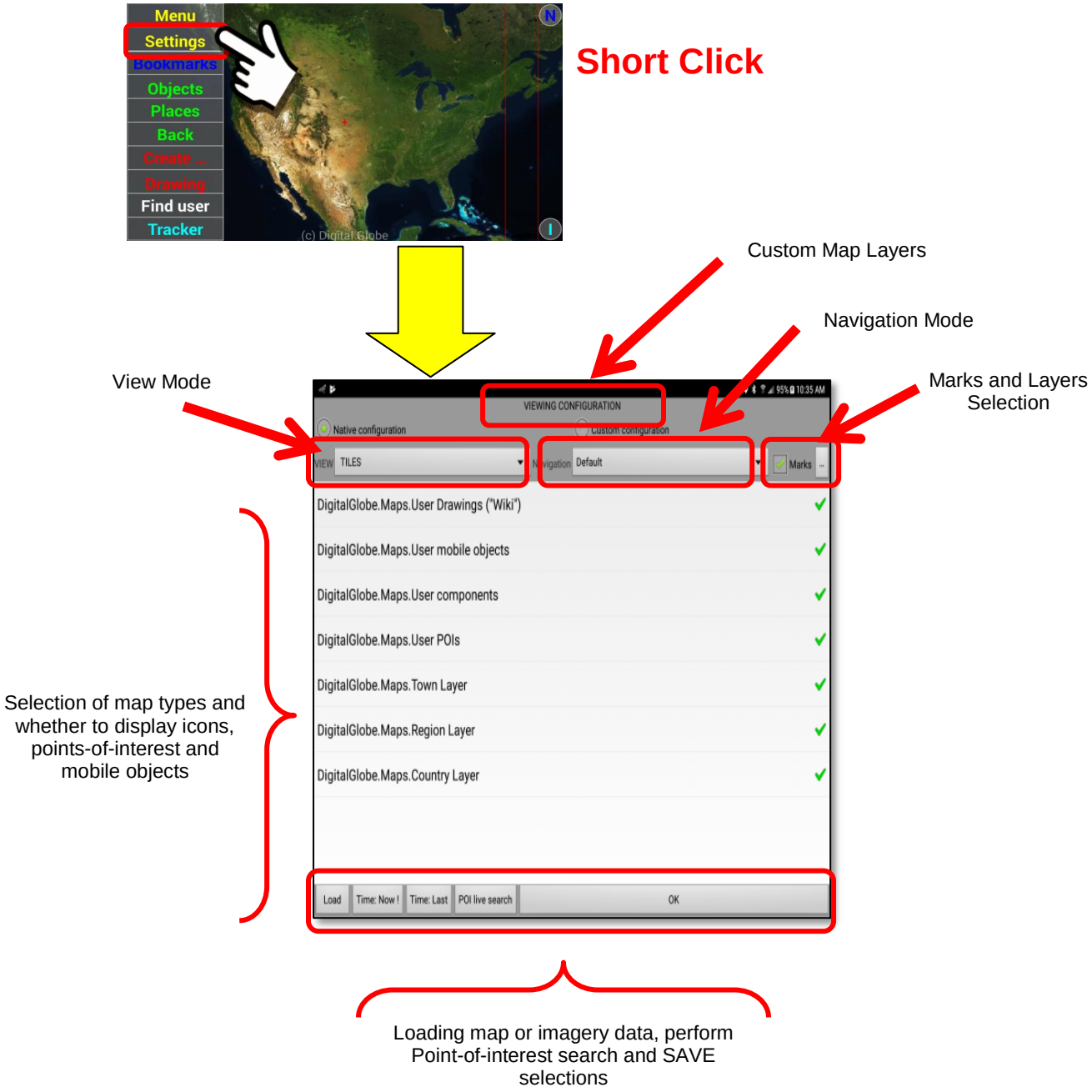


8. The “Settings” Button features

8.1. Overview of the Viewing Configuration panel

Overview:

The Viewing Configuration panel allows a user to select map types, how zoom in-out will be performed and the layers of additional information they would like on the mobile device screen. This section will describe the available features and buttons.



“Quick” Launch of Foreground, Central and Background Layers:

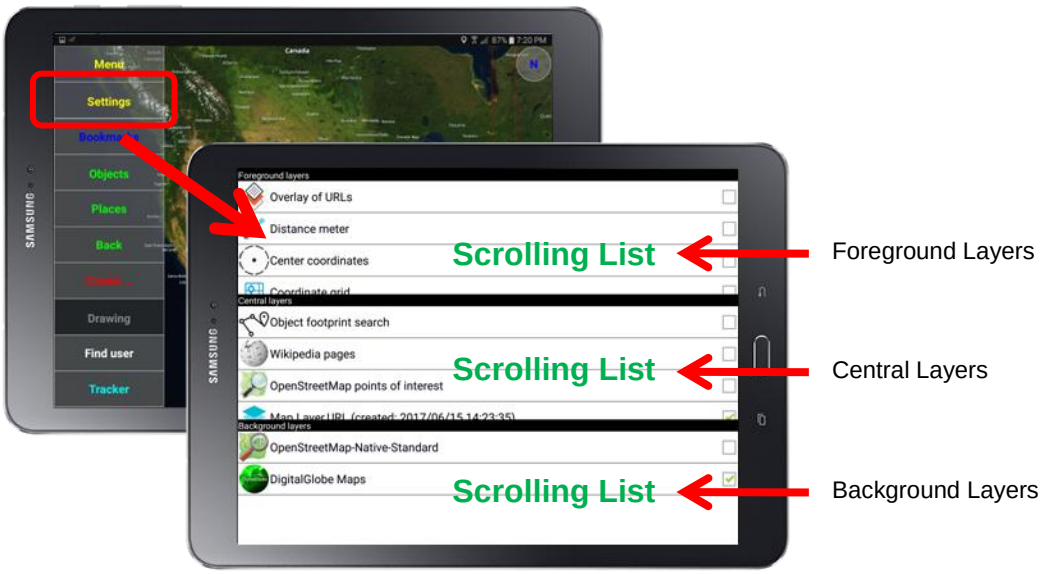
The Settings Button will also provide a “quick launch” of custom layer bookmark panels. This quick launch feature allows a user to have a “one click” access to the Foreground, Central and Background Layer panels (Tablets only).

We have provided this “alternate” launch feature by performing a “Long click” on the Settings Button.

> **Note: This feature ONLY works for Tablets that have a large display area. Each of the layers (Foreground, Central and Background) have a scrolling region so we have disabled it for small screens (ie Phones).**

The following pictures will illustrate the screens.

Perform a “Long click” on the ***Settings Button*** on the Main Map Screen..



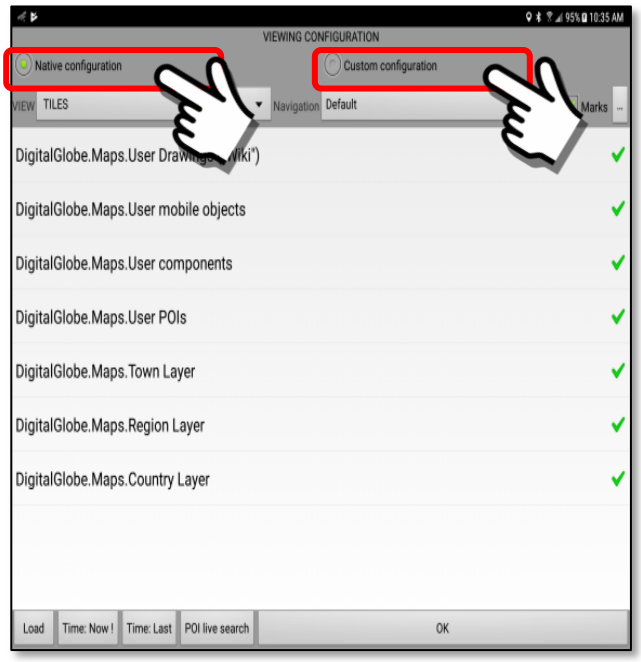
8.2. Native and Custom Configuration Modes

Overview:

The Viewing Configuration Panel has two (2) display options that will allow the User access to many of the features.

1. Native configuration
2. Custom configuration

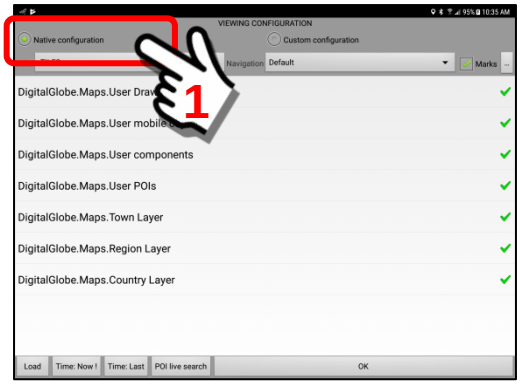
This section will review these two display options.



Review of Native and Custom configuration options:

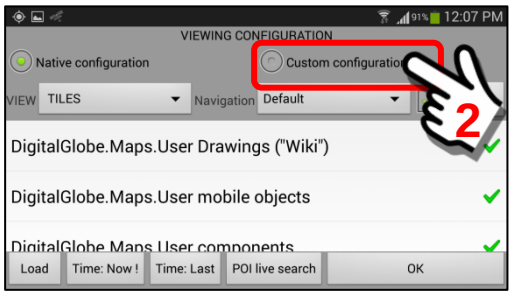
1. ***Native Configuration Mode***

   The "Native" option is the default screen view for the ***Viewing Configuration*** Panel. This displays map options with layer types including points-of-interest, user drawings and mobile objects.



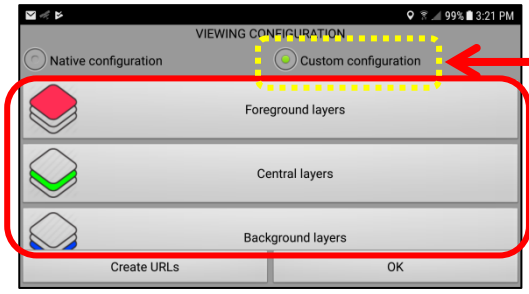
2. *Custom Configuration Mode*

The “Custom” option is an alternate view mode of the Foreground, Central and Background Layers functions. To open this panel, click the ***Custom Configuration*** Button on the Viewing Configuration Panel.



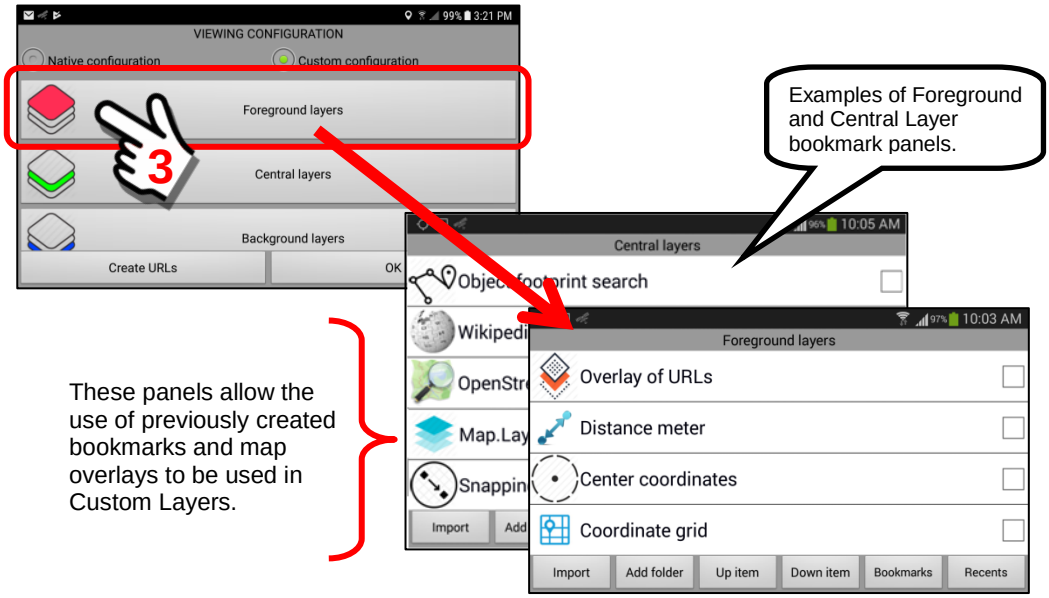
<u>Three large buttons will be displayed</u>

1. Foreground Layers
2. Central Layers
3. Background Layers



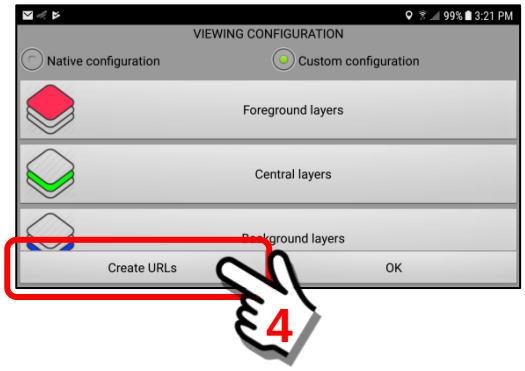
Custom Configuration mode is now activated

These features will be described in detail in **Section 8.5**.

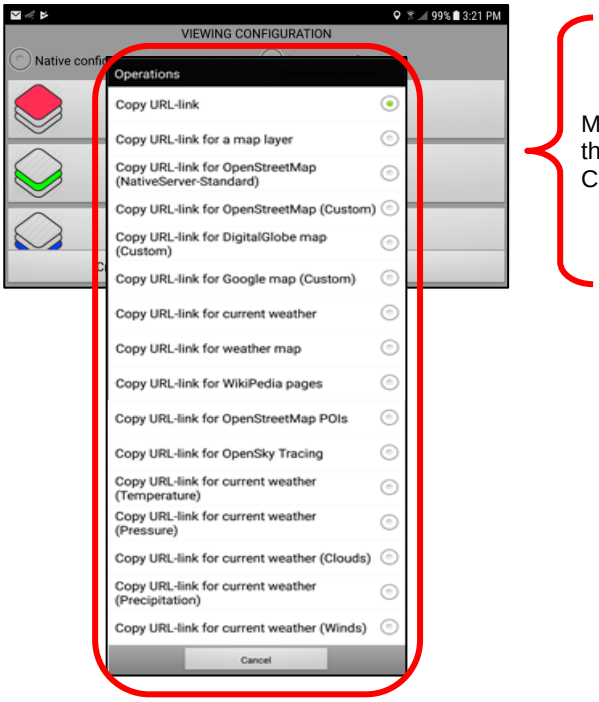


In addition to the ability to create Foreground, Central and Background Layers, the panel includes a "***Create URLs***" Button that has pre-defined map features that may be used to create the layers.

Click on the Create URLs Button.



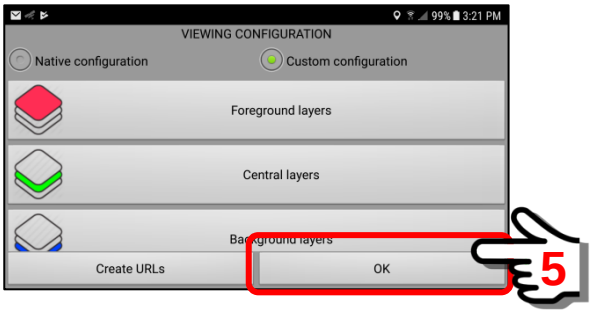
A pop-up panel will open with 16 menu options. These options will be described in **Section 8.4.1.**



Menu of Custom Options that are available to use as Custom Map Layers.

3. *Saving Custom Configuration Options*

To save your work, click the "***OK"*** Button on the Viewing Configuration Panel. You are returned to the Main Map Screen.



8.3. Custom Map Layers and Display Quality Settings

Overview:

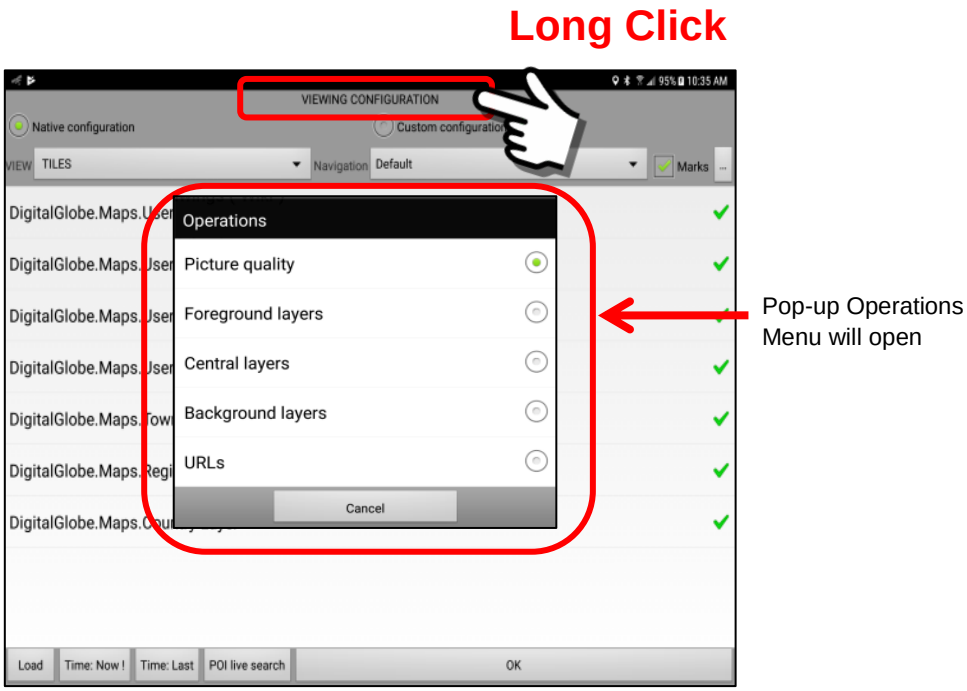
The Settings Section provides the user with a series of Custom Menu Options. These options will create “custom” map overlays that can show live video, embedded data references, 3rd Party Data, Temperature profiles, Wikipedia Data and more.

When created, these options are saved as a bookmark SHORTCUT that will display the data for a selected geographical area. Some of this data (weather) is currently available for locations in the USA only as this data is pulled from a US Government website. Other data (Wikipedia) is available worldwide.

This section will describe the menus and options available. See the Bookmarks section for a detailed discussion of setup and configuration (**Sections 9.12 – 9.30**).

Menu options to create a Custom Map Screen panel:

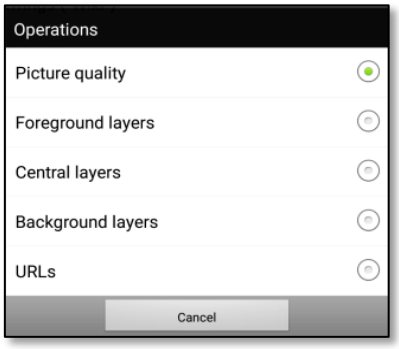
There are two methods to access the menu options, (1) Perform a “Long click” on the Viewing Configuration text header or (2) Open the Custom Configuration panel shown in **Section 8.2**. The first option is shown below.



Description of the menu buttons and features:

1. ***Menu options.***

   This section will describe the five (5) sets of menu choices that are available when a “Long click” is performed on the Viewing Configuration Panel header.

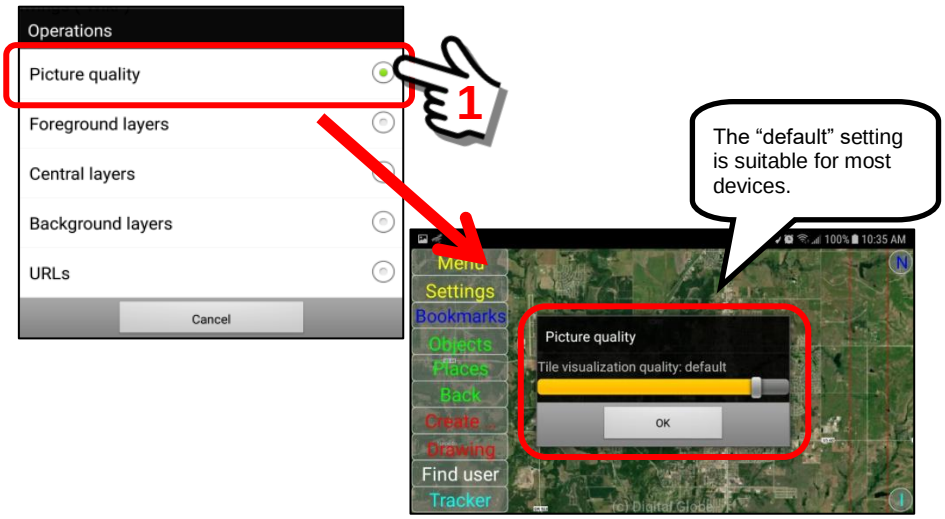


<u>Picture Quality (setting the screen resolution of the Satellite Map Screen)</u>

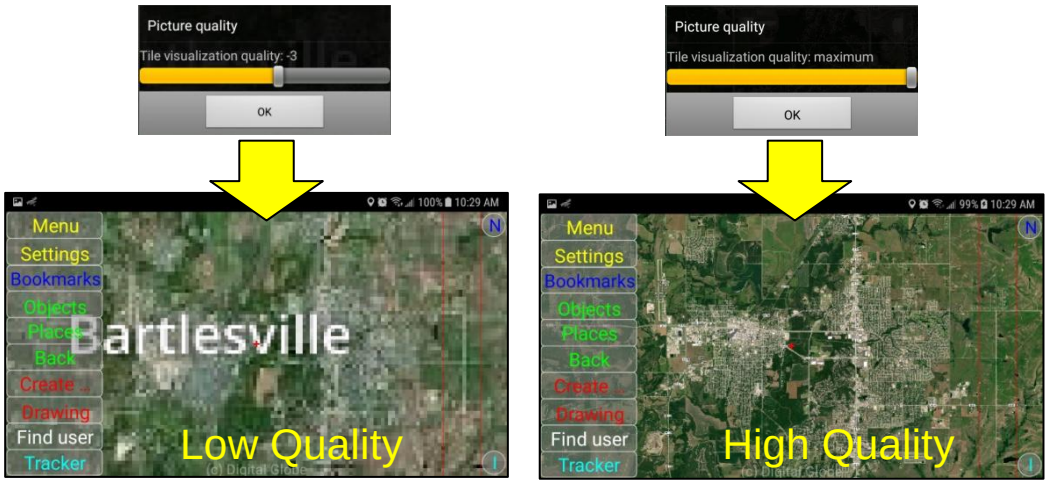
The SentryMDU App provides a setting to adjust the screen resolution of the satellite image “tiles” that are downloaded from the Tile Server.

Industry standard is to download imagery tiles in 256x256 pixel image tiles. These tiles are then combined to provide a full screen image. Lower settings of the **Picture Quality** option will allow the tiles to “display” more quickly on your device, however they may also be slightly “fuzzy” in appearance (pixelated). The higher settings (Maximum) will provide a “crisp” display image using the full resolution of your device.

Click to open the **Picture Quality** pop-up setting panel.

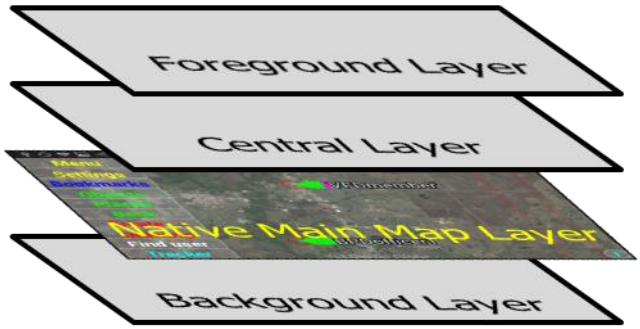


To change the picture quality, move the “slider” to give you the quality you want.

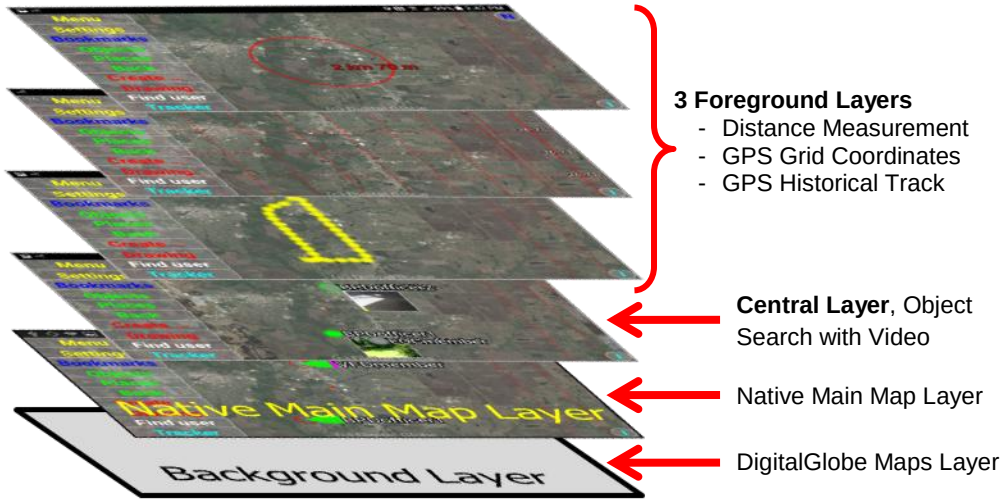


Understanding the concept of Map Layers

The SentryMDU System uses a “layers” concept to provide the user with options to add custom features to any particular map view. With “layers” a user can create custom bookmarks that include the standard Main Map Screen, Central Layers for Object Search functions and Foreground Layers of “tools” such as Distance Measurement or GPS Grid Coordinates.

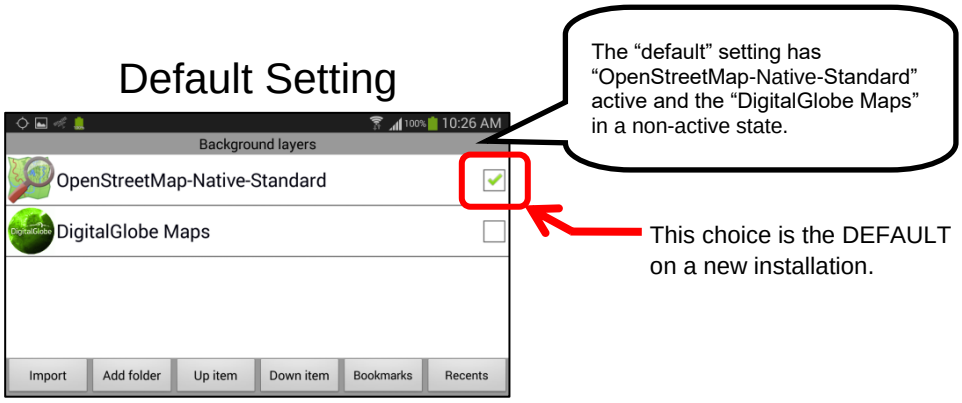


The following image will illustrate the concept of multiple layers.



Background Layers

The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put “custom” maps of your own in this folder.



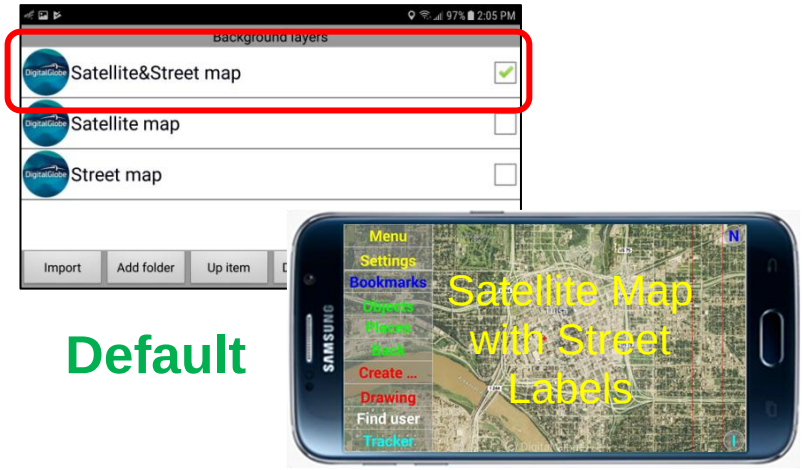
When a User device installs the MapBox/DigitalGlobe Map imagery by way of a Subscription or User License, the DigitalGlobe Maps menu item will become active.

To view the 3 different DigitalGlobe Map options, click on the Menu Item.

During an initial install of the DigitalGlobe Maps, the “**Satellite&Street map**” option will be installed by default.

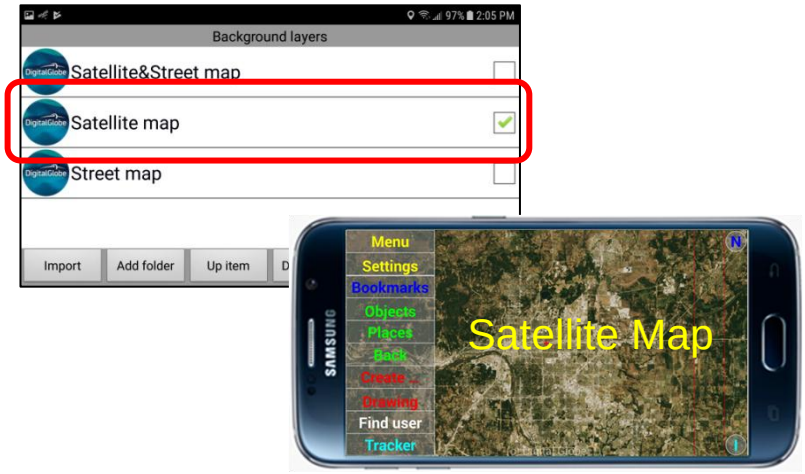
A User may select any of the other map options as indicated below.

1

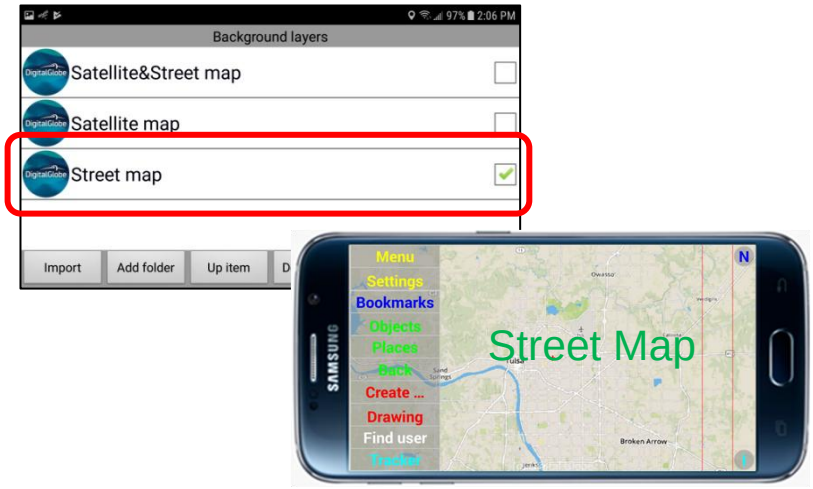


Default

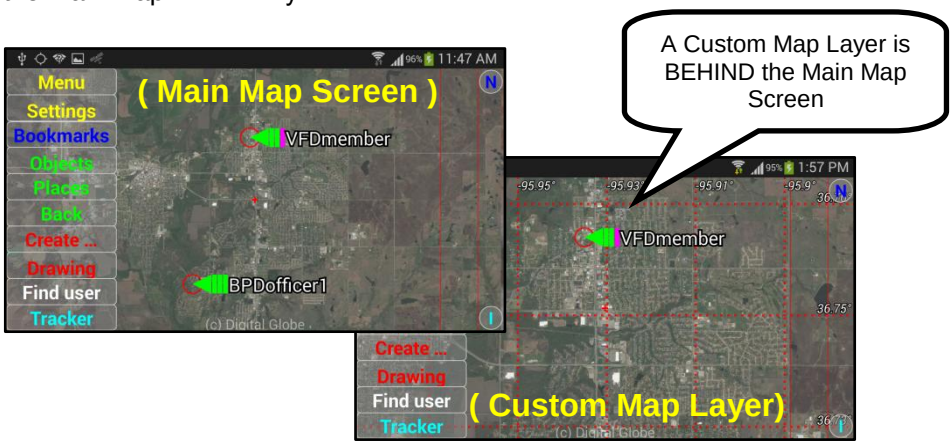
2



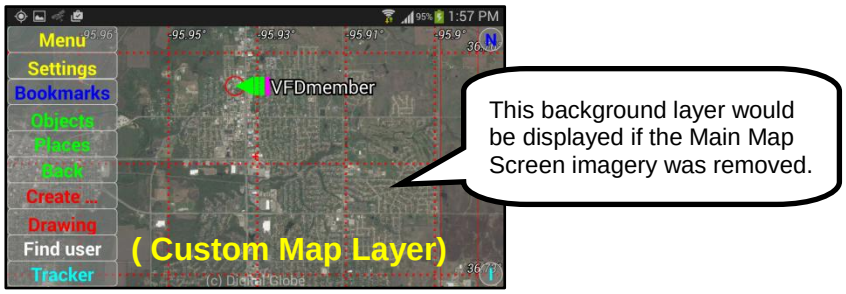
3



The “Background Layers” menu option will allow the display of Custom Map Layers that will reside BEHIND the main Map Screen layer (ie Satellite image). In this feature the Background Layer will be displayed if the main Map Screen layer is turned “off”.



In typical use, the Background Layers would only become visible if the Main Map Screen were to be “removed”. This situation could occur if a user were to provide a “custom” set of map images (not using the MapBox/DigitalGlobe satellite imagery) and those images were removed. Additional details on setting up Foreground and Background layers will be provided later in this Section.



Central Layers

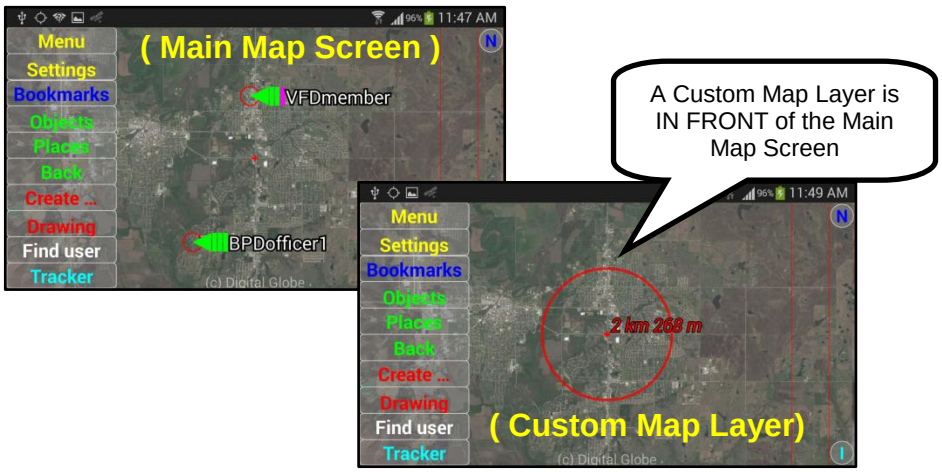
The “Central Layers” menu option will allow the display of Custom Map Layers that will reside IN FRONT OF the main Map Screen layer (ie Satellite image). In this feature the Central Layer will display on top of the Main Screen (ie Satellite image layer) but behind the Foreground Layer.

In this example, the central layer (Object Search feature) will be a custom “overlay” on top of the Main Map Screen. As long as the Central Layer feature is “active” (checkbox checked) the overlay will appear.

This option will allow as many layers as resources are available on your mobile device.

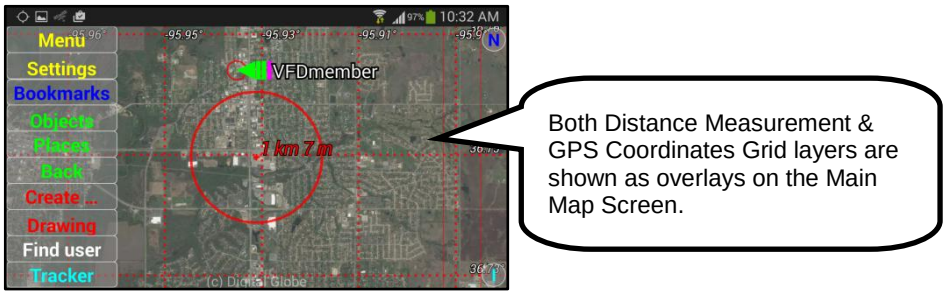
Foreground Layers

The “Foreground Layers” menu option will allow the display of Custom Map Layers that will reside IN FRONT OF both the Central Layer and the Main Map Screen layer (ie Satellite image).



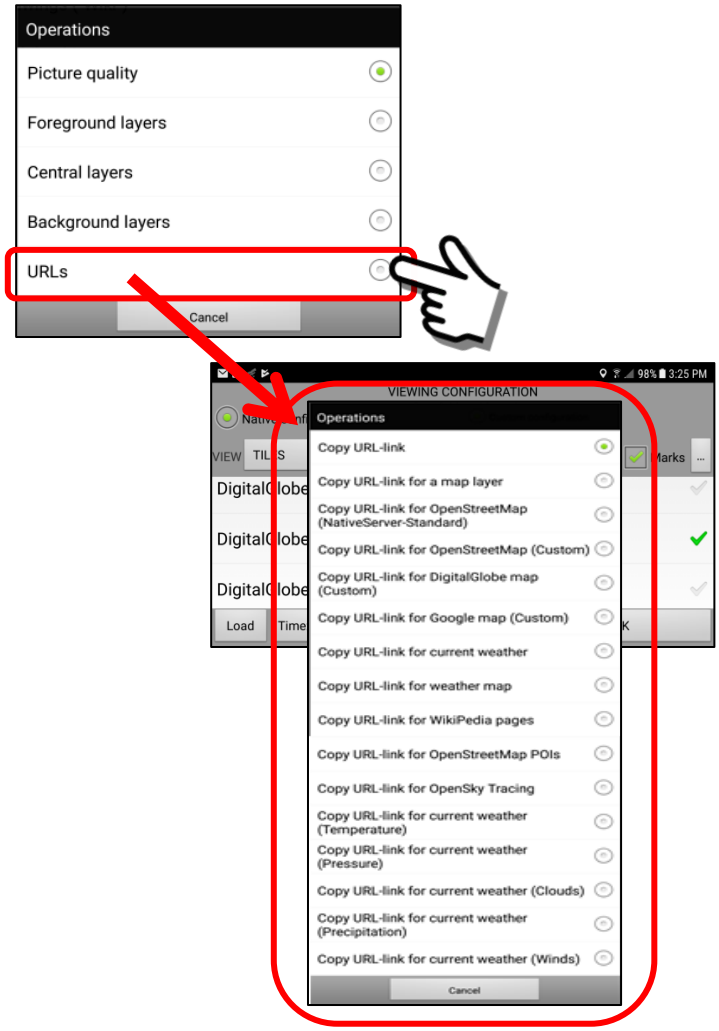
In this example, the foreground layer (Distance Measurement feature) will be a custom “overlay” on top of the Main Map Screen. As long as the Foreground Layer feature is “active” (checkbox checked) the overlay will appear. Additional details on setting up Foreground and Background layers will be provided later in this Section.

In this example, two foreground layers (Distance Measurement & GPS Coordinates Grid) are both displayed at the same time. This option will allow as many layers as resources are available on your mobile device.



URLs

The "URLs" Operations Menu has 16 options for the display of different Custom Map Layers for use as bookmarks or foreground/central layers to enhance the Main Map Screen.



8.4. Review the available Custom Map options

8.4.1. Overview of 16 types of Custom Map options

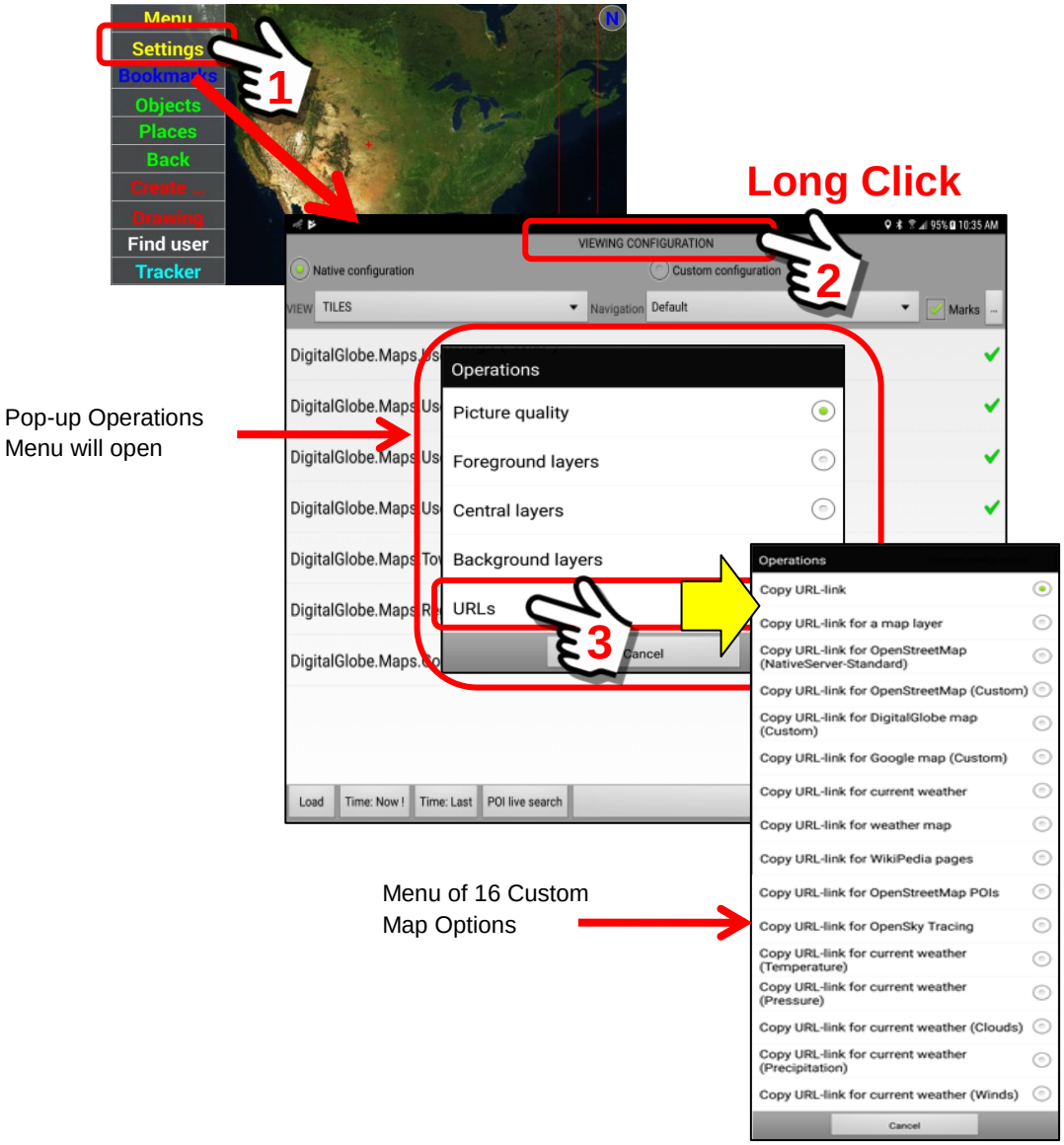
Overview:

The SentryMDU System provides for a variety of options for creating Custom Map Layers.

This section will describe the menus and options available. See the Bookmarks section for a detailed discussion of the setup and configuration of the bookmarks feature (**Sections 9.5 – 9.31**).

Menu options to create a Custom Map Screen panel:

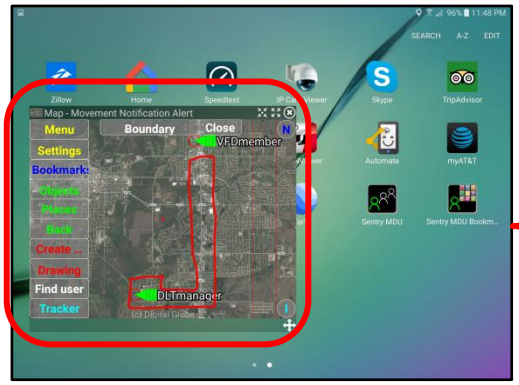
There are two methods to access the menu options, (1) Perform a "Long click" on the Viewing Configuration text header or (2) Open the Custom Configuration panel shown in **Section 8.2**. The first option is shown below.



Description of the menu buttons and features:

1. ***Copy URL-link.***

   The “Copy URL-link” menu option will make a copy of the current Map Screen URL and store it on the Sentry MDU “clipboard” (.TEMP file folder). This URL link is then “imported” as a custom layer bookmark. This menu item is also used in the “Movement Notification Alerts” feature. See **Section 9.26** for details.



Movement monitoring (geo-fence) panel as a floating window.

One of the features where the “Copy URL-link” option is used.

2. ***Copy URL-link for map layer.***

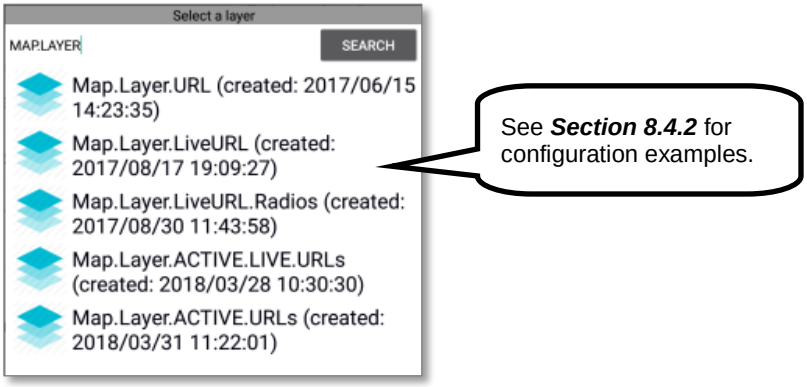
   Creates a “Map objects” custom layer. This layer highlights embedded map objects and allows clicking on them to see the “data” behind the objects (drawings, pictures, reference materials, audio files, etc.).

   These are **User Defined** custom map layers. Each user may create custom map layers which will be “saved” on the SentryMDU Server. These custom map layers are available for ALL users in the same Security Domain. In this way, one user may create a custom map layer for a specific application (ie Search & Rescue Application) and all other members of the same Search & Rescue Organization will have access to that Custom Map (assuming the same Security Domain).

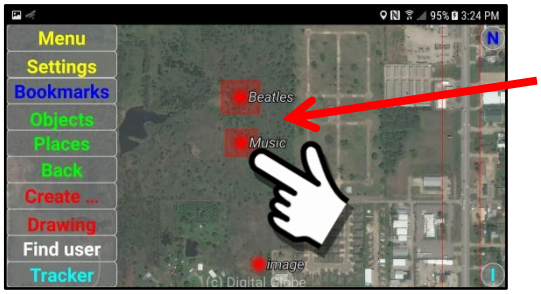
   A new install of the SentryMDU App includes a small group of “default” custom map layers that users may use, modify and rename to suit their needs. The default group includes samples of embedded content that may be selected by the user. These are to illustrate the capability of the system.

   Section 8.4.2 will provide specific configuration instructions and design guidelines for constructing your own custom layers.

The sample Custom Layers panel below shows 5 different types of custom layers included in the initial install.

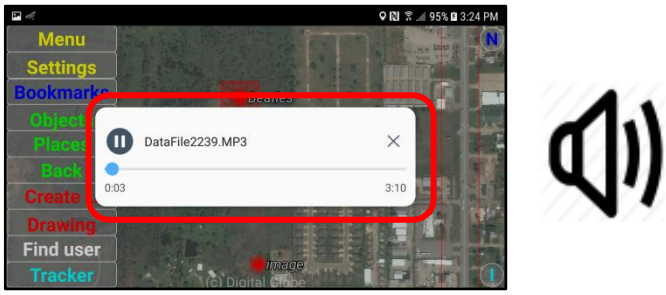


The following screen shows one version of embedded map objects.



Embedded map objects displayed as data files, video, audio files or other reference data.

Clicking on the Map Object opens the data file. In this example, a music file (.mp3) is played by the mobile device.



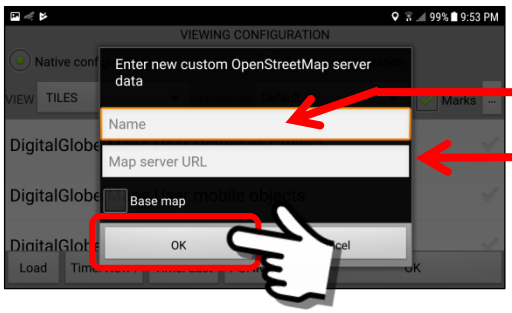
3. ***Copy URL-link for OpenStreetMap (NativeServer – Standard).***
   Creates a custom map layer that uses the DLT OpenStreetMap Tile Server as the map source. The NativeServer URL is hardcoded to the DLT Server. Each of these custom map layers will store the "current map view" as the default view. In this way, you may create many custom map views pointing to different map locations.

In this example, we will navigate to a “map view” of the area around Paris, France. The result will be “bookmark” of a street map of Paris.

In this example, we will select the city of Paris, France

4. ***Copy URL-link for OpenStreetMap (Custom).***

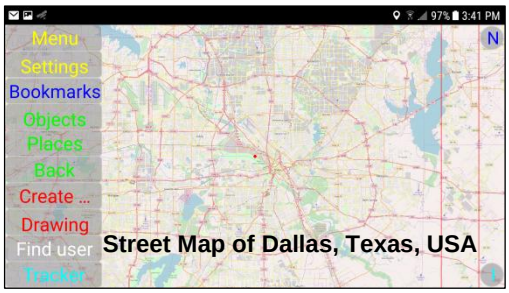
Creates a custom map layer that uses “other” OpenStreetMap Tile Servers as the map tile source. There are many companies on the internet that provide map resources … some are free and some are paid. This choice allows a User to specify the OSM Tile Server address they want to use. Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.



Enter a “Name” for this Map Layer

Enter the OSM Tile Server internet address (URL)

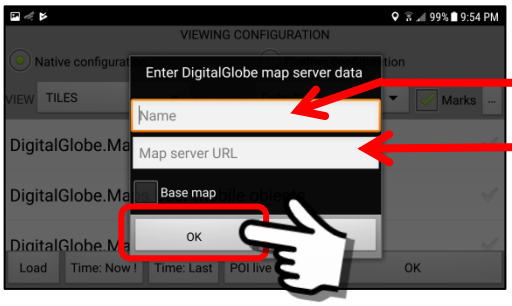
The resulting OSM Map Layer will be similar to the following street map of Dallas, Texas, USA.



5. ***Copy URL-link for DigitalGlobe Map (Custom).***

Creates a custom map layer that uses “other” MapBox/DigitalGlobe Tile Servers as the map tile source. The SentryMDU Data Server is hardcoded to use the MapBox/DigitalGlobe specified tile servers for our satellite imagery.

This choice allows a User to specify alternate MapBox/DigitalGlobe Tile Servers they may want to use. (May require separate Imagery Contract with MapBox). Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.



Enter a “Name” for this Map Layer

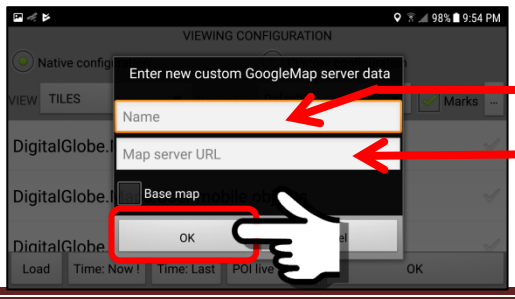
Enter the MapBox/DigitalGlobe Tile Server internet address (URL) and API Key

Activating this custom map layer will display the MapBox/DigitalGlobe imagery tiles from the alternate Tile Server.

6. ***Copy URL-link for Google Map (Custom).***

Creates a custom map layer that uses Google Tile Servers as the map source or other tile servers (ie Navitel, etc.) that conform to the Google Map API Standards.

This choice allows a User to specify the Tile Server address they want to use. (May require separate Imagery Contract with Google or other Map Providers). Each of these custom map layers will store the “current map view” as the default view.

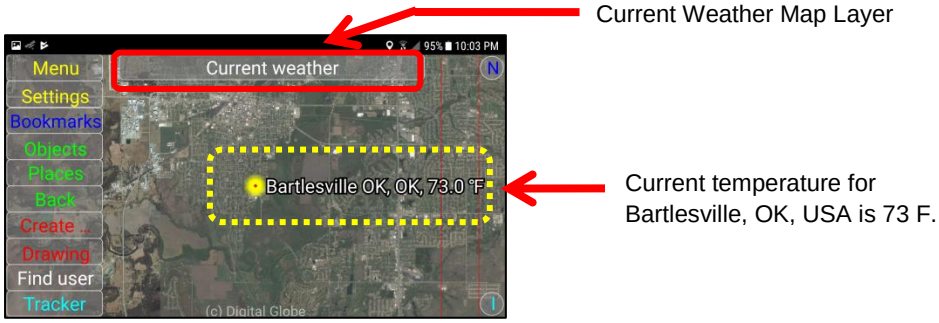


Enter a “Name” for this Map Layer

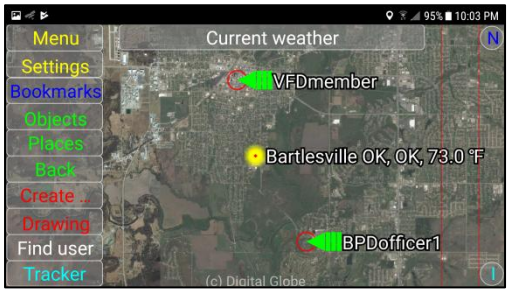
Enter the Google Tile Server internet address (URL) and API Key

7. ***Copy URL-link for Current Weather (USA only).***

Provides a temperature reading (current weather) as received for the designated location from a US Government website. The monitoring point may be moved to other locations on the map and the temperature at those locations will be displayed. Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.

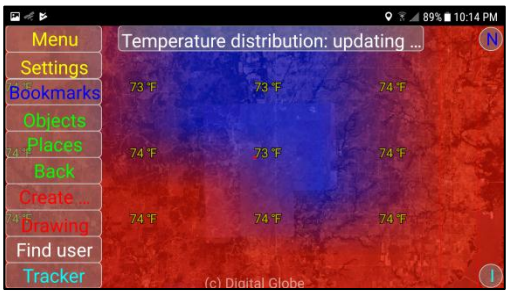


Shown as Foreground Layer overlay upon main map screen.



8. ***Copy URL-link for weather map (USA only).***

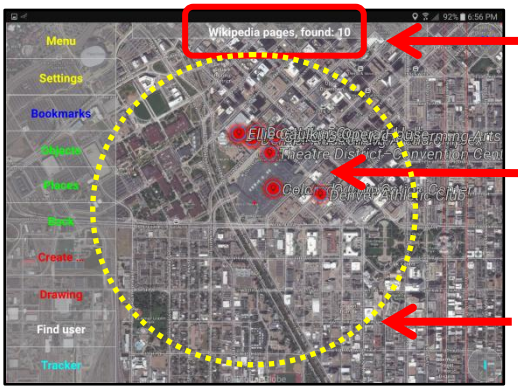
Provides a current temperature profile for any selected region on the map from weather data pulled from US Government Servers. Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.



To “update” the temperature, click on the ***Temperature Distribution*** Button at the top of the panel.

9. Copy URL-link for Wikipedia Pages.

The “Wikipedia” feature allows a user to save a SHORTCUT that will create a map panel with a Wikipedia data overlay. The SentryMDU System will pull data from the Wikipedia library based on the site geo-location and overlay these locations on a custom map view. Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.



The Wikipedia Panel showing the number of items found in the search area (maximum of 50 items).

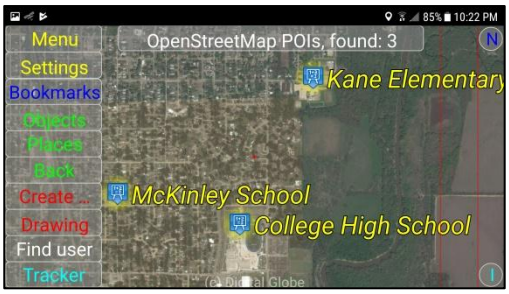
GPS location and name of the Wikipedia items found in the search. Zoom in to see items that are closely grouped.

The search area will retrieve data within a 10km radius of the designated map center.

10. Copy URL-link for OpenStreetMap Points-of-Interest (POIs).

This feature uses Point-of-Interest (POIs) data from the OpenStreetMaps data set. This URL retrieves data from the DLT Tile Server database which is configured using OpenStreetMap POI data (Open Source). This POI data may be viewed as “custom” layers of the Main Map Screen. Each of these custom map layers will store the “current map view” as the default view. In this way, you may create many custom map views pointing to different map locations.

In this example, 3 points-of-interest have been found within the current map view.



Example of points-of-interest around the city of Bartlesville, OK, USA

Zoom in-out to see more or less data in the region.

11. Copy URL-link for OpenSky Airplane Tracking.

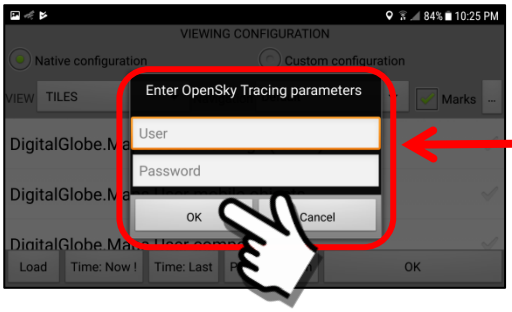
This feature creates a custom map layer that retrieves data from the OpenSky Network of airplane GPS locations. Depending on your application-use, various "types" of User Access Licenses are available (ie Personal, Commercial, Research, etc.).

Please visit the following website for more information:

<u>Details on the OpenSky Network data and Pricing</u>
https://opensky-network.org

<u>Details on the Basic (Free) License</u>
https://market.mashape.com/opensky/live-flight-tracking/pricing

For the casual user, you may take advantage of the available FREE Basic license. Simply click the "OK" button below WITHOUT filling in a Username/Password (default). If you have a Commercial License then enter a Username/Password pair.

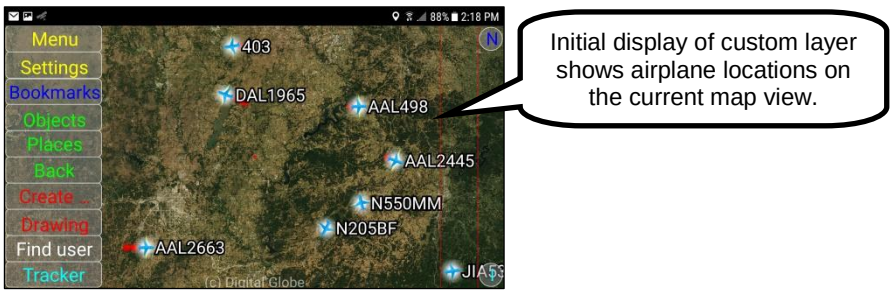


If you have a commercial account, enter your Username/password here … then click "OK".

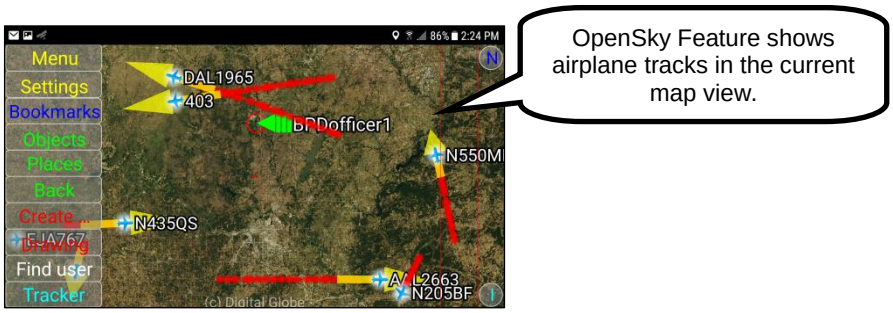
As the OpenSky Network custom map layer is launched, the system will retrieve airplane location data from the OpenSky Network servers. This information will be updated at 15 second intervals. The custom map layer will display an airplane "icon" and identification data that has been retrieved from the airplane transponder.

As more data is received, the SentryMDU system will create a GPS trace of the path of the airplane. You may zoom the screen in-out to expand or contract the viewing area to see more or less airplanes.

A sample screen in shown below.



As more data is retrieved, the GPS track of the airplanes is shown.



12. Copy URL-link for Current Weather (Temperature).

Provides a temperature reading retrieved from the OpenWeatherMap.org website. Unlike the "USA Only" options, this option provides worldwide data at 2 hour intervals. Depending on your application-use, various "types" of User Access Licenses are available (from Free to Enterprise).

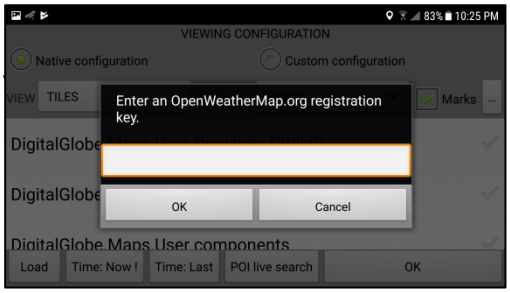
Please visit the following website for more information:

Details on the OpenWeatherMap Data and Pricing
https://openweathermap.org

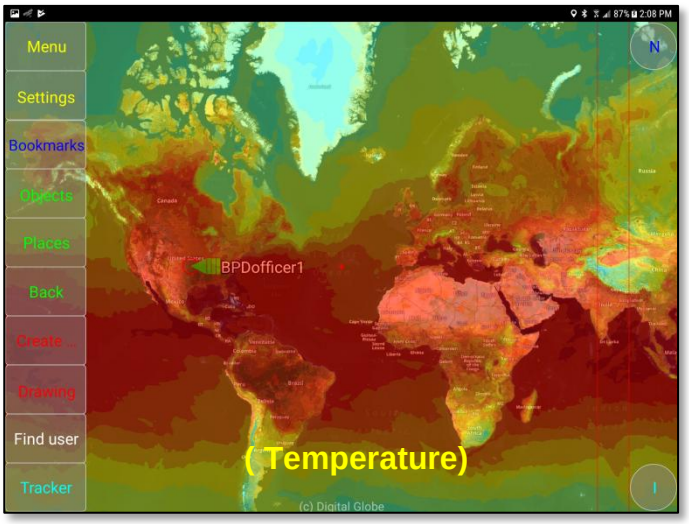
Details on the Free License
https://openweathermap.org/price

For the casual user, you may take advantage of the available FREE license. Register on the website and receive a "registration key". This key will allow you to receive weather data at 10 minute intervals. If your job requires more frequent weather data access, we suggest purchasing a commercial license from OpenWeatherMap.org.

To access the weather data, enter your Registration Key in the field provided and click the “OK” Button.



A typical Temperature Map will be similar to the following.



13. Copy URL-link for Current Weather (Pressure).

Provides a barometric pressure reading retrieved from the OpenWeatherMap.org website. Unlike the “USA Only” options, this option provides worldwide data at 2 hour intervals. Depending on your application-use, various “types” of User Access Licenses are available (from Free to Enterprise).

Please visit the following website for more information:

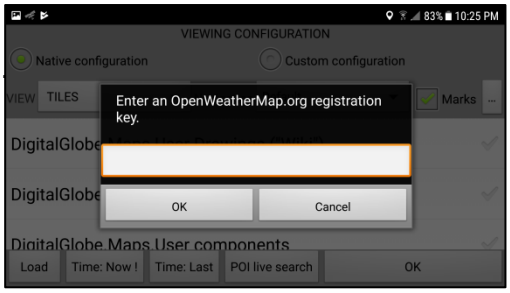
Details on the OpenWeatherMap Data and Pricing
https://openweathermap.org

Details on the Free License
https://openweathermap.org/price

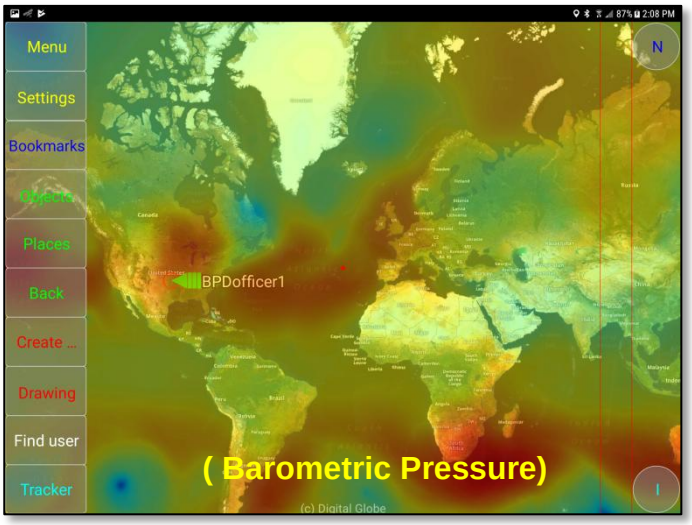
For the casual user, you may take advantage of the available FREE license. Register on the website and receive a “registration key”. This key will allow you to receive weather data at 10 minute intervals. If your job

requires more frequent weather data access, we suggest purchasing a commercial license from OpenWeatherMap.org.

To access the weather data, enter your Registration Key in the field provided and click the “OK” Button.



A typical Barometric Pressure Map will be similar to the following.



14. Copy URL-link for Current Weather (Clouds).

Provides a cloud coverage map retrieved from the OpenWeatherMap.org website. Unlike the “USA Only” options, this option provides worldwide data at 2 hour intervals. Depending on your application-use, various “types” of User Access Licenses are available (from Free to Enterprise).

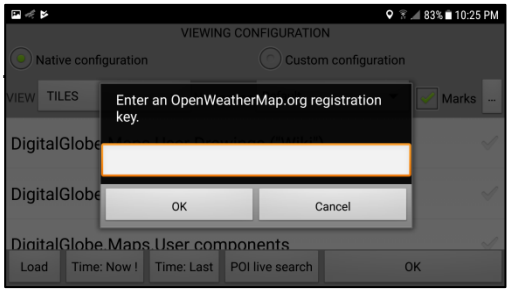
Please visit the following website for more information:

Details on the OpenWeatherMap Data and Pricing
https://openweathermap.org

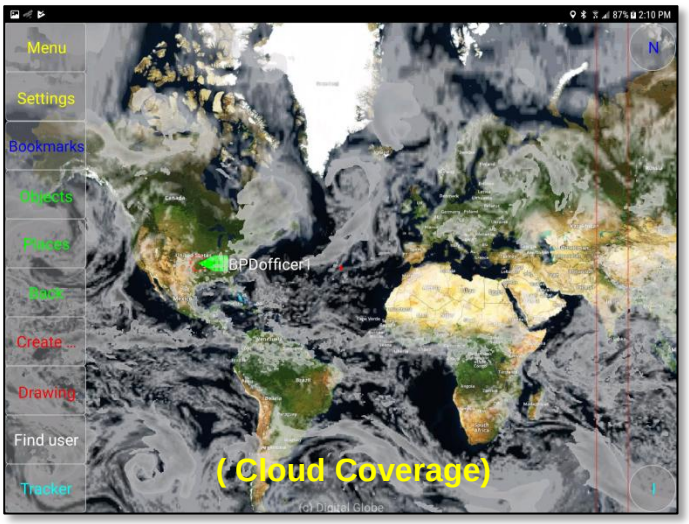
Details on the Free License
https://openweathermap.org/price

For the casual user, you may take advantage of the available FREE license. Register on the website and receive a “registration key”. This key will allow you to receive weather data at 10 minute intervals. If your job requires more frequent weather data access, we suggest purchasing a commercial license from OpenWeatherMap.org.

To access the weather data, enter your Registration Key in the field provided and click the “OK” Button.



A typical Cloud Coverage Map will be similar to the following.



15. Copy URL-link for Current Weather (Precipitation).

Provides a Rainfall/Precipitation Map retrieved from the OpenWeatherMap.org website. Unlike the “USA Only” options, this option provides worldwide data. Depending on your application-use, various “types” of User Access Licenses are available (from Free to Enterprise).

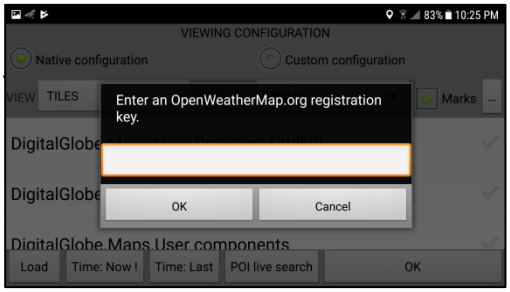
Please visit the following website for more information:

Details on the OpenWeatherMap Data and Pricing
https://openweathermap.org

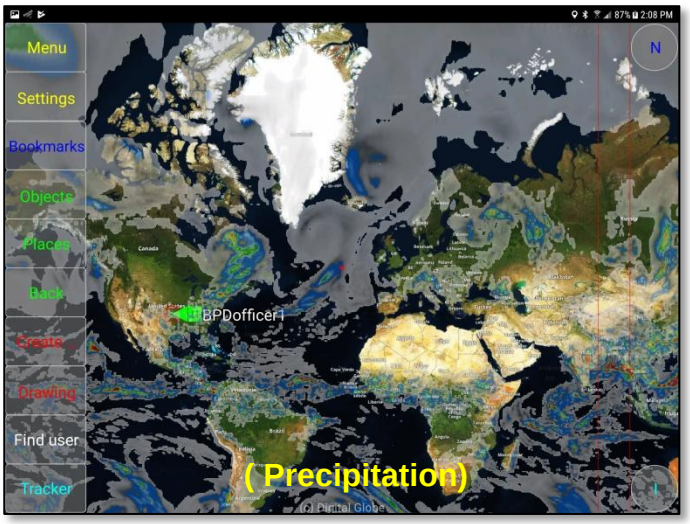
Details on the Free License
https://openweathermap.org/price

For the casual user, you may take advantage of the available FREE license. Register on the website and receive a “registration key”. This key will allow you to receive weather data at 10 minute intervals. If your job requires more frequent weather data access, we suggest purchasing a commercial license from OpenWeatherMap.org.

To access the weather data, enter your Registration Key in the field provided and click the “OK” Button.



A typical Precipitation Map will be similar to the following.



16. Copy URL-link for Current Weather (Winds).

Provides a set of wind speed data retrieved from the OpenWeatherMap.org website. Unlike the “USA Only” options, this option provides worldwide data at 2 hour intervals. Depending on your application-use, various “types” of User Access Licenses are available (from Free to Enterprise).

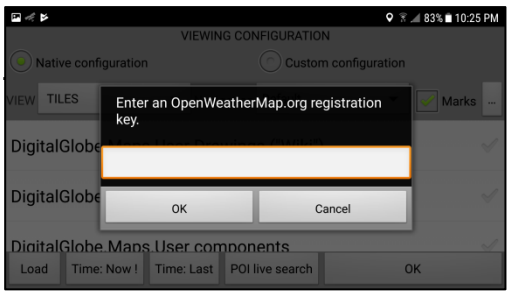
Please visit the following website for more information:

Details on the OpenWeatherMap Data and Pricing
https://openweathermap.org

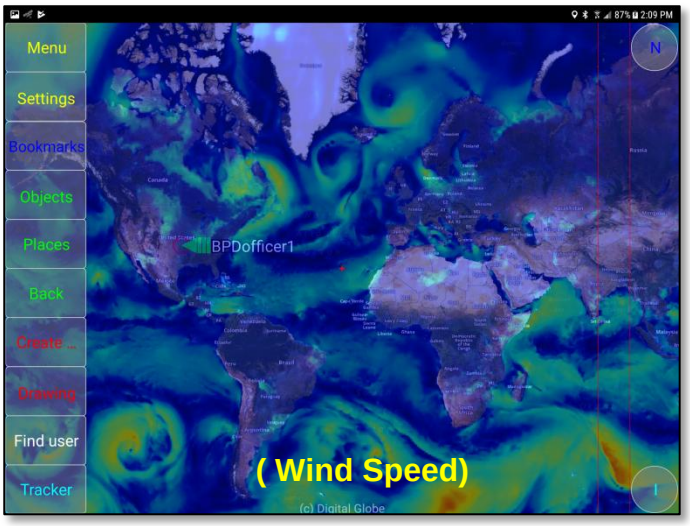
Details on the Free License
https://openweathermap.org/price

For the casual user, you may take advantage of the available FREE license. Register on the website and receive a “registration key”. This key will allow you to receive weather data at 10 minute intervals. If your job requires more frequent weather data access, we suggest purchasing a commercial license from OpenWeatherMap.org.

To access the weather data, enter your Registration Key in the field provided and click the “OK” Button.



A typical Wind Speed Map will be similar to the following.



8.4.2. Configuration of User Defined custom map layers

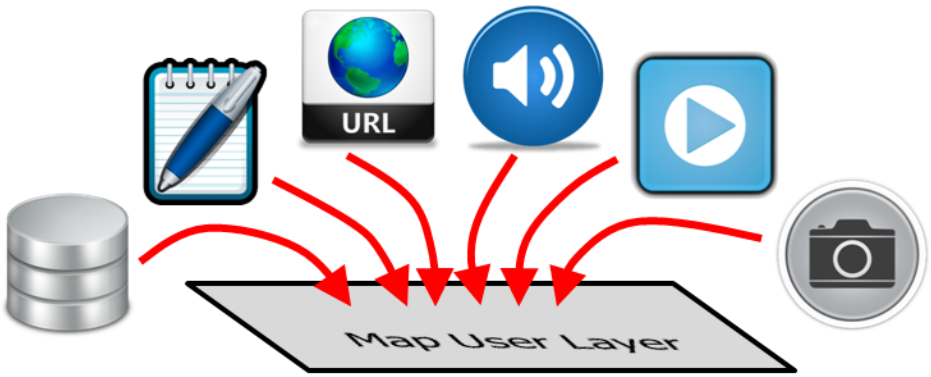
Overview:

The SentryMDU System provides a variety of options for embedding content into Custom Map Layers. One such option is the **User Defined** custom layer. This layer highlights embedded map objects and allows clicking on them to see the "data" behind the objects (drawings, pictures, reference materials, audio files, etc.).

Each "map user layer" has the following 3 elements:

(1) A layer that objects will attach to (usually a map layer)
(2) Icons and/or user drawings that are attached to the layer
(3) Content data that is attached to the icons (available when clicked)

When a "layer" is first created, it is empty (has no map or objects attached). The user will decide what map screens, objects, video, text and reference data to associate with this custom map view. This view may then be stored as a bookmark or Foreground/Central Layer to use with the Main Map Screen.

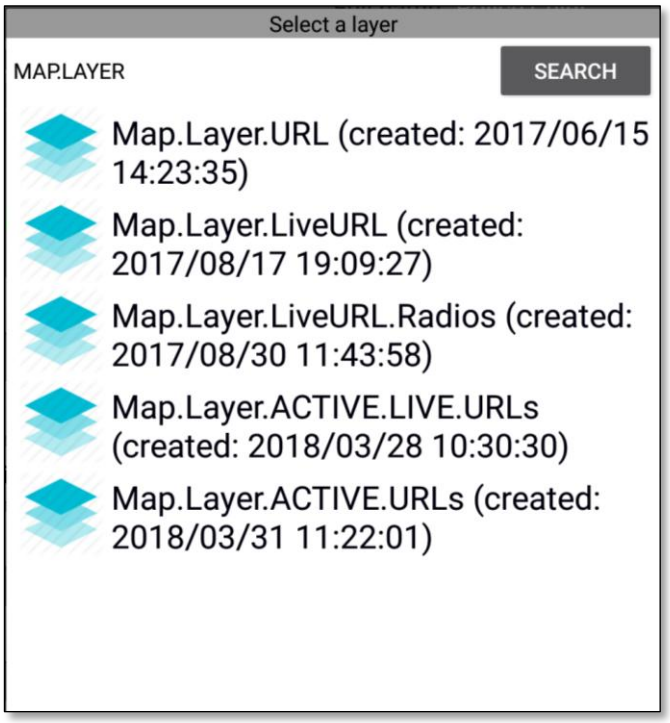


Each user may create **User Defined** custom map layers which will be "saved" on the SentryMDU Server. These custom map layers are available for ALL users in the same Security Domain. In this way, one user may create a custom map layer for a specific application (ie Search & Rescue Application) and all other members of the same Search & Rescue Organization will have access to that Custom Map (assuming the same Security Domain).

A new install of the SentryMDU App includes a small group of "default" custom map layers that users may use, modify and rename to suit their needs. The default group includes samples of embedded content that may be selected by the user. These are to illustrate the capability of the system

This section will describe the menus and options available.

Sample panel of “default” **User Defined** custom map layers.



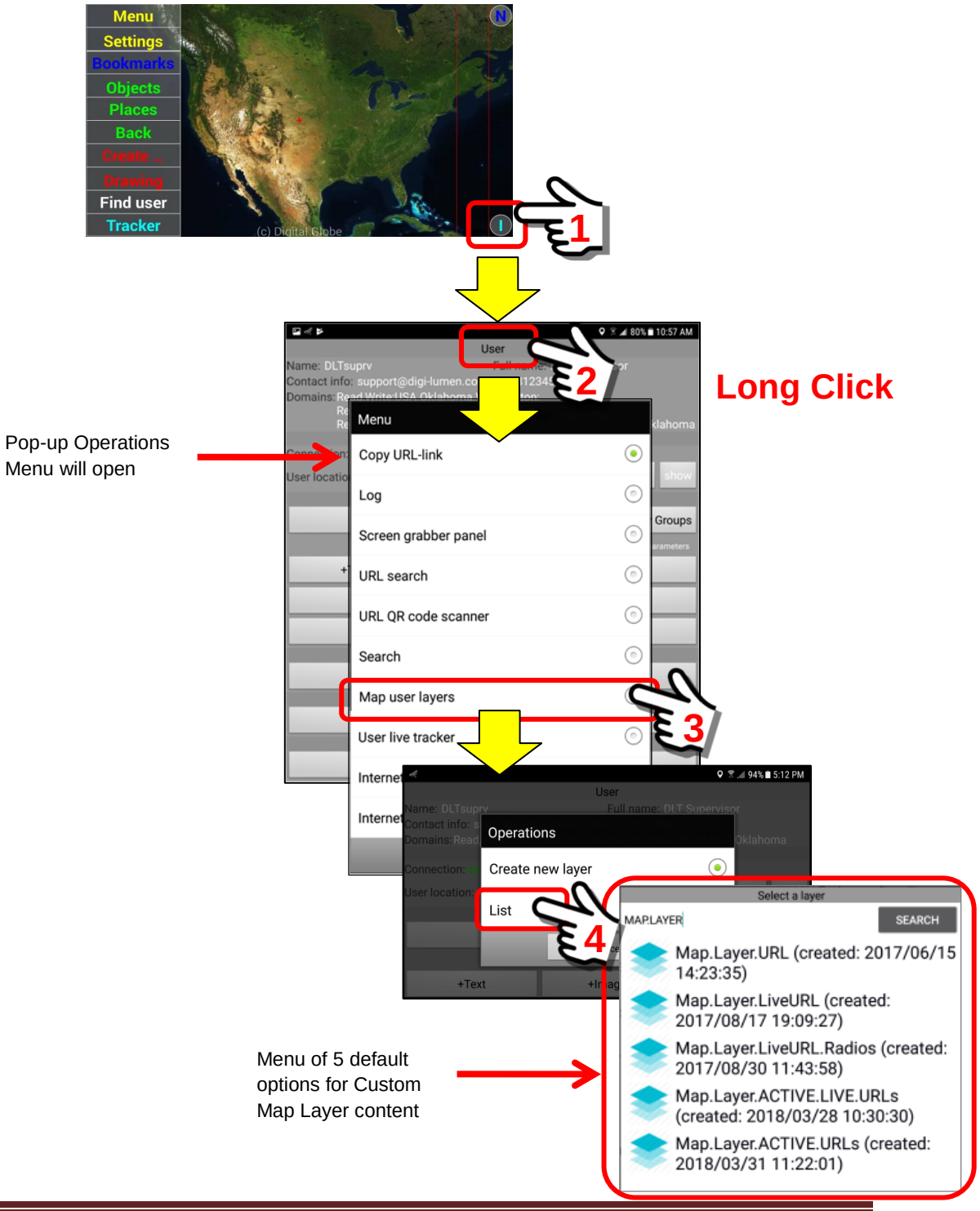
The specific functions of each of these will be covered later in this section.

Two methods to access Custom Map Layers:

Method 1 to access Custom Map Layers
There are two methods to access the menu options.

(1) Access via the User Information Panel
(2) Access via the Settings Panel.

The first option is shown below.

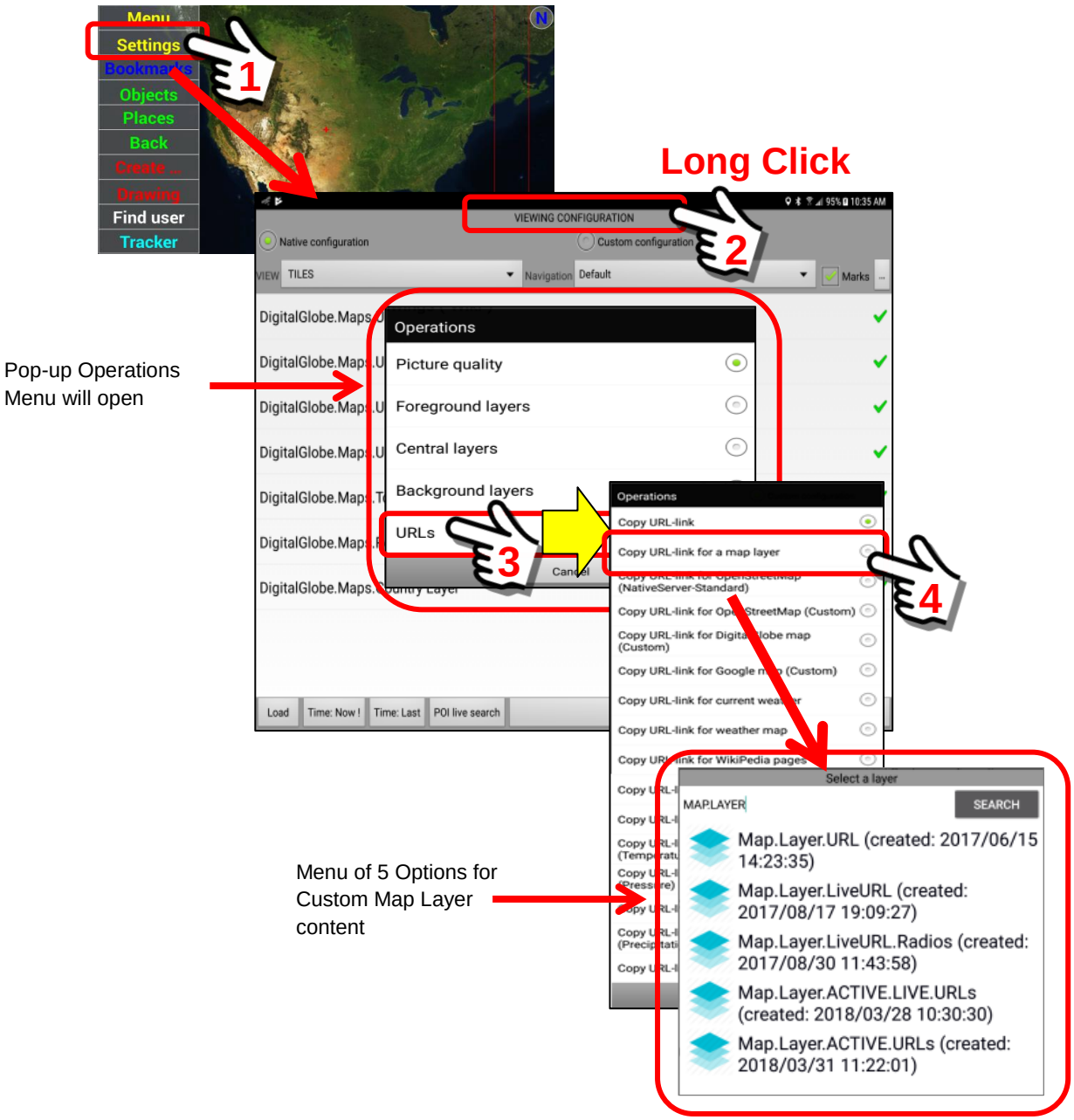


Method 2 to access Custom Map Layers

There are two methods to access the menu options.

(1) Access via the User Information Panel
(2) Access via the Settings Panel.

The second option is shown below.



Pop-up Operations Menu will open

Menu of 5 Options for Custom Map Layer content

Configuration instructions for Custom Map Layers:

1. What are Custom Map Layers used for?

User Defined custom map layers should be created and installed into the Foreground and Central Layers bookmark folders. This will allow rapid access to specific SentryMDU features that might otherwise take additional "time" to set up.

These custom layers may be pre-configured for a specific "set" of circumstances and situations that Users would encounter. Since the **User Defined** custom layers are shared among users within the common Security Domain, new capability can rapidly expand throughout an organization (created by one person and adopted by many).

<u>Potential Applications for Custom Layers</u>

(1) School Campus Layout Resources (active shooter scenario)
A police department creates a map of a city area. On this map are markers showing the GPS location of all public schools in the area. Embedded into the map are icons representing building blueprints, campus layouts for each school and SentryMDU devices as mobile surveillance cameras. When the custom layer is active, a police officer can access the map, locate the school, click on the blueprint icon, review a screen layout of the school campus and watch live video from the surveillance cameras.

(2) Readily available documentation of critical infrastructure
A city maintenance department creates a map of a city area. On this map are markers showing the GPS location of specific flood pumps that protect a portion of the city. Attached to the location are document icons that represent a URL link to Operating Manuals and equipment maintenance records. This information is now available to all city maintenance employees when they activate this Custom Map Layer.

(3) Remote video surveillance to thwart vandalism
A police department has been having multiple complaints of vandalism in a particular area. Using the SentryMDU App installed on "extra" smartphones, they install these mobile devices at a vantage point that provides a "view" of the target area. Equiped with inexpensive auxiliary battery packs and telephoto lense options, the smartphones can now be placed in these remote locations and provide 24/7 monitoring for extended periods of time. With the Motion Detection option enabled, the device will even send an "Alert" to designated officers (or Dispatch Center) together with a live video feed of the vandals. Officers can respond as appropriate.

2. ***Who can create Custom Map Layers and who has access to them?***

Custom Map Layers may be created by ALL registered users on the system. When created by a User, the Custom Maps will only be available to other Users within the same "ROOT" Security Domain.

Since these are **User Defined** custom map layers the ONLY person that may REMOVE a User Defined custom map layer is the User that created the layer.

As explained in **Section 6.2** a "ROOT" security domain is defined as the lowest level in the security domain hierarchy. The following example shows 4 different security domain levels.

Read,Write:samexpress.work
Read,Write:samexpress.family
Read,Write:samexpress.family.children.alex

"samexpress" would be the ROOT level security domain.

Notice in this example of a personal security domain (samexpress) that ALL "personal" security domains have the same ROOT context of "samexpress". All users in these security domains would have access to the Custom Map Layers created by ANY user in the domain.

<u>Limits on the number of Custom Map Layer files a User may create</u>

(1) Anonymous User (not registered) …….…. None
(2) Registered User (No Subscription or License) ……. 25
(3) Registered User (with a Subscription) ……..…. 200
(4) Registered User (with a License) …… No Limit

<u>How to remove a User Defined custom map layer.</u>

When a User Defined custom map layer is created by a User, three things happen:

(1) The Custom Map Layer is uploaded to the SentryMDU Data Server.
(2) The "new" Custom layer is added to the list of available Custom Map Layers that can be used by everyone in the security domain.
(3) The Custom Map Layer item is added to the User's "Current Activity" Content listing (the user that created it).

The person that creates the Custom Layer is the only one that can remove it. This removal process includes the following 6 steps.

(1) Open the User Information Panel ("I" Button).
(2) Click the Content Button for the Current Activity.
(3) The User Defined custom Map Layer will be on the list of Content.
(4) Long Click on the Custom Map object to open the Menu Panel.
(5) Scroll down and select "Remove" from the list of options.
(6) Confirm that you want to remove the Custom Map Layer item.

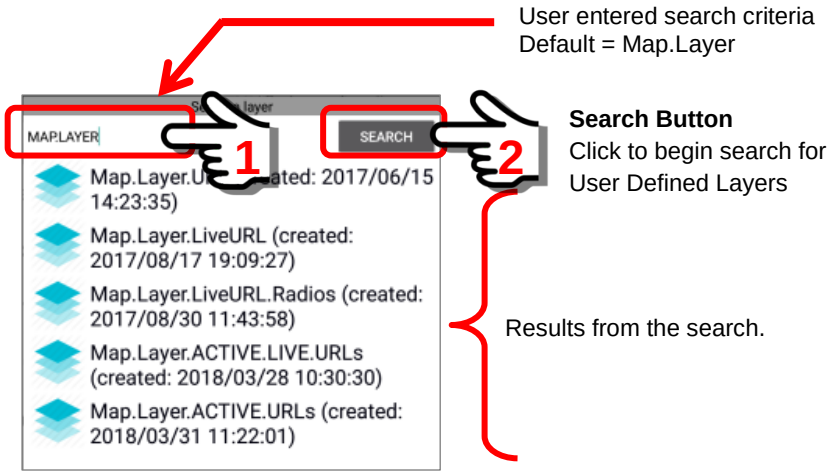
3. *Where are Custom Map Layer files stored?*

All **User Defined** Custom Map Layers are stored on the file system of the SentryMDU Data Server instance serving a particular user group. One of the features available to Users is the ability to perform a context "search" of the available Custom Map Layers for a particular type of custom layer.

A copy of the Custom Map Layer is also stored in the "Current Activity" Content folder on the User Information Panel of the user that created the layer.

The DEFAULT search setting is the root element "Map.Layer".
In this example, we have searched for the following Custom Map Layers.

(1) File Context = MAP.LAYER
(2) The "Search" Button will search for Layers meeting the specs.
(3) The search returned 5 results



The person that creates the Custom Layer is the only one that can remove it. This removal process includes the following 6 steps.

(1) Open the User Information Panel ("I" Button).
(2) Click the Content Button for the Current Activity.
(3) The User Defined custom Map Layer will be on the list of Content.
(4) Long Click on the Custom Map object to open the Menu Panel.
(5) Scroll down and select "Remove" from the list of options.
(6) Confirm that you want to remove the Custom Map Layer item.

4. Custom Map Layer naming format explained.

The **User Defined** Custom Map Layer feature uses a specific naming format for setting and searching for Custom Map Layers.

<u>The naming format is defined as follows:</u>

(1) Alphanumeric, case insensitive, a-z, A-Z, 0-9.
(2) Words separated by a dotted notation, (a period between words).
(3) No whitespace in the string, must be a continuous string.
(4) All names shall start with the words "Map.Layer" (no quotes).
(5) The word "Live" must be included in the name if the layer is to contain active embedded content such as Audio, Video.
(6) The word "Active" must be included in the name if the object itself is mobile (ie a video feed panel is moving about the screen as in a vehicle "Dash Cam").
(7) If both "Active" and "Live" are used in a name, the word "Active" must come first in the text string.

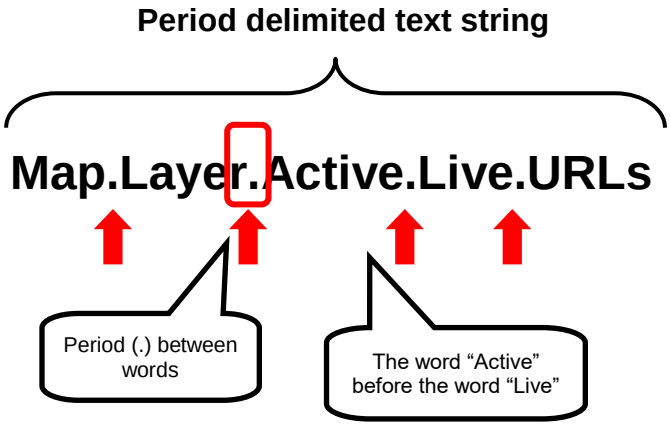
<u>Examples of naming format:</u>

Map.Layer.LiveURL

Map.Layer.LiveURL.Radios

Map.Layer.Active.Live.URLs

<u>Review of the naming format</u>



5. ***Searching the Custom Map Layer database.***

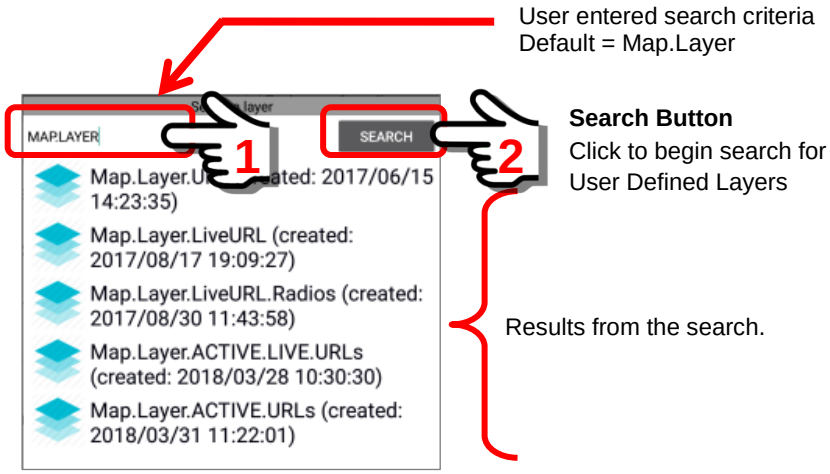
Creates a “Map objects” custom layer. This layer highlights embedded map objects and allows clicking on them to see the “data” behind the objects (drawings, pictures, reference materials, audio files, etc.).

The DEFAULT search setting is the root element “Map.Layer”.

In this example, we have searched for the following Custom Map Layers.

(1) File Context = MAP.LAYER
(2) The “Search” Button will search for Layers meeting the specs.
(3) The search returned 5 results

<u>We get the following search result.</u>



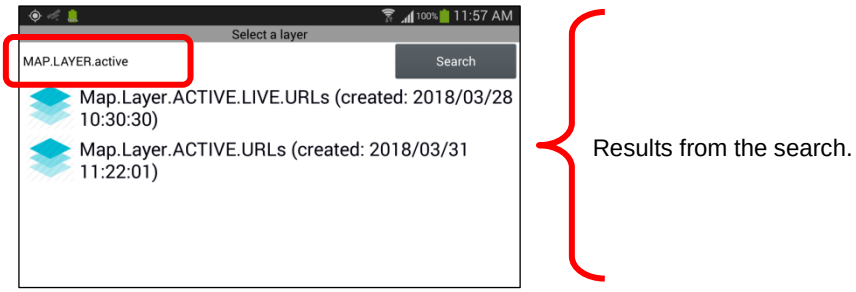
<u>In this example, the search context was …..</u>

Map.Layer

<u>The search returned 5 results …..</u>

Map.Layer.URL
Map.Layer.LiveURL
Map.Layer.LiveURL.Radios
Map.Layer.ACTIVE.LIVE.URLs
Map.Layer.ACTIVE.URLs

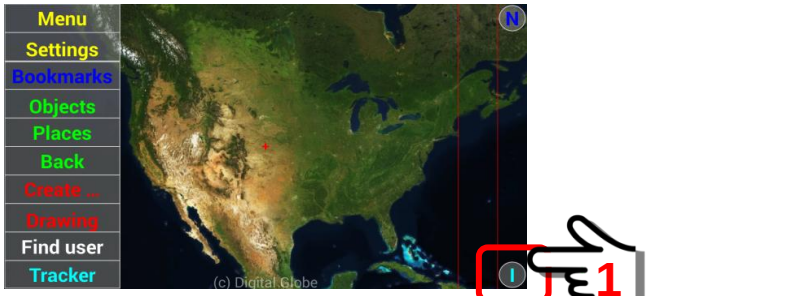
<u>If the search context = Map.Layer.Active, we have 2 results</u>

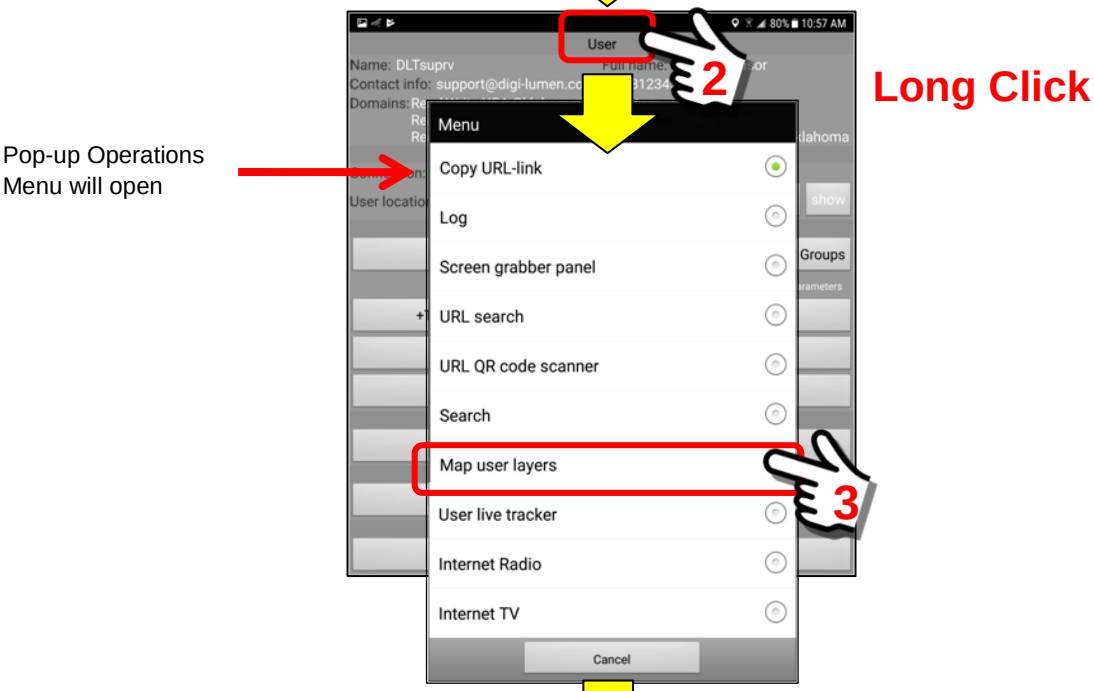


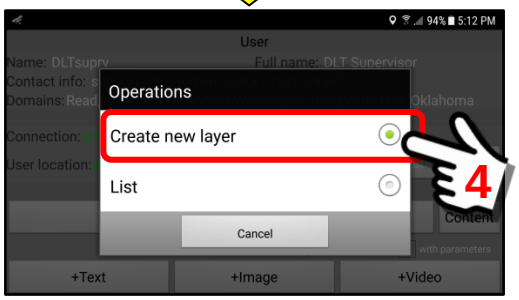
6. *Constructing a "new" User Defined custom map layer.*

This section will describe the steps necessary to create a "new" Custom Map Layer. When a "new" **User Defined** custom map layer is first created, it is an "empty" canvas. The Custom Map Layer will have a name and format (ie Map.Layer.Active.Live … ???) but that is all. The next step is to assign a map "view" and embed objects (audio, video, etc.) into the map layer. This section will only cover the creation of the "new" map layer.

Click the "I" Button to open the User Information Panel. This is located on the lower, right hand corner of the Main Map Screen.





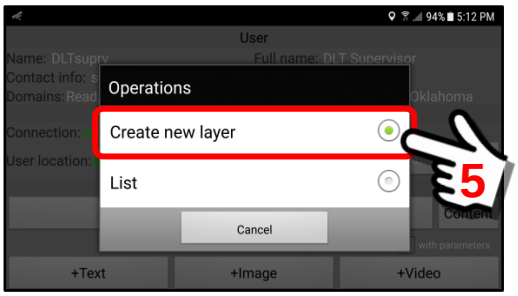


To create a “new” User Defined Custom Map Layer, follow these steps.

1. At the Main Map Screen, click on the “I” Button to open the User Information Panel.
2. “Long Click” on the User Information Panel title block to open the Menu pop-up panel.
3. Select the “Map user layers” option on the Menu Panel.
4. A new Operations Panel will open with 2 options.
5. Select the “Create new layer” menu option.
6. Create a name for the Custom Map Layer.
7. The new layer is a “named” empty template.

Follow steps 1 – 4 using the pictures above.

Select the “Create new layer” menu option



Create a “name” for the User Defined Custom Map Layer.
In this example, we are building a custom layer for the following scenario.

> We will construct a Custom Map with markers showing the GPS location of a local High School. Embedded into the map will be icons representing building blueprints, the school campus layout and onsite surveillance cameras. When the custom layer is active, a police officer can access the map, locate the school, click on the blueprint icon and view a screen layout of the school campus. Police have also installed a “Convert Cam” that watches the back of the school building and will stream live video to 911 Dispatch.

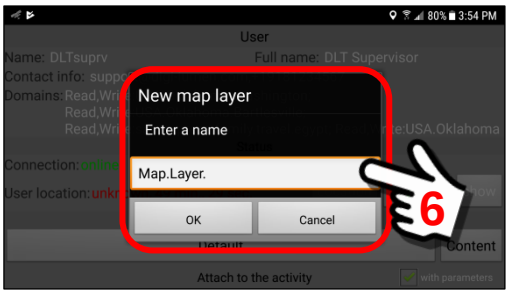
With this scenario, we will have BOTH active and live content in our custom map layer. We have selected the following NAME for our custom map layer.

Map.Layer.Active.Live.BPS.Dwg

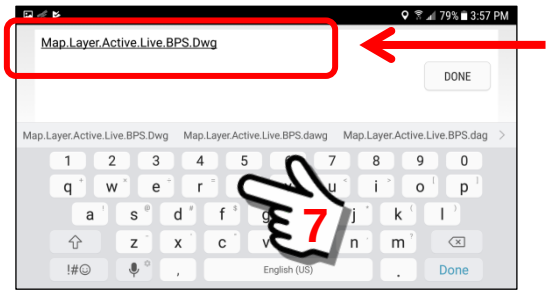
Map.Layer …… default “root” name of Layer (required)
Active …… content (video panels) that move on the screen
Live …… content (live video and audio)
BPS …….. named for local Public School district
Dwg …… indicates reference Drawings are available

Clicking on the “Create new layer” option opens a **New Map Layer** pop-up panel to enter a name. The system defaults to “Map.Layer.” in the text box.

Click in the text box to edit the name.

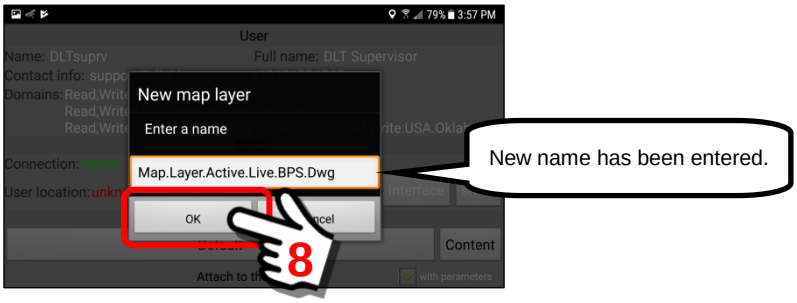


The on-screen keyboard will open and allow editing. Type in the name you have selected.

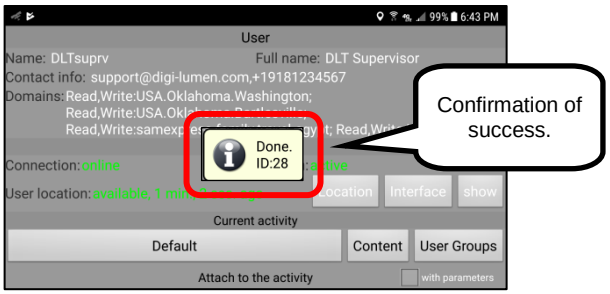


Type in the name for your “new” Custom Map Layer

The “edited” name is now shown in the **New Map Layer** box.
Click the “OK” Button to continue.

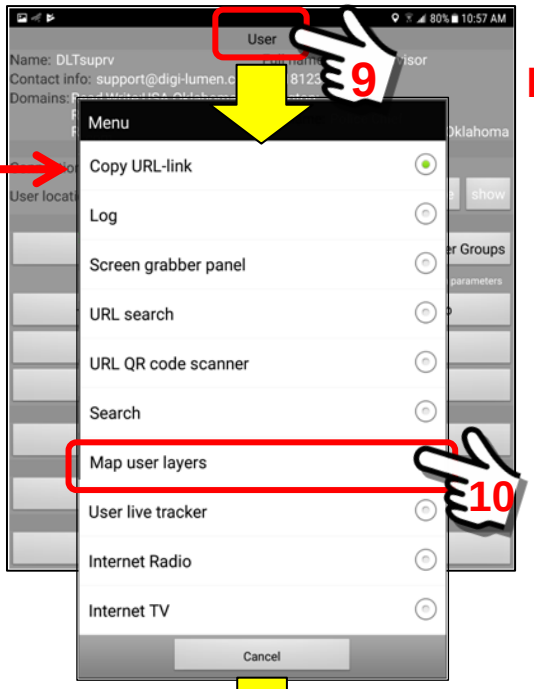


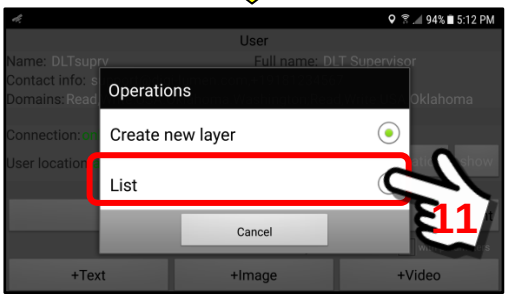
If the Custom Map Layer is successfully created, you will see a confirmation message (Done).



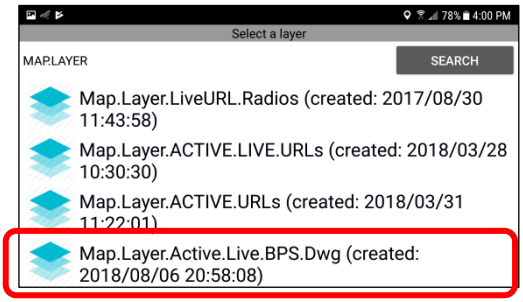
To review the newly created Custom Map Layer, return to the User Information Panel and the “Map user layer” menu option.

Pop-up Operations Menu will open





The list will now display the “new” Custom Layer template.



New Custom Map Layer

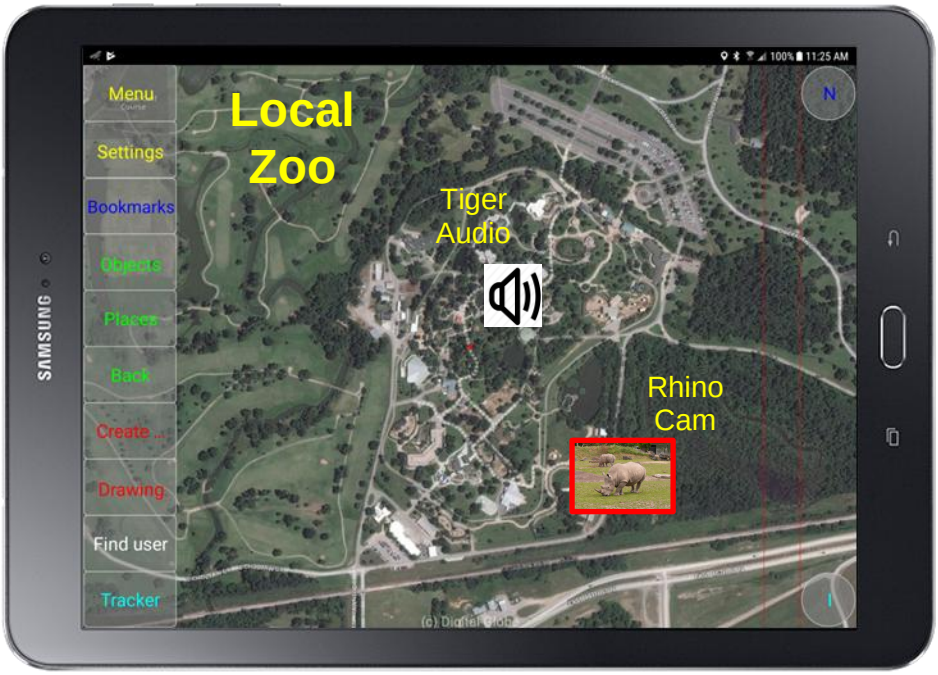
8.4.3. Example - Embedding Audio-Video in User Defined Layers

Overview:

The SentryMDU System provides a variety of options for embedding content into Custom Map Layers. In this example, we will embed audio and video into a “new” **User Defined** custom map layer. This layer will illustrate a hypothetical situation where we are using the SentryMDU System to monitor animal habitats at a Local Animal Zoo located in Oklahoma, USA.

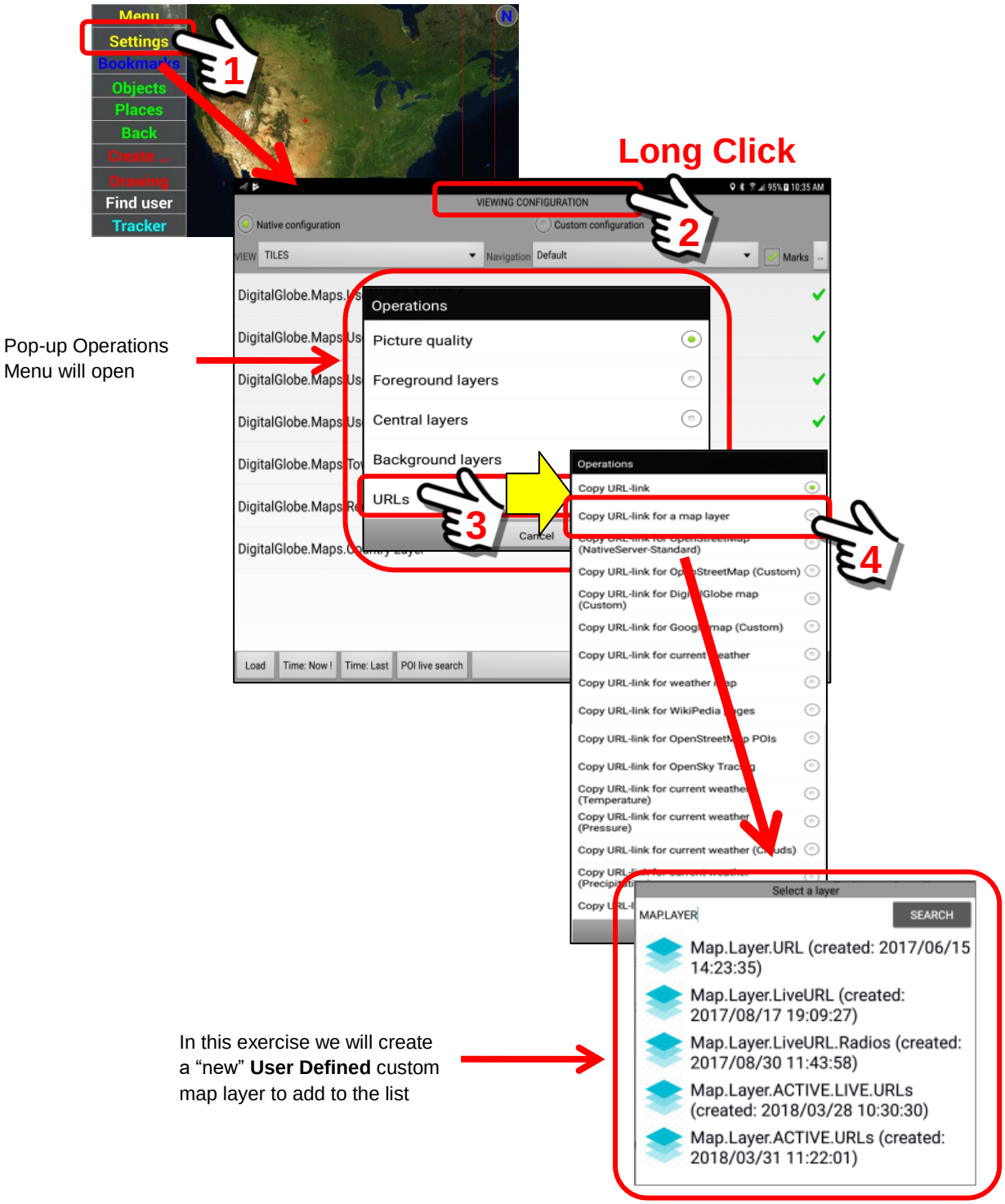
The Custom Map Layer for this exercise will be created in this section.

Below is a satellite image of a Local Animal Zoo as displayed on a 10” Tablet showing two embedded objects (Audio & Video).



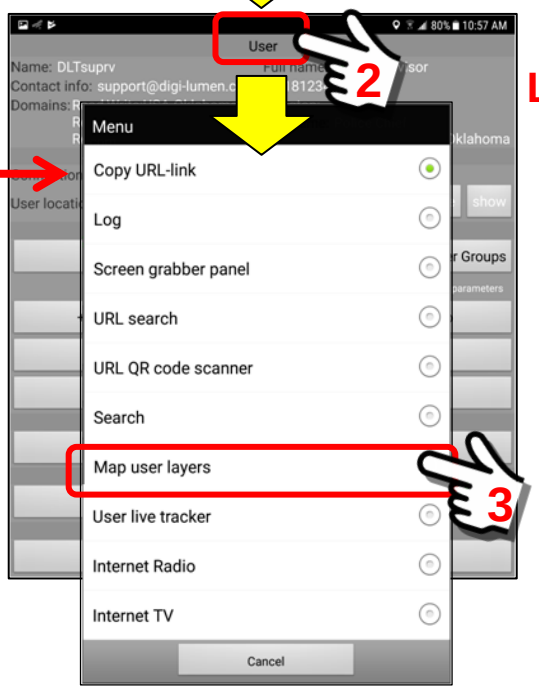
Menu options to create Embedded Map Layers:

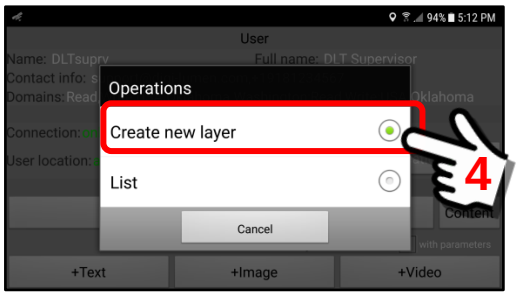
We will access the menu options for User Defined custom map layers via the Settings Button.



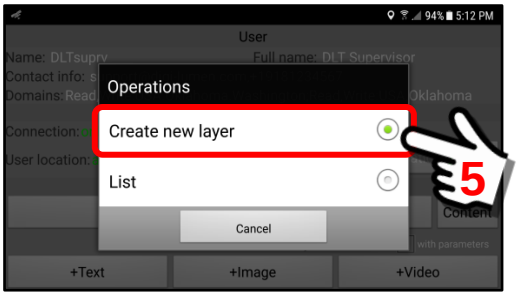
Steps to embedded map layers for a Zoo Application:

1. ***Create a new User Defined custom map layer.***
   Click the "I" Button to open the User Information Panel. This is located on the lower, right hand corner of the Main Map Screen.





Select the “Create new layer” menu option.



Create a “name” for the **User Defined** Custom Map Layer.

<u>In this example, we are building a custom layer for the following scenario</u>.

> We will construct a Custom Map with markers showing the GPS location of a Local Zoo in Oklahoma, USA. Embedded into the map will be icons representing two devices.
>
> (1) An Audio Feed from a mobile device installed in the Tiger Exhibit.
>
> (2) A live streaming Video Feed from a mobile device installed in the Rhino Reserve.

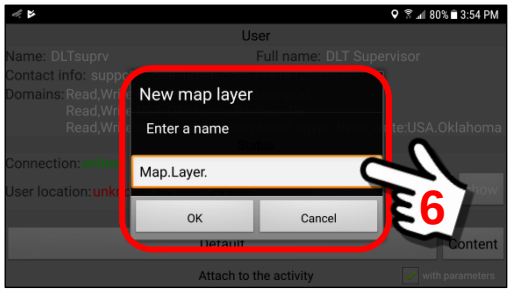
With this scenario, we will have BOTH active and live content in our custom map layer. We have selected the following NAME for our custom map layer.

Map.Layer.Active.Live.Zoo

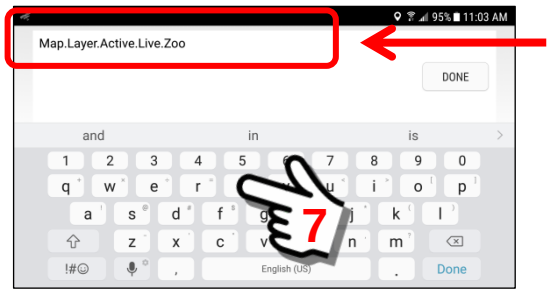
Map.Layer …… default “root” name of Layer (required)
Active …… content (video panels) that move on the screen
Live …… content (live video and audio)
Zoo …….. This is a test example for an Animal Zoo.

Clicking on the “Create new layer” option opens a **New Map Layer** pop-up panel to enter a name. The system defaults to “Map.Layer.” in the text box.

Click in the text box to edit the name.

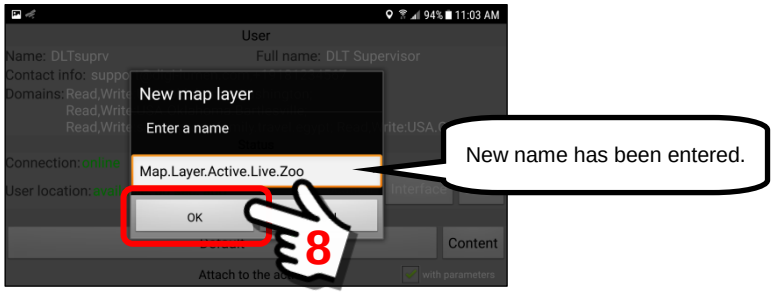


The on-screen keyboard will open and allow editing. Type in the name you have selected.

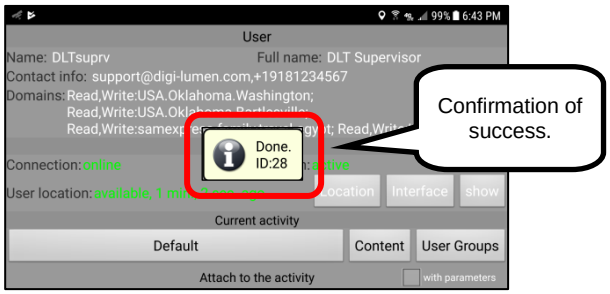


Type in the name for your "new" Custom Map Layer

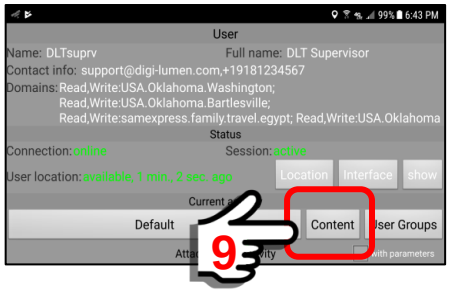
The "edited" name is now shown in the **New Map Layer** box.
Click the "OK" Button to continue.



If the **User Defined** Custom Map Layer is successfully created, you will see a confirmation message (Done).

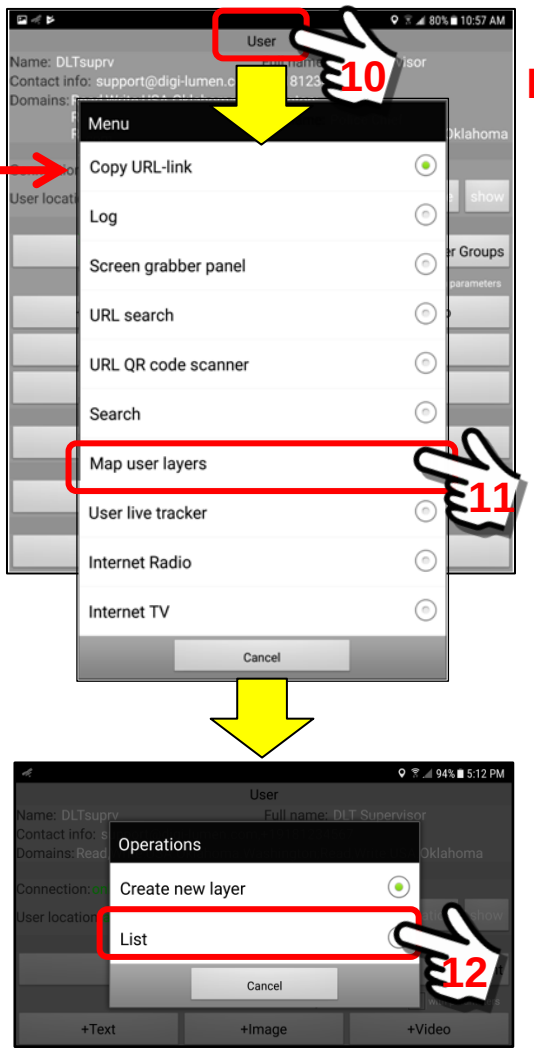


When a **User Defined** custom map layer is created, the "master" copy is installed in the Current Activity "Content" Folder on the originating device. To view this file, click on the Content Button.

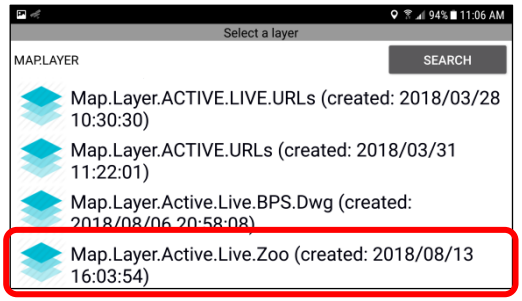


To review the newly created Custom Map Layer, return to the User Information Panel and the “Map user layer” menu option.

Pop-up Operations Menu will open



The list will now display the “new” Custom Layer template.



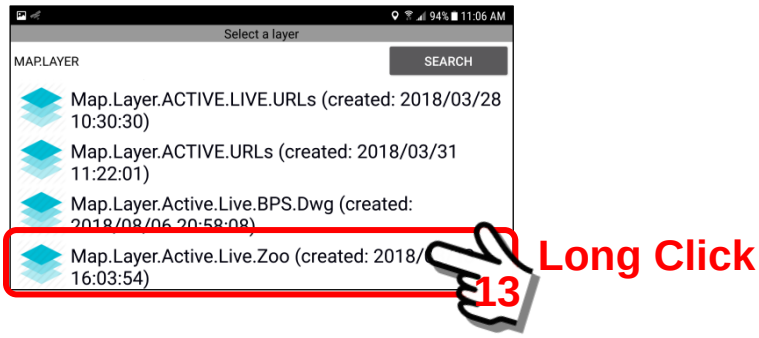
New Custom Map Layer

Now that we have established a new **User Defined** custom map layer we will need to copy it into a Foreground/Central/Background layer before we attach and embed URLs into the layer.

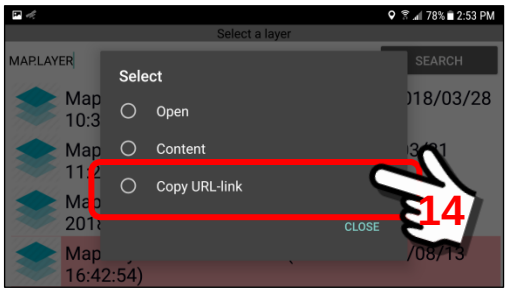
> **Important Note: In order to insert, modify or delete objects from a newly created Custom Map Layer, it must be copied into a Foreground / Central / Background layer.**

The next step in our process is to COPY this custom map layer into our Foreground Layers Folder.

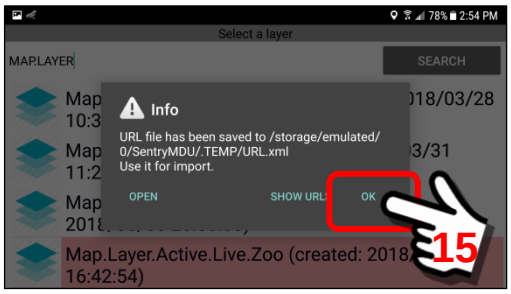
"Long click" on the Custom Map Layer.



Click on the "Copy URL-link" Button to save the URL for this Custom Map.



The URL is now stored in a temporary folder (.TEMP) and is ready to be imported into the Foreground or Central Bookmarks folder.
Click the "OK" Button to save the selection.



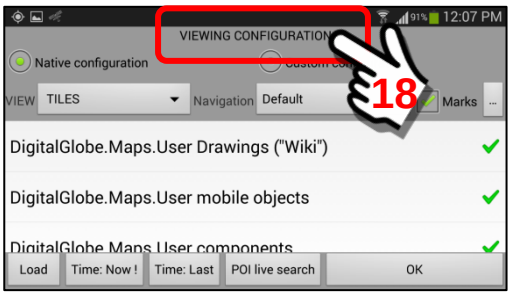
Return to the Main Map Screen.
The first step to install a custom map layer is to set the zoom level (view area) that you want covered by the Custom Map Layer. We will then install this view level into the custom map layer (which is empty at the moment).

Starting at the Main Map Screen, zoom into the desired view area.

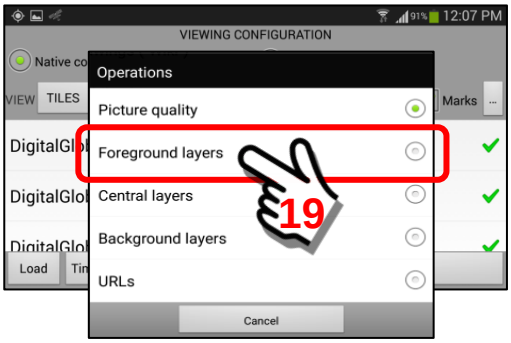
We select the View Area first because the Custom Map will accept the default view area of the Main Map Screen when we create the Foreground Layer.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

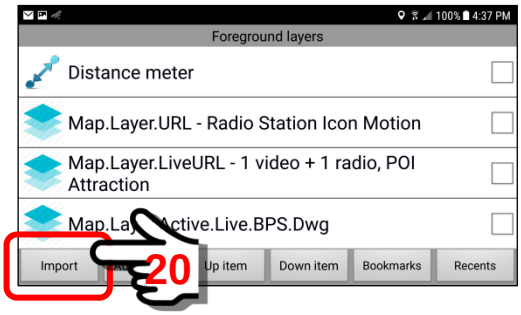


A pop-up Operations Menu will appear. Select the Foreground Layers option.



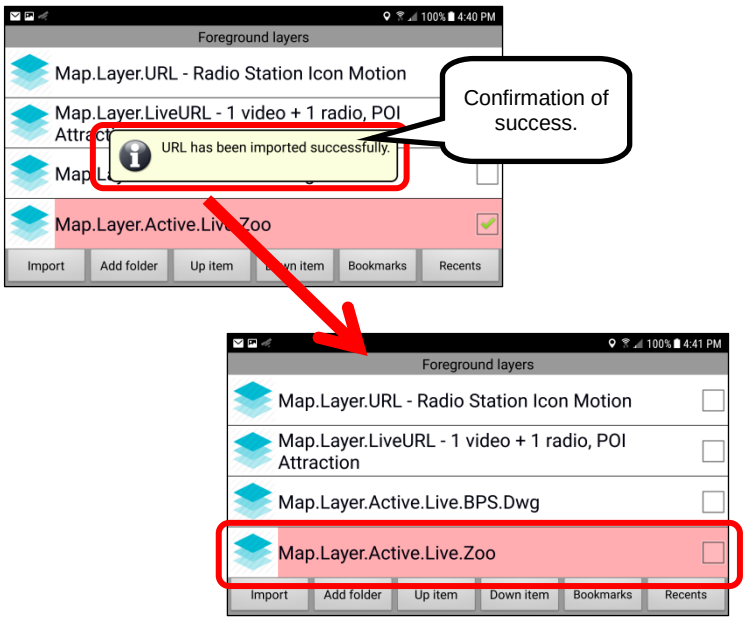
The Foreground Layers menu option will open the Foreground Layers Panel. We will now import the URL we saved in the previous step into the Foreground Folder.

Click the Import Button.



When the **Import Button** is “clicked” a pop-up panel appears with the default NAME of the custom layer that will be installed. In this example, we will edit the name to remove the date/time information.

Click “OK” to accept the name change and install the Foreground Layer.



The “new” custom map layer for **Map.Layer.Active.Live.Zoo** has now been installed into the Foreground Layer folder. We are ready to embed objects.

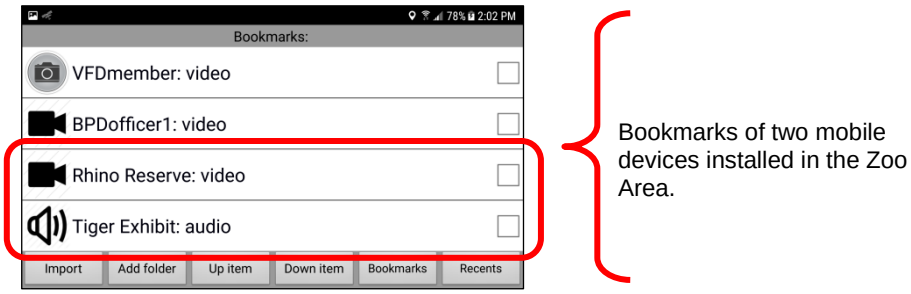
2. ***Locate or create the two bookmarks for transfer to the Map Layer.***
To embed map objects into a **User Defined** custom map layer you will need to create bookmarks of the sensors that you want to monitor (audio, video, etc.). In this section we will assume you have created two bookmarks … one video and one audio, named as follows. See **Section 9.6** if you need a refresher.

Rhino Reserve: video

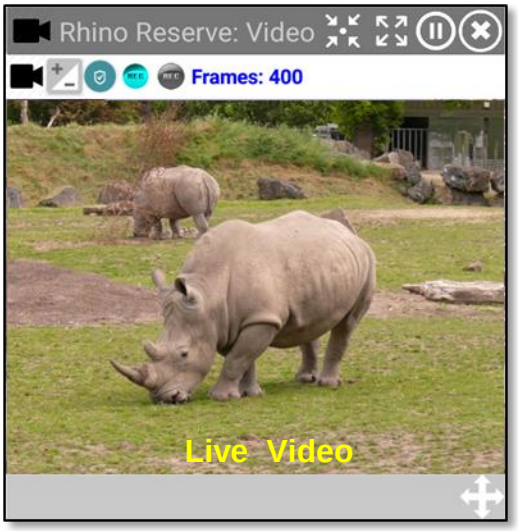
This is a SentryMDU mobile device installed inside the Rhino Reserve area of the Local Animal Zoo. The mobile device is in a waterproof box and with an auxiliary battery pack and can operate several days at a time (or solar array to operate continuous). It is strategically located to video monitor the activities of the Rhino population.

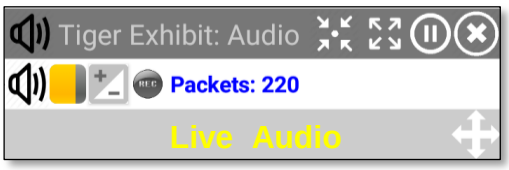
Tiger Exhibit: audio

This is a SentryMDU mobile device installed inside the Tiger Exhibit area of the Local Animal Zoo. The mobile device is in a waterproof box, an auxiliary battery pack and can operate several days at a time (or solar array to operate continuous). It is strategically located to audio monitor the activities of the Tiger population.



Each bookmark has been configured to launch as a floating window. Examples are shown below.

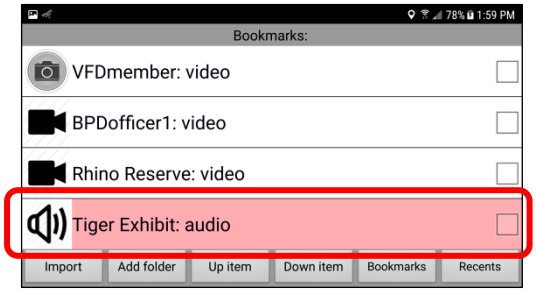




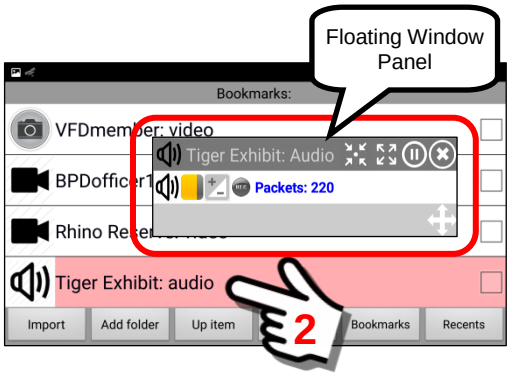
3. ***The "Tiger Exhibit: audio" will be the first embedded object. It must be opened as a floating window panel.***
In this example, we will select the "**Tiger Exhibit: audio**" URL from the Bookmarks Section and open it as a floating window. This is our microphone (audio device) to listen to the Tiger roaring.

Click on the Bookmark Button at the Main Menu Screen.

At the Bookmarks Panel, we will select the "**Tiger Exhibit: audio**" bookmark URL to copy onto our "Map user layers" screen.



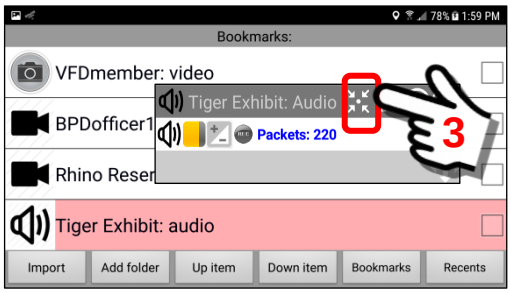
Click on the "**Tiger Exhibit: audio**" bookmark to open (launch) the floating window for this URL.



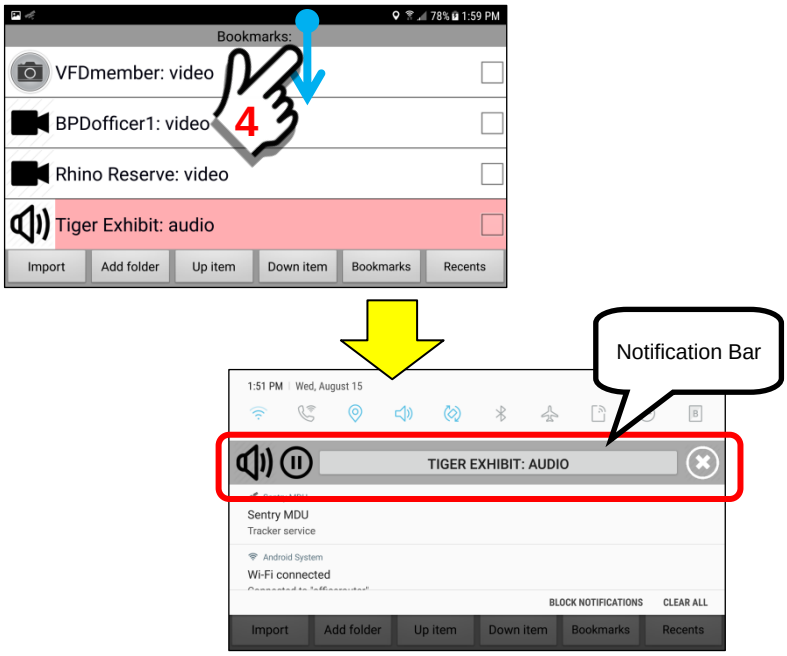
Click to open a Floating Window Panel for the selected bookmark. If the bookmark is NOT set to open as a floating window, use the "Change open type" option on the menu to change it (Long click will get you the Menu of options).

On smaller screens (like a smartphone) it is usually a good idea to minimize the floating window to the Notification Bar so the panel will not be in the way as you do other things. For a refresher, see Section 9.13 on Floating Windows.

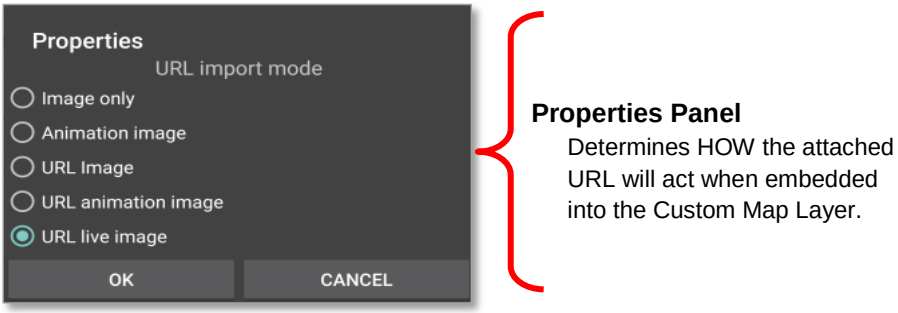
To minimize, click on the “minimize” icon ….



The floating window has now been minimized to the Notification Bar. Swipe “down” with your finger to expose the Notification Bar.



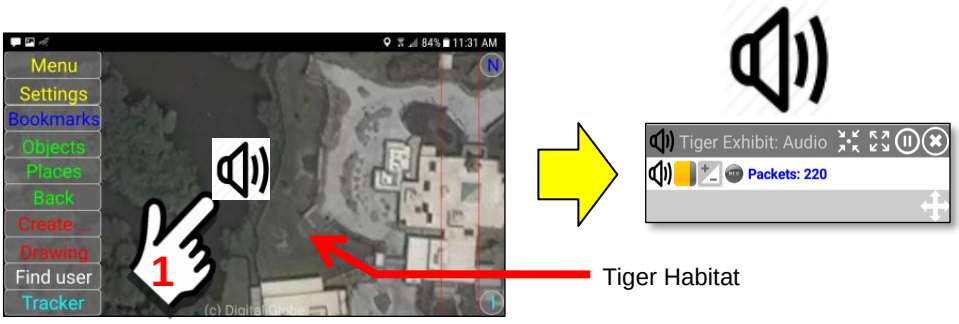
4. ***Adjust the PROPERTIES of the Custom Map Layer to match the URL.***
The Custom Map Layers feature of the SentryMDU System has the ability to import various combinations of images, URL actions, live streaming data, etc. The configuration panel is shown below:



When configuring multiple URL sources attached to a Custom Map Layer you MUST specify the correct **URL Import Mode** for the particular data type. The system will attempt to guess based on the type of custom map layer "name" that you specify, but if you have multiple embedded objects (doing different things), adjustments are usually required.

For example, if you specify a **Map.Layer.Active.Live** custom map layer, the system will assume the "URL live image" type of URL Import Mode. However, if you have multiple URL types on the same Map Layer you will need to adjust the URL Import Mode setting for each different URL type.

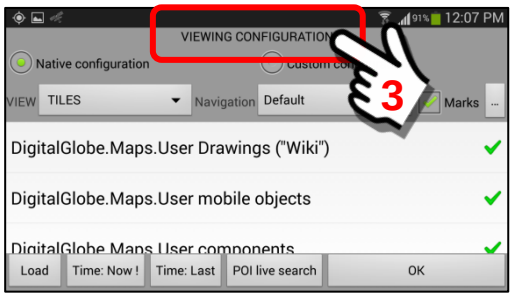
In this exercise, we want the **Tiger Exhibit: audio** to only begin transmitting audio when we "click" on the Speaker Icon.



To adjust the URL Import Mode setting for the Audio Microphone device in the Tiger Habitat, we do the following.

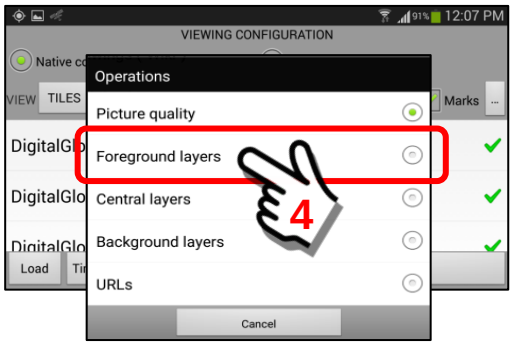
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.



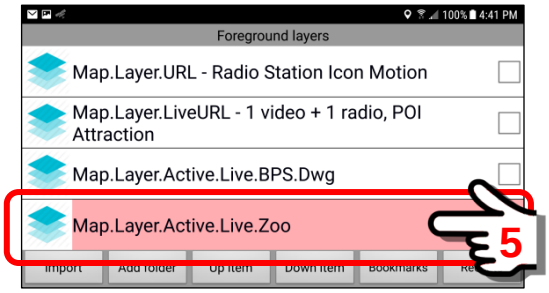
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



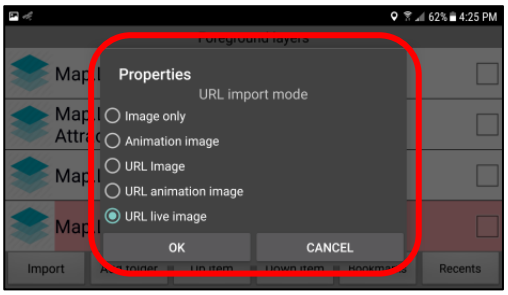
The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the **Map.Layer.Active.Live.Zoo** Layer.

“Long Click” on the Custom Map Layer item.



Long Click

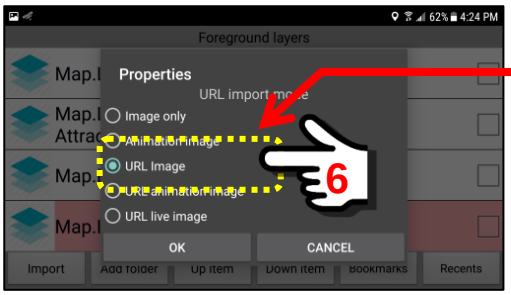
A Custom Map Layer pop-up **Properties Panel** will open.
Inspect the default setting for the URL Import Mode.



Properties Panel

Determines HOW the attached URL will act when embedded into the Custom Map Layer.

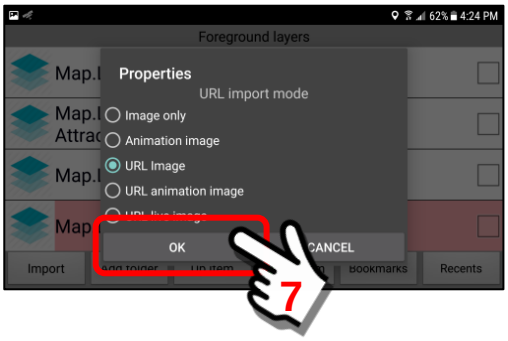
We notice that the URL Import Mode is set to “URL live image”. We want the “URL Image” mode because we don’t want the video until after we click on the icon. Click on the **URL Image** menu option to activate that mode.



We want to click on a “URL image” to open the video panel so we select.

URL Image

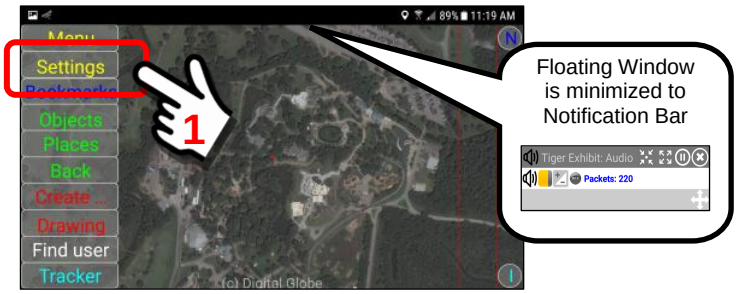
When finished, click the “OK” Button to close the panel settings.



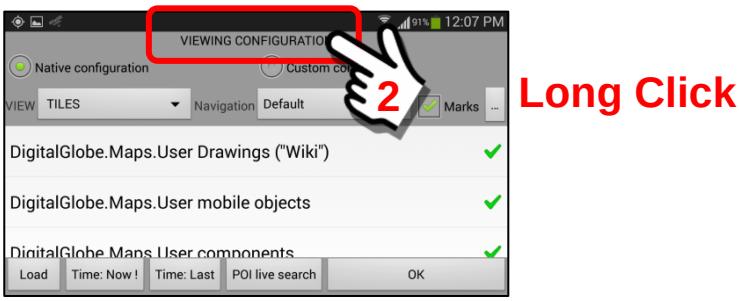
Important Note: You will need to adjust these settings for each new type of URL you install on a Custom Map Layer.

5. ***Add (or attach) the "Tiger Exhibit: audio" icon to the Map Layer .***
In a preceeding section we opened the "**Tiger Exhibit: audio**" URL link as a floating window so we can add this URL to the "Map user layer". This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

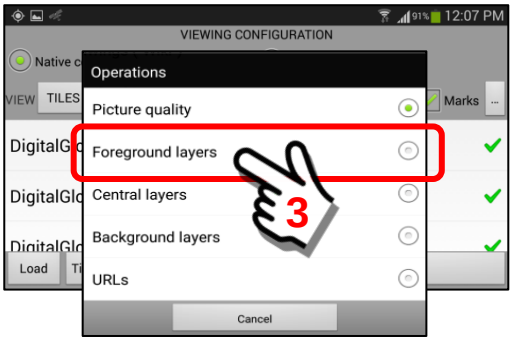
At the Main Map Screen, click on the Settings Button.



At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.

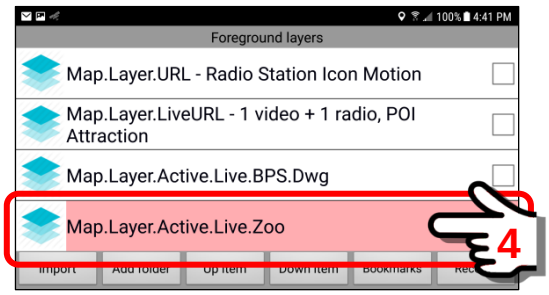


A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.Zoo**.

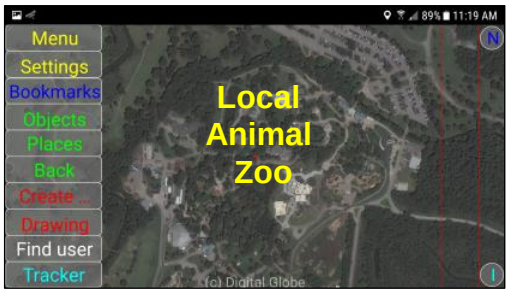


The Custom Map Layer will open and SHOULD display the view area you originally specified.

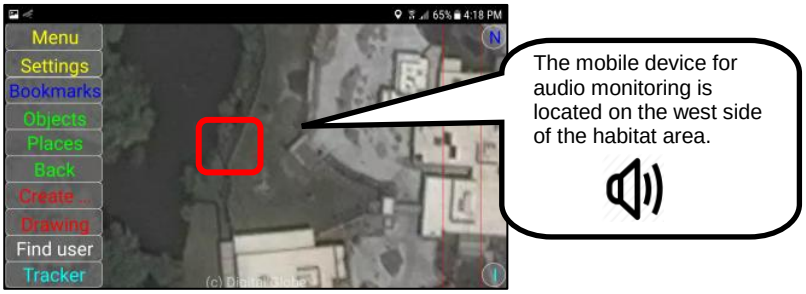
As the Custom Map Layer is opened, notice the text at the top of the screen that identifies the "layer".

Map.Layer.Active.Live.Zoo

We are now at the custom map layer of the Local Animal Zoo. It is ready to load reference data, URLs and video panels.

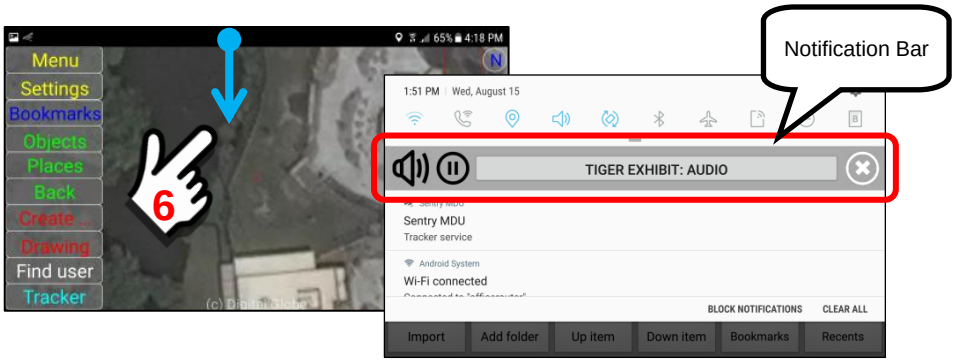


The objective is to locate the Audio Monitoring Icon in a position that reflects the "actual" location of the device relative to the Tiger Habitat area. For this reason we want to show the icon inside the Tiger habitat near where the device is actually installed.

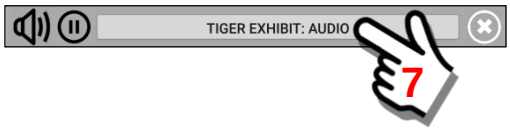


To correctly “place” the **Audio Monitoring Icon**, zoom in to the Tiger habitat location on the map panel.

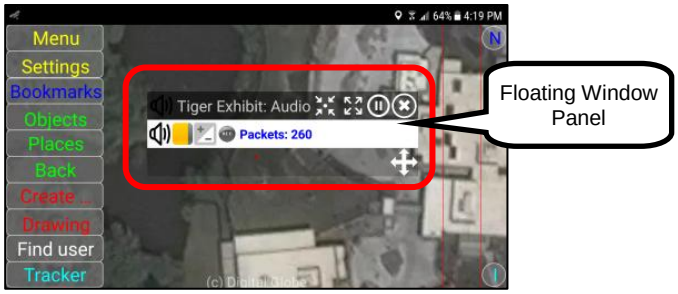
Once you have arrived at the desired “zoom level” and screen position, retrieve “**Tiger Exhibit: audio”** floating window from the Notification Bar.



Click on the **“Tiger Exhibit: audio”** notification block.



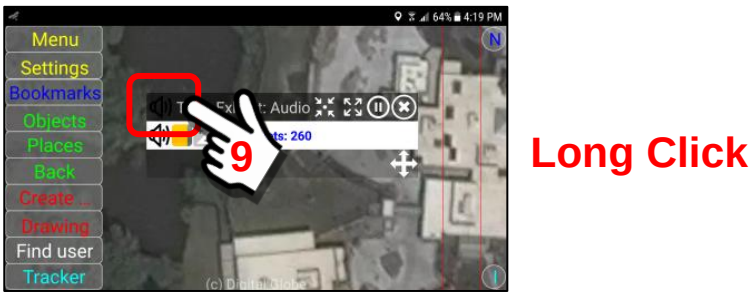
The **“Tiger Exhibit: audio”** floating window will now be installed on the Map Panel of the Local Animal Zoo, Tiger Exhibit.



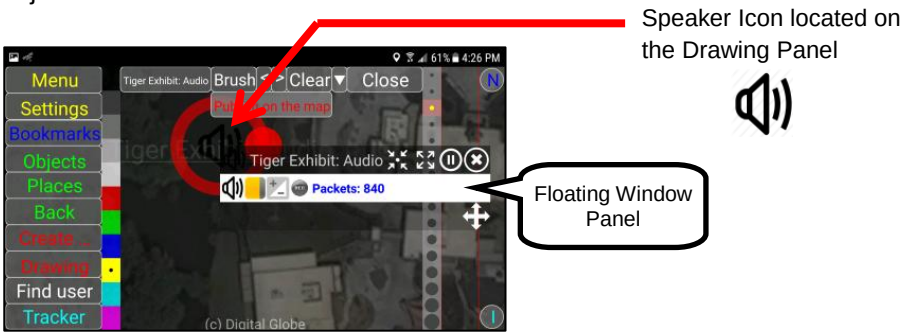
To install the Audio Monitoring “Icon” (a speaker icon) on the Custom Map Panel, you will perform a “Long click” on the upper left corner of the floating window panel at the Speaker Icon.

“Long click” the Speaker Icon to transfer the icon to the Map Panel.

As you peform the “Long click”, you will feel tactile feedback in your finger as the screen transfers to the Drawing Mode and the screen format changes.



The Speaker Icon is now installed at the top left corner of the floating window panel. The Drawing Mode is enabled and “**Tiger Exhibit: audio**” is the active object.



Since we have copied the **“Tiger Exhibit: audio”** Speaker Icon and URL to the Custom Map Layer, we may now remove the floating window panel. We are done with it.

To remove the Floating Window Panel, click on the “X” Button in the upper right corner of the floating window.

With the Floating Window now removed, the screen looks as shown below.

The object URL is now "active" for editing, movement and resizing.

Tiger Exhibit: audio

Speaker Icon located on the Drawing Panel

See the Drawing Tools section (**Section 13**) if you need a refresher on using the tools. In this example, we will resize the Speaker Icon (smaller) and we will move it slightly to the area near the fence (where the actual mobile device is located).

Move, resize and rotate if needed.

Since we are in the Drawing Mode, we could "draw" on the screen, make notes, use different colors and so on. For now we are satisfied, done.

When finished, Click the "Publish on the Map" Button.

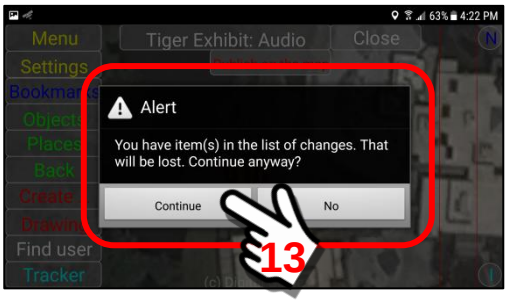
Publish on the Map will save the Speaker Icon and URL.

This will finalize any changes and SAVE the **"Tiger Exhibit: audio"** Speaker Icon and URL to the Custom Map Layer.

When you click the "Publish on the Map" Button, the system will open a pop-up Alert Box telling you that you may have items(s) in your "changes" list that

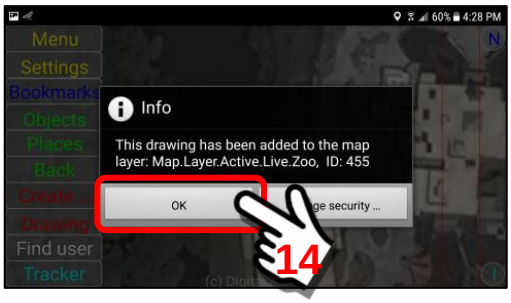
will be lost if you continue. In the Drawing Mode, the system keeps track of changes you have made to the screen in case you want to “go back” and correct things (or you changed your mind).

Since we are happy with what we have, click the “Continue” Button.

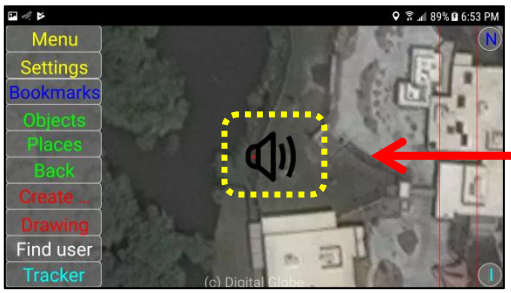


It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing Object has now been added to the custom map layer.

Click “OK” to acknowledge the successful completion.



Review the installation of the **“Tiger Exhibit: audio”** embedded object.



Tiger Exhibit: audio
Click link to hear audio

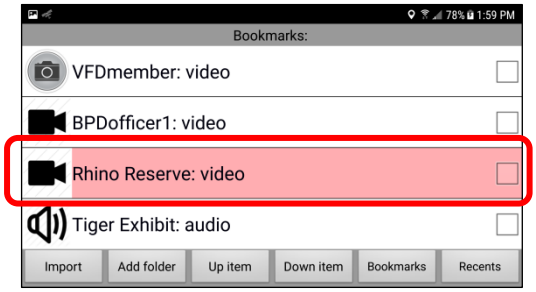
To “test” the new embedded mobile device, click on the Speaker Icon.

The SentryMDU remote mobile device will turn on the microphone (audio) and you will hear sounds from the Tiger Exhibit Area.

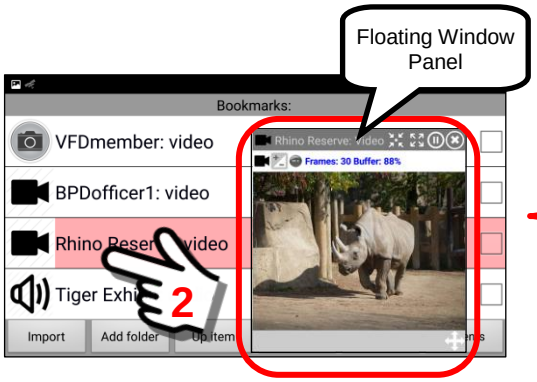
6. ***The "Rhino Reserve: video" will be the second embedded object. It must be opened as a floating window panel.***
In this example, we will select the "**Rhino Reserve: video**" URL from the Bookmarks Section and open it as a floating window. This is our "Rhino Cam" video streaming device to watch the Rhino population.

Click on the Bookmark Button at the Main Menu Screen.

At the Bookmarks Panel, we will select the "**Rhino Reserve: video**" bookmark URL to copy onto our "Map user layers" screen.



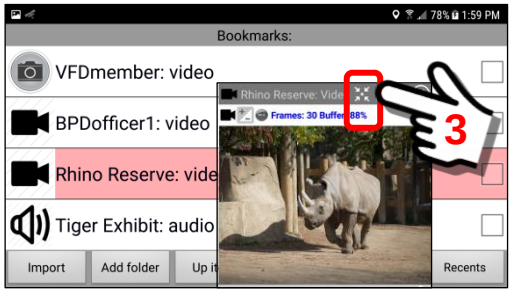
Click on the "**Rhino Reserve: video**" bookmark to open (launch) the floating window for this URL.



Click to open a Floating Window Panel for the selected bookmark. If the bookmark is NOT set to open as a floating window, use the "Change open type" option on the menu to change it (Long click will get you the Menu of options).

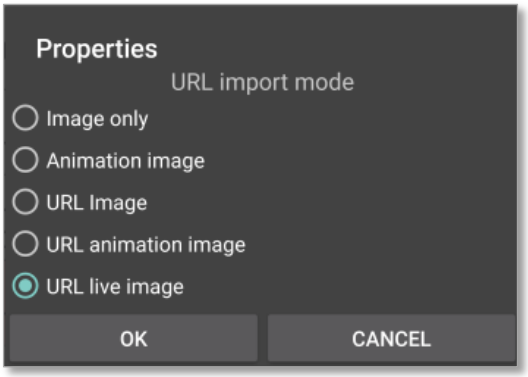
On smaller screens (like a smartphone) it is usually a good idea to minimize the floating window to the Notification Bar so the panel will not be in the way as you do other things. For a refresher, see **Section 9.13** on Floating Windows.

To minimize, click on the “minimize” icon ….



The floating window has now been minimized to the Notification Bar. Swipe “down” with your finger to expose the Notification Bar.

7. ***Adjust the PROPERTIES of the Custom Map Layer to match the URL.***
The Custom Map Layers feature of the SentryMDU System has the ability to import various combinations of images, URL actions, live streaming data, etc. The configuration panel is shown below:

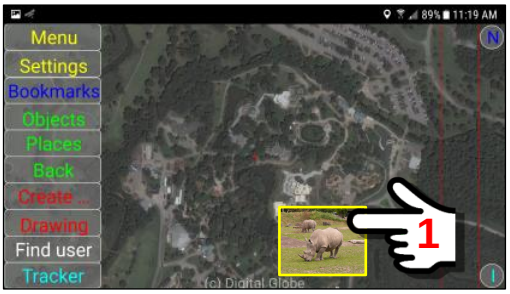


Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

When configuring multiple URL sources attached to a Custom Map Layer you MUST specify the correct **URL Import Mode** for the particular data type. The system will attempt to guess based on the type of custom map layer "name" that you specify, but if you have multiple embedded objects (doing different things), adjustments are usually required.

For example, if you specify a **Map.Layer.Active.Live** custom map layer, the system will assume the "URL live image" type of URL Import Mode. However, if you have multiple URL types on the same Map Layer you will need to adjust the URL Import Mode setting for each different URL type.

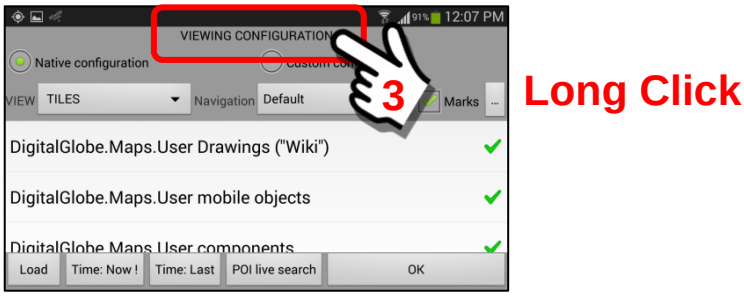
In this exercise, we want the **Rhino Reserve: video** "Rhino Cam" to be transmitting whenever we access this Custom Layer.



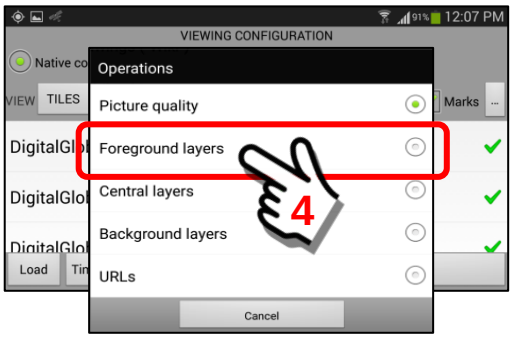
To adjust the URL Import Mode setting for the "Rhino Cam" we do the following.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

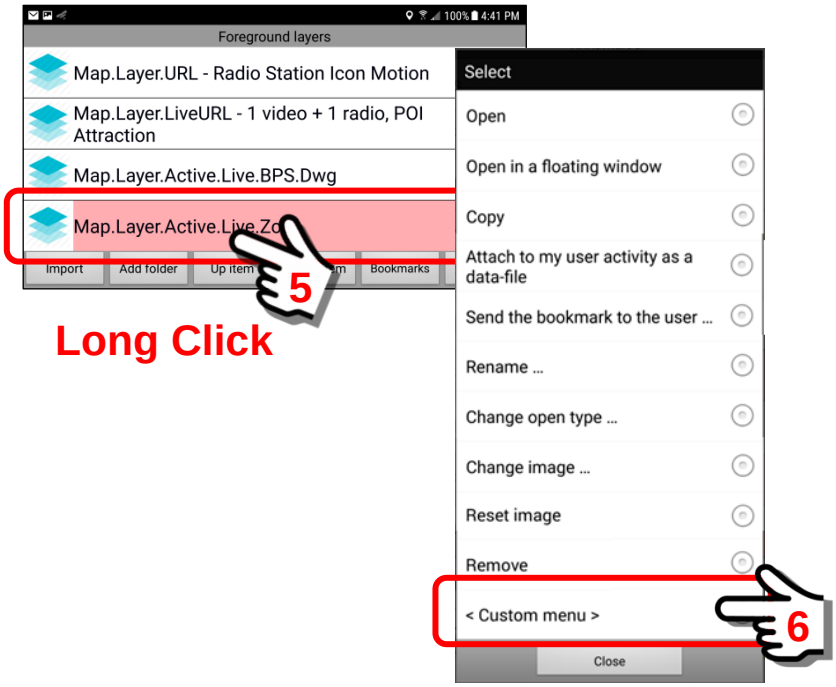


A pop-up Operations Menu will appear. Select the Foreground Layers option.

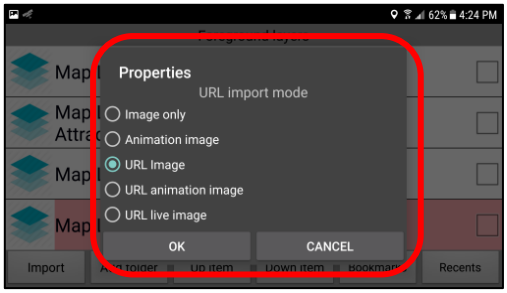


The Foreground Layers menu option will open the Foreground Layers Panel where we have the **Map.Layer.Active.Live.Zoo** Layer. Since this is now the second OBJECT to be added to the Custom Map Layer, we will go to the “<Custom Menu>” item in the Options Menu

“Long Click” on the Custom Map Layer item.

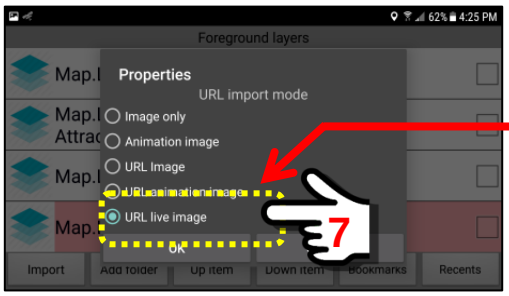


Select the “<Custom menu>” Option from the pop-up menu listing.
A Custom Map Layer pop-up **Properties Panel** will open.
Inspect the default setting for the URL Import Mode.



Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

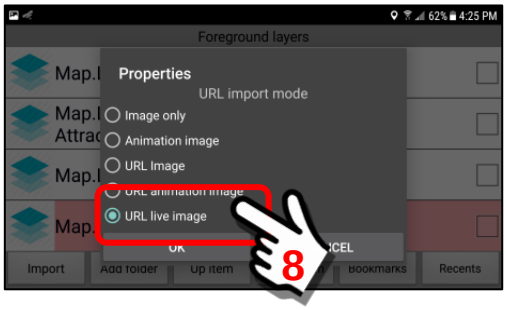
We notice that the URL Import Mode is set to “URL image” because that is how we left it when we set up the Tiger Audio in the last section. However, we want the “URL live Image” mode because we want the “Rhino Cam” video to be running all the time whenever we launch this Custom Map Layer. Click on the **URL live Image** menu option to activate that mode.



We want to click on a “URL live image” to make sure the Rhino Cam is always running.

URL live Image

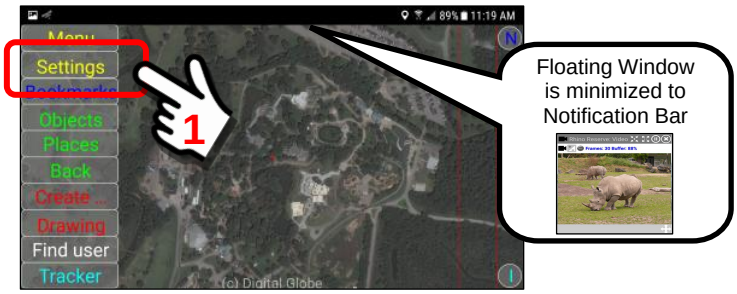
When finished, click the “OK” Button to close the panel settings.



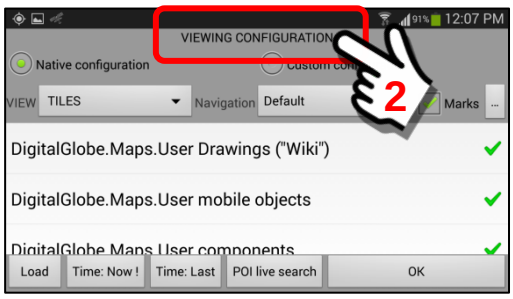
Important Note: You will need to review/adjust these settings for each new type of URL you install on a Custom Map Layer.

8. ***Add (or attach) the "*Rhino Reserve: video*" icon to the Map Layer .***
In a preceeding section we opened the "**Rhino Reserve: video**" URL link as a floating window so we can add this URL to the "Map user layer". This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

At the Main Map Screen, click on the Settings Button.

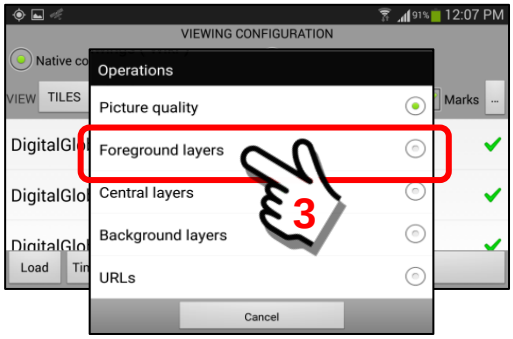


At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



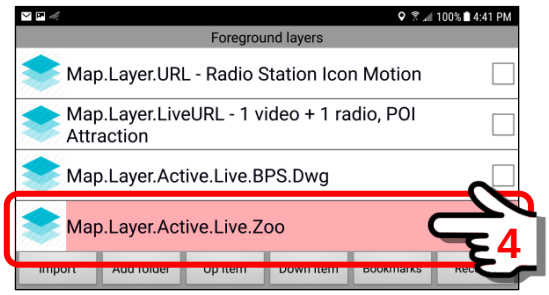
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.Zoo**.

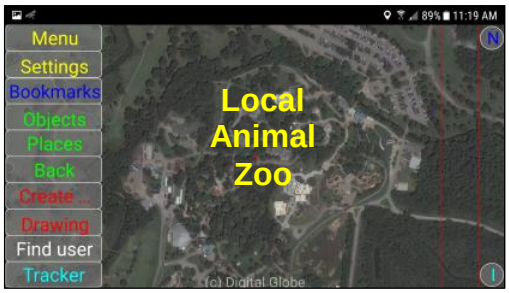


The Custom Map Layer will open and SHOULD display the view area you originally specified.

As the Custom Map Layer is opened, notice the text at the top of the screen that identifies the "layer".

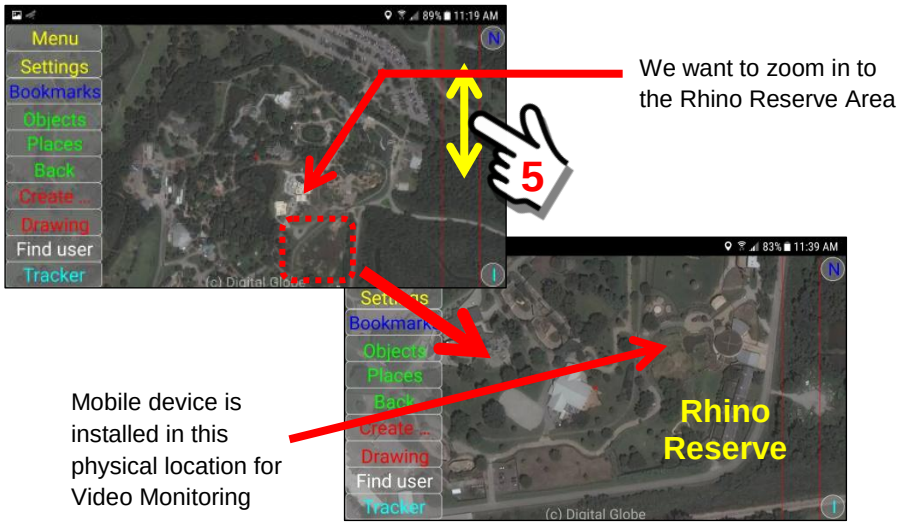
Map.Layer.Active.Live.Zoo

We are now at the custom map layer of the Local Animal Zoo. It is ready to load reference data, URLs and video panels.

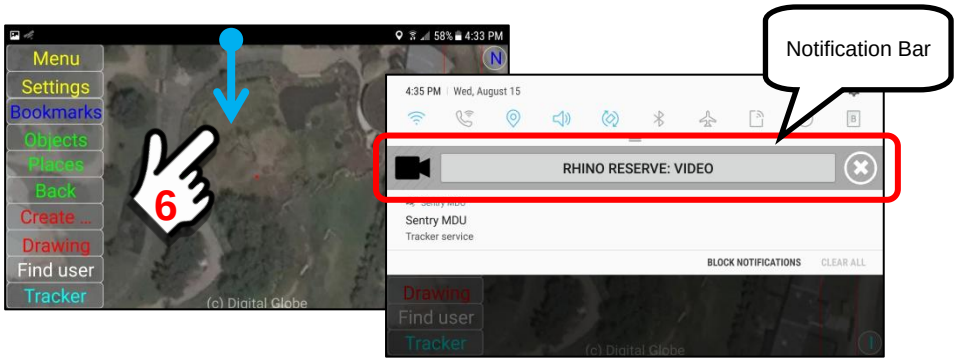


The objective is to locate the Rhino Cam Icon in a position that reflects the "actual" location of the device relative to the Rhino Reserve area. For this reason we want to show the icon inside the Rhino habitat near where the device is actually installed.

To correctly “place” the **Video Monitoring Icon**, zoom in to the Rhino habitat location on the map panel.

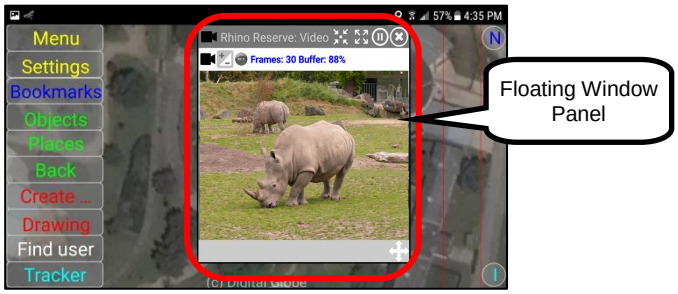


Once you have arrived at the desired “zoom level” and screen position, retrieve “**Rhino Reserve: video”** floating window from the Notification Bar.



Click on the **“Rhino Reserve: video”** notification block.

The **“Rhino Reserve: video”** floating window will now be installed on the Map Panel of the Local Animal Zoo, Rhino Reserve.



To install the Video Monitoring “Icon” (video camera icon) on the Custom Map Panel, you will perform a “Long click” on the upper left corner of the floating window panel at the Video Camera Icon.

“Long click” the Video Camera Icon to transfer the URL to the Map Panel.

As you peform the “Long click”, you will feel tactile feedback in your finger as the screen transfers to the Drawing Mode and the screen format changes.

The Video Panel is now installed adjacent to the top left corner of the floating window panel. The Drawing Mode is enabled and “**Rhino Reserve: video**” is the active object (live streaming video).

Since we have copied the **“Rhino Reserve: video”** video panel and URL to the Custom Map Layer, we may now remove the floating window panel. We are done with it.

To remove the Floating Window Panel, click on the “X” Button in the upper right corner of the floating window.

With the Floating Window now removed, the screen looks as shown below.

The object URL is now "active" for editing, movement and resizing.

Rhino Reserve: video

Live streaming video panel located on the Drawing Panel

See the Drawing Tools section (**Section 13**) if you need a refresher on using the tools. In this example, we will resize the Video Panel (smaller) and we will move it slightly up and to the left, near to the fence (where the actual mobile device is located).

Move, resize and rotate if needed.

Since we are in the Drawing Mode, we could "draw" on the screen, make notes, use different colors and so on. For now we are satisfied, done.

When finished, Click the "Publish on the Map" Button.

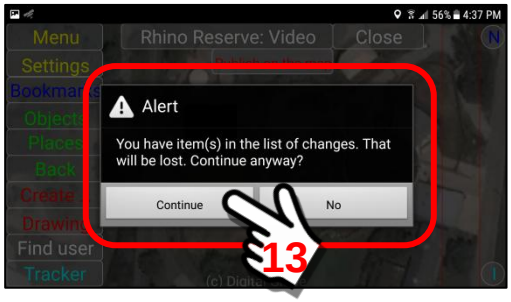
Publish on the Map will save the Video Panel and URL.

This will finalize any changes and SAVE the **"Rhino Reserve: video"** Speaker Icon and URL to the Custom Map Layer.

When you click the "Publish on the Map" Button, the system will open a pop-up **Alert Box** telling you that you may have items(s) in your "changes" list

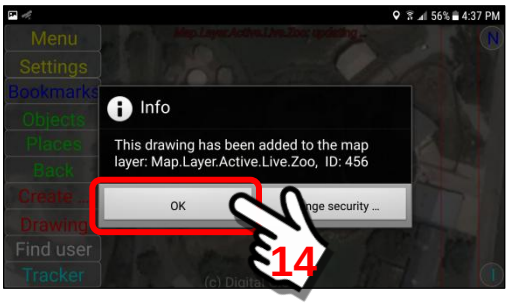
that will be lost if you continue. In the Drawing Mode, the system keeps track of changes you have made to the screen in case you want to “go back” and correct things (or you changed your mind).

Since we are happy with what we have, click the “Continue” Button.

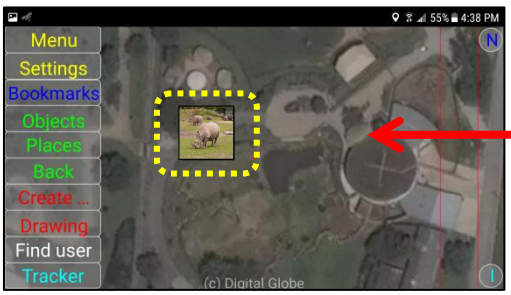


It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing Object has now been added to the custom map layer.

Click “OK” to acknowledge the successful completion.



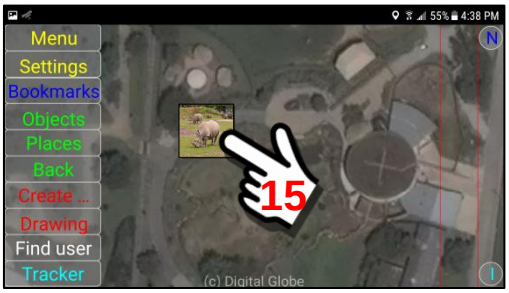
Review the installation of the **“Rhino Reserve: video”** embedded object.



Rhino Reserve: video
Live streaming video.

To “test” the embedded “Rhino Cam”, click on the Video Panel.

The SentryMDU remote mobile device will “live stream” video from the Rhino Reserve Area.



9. ***Testing BOTH embedded objects in the Foreground Map Layer.***
We have completed the installation of the two enbedded objects:

Rhino Reserve: video

This is a SentryMDU mobile device installed inside the Rhino Reserve area of the Local Animal Zoo. It is strategically located to video monitor the activities of the Rhino population.

Tiger Exhibit: audio

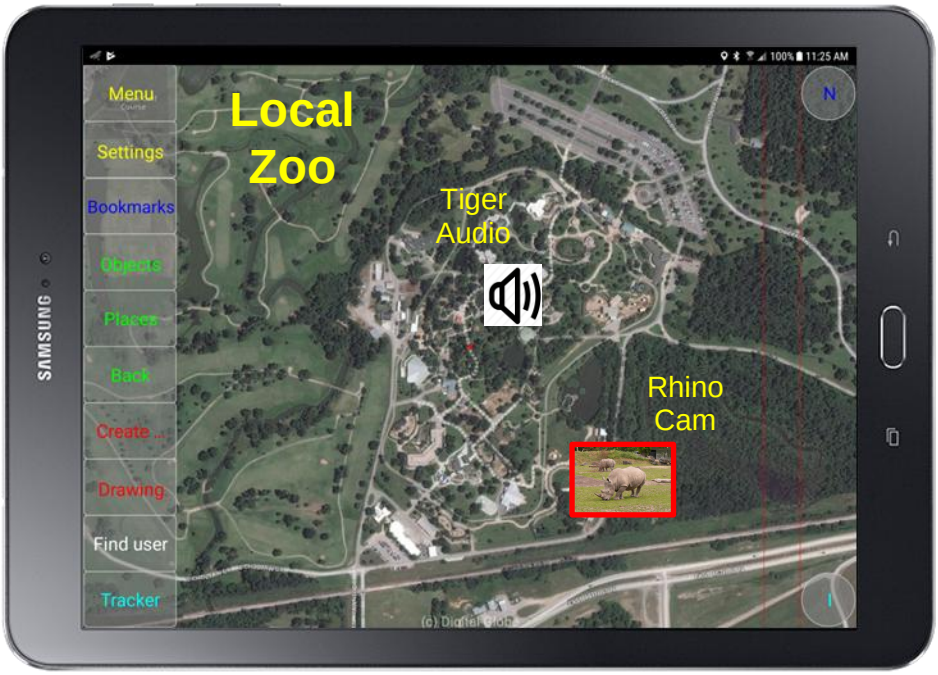
This is a SentryMDU mobile device installed inside the Tiger Exhibit area of the Local Animal Zoo. It is strategically located to audio monitor the activities of the Tiger population.

This User Defined custom layer can operate "stand-alone" or may be used in the Foreground Layer context. As a Foreground Layer, both of the objects (Tiger Audio and Rhino Cam) remain dormant until the Local Animal Zoo location is within the screen view and the zoom level is such that the objects become visible.

Tiger Exhibit: audio
Click link to hear audio

Rhino Reserve: video
Live streaming video.

When completed, your tablet should have two embedded URL objects.



8.5. Foreground, Central and Background Layers (Custom Maps)

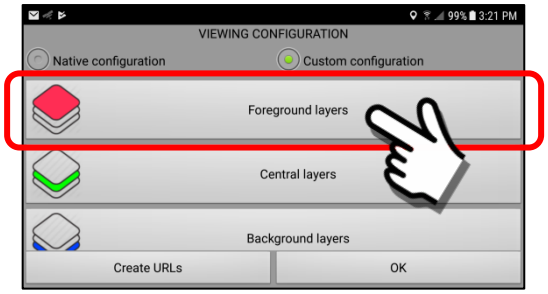
8.5.1. Default Foreground Layer Custom Maps

Overview:

During installation of the SentryMDU App, a group of default Custom Map Layers is installed in the ***Foreground Layers*** folder. This section will describe the default layers. User created custom layers may also be imported into the Foreground Layer folder and used in conjunction with the default layers. The default layers include the following:

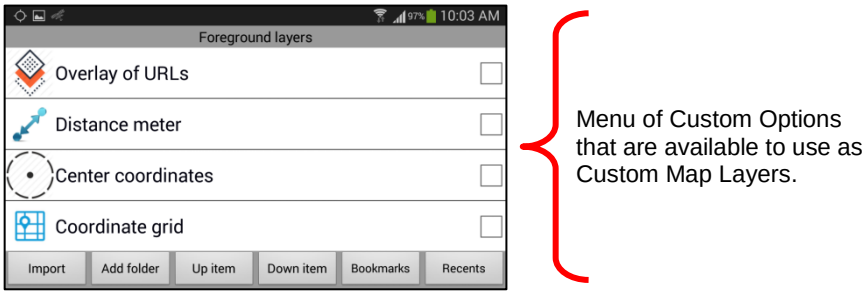
1. Overlay of URLs
2. Distance Meter
3. Center Coordinates
4. Coordinate Grid

To access the Foreground Layer Folder, click on the Button.



Foreground Layers Panel:

The "Foreground Layers" Panel contains 4 default custom map options. This option will allow the display of Custom Map Layers that will reside IN FRONT OF both the Central Layer and the Main Map Screen layer (ie Satellite image).



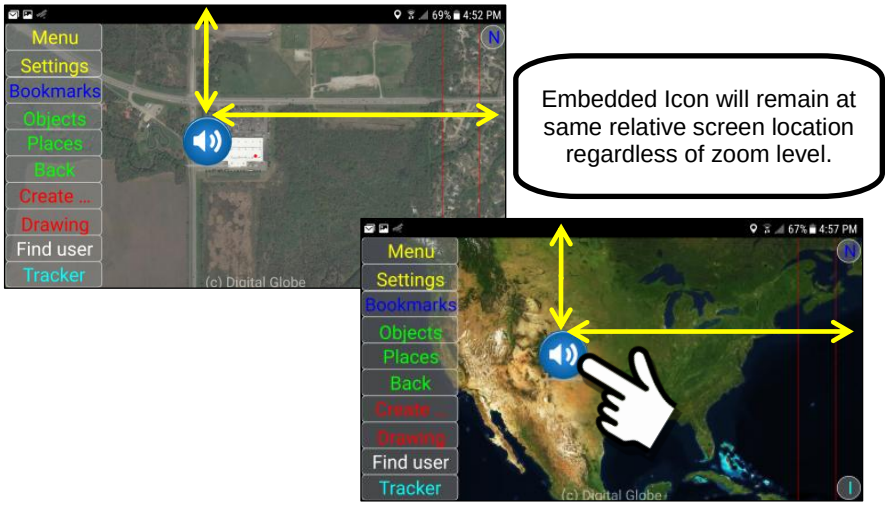
To activate a custom map layer, simply put a "checkmark" in the adjacent checkbox. When you return to the Main Map Screen, the selected layer will be ON TOP OF the Main Map Screen.

Overlay of URLs

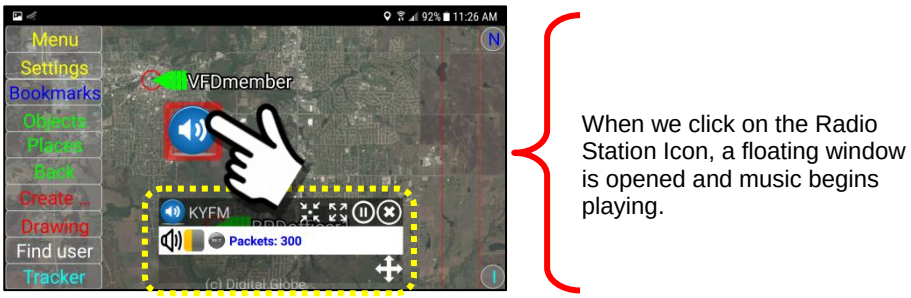
The “Overlay of URLs” Feature allows a user to create an image or URL Link that will remain on “top” of the Main Map Screen, at the same relative location on the display, at all times … even when you navigate to other parts of the world map.

For example, assume you had a favorite radio station. It is possible to create a “radio station button” as part of a Foreground Layer that would remain visible at all times. Click on the button to launch the radio station URL.

Embedded Icon stays at same screen location.

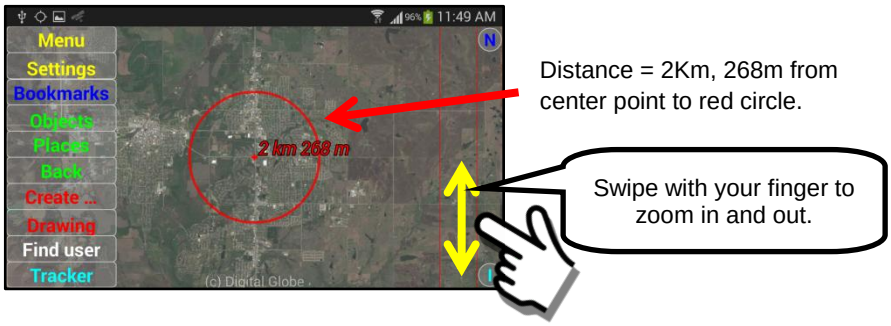


See ***Section 8.5.5*** for an example on how to set up this type of embedded Foreground Layer.



Distance meter

Provides a distance measurement from a designated map point. Simply place the red plus sign (+) at a location on the map and zoom the screen in-out. The distance from the map center to any point on the circle will be displayed.

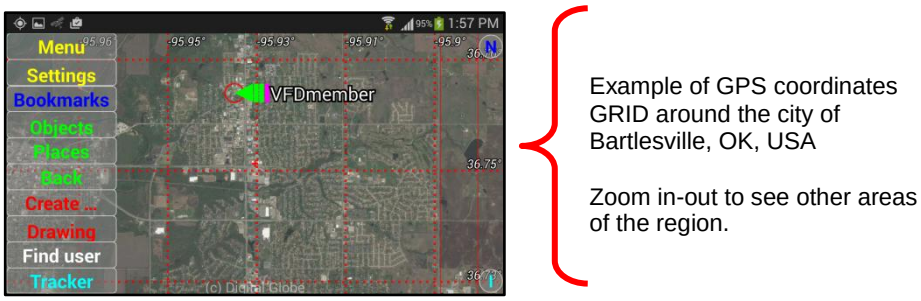


Center coordinates

Provides a GPS coordinate point reference overlay for the center point of the Map Screen. This will allow a user to easily select any point on the map and know the GPS coordinates for that point.

Coordinate grid

Provides a grid-based overlay showing the GPS coordinates for any selected region on the map.



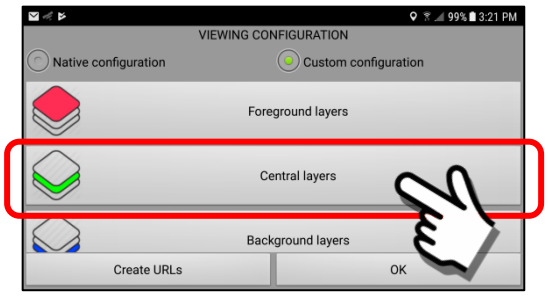
8.5.2. Default Central Layer Custom Maps

Overview:

During installation of the SentryMDU App, a group of default Custom Map Layers is installed in the ***Central Layers*** folder. This section will describe the default layers. User created custom layers may also be imported into the Central Layer folder and used in conjunction with the default layers.
The default layers include the following:

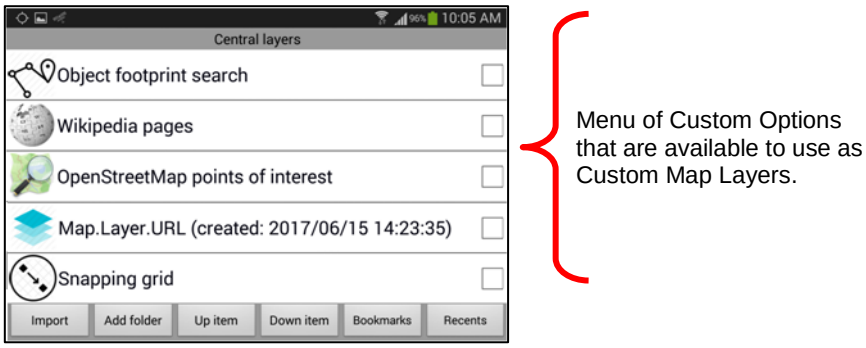
1. Object footprint search
2. Wikipedia pages
3. OpenStreetMap points of interest
4. Map.Layer.URL
5. Snapping grid

To access the Central Layer Folder, click on the Button.



Central Layers Panel:

The “Central Layers” Panel contains 5 default custom map options.
This option will allow the display of Custom Map Layers that will reside below the Foreground Layer, but IN FRONT OF the Main Map Screen layer (ie Satellite image).

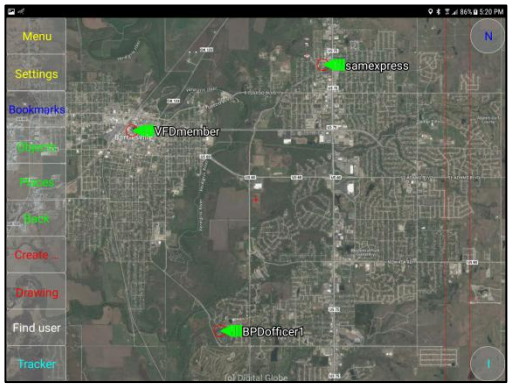


To activate a custom map layer, simply put a “checkmark” in the adjacent checkbox. When you return to the Main Map Screen, the selected layer will be ON TOP OF the Main Map Screen.

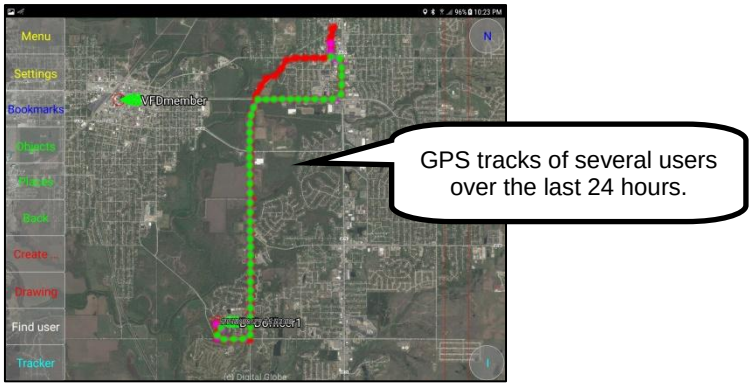
Object footprint search

The “Object Footprint Search” Layer allows a user to monitor the GPS track of a mobile object in real-time or review the GPS track history for the past 24 hours (+ -). The system will display a 24 hour (+ -) color coded trace of GPS tracks for all mobile devices within the search area (screen view area).

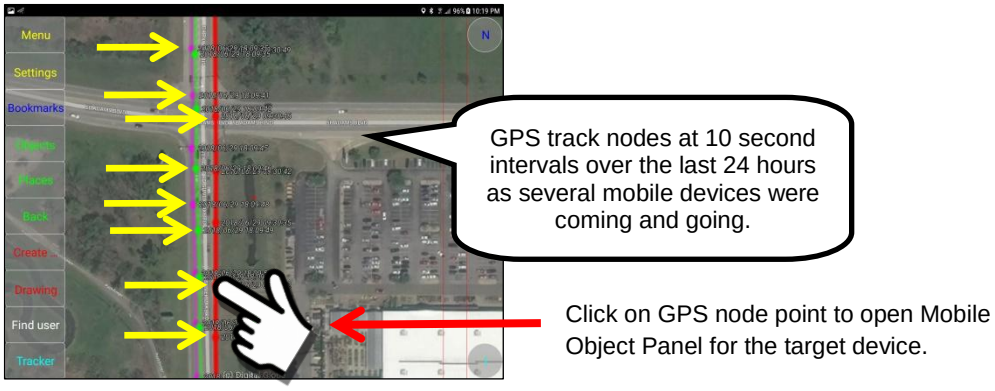
Screen BEFORE the “Object footprint search” Layer is activated



Screen AFTER the “Object footprint search” Layer is activated

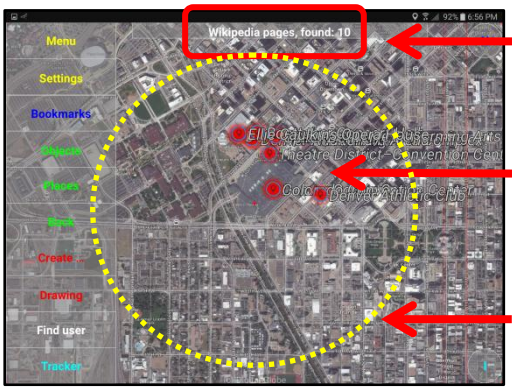


A “zoomed in” portion of the screen showing GPS node readings.



Wikipedia Pages

The “Wikipedia” Layer allows a user to create a custom map panel with a Wikipedia data overlay. The SentryMDU System will pull data from the Wikipedia library based on the site geo-location and overlay these locations on a custom map view.



The Wikipedia Panel showing the number of items found in the search area (maximum of 50 items).

GPS location and name of the Wikipedia items found in the search. Zoom in to see items that are closely grouped.

The search area will retrieve data within a 10km radius of the designated map center.

OpenStreetMap points-of-interest

The “OpenStreetMap” POI Layer allows a user to create a custom map panel with an OpenStreetMap points-of-interest data overlay. The SentryMDU System will pull data from the OpenStreetMap POI library running on a DLT Server based on the site geo-location and overlay these locations on a custom map view.

OpenStreetMap points of interest overlay on a street map.

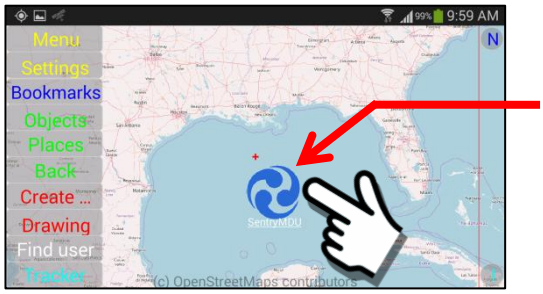
If the text description of a POI (point-of-interest) has an “underline”, this indicates that the POI icon is also a website link. Click on the text name and the website will be launched.

Text Object URL link

Map.Layer.URL

The “Map.Layer.URL” Layer installs an animated SentryMDU Icon which is placed in the Gulf of Mexico just south of the North American Continent. This feature provides a link to SentryMDU website screen examples and this User Manual documentation.

Map.Layer.URL Feature as displayed on a phone using street maps



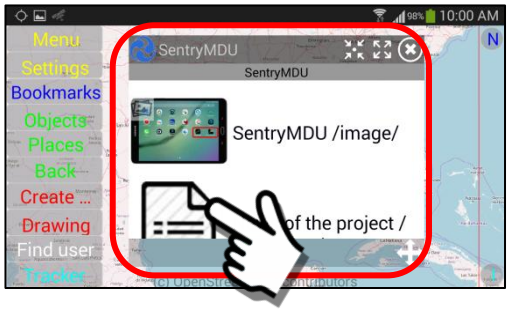
Click on the animated icon to open SentryMDU reference materials

Map.Layer.URL Feature as displayed on a Tablet using satellite imagery

Click on the animated icon to open SentryMDU reference materials

To open the data, click on the animated icon. A red box will highlight the selection and a floating window will be launched on the screen.

Once the floating window is displayed, resize the floating window to see the contents of the panel. The SentryMDU Reference material includes a sampling of typical screens and an “online” User Manual.



Floating Window contains URL links to reference materials.

Click on an item to open.

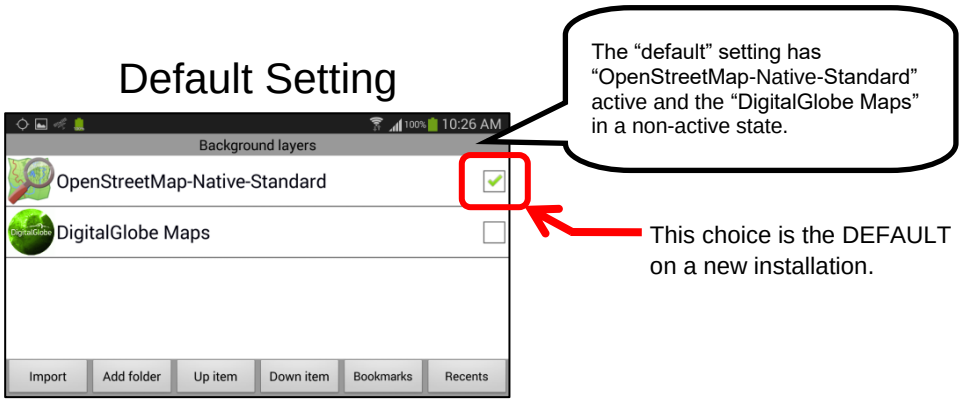
Snapping Grid

The “Snapping Grid” Layer allows a user to overlay a high resolution checkerboard grid over a satellite image map screen. This provides a reference grid against which landmarks and topographical features may be compared. This feature has application in Search & Rescue activities.

8.5.3. Default Background Layer Custom Maps

Overview:

The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put "custom" maps of your own in this folder.



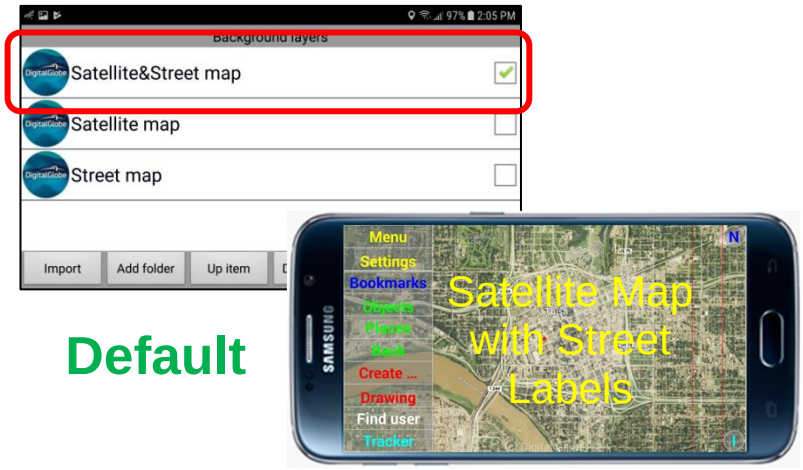
When a User device installs the MapBox/DigitalGlobe Map imagery by way of a Subscription or User License, the DigitalGlobe Maps menu item will become active.

To view the 3 different DigitalGlobe Map options, click on the Menu Item.

During an initial install of the MapBox/DigitalGlobe Maps, the "**Satellite&Street map**" option will be installed by default.

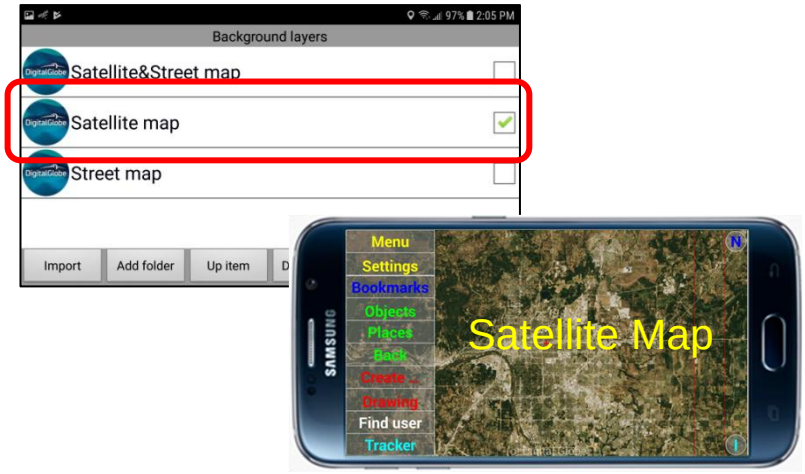
A User may select any of the other map options as indicated below.

1

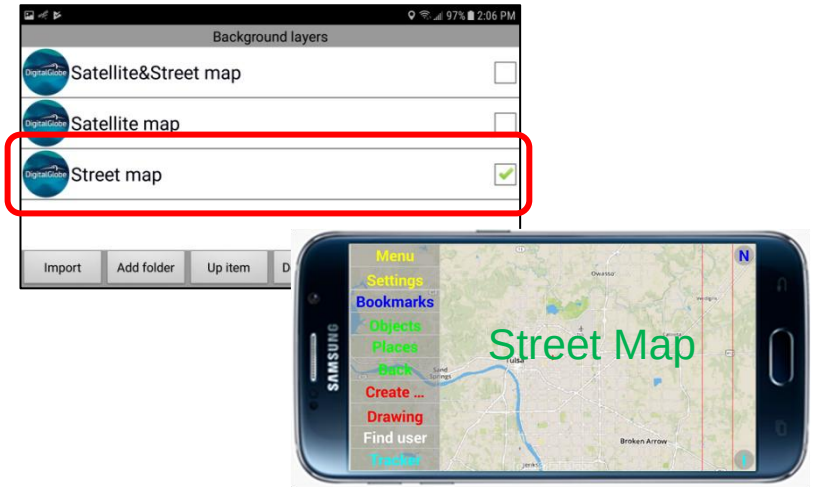


Default

2



3

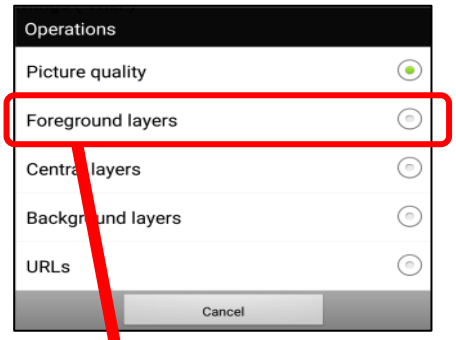


8.5.4. Setting Foreground, Central and Background Layers

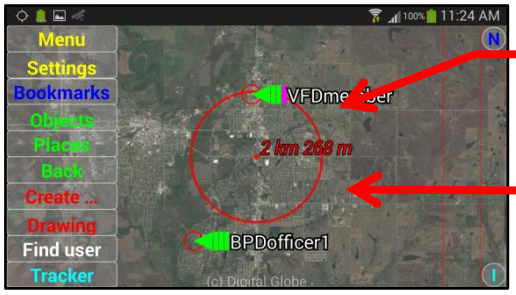
Overview:

The Viewing Configuration Panel has options to create/set foreground, central and background map layers. These layers are in addition to the “default” layers that are included in the initial installation (see previous sections).

These “custom” map layers can display reference data, pictures, video clips, weather data and distance measurement parameters. This section will illustrate how to set up both a Foreground and Background map layer. Use a similar process for Central Layers.



Example of Foreground Layer



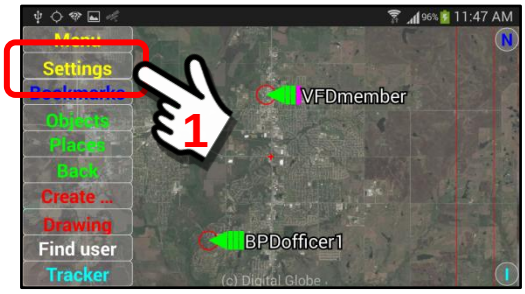
Main Map Screen showing 2 Users on the network.

The “red circle” is a Distance Measurement feature displayed as a foreground “overlay” ON TOP of the Main Map Screen.

Review of Foreground and Background Configuration:

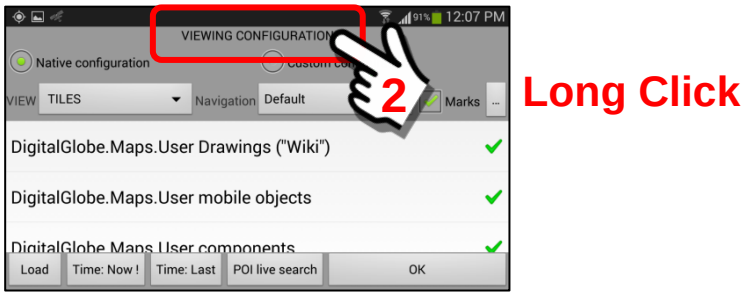
1. ***Foreground Custom Map overlay option.***
   The “Foreground” option is the primary method used to “stack” custom map layers on top of the Main Map Screen. Multiple layers may be created, stored and activated by the User. This example will illustrate how to select a Distance Measurement map layer from the available options and create a foreground layer that will display each time the SentryMDU system is started.

   Begin at the Main Map Screen, click on the Settings Button.

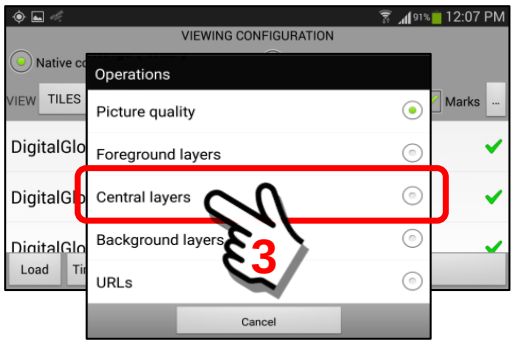


The first step will be to create the “overlay” that we would like to use as our foreground custom map. In this example, we will create a “Distance Measurement” map overlay.

At the Setting Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

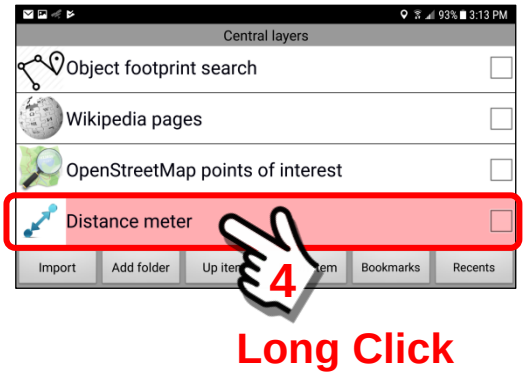


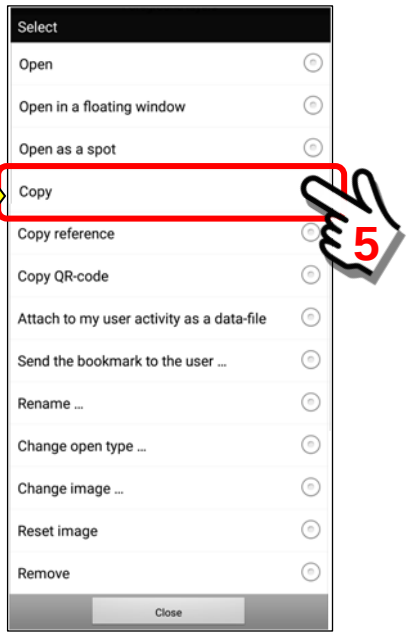
A pop-up Operations Menu will appear. Select the **Central Layer** option.



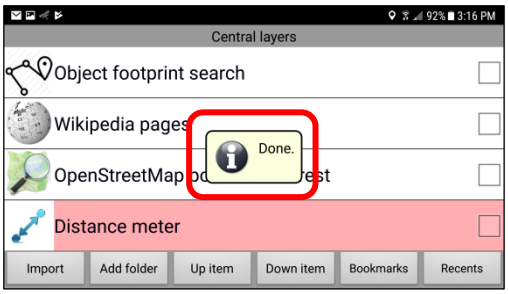
Perform a “Long click” on the Distance Meter Button to open a pop-up Select Menu with 13 menu options. In this example, since we want to create a custom map overlay using the Distance Meter, select the “Copy” option. We will copy the URL Link from the Central Layer to the Foreground Layer.

Select the “*Copy*” option.

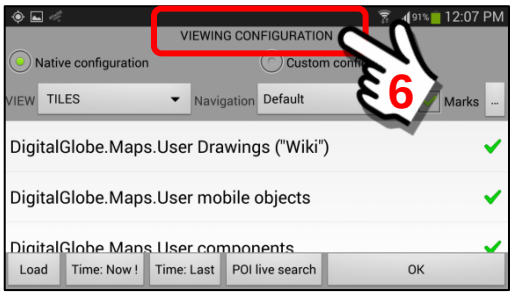




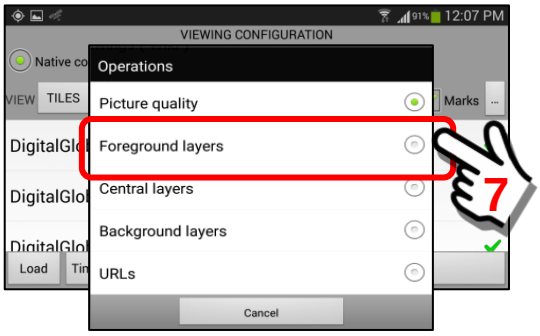
If the “copy” operation is successful, a pop-up Done Box will appear for a few seconds. The URL “link” for the distance measurement panel will be saved in a temporary file, ready to be imported into the bookmark folder.



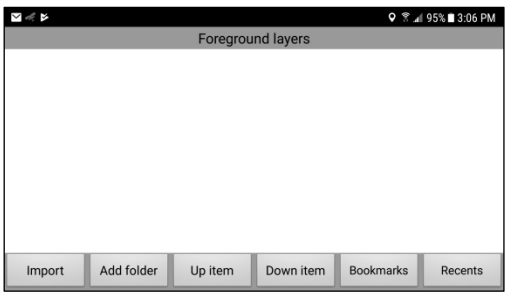
Now that we have saved the “Distance Meter” map URL we will need to import it into the Foreground file storage repository. Click the “Back” Button on the device to return to the ***Viewing Configuration*** Panel.



Click on the ***Viewing Configuration*** header and select “Foreground layers” from the Operations menu options.



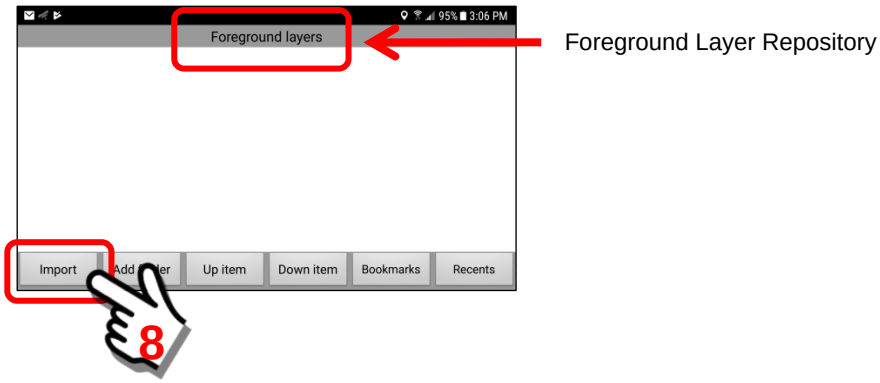
The Foreground layers panel will open. In this example, we are showing the Foreground Layers folder to be empty as shown below.



This is where we will install “links” to the custom map layers that we want to use as Foreground Layers.

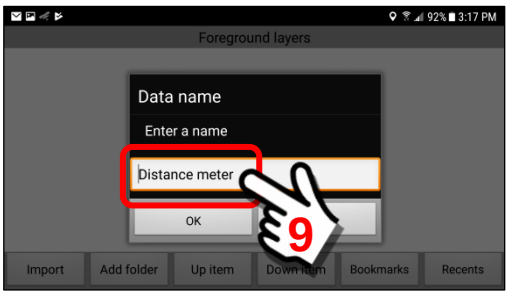
Since we have saved the URL “link” for the distance measurement feature in a temporary file, we are now ready to “import” this URL link into our Foreground Layer Repository as shown below.

Click on the Import Button.

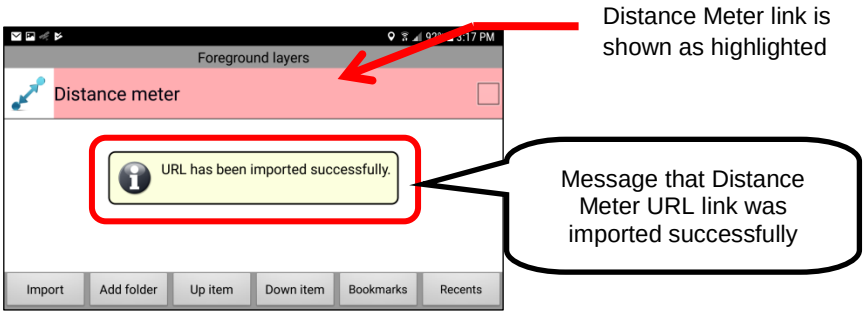


Clicking on the Import Button will open a pop-up box that allows a User to enter a “Data name” for the particular Foreground Layer. Since we had originally copied a URL link for the Distance Meter feature, the system will use a default name of “Distance meter”. You may change this name by clicking in the text entry block and editing the text. For this example, we will leave as is.

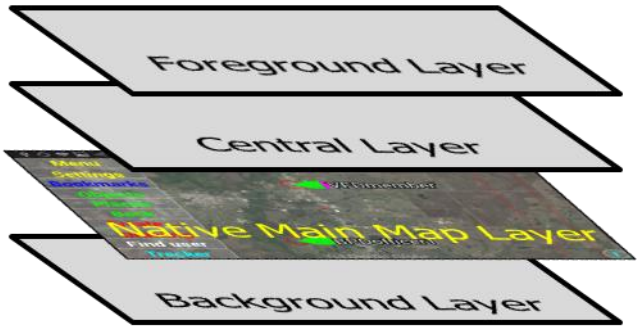
When finished, click “OK” to save the Foreground Layer link.



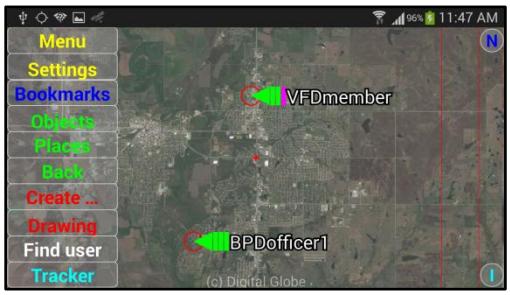
Once the URL link has been installed into the Foreground Repository, you will receive a message that the import was successful.



To test the Foreground Layer overlay feature, return to the Main Map Screen. Notice that the Distance Meter overlay map is now a layer on the Main Map screen.

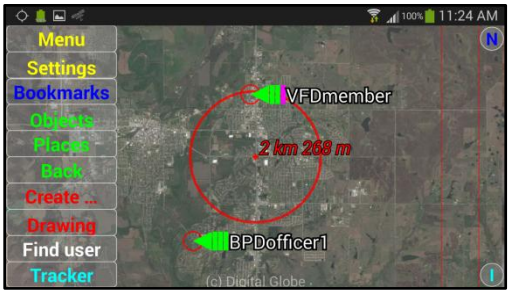


In this example, we have added a foreground layer to the Main Map Screen.



Main Map Screen

Foreground Layer

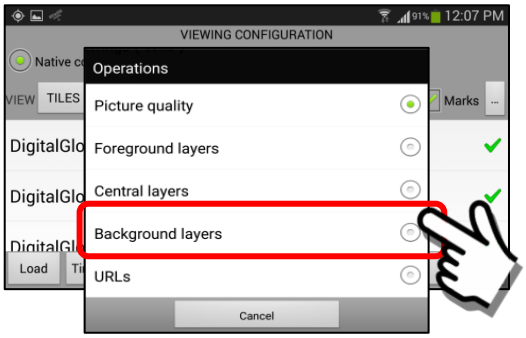


Combined Display

2. ***Background Custom Map overlay option.***

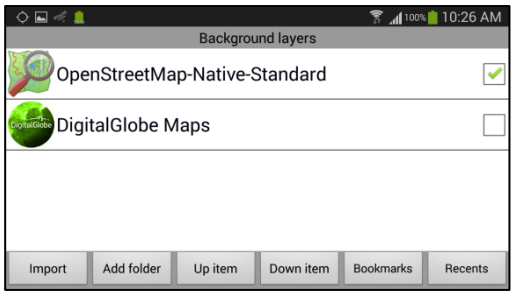
The “Background” option is similar to the Foreground method in process and configuration. However, in the Background method, layers are created that will reside BEHIND the Main Map Screen instead of in front of it. Multiple layers may be created, stored and activated by the User.

Background Layers menu option



Background Layers URL Repository

The **Background Layers** folder contains the currently available sources for map imagery. In this example we show the 2 default entries. You may also put “custom” maps of your own in this folder.



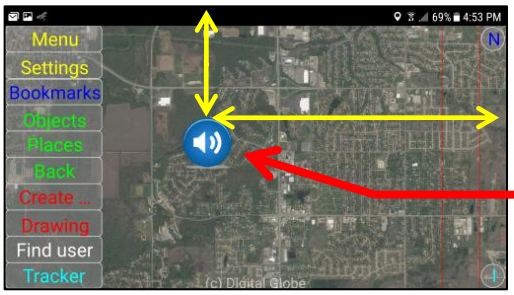
To view the 3 different DigitalGlobe Map options, click on the Menu Item.

8.5.5. Example – Embedded Radio Station in a Foreground Layer

Overview:

This section will describe how to embed active content into the SentryMDU map system. This example will use a Foreground Layer, a Radio Station URL and create a "button" that when clicked, will launch a radio station floating window. This same principle may be used to display reference data, pictures, video clips, third-party content and more.

Example of Foreground Layer



We will create a Radio Station Icon at a specific location on the display screen. As the screen moves, the Icon stays in the same location.

The Foreground Layer button that is created will float above the same screen reference location on the mobile display. This means it will always be available at the same location regardless of the area of the world that is viewed.

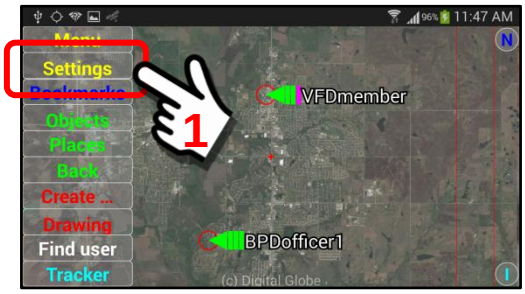
<u>Steps to create embedded content used in a Foreground Layer</u>

1. Click on the Settings Button
2. At the Viewing Configuration Panel, select Custom Configuration
3. Select the Foreground Layers button.
4. At the Foreground Layers Panel, put a checkmark in the "Overlay of URLs" menu option checkbox. This checkmark activates the embed feature.
5. Return to the Main Map Screen.
6. Select the Bookmarks Menu item from the Main Map Panel.
7. At the Bookmarks Panel, select the Radio Station entry that you wish to embed in the Foreground Layer.
8. Launch the Radio Station URL as a floating window (the default).
9. Return to the Main Map Screen such that the Radio Station floating window is an overlay on the Main Map Screen.
10. Resize the display area and zoom level to show the landmark or GPS coordinates of the location where you want the embedded Icon to show.
11. Move the Radio Station floating window panel about the Main Map Screen until the top left corner is adjacent to the landmark/location where you wish the embedded icon to reside.
12. Perform a "Long Click" on the top-left corner of the Radio Station floating window panel. This action will launch a Drawing Panel that will display a Radio Icon together with tools for resizing and moving the icon to other locations on the screen.
13. After editing, click on the "Add Button" to lock in the changes and save the embedded icon to the desired location on the Main Map Screen.

14. The embedded icon is now an active URL link. Clicking on the embedded icon will launch the radio station floating window.
15. The embedded icon will remain active as long as the Foreground Layer menu item (Overlay of URLs) is “checked”.
16. Moving the embedded icon location to another display location.

Steps to create Foreground Overlay URLs Configuration:

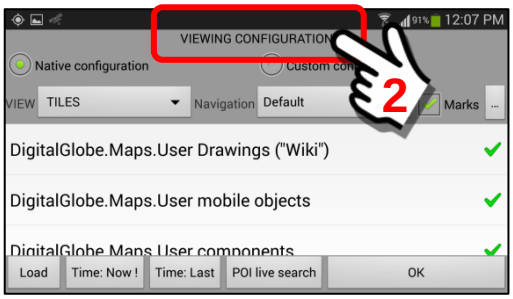
1. ***Click on the Settings Button.***
   Begin at the Main Map Screen, click on the Settings Button.



There are two methods you may use to gain access to the Foreground Layer options. We will show both of them here.

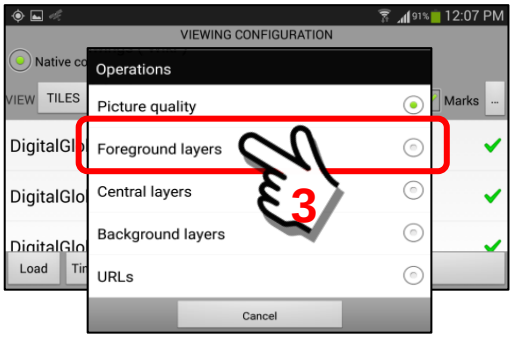
Method 1 – Using the Viewing Configuration Panel

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

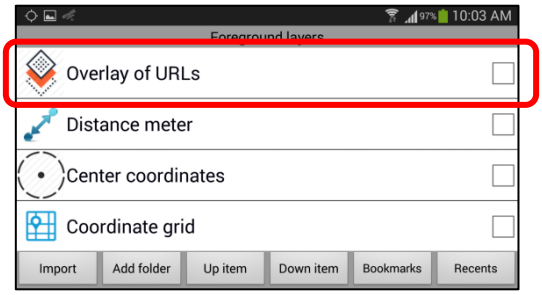


Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.

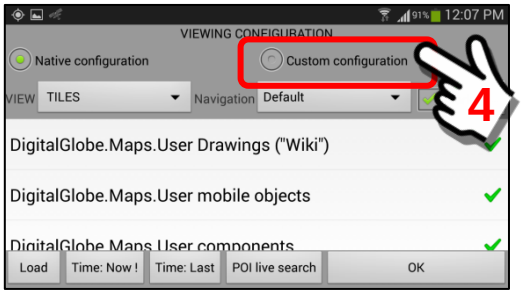


The Foreground Layers menu option will open the Foreground Layers Panel. We will be using the “Overlay of URLs” default bookmark.



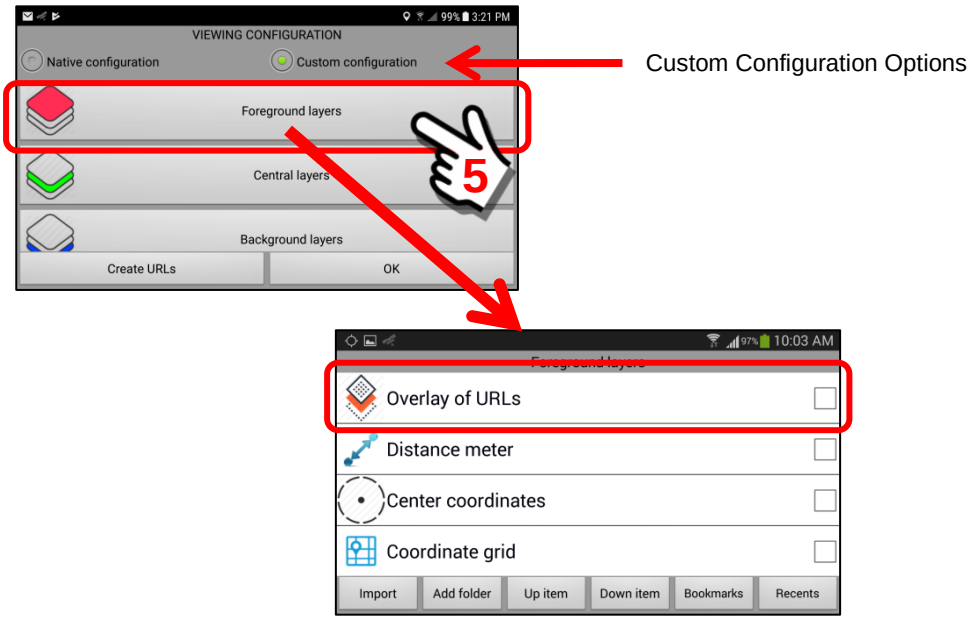
Method 2 – Using the Custom Configuration “button” option

At the Settings Panel, select the Custom Configuration option.

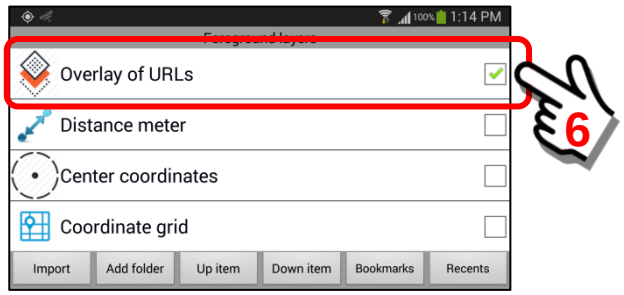


The Settings Panel will change to the ***Custom Configuration*** option view. The Foreground Layers menu option will open the Foreground Layers Panel. We will be using the “Overlay of URLs” default bookmark.

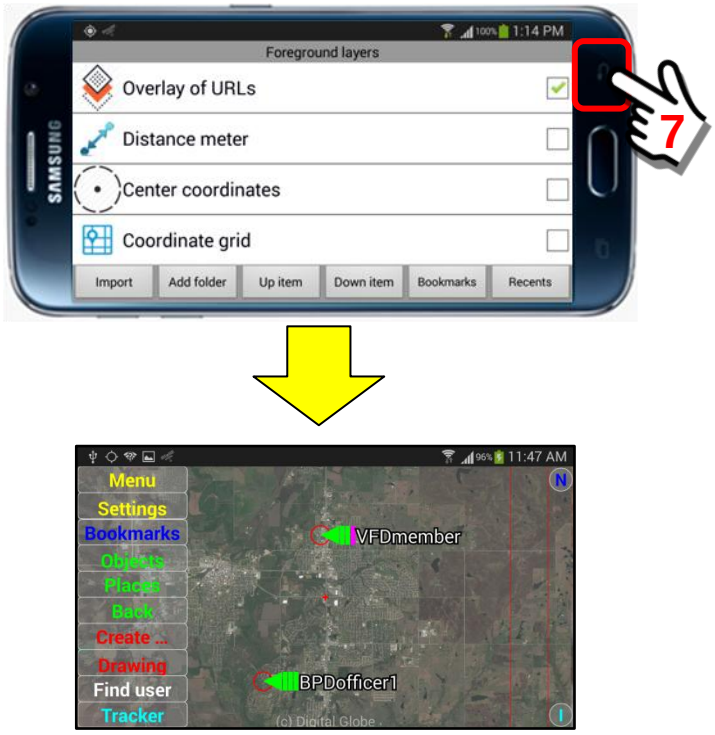
Click on the “Foreground Layers” Button.



2. ***Select the "Overlay of URLs" menu option checkbox.***
At the Foreground Layers Panel, put a checkmark in the "Overlay of URLs" menu option checkbox. This checkmark activates the embedding feature for this option.

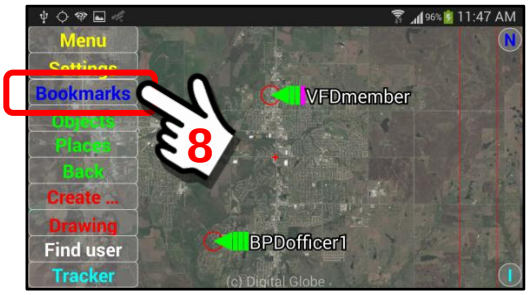


3. ***Return to the Main Map Screen.***
Now that we have "activated" the URL embedding feature, we return to the Main Map Screen to create our Radio Station embedded object. Click on the "Back" button on the mobile device to return to the Main Map Screen.

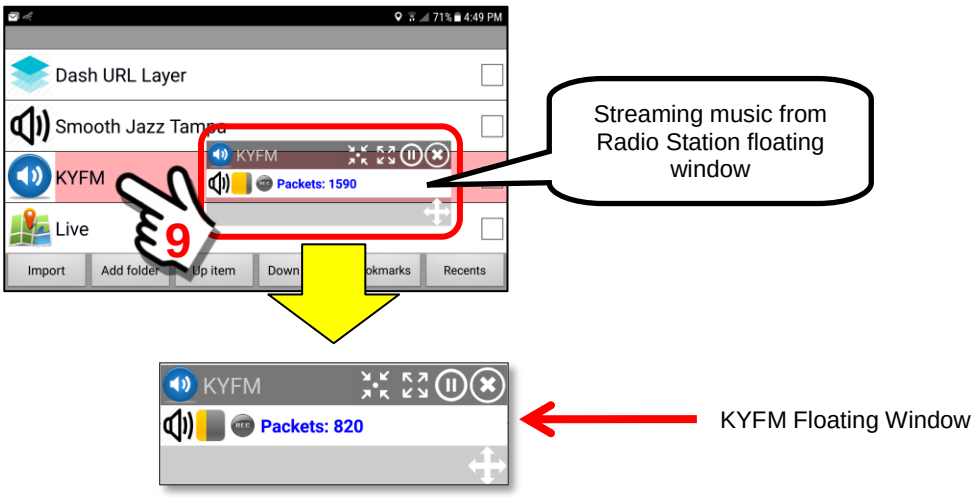


4. ***Select the Bookmarks Menu item and the Radio Station entry.***
Select the Bookmarks Menu item from the Main Map Screen Panel. At the Bookmarks panel, scroll down the list of available bookmarks until you find the Radio Station Bookmark that you will to install into the Foreground Layer.

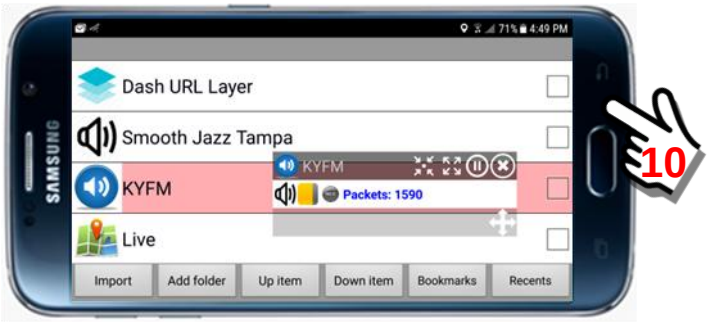
Click on the Bookmarks Menu item.



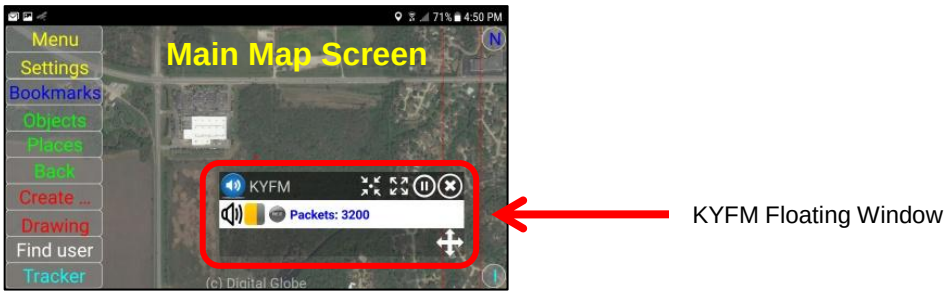
From the list of available bookmarks we select ***KYFM*** (a music streaming Radio Station). Click on ***KYFM*** and the floating window panel for the Radio Station will be launched as an overlay on the screen.



5. ***Return to the Main Map Screen with floating window visible.***
Return to the Main Map Screen by clicking on the "Back" button of the mobile device.

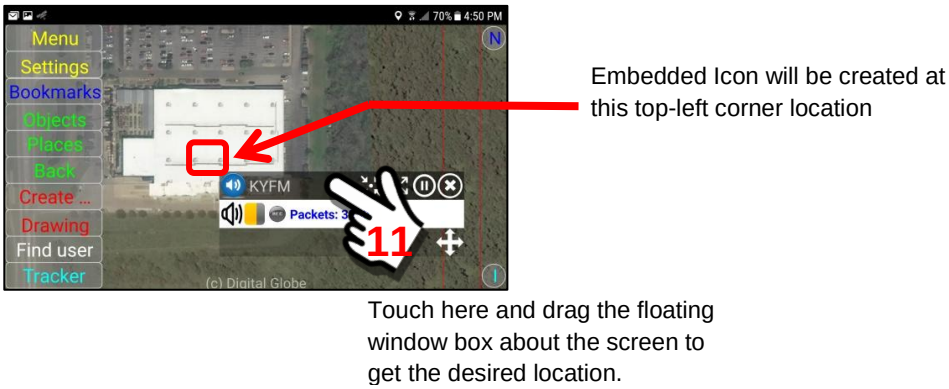


The KYFM floating window should still be visible on the Main Map Screen.

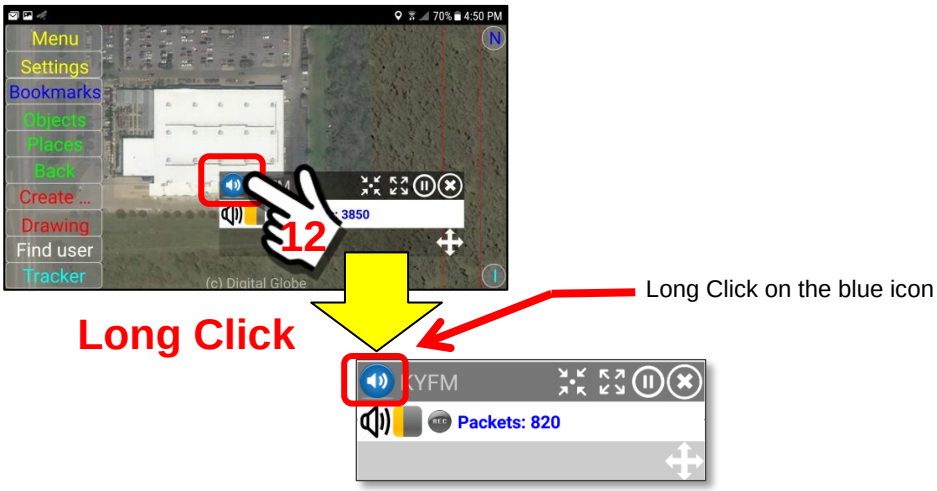


6. ***Locate the floating window top left corner to a desired location.***
To create an "embedded" object (ie Radio Station URL Icon), move the floating window such that the top-left corner of the floating window is at the location on the screen where you would like the embedded object to reside.

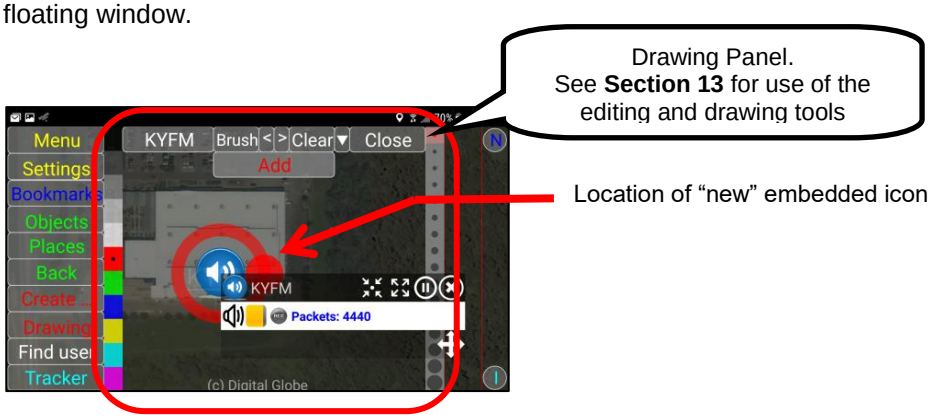
Do not worry if you cannot get it exactly where you want it … you can still move it later. For now, we will move the floating window to the position shown.



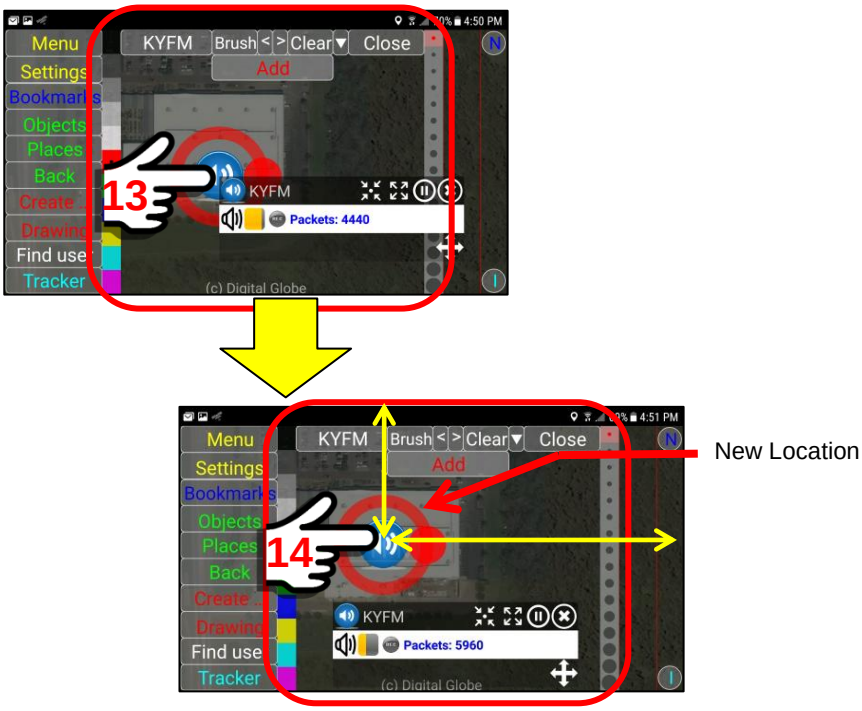
When you have selected the desired location, perform a "Long click" on the blue speaker icon located in the top-left corner of the floating window box.



7. ***Perform a "Long click". The Drawing Panel will open to allow editing.***
A successful "Long click" on the blue speaker icon will result in tactile feedback (vibration) and the Drawing Panel will open with a blue speaker icon (surrounded by a red circle) now located at the top left corner of the floating window.

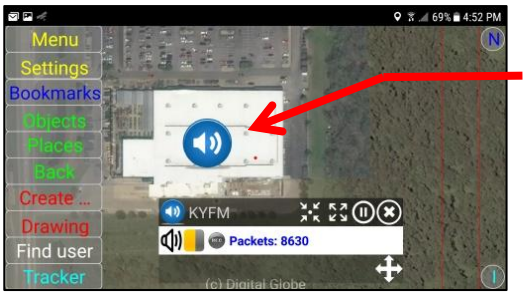


Using your finger, touch ***inside*** the "red circle" surrounding the new icon and drag the blue speaker icon to a desired location on the display screen (you may also resize and rotate the image). When you release your finger, the icon will stay at the new location on the screen.



8. ***Click the "Add" Button to save the embedded object.***
To SAVE the embedded object, click on the ***Add Button***.
This will save the Radio Station URL as a Foreground Layer overlay.

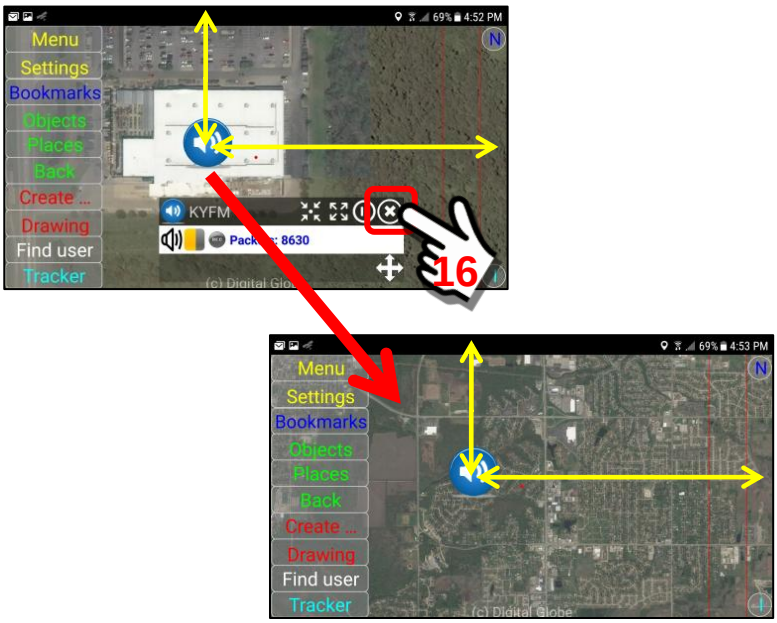
The Radio Station embedded object will now be saved as a Foreground Layer URL object. Whenever, the "Overlay of URLs" foreground layer checkbox is activated, this Radio Station URL icon will be displayed.



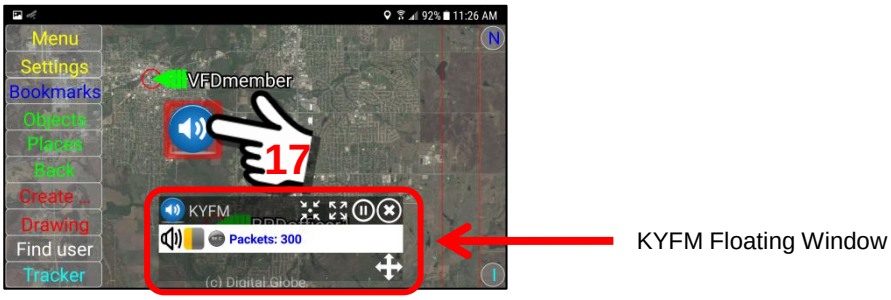
Radio Station embedded object.

Note that the "iimage" icon may be changed and the text description may also be changed as desired.

In this example, we will now "close" the KYFM floating window and zoom "out" to give a wider perspective. Notice that the Foreground Layer radio station icon stays at the same relative position on the screen regardless of the zoom level.

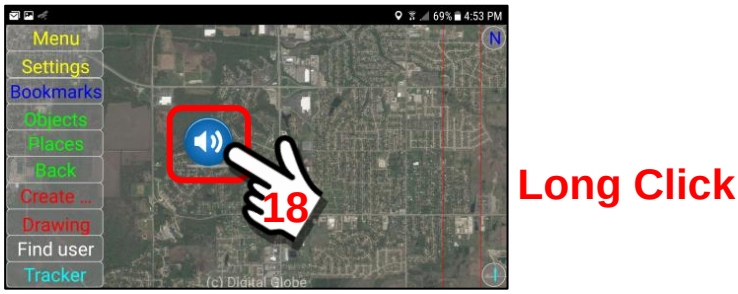


9. ***The embedded icon is now an "active" URL link.***
To "test" the embedded overlay URL, click on the blue icon. The KYFM Radio Station floating window should be launched and will appear near the icon.

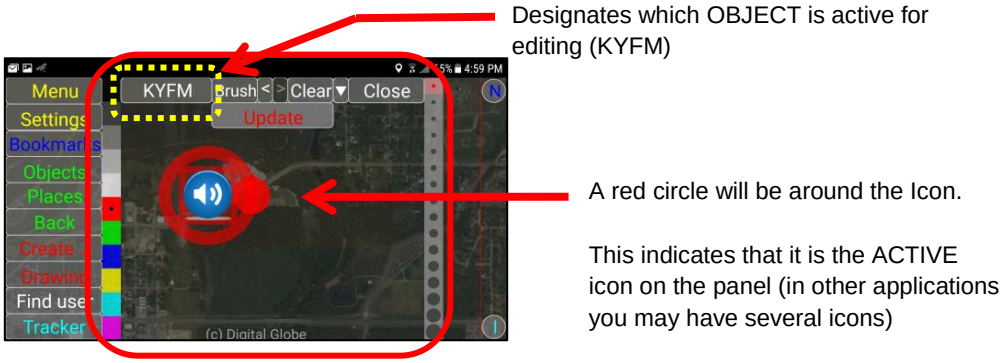


10. ***Editing the Radio Station Icon location.***
See **Section 13** for details on using the Drawing Mode editing tools. In this example, we will launch the UPDATE Mode to change the location of the Radio Station Icon.

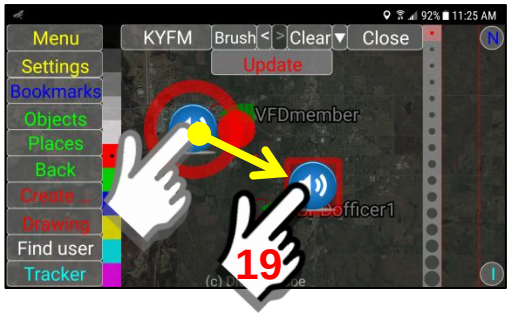
Perform a "Long click" on the Radio Station Icon. You will feel tactile feedback (vibration) and the Drawing Tools will open in Editing Mode.



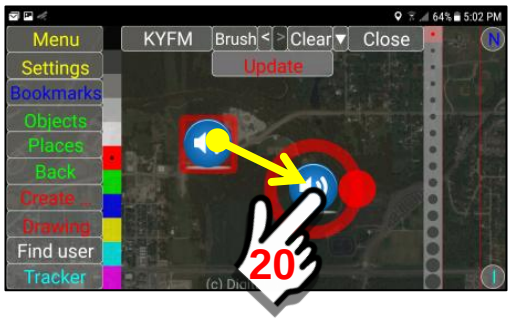
The Drawing Tools Panel will open in Editing Mode.



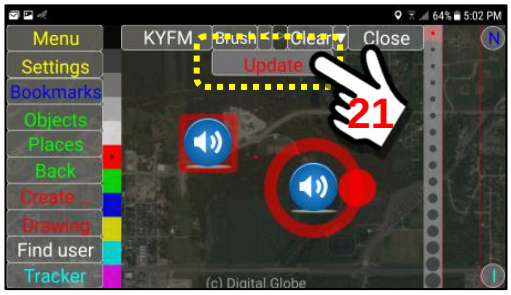
To move the “Icon”, touch with your finger (inside the red circle) and drag to a “new” location on the screen and then release your finger.



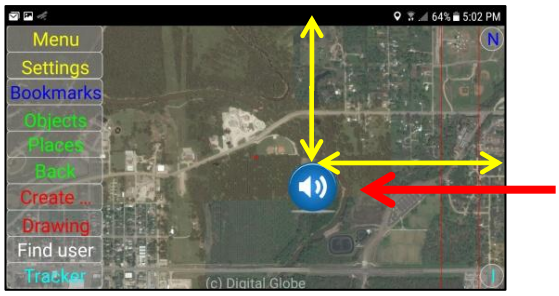
The Icon with the red circle will move to the new location. Lift your finger and the icon within the red circle will remain.



Click on the “Update” Button at the top of the Panel to finalize the change.



The Radio Station Icon is now located in a “new” relative location on the panel.



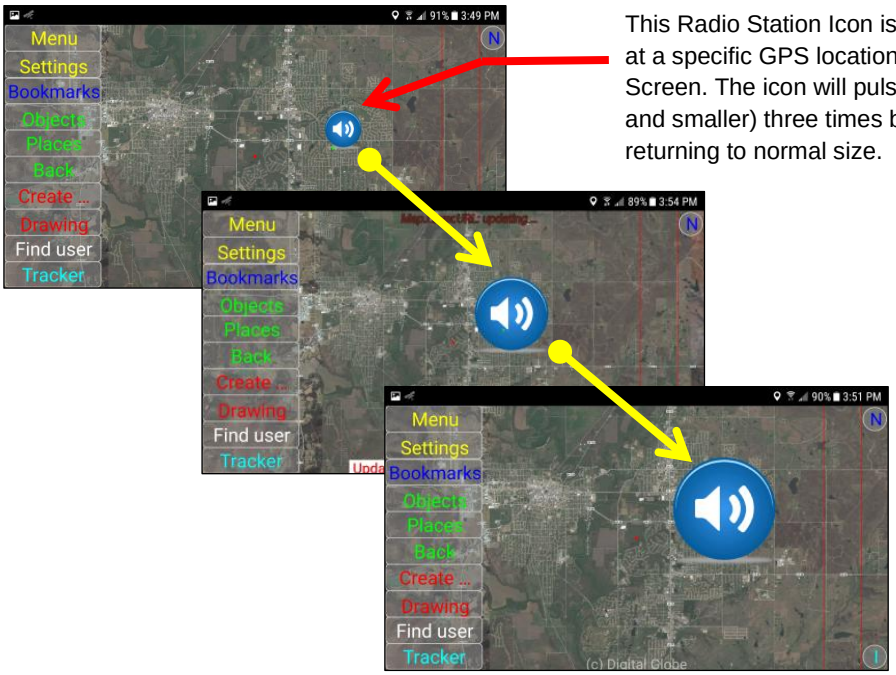
New location on the Panel

8.5.6. Example – Embedded Radio Station with Animation

Overview:

This section will describe how to add icon "animation" to embedded active content such as an embedded Radio Station URL. This example will use a Foreground Layer, Radio Station URL "button" that when clicked, will launch a radio station floating window. We will add pulsing motion to the "speaker icon" so that it will be easily noticed on the Main Map Screen.

Example of Animated Foreground Layer



This Radio Station Icon is embedded at a specific GPS location on the Map Screen. The icon will pulse (get bigger and smaller) three times before returning to normal size.

Whenever a user navigates the screen area and the Radio Station Icon "object" is moved into view such that it appears on the Map Screen Panel, the "pulse animation" motion will occur 3 times. As long as the Foreground Layer button is "active" the Radio Station will always be available at the GPS location where it was installed.

<u>Steps to create embedded content used in a Foreground Layer</u>

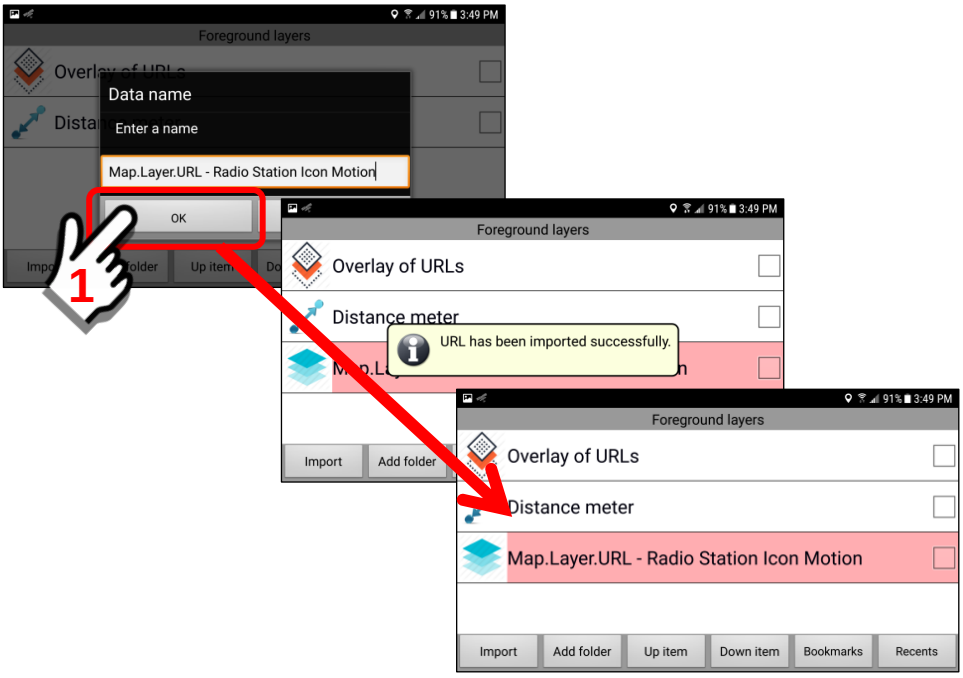
1. Follow steps to create an embedded object.
2. Install the new bookmark into the Foreground Layers folder.
3. Rename the Bookmark to indicate that it will be motion enabled.
4. Click to launch the Bookmark. See Foreground Layer on Main Map Screen.
5. Select the Radio Station Icon showing on the Main Map Screen.
6. Select the Menu Button on the Main Map Panel.
7. Click on the "Selected Object …" Button displayed on the Menu Bar.
8. Select the "Set motion" Button on the Operations pop-up Menu.
9. On the "Motions" Panel menu, select the "Pulsing" menu option.
10. The Radio Station Icon on the panel will now "pulse" 3 times as a test.

11. The embedded icon is now an active “pulsing” URL link. Clicking on the embedded icon will launch the radio station floating window.
12. The embedded icon will remain active as long as the Foreground Layer menu item (Overlay of URLs) is “checked”.
13. Removing the motion feature from the Radio Station Icon.

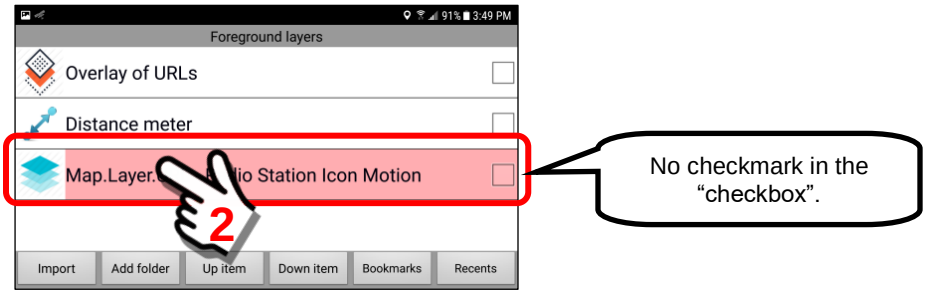
Steps to create Foreground Overlay URLs Configuration:

1. ***Create the embedded object.***
   From an existing embedded object, import it into the Foreground Layers folder so it may be modified (we don’t want to change the original).

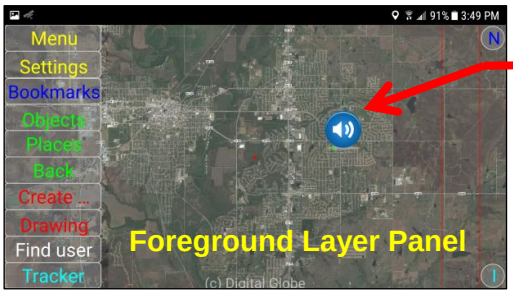
   Follow the steps to “Rename” the imported bookmark. See **Section 9** if you need to review the RENAME steps.



2. ***Select and “click” on the bookmark.***
   Click on the bookmark to launch it. However, do NOT put a checkmark in the menu option checkbox. For now, we are still configuring the motion feature.



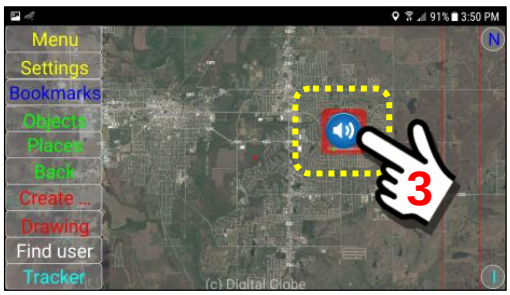
3. ***The embedded Radio Station URL will open and the Icon will be displayed.***
The Radio Station URL is displayed on the Main Map Screen at the GPS location that the user had previously selected.



This Radio Station Icon is embedded at a specific GPS location on the Map Screen.

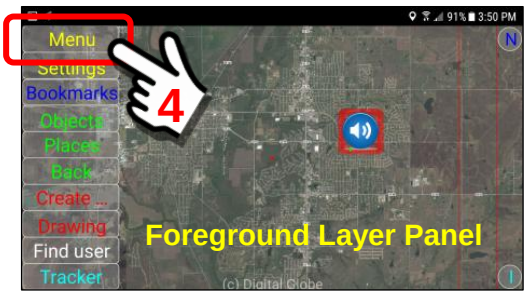
4. ***Select the Radio Station Icon displayed on the Map Screen.***
Click on the Radio Station icon to select it. Perform a "short click". You should see a "red box" surround the icon. The Radio Station floating window may open, if so, close the floating window (click on the "X" in the top right corner). We want to have the screen with the Radio Station icon "selected" with the red box surrounding it (means it is selected for further actions).

Click on the Radio Station icon.



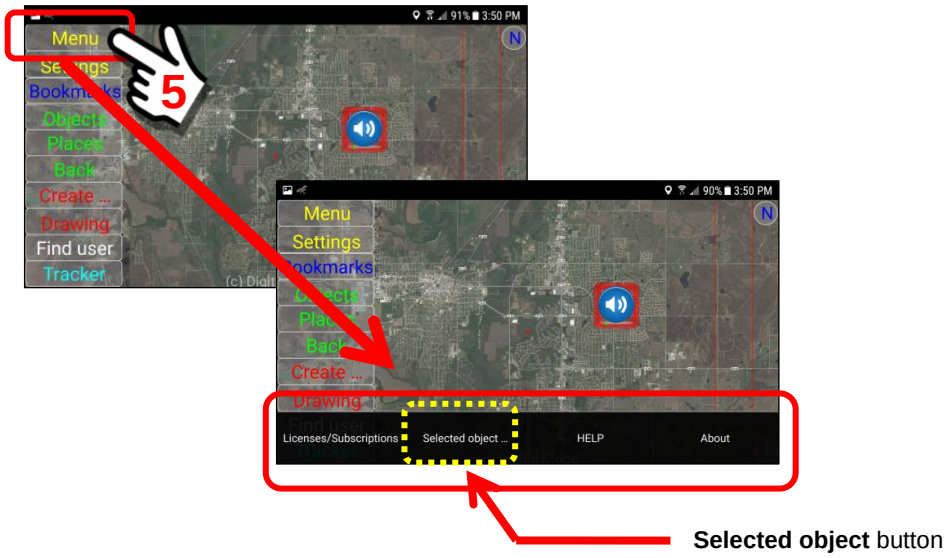
Short Click

5. ***Click on the Menu Button on the Main Map Screen.***
Now that we have "selected" the Radio Station icon as an active object (red box) we need to configure the motion animation features.

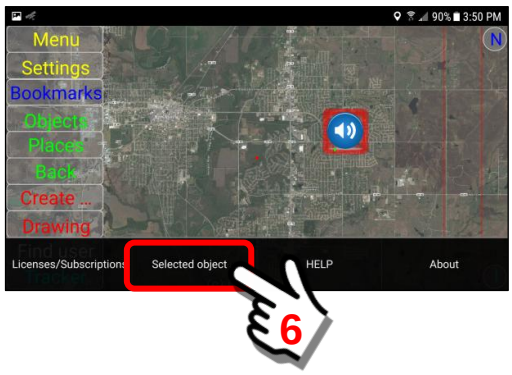


The Menu Button will open the Menu Panel at the bottom of the screen. Since we are operating on a Foreground Layer, it will not have all of the menu options you would have if you were at the Main Map Screen panel.

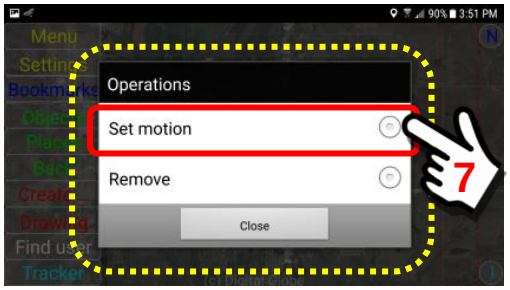
We are looking for the "**Selected Object …**" menu option.



6. ***Click the "Selected object" Button located on the Menu Bar.***
To gain access to the Motion/Animation features, click on the "Selected object" Button. This will launch a pop-up Operations Menu.

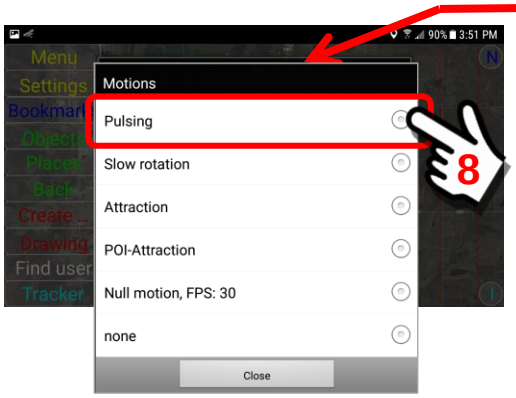


Select the "Set motion" menu option on the Operations Panel.

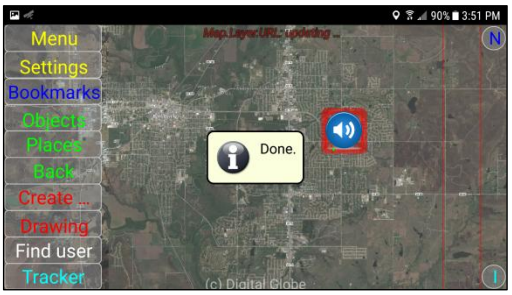


7. ***Select the "Pulsing" Menu option on the Motions Panel.***
A Motions Panel will open with 6 menu options. In this example, we will select the first option … Pulsing.

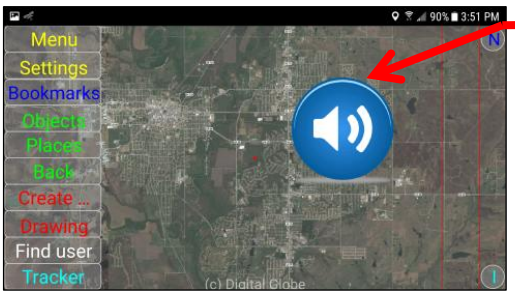
Click on the "Pulsing" Option.



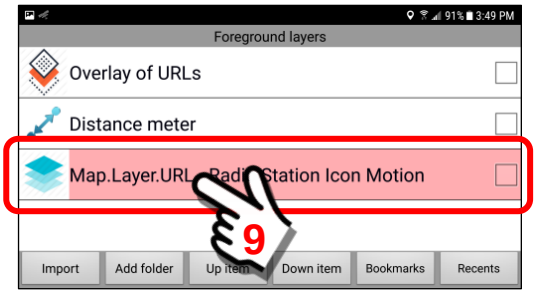
8. ***Confirmation of a successful menu selection.***
If the "Pulsing" option is successful the screen will provide a confirmation message "Done" that will display for a few moments.

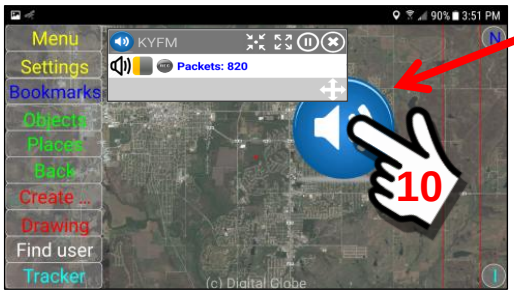


The Radio Station embedded object will now be saved as a Foreground Layer URL "pulsing" object. The screen will then return to the Foreground Layer display and the Radio Station icon will "pulse" three times at 3 second intervals.



9. ***The embedded icon is now an "active" pulsing URL link.***
To "test" the embedded pulsing URL, use the screen "back" button and return to the Foreground Layers screen. Click on the Radio Station bookmark. The KYFM Radio Station icon should appear and "pulse" three times before becoming static. Click on the icon to launch the floating window for the Radio Station.

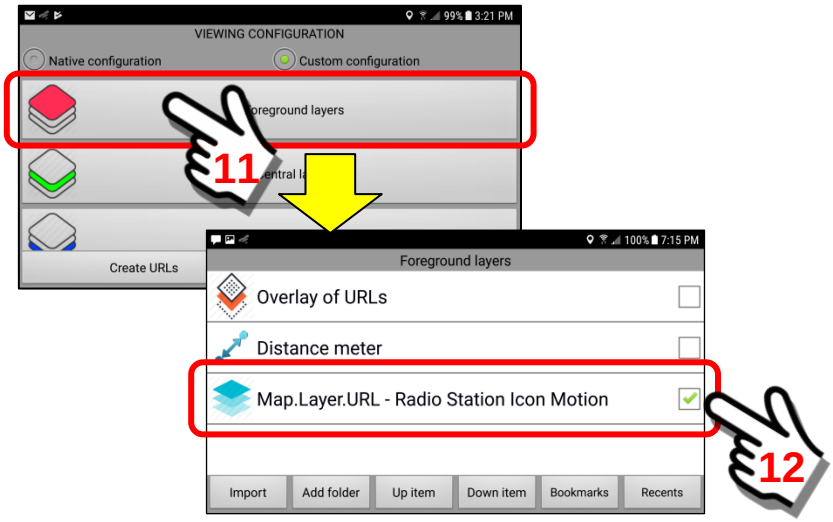




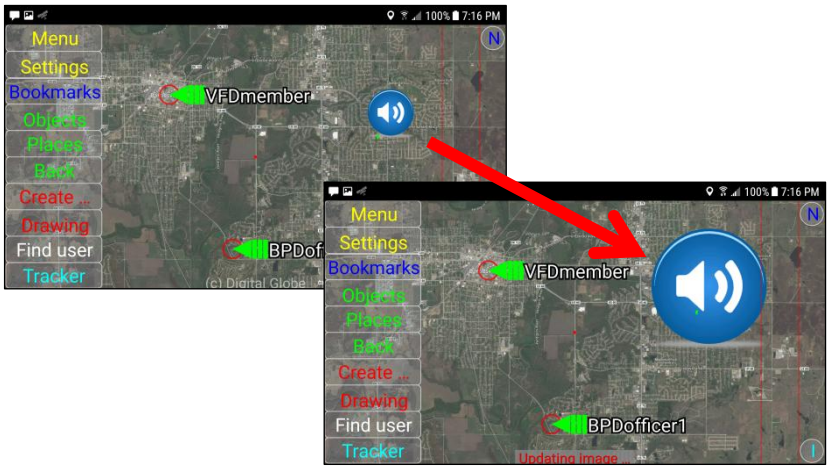
Pulsating Radio Station embedded object.

10. ***Launch the Radio Station Icon in a Foreground Layer.***
To test the Foreground Layers ability to launch the pulsing Radio Station icon, navigate to the Viewing Configuration Panel.

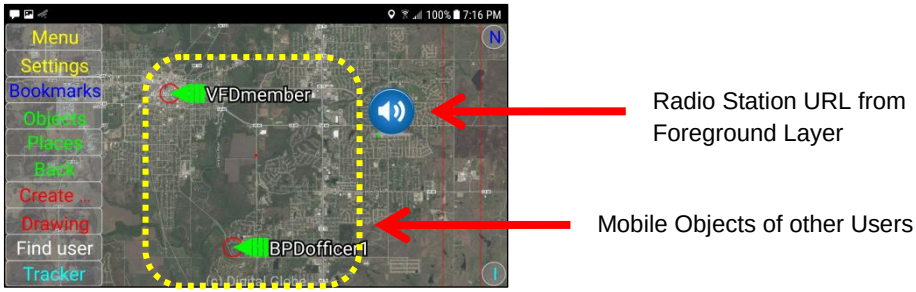
Click on the Foreground Layers Button.



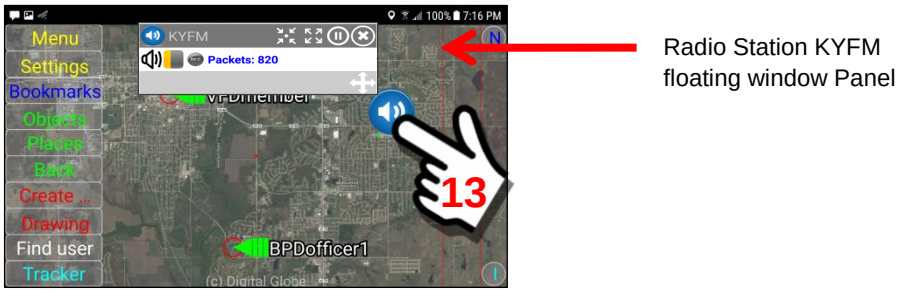
Use the “back” button on your mobile device and return to the Main Map Screen. As the screen is displayed, notice that the Radio Station icon will now “pulse” three times (get bigger and smaller) over a period of 6 seconds.



As the “pulsing” motion completes, the Radio Station icon will return to normal size and a static state. The Main Map Screen now contains the selected mobile objects (of other users) and the Foreground Layer that contains the Radio Station URL link.



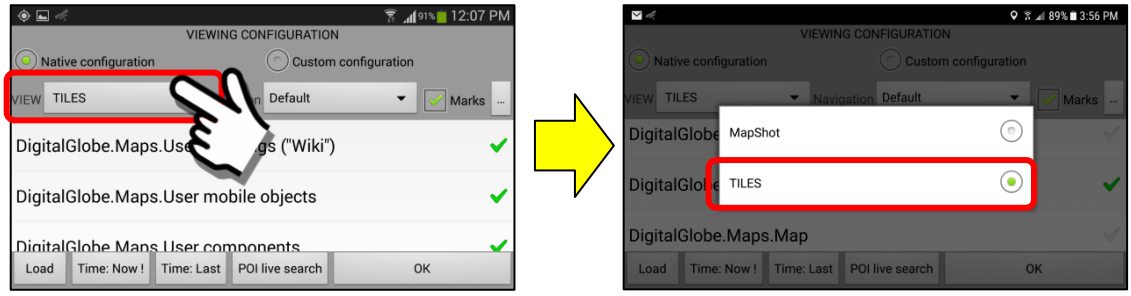
The Radio Station URL may now be “activated” by clicking on the blue speaker icon. This will launch the floating window panel for Radio Station KYFM.



8.6. View Mode

Overview:

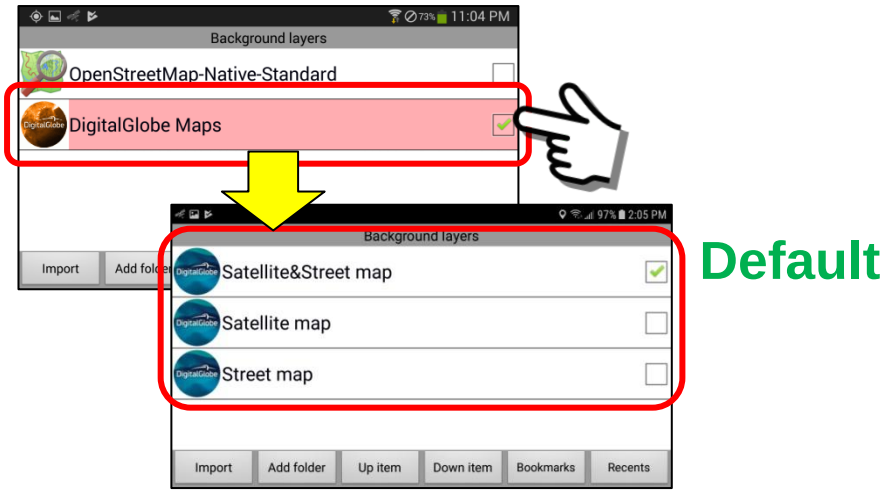
The View Mode option has two menu choices. These will select either the primary satellite/map provider (Tiles) or alternative imagery (Mapshot) that may be available from a variety of sources. The default setting is “Tiles”.



Review of Mapshot and Tiles options:

1. ***Tiles Option.***
   The “Tiles” option is the default View Mode for mobile devices. The “tiles” term refers to 256pixel X 256pixel imagery tiles that are provided by the satellite imagery provider. This option provides high resolution imagery for most of North America and Western Europe.

   The DigitalGlobe Map options are located in the Background Layers folder.

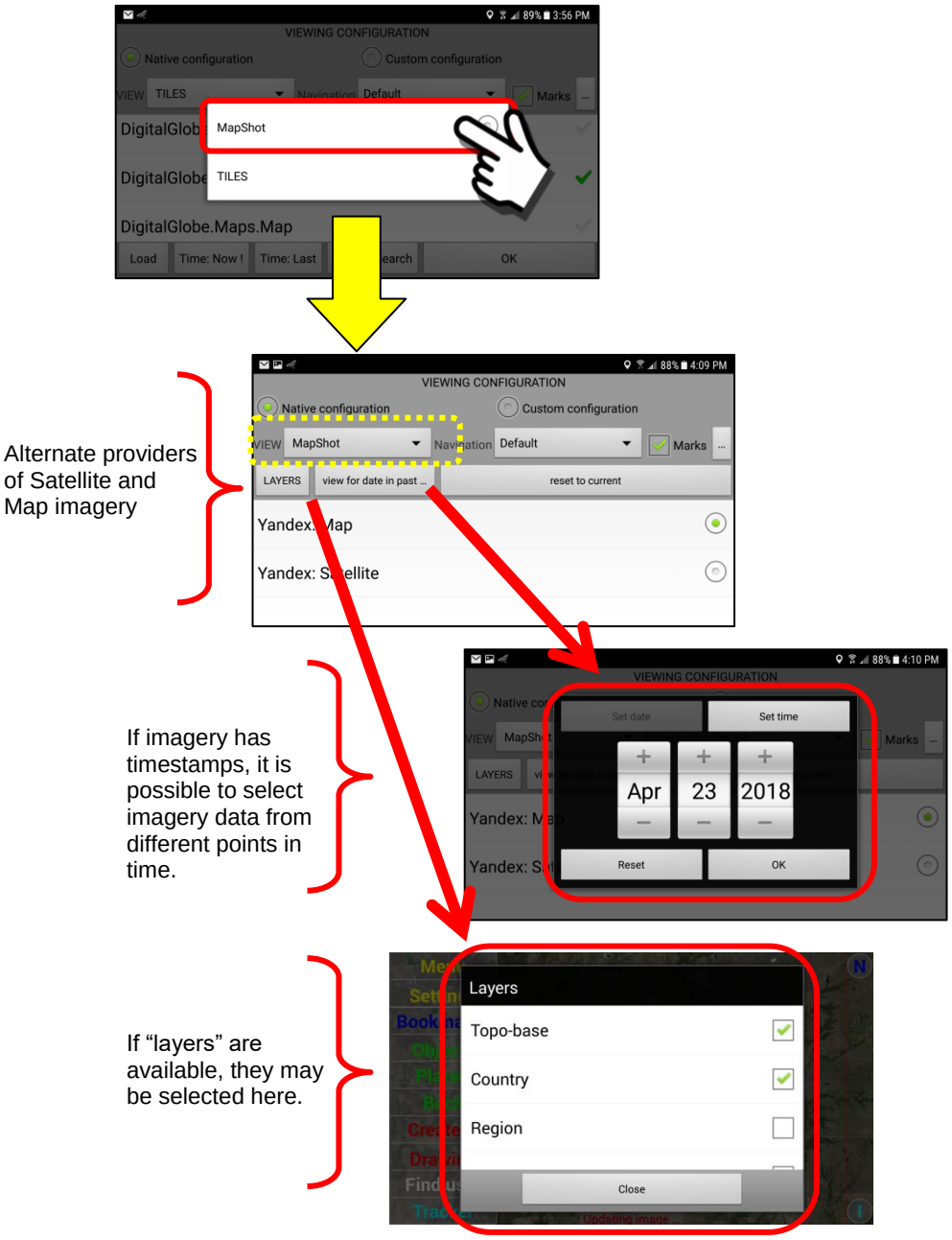


   During an initial install of the MapBox/DigitalGlobe Maps, the “**Satellite&Street map**” option will be installed by default.

2. ***Mapshot Option.***

The “Mapshot” option is an alternate view mode for mobile devices. The “Mapshot” term refers to graphical images (Maps) that may be provided by other sources than the primary satellite image provider. There are several regions of the world where satellite imagery is either “restricted” or where high resolution imagery is not available (ie Russia, China/Asia, etc.). In those situations alternate sources of imagery may be available. If so, they would be stored under the Mapshot menu choice.

Shown below is an example of imagery choices provided by Yandex of the Russian Federation.



8.7. Navigation Mode

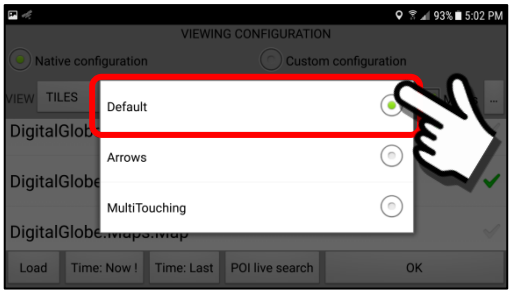
Overview:

The Navigation Mode options allow a user to select “how” they want to manipulate the screen pan/zoom functions on the display of the Sentry MDU mobile device. The default setting is listed as “Default” and it allows a ***finger swipe*** to zoom the screen in-out and rotate the screen.

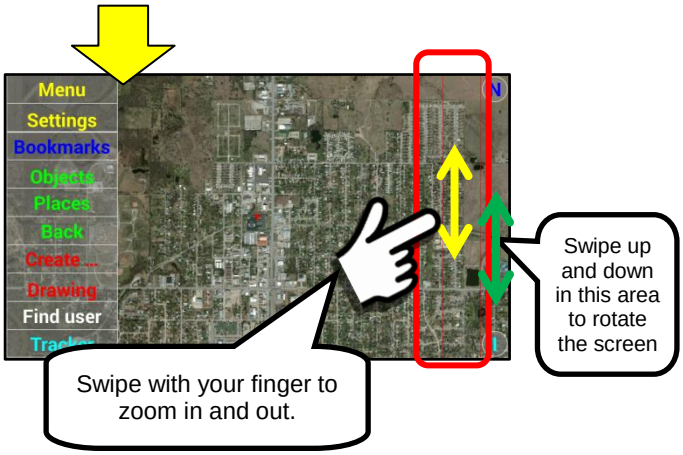
Navigation Mode options (Default, Arrows, MultiTouching):

1. ***Default***

   The “Default” Navigation Mode provides two vertical panels located on the right side of the screen. A finger swipe up and down the screen within the vertical red lines will both zoom in-out and/or rotate the screen.

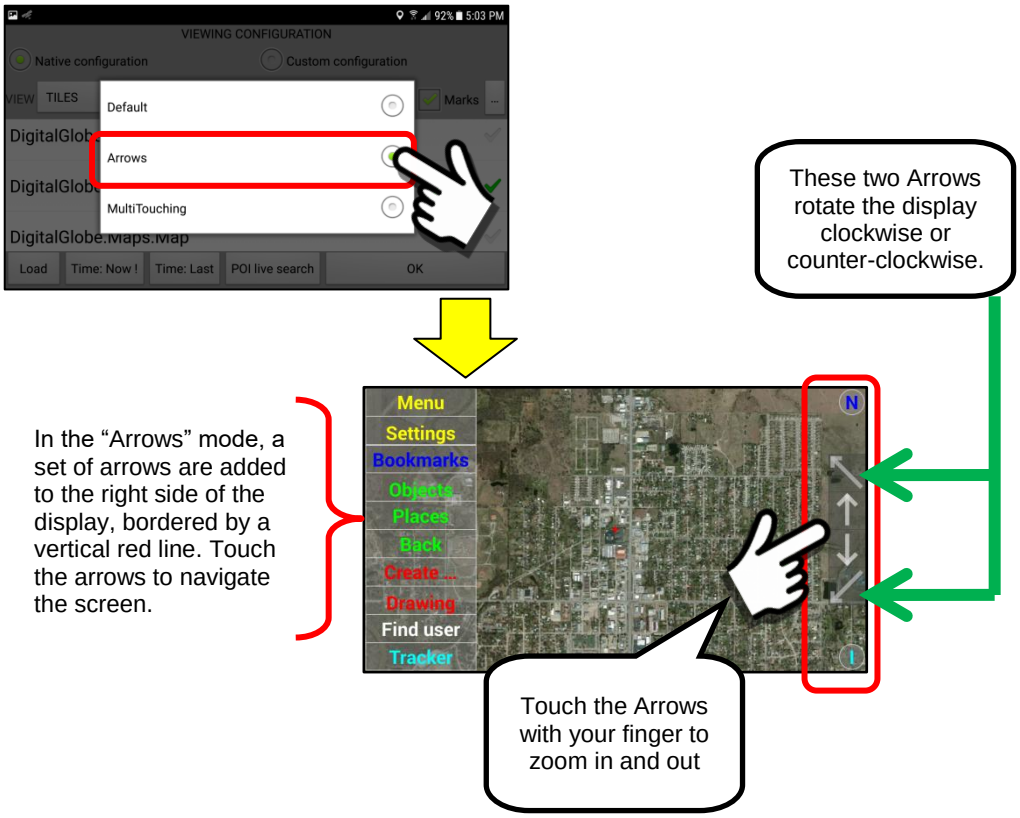


In the “Default” mode, a panel is added to the right side of the display, bordered by the vertical red lines. Swipe your finger up and down to zoom in and out.



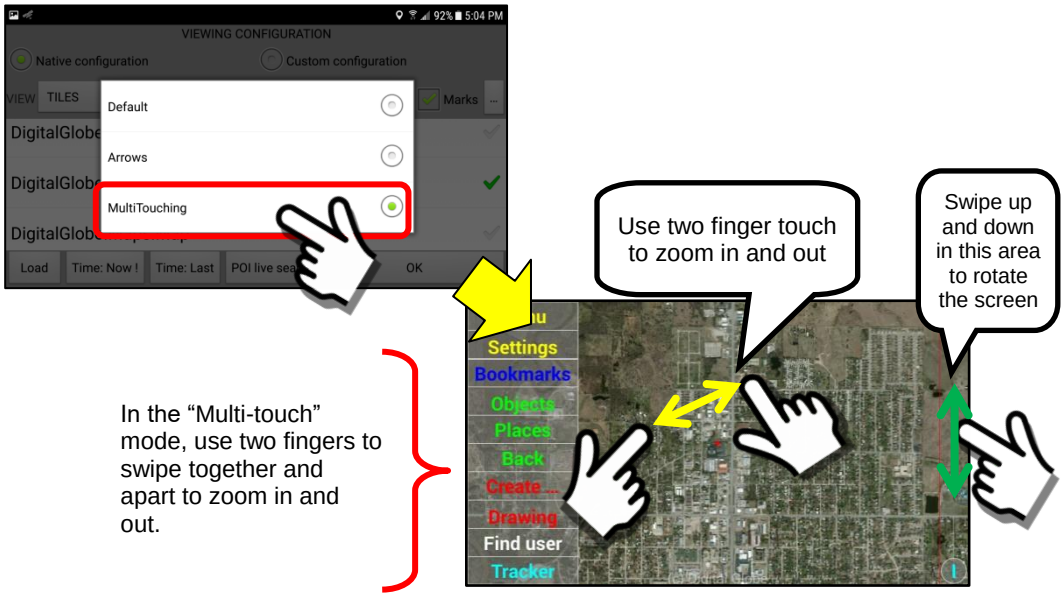
2. *Arrows*

The “Arrows” Navigation Mode provides a user a set of gray navigation arrows located on the right side of the screen panel. By touching the arrows a user may zoom in-out and rotate the screen.



3. *MultiTouching*

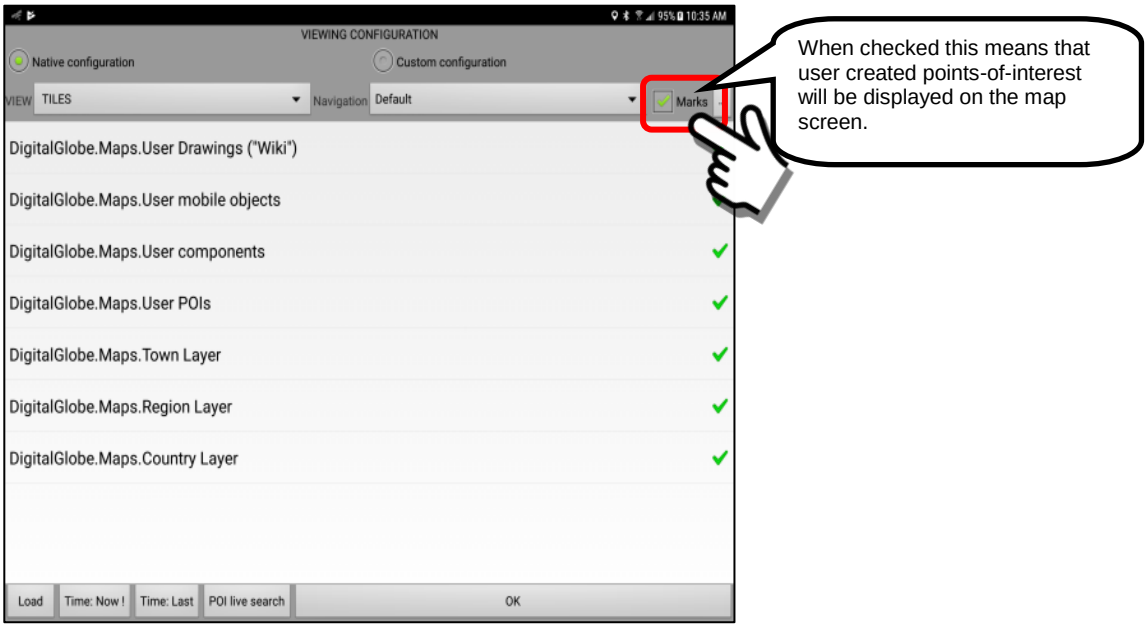
The “MultiTouching” Navigation Mode allows a two finger pinch-spread navigation movement to zoom the screen in-out. The screen rotation is accomplished by a ***finger swipe*** on the right side of the screen panel.



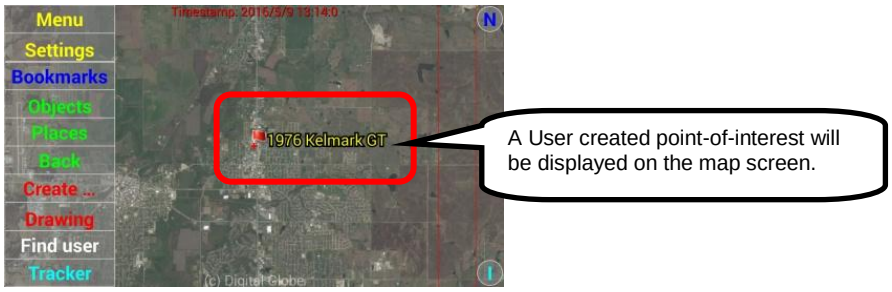
8.8. Marks checkbox

Overview:

The “Marks” checkbox refers to the Point-of-Interest “marks” that a user has designated on the mobile device. By checking the “checkbox” this indicates that the point-of-interest marks will be displayed. The default is “checked” (to display the POI’s).



Example – User Point-of-Interest



8.9. Marks Layers selection panel

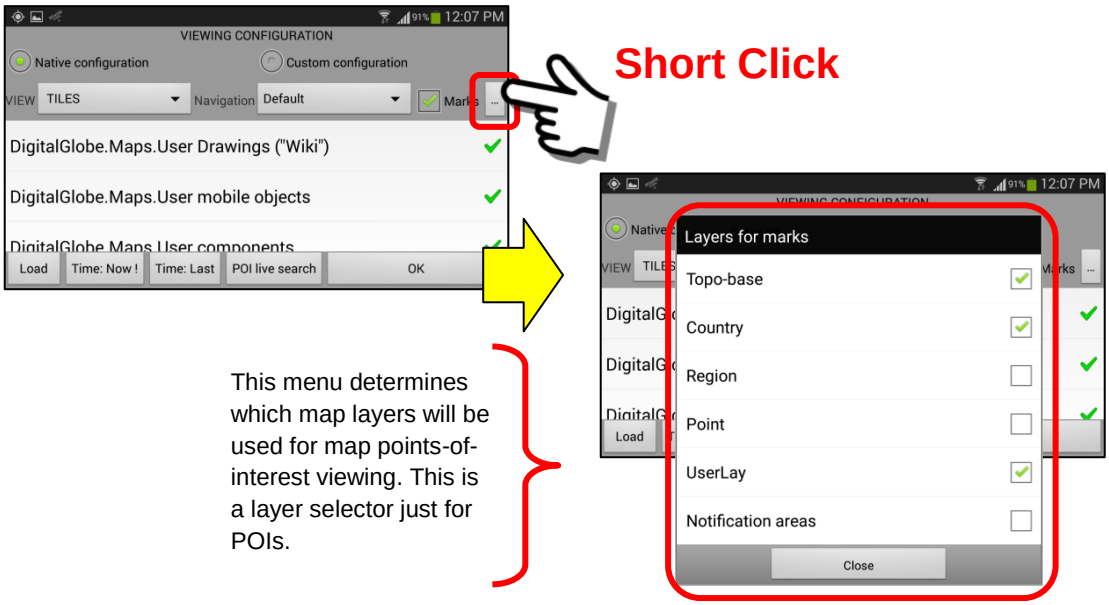
Overview:

This feature allows a user to select the “Map Layers” upon which points-of-interest “marks” will be displayed. In addition, when “Long clicked”, the button does a quick launch of the “POI Live Search” Feature.

These concepts will be described in this section.

Map Layers to display points-of-interest marks:

The Viewing Configuration panel provides a selection of menu options to designate which map layers will be used for displaying points-of-interest.



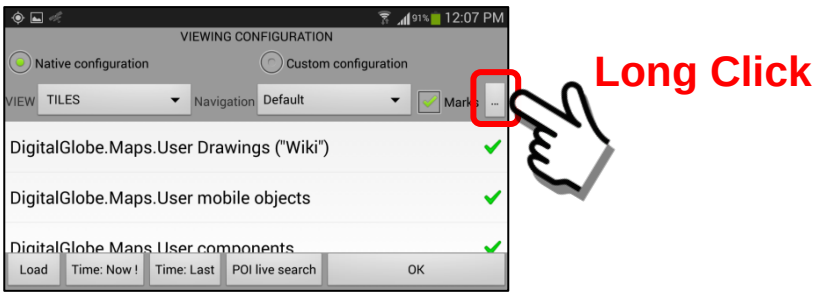
This menu determines which map layers will be used for map points-of-interest viewing. This is a layer selector just for POIs.

Description of menu choices:

1. ***Topo-base***
   This is the base map layer.
2. ***Country***
   Currently not active. This is when mapping includes country border designations.
3. ***Region***
   Currently not active. This is when mapping includes regional designations.
4. ***Point***
   User designated points-of-interest.
5. ***UserLay***
   User Components, Drawings and Mobile Objects. The floating icon (Green Dot) from the POI Live Search feature will not be displayed unless this item is active (checked).
6. ***Notification areas***
   User designated notification areas.

“Quick” Launch of POI Live Search Panel:

The quick launch “POI Live Search” feature allows a user to view the location of “Point-of-Interest” objects using an augmented reality feature that provides for a point image overlay on a “live” camera view. Although there is a dedicated button located at the bottom of the Viewing Configuration Panel, we have provided this “alternate” launch feature by performing a “Long click” on the Marks Layers Button.

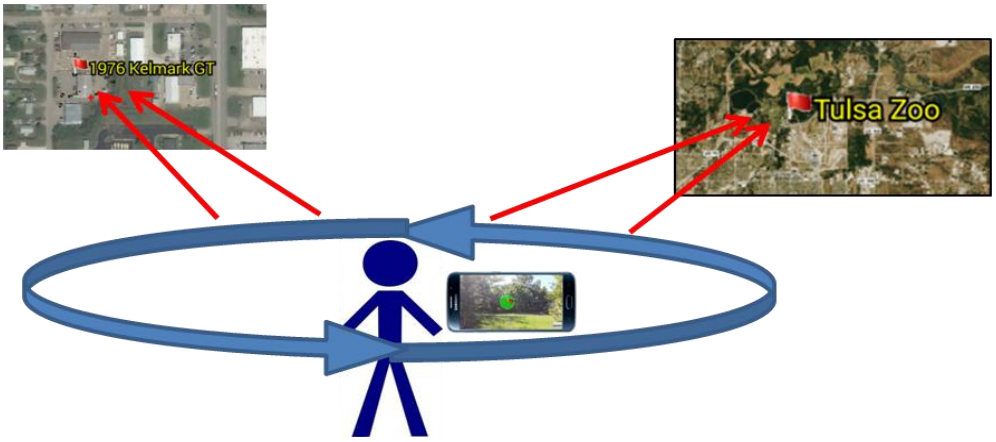


As a User points the camera of the mobile device in the direction of a point-of-interest, a floating green dot appears in the direction of the POI.

A specific location within the Tulsa Zoo is 58 Km, 221 meters from the User current location.

Point-of-Interest and distance from User location

This allows a user to determine the “compass direction” of the POI from a reference point on the Map. This feature uses the GPS coordinates of the reference point (or User location) and selected POI’s to determine heading and distance. The name of the point-of-interest, and the distance from the reference point to the POI (in Km) is displayed on the image overlay. The size of the green dot is relative to the distance to the object (small dots farther away, large dots, closer). See **Section 8.11** for a full description of the POI Search Feature. Also see Section 15.2.10 on the display of both Public and Private POIs.



8.10. Load, Time:Now! and Time:Last Buttons

Overview:

The Viewing Configuration panel has a set of 5 buttons at the bottom of the screen. These buttons facilitate loading of imagery for new map updates and for displaying Point-of-Interest layers. This section will describe the function of these buttons.

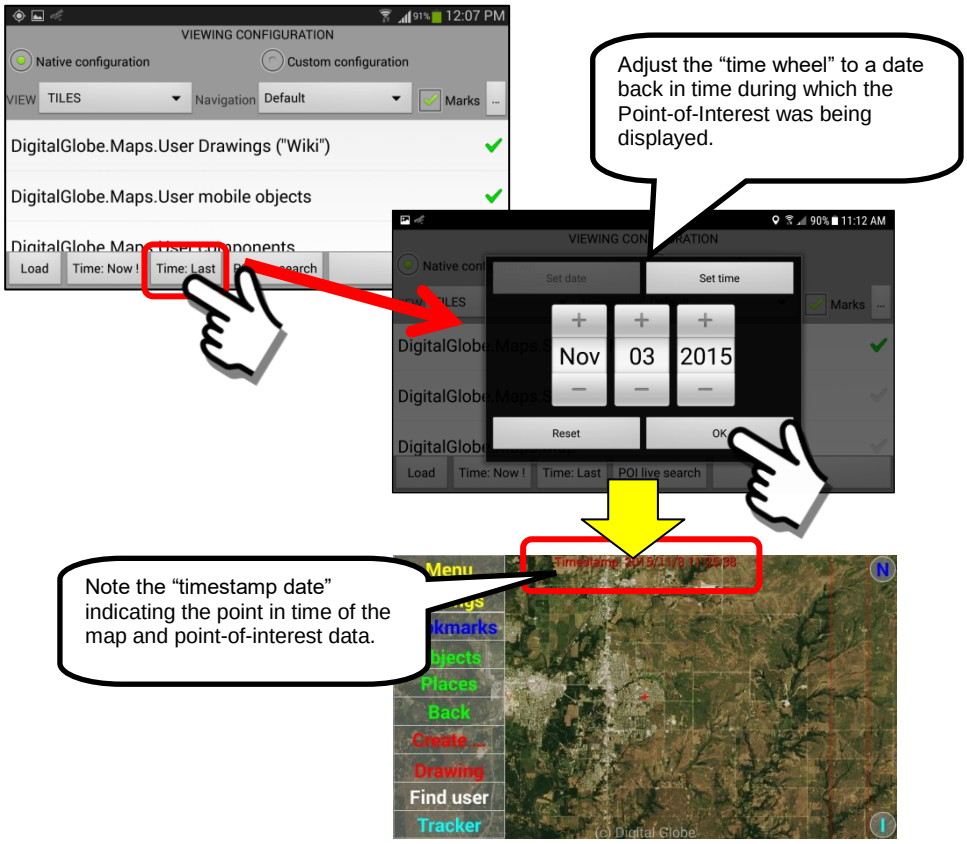
Description of button functions:

1. ***Load***

   The first time the Viewing Configuration panel is opened (after program installation) the full maps list will be loaded automatically. The "Load" Button is only used in the event that the map list is updated on the Data Server. In normal operation, the "Load" Button is not used.

2. ***Time: Now! and Time: Last Buttons***

   The "Time: Now!" and "Time: Last" Buttons allow a user to view map objects that were created in the "past". For example, a "Point-of-Interest" object, by default, has a display lifetime of one month (adjustable with the SentryMDU Desktop Client). This means that a newly created POI is visible on the map for only one month. After that time the POI disappears from view. The "Time: Last" button allows a user to return to a certain time in the past and see the "Points-of-Interest" that were on display at that time (see old POIs). The "Time: Now!" button returns the map view to the present time state.



8.11. The POI Live Search Button

Overview:

The Viewing Configuration panel has a set of 5 buttons at the bottom of the screen. The "POI Live Search" Button allows a user to view the location of "Point-of-Interest" objects using an augmented reality feature that provides for a point image overlay on a "live" camera view. This section will describe the function of this button.

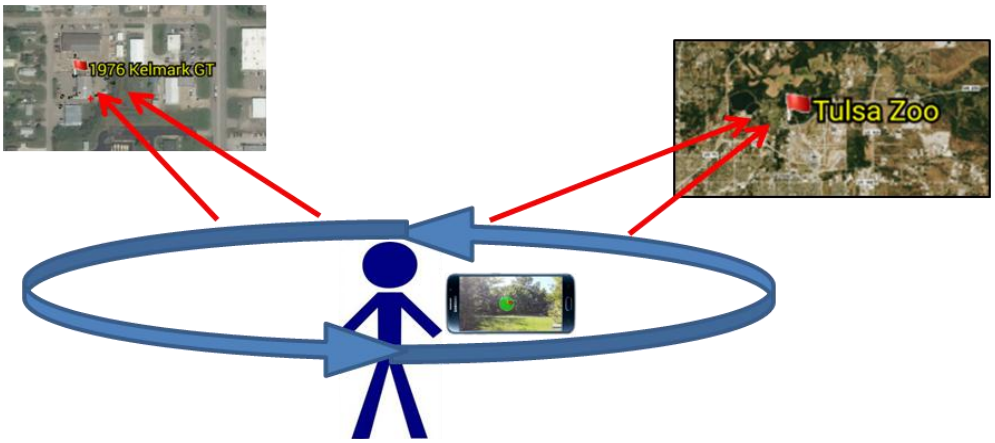
Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, the Live Search feature will NOT work.

As a User points the camera of the mobile device in the direction of a point-of-interest, a floating green dot appears in the direction of the POI.

A specific location within the Tulsa Zoo is 58 Km, 221 meters from the User current location.

Point-of-Interest and distance from User location

This allows a user to determine the "compass direction" of the POI from a reference point on the Map. This feature uses the GPS coordinates of the reference point (or User location) and selected POI's to determine heading and distance. The name of the point-of-interest, and the distance from the reference point to the POI (in Km) is displayed on the image overlay. The size of the green dot is relative to the distance to the object (small dots farther away, large dots, closer).

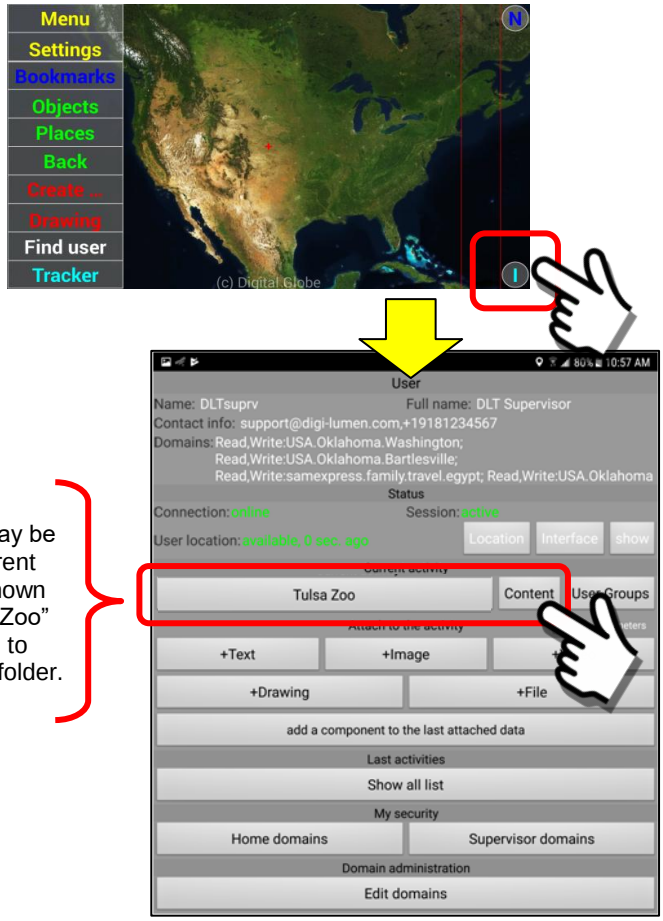


The following section will provide an example of the POI live search feature.

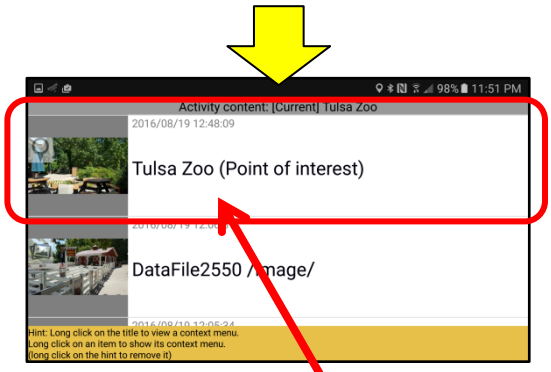
Description of button functions:

1. ***Preparations to use the "POI Live Search" feature***
   To use the POI Live Search feature a number of steps must be taken in preparation. These will be listed and explained below.

   a. You must have created points-of-interest on your mobile device, imported them from other Users and/or have sufficient security access to view public POI's on the Sentry MDU network. Check the Content section to verify you have POI's.

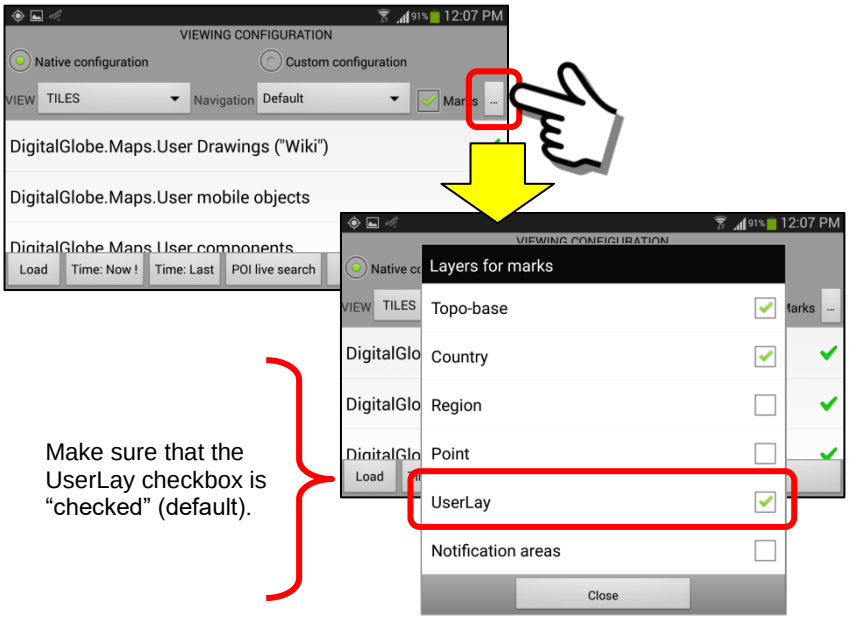


Note that POI's may be stored under different activity folders. Shown here is the "Tulsa Zoo" Folder. Make sure to select the correct folder.

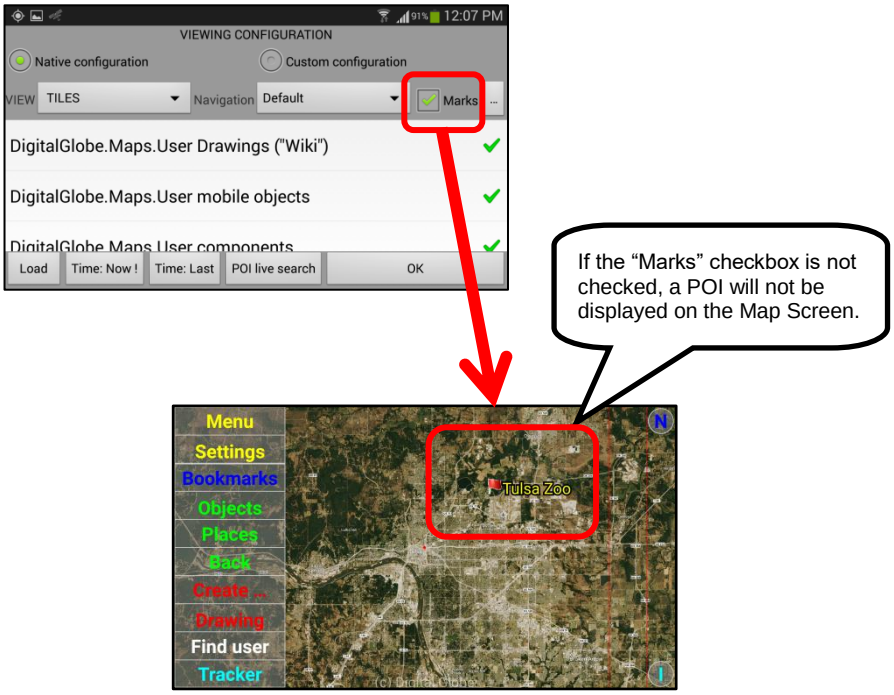


We have a point-of-interest in the Content Folder

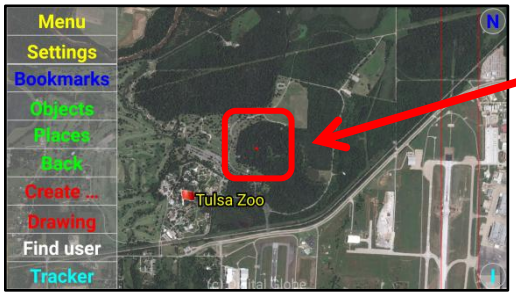
b. The “UserLay” (User Layer) checkbox must be “checked” (activated) in order for the point-of-interest floating icon to be displayed on the live camera view screen. This is normally the default setting.



c. If you want to see the POI’s on a Map View screen, make sure that the “Marks” checkbox is “checked” (active). Although this is not necessary for the POI Live Search feature to work, if you want to see the POI’s on your Map View, you will need this activated.



d. Place the center of the Map screen (designated by a “red” plus sign +) to a reference location from which to view the POI. The system will assume that the User is standing at the location of the red plus sign. As the user, you may put the plus sign at your current GPS location, or you may choose to put it at any other location on the map and the Sentry MDU System will assume you are now standing at this “new” location. All compass headings and distances will be relative to the new virtual location.

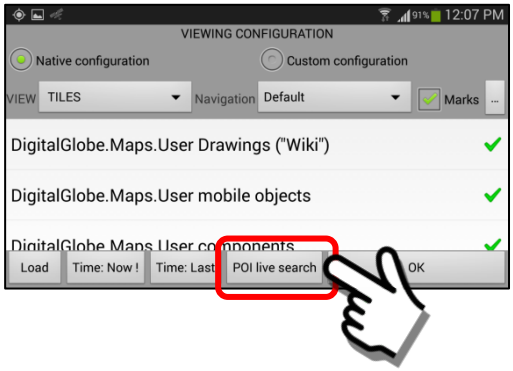


Note the red plus sign (+). This will be the GPS location that the Sentry MDU System uses as the virtual location of the User.

In this example, the User would be looking southwest from the virtual location towards the Tulsa Zoo.

2. ***Launching the “POI Live Search” feature***

Once you have verified that you have POI’s and the User Layers checkbox is activated, click on the “POI Live Search” button.



3. ***POI Live Search display panel***

The “POI Live Search” display panel uses the camera on the mobile device to show a “live view” of the scene with a floating icon representing the location (compass direction) and distance to the selected Point-of-Interest.

In this example, if a User walked 58 Km, 221 meters in the direction of the crosshairs on the green dot, they would arrive at the Tulsa Zoo.

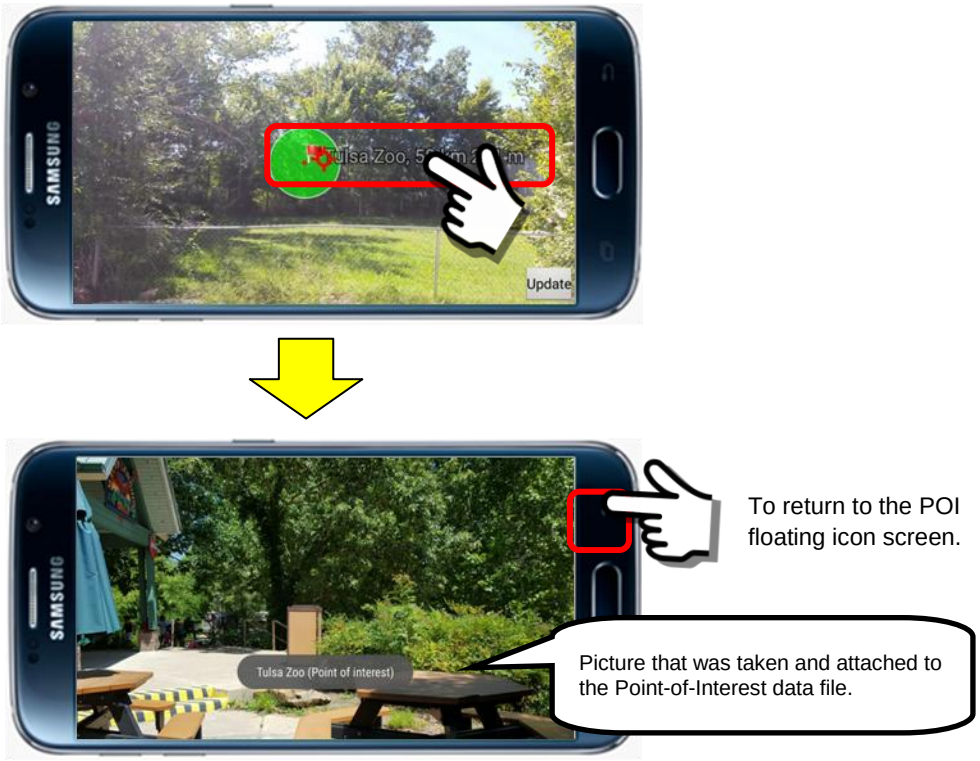
4. ***Additional information available about the POI***

The “POI Live Search” feature also provides a method for the User to access additional information about the POI. As explained in Section 15.2.10, once a point of interest is created a user may then “attach” text, pictures, videos, drawings and files to this POI.

To access the additional information stored about a POI, perform a “click” on the POI name. If multiple data items are stored for the POI (ie text, images, videos, etc.) a separate panel will open providing the User a choice to select the data they would like to view.

In our example of the Tulsa Zoo, we have stored a single picture that was taken and stored for this POI at the location.

Click on the POI name.



Click on the “back” Button to return to the POI virtual location screen.

5. ***Application of the POI Live Search feature***

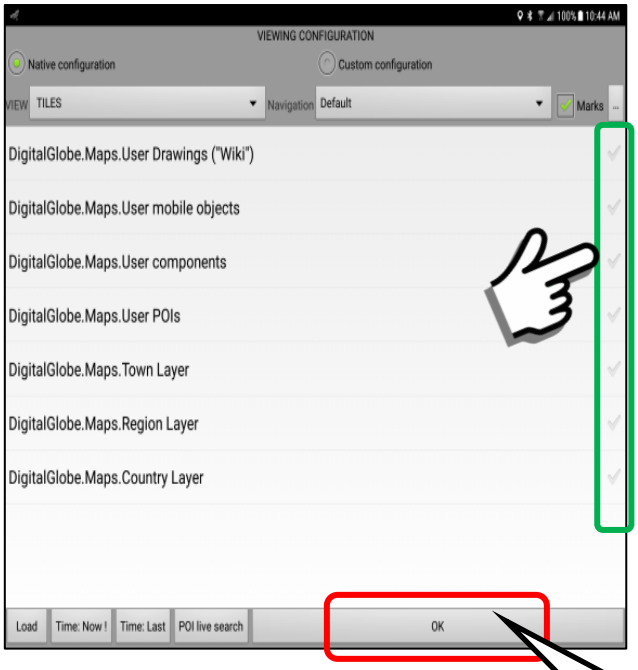
The “POI Live Search” feature allows a User to locate a point-of-interest via a virtual location overlay display. Multiple POI’s may be displayed simultaneously on the panel with each providing an indication of distance and position relative to a user location or selected reference point.

8.12. Maps, Icons, Objects and Components display options

Overview:

The Sentry MDU System can display a variety of user data on the main map screen. The Viewing Configuration panel allows a user to turn on-off specific icons, components and mobile objects so they are only displayed when needed.

During an "initial install" the default setting is to "uncheck" (inactivate) all items. However, it is recommended to "check" (activate) all items.



User Drawings layer shows the drawing created by a user via the "Drawing" Menu Option.

User Mobile Objects layer shows user Tracker Objects.

User Components layer shows objects created by a user via the "Create …" Menu Option.

POI's, known as "Points of Interest" will display user created points of interest created via the Tracker Panel.

Country, Region and Town layers are currently NOT being used. It is a "future" enhancement that will eventually contain "border" markings for these areas.

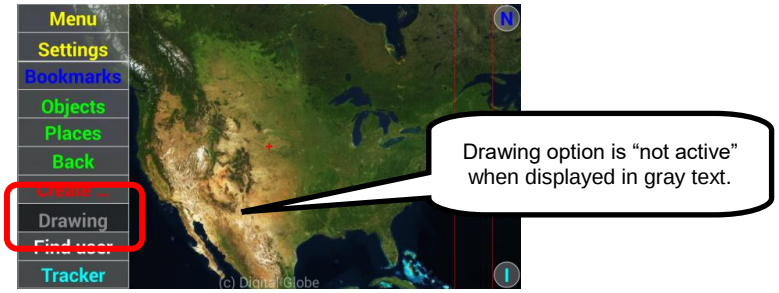
After your selection, click "OK" to save your selections.

Description of the display options selected by the User:

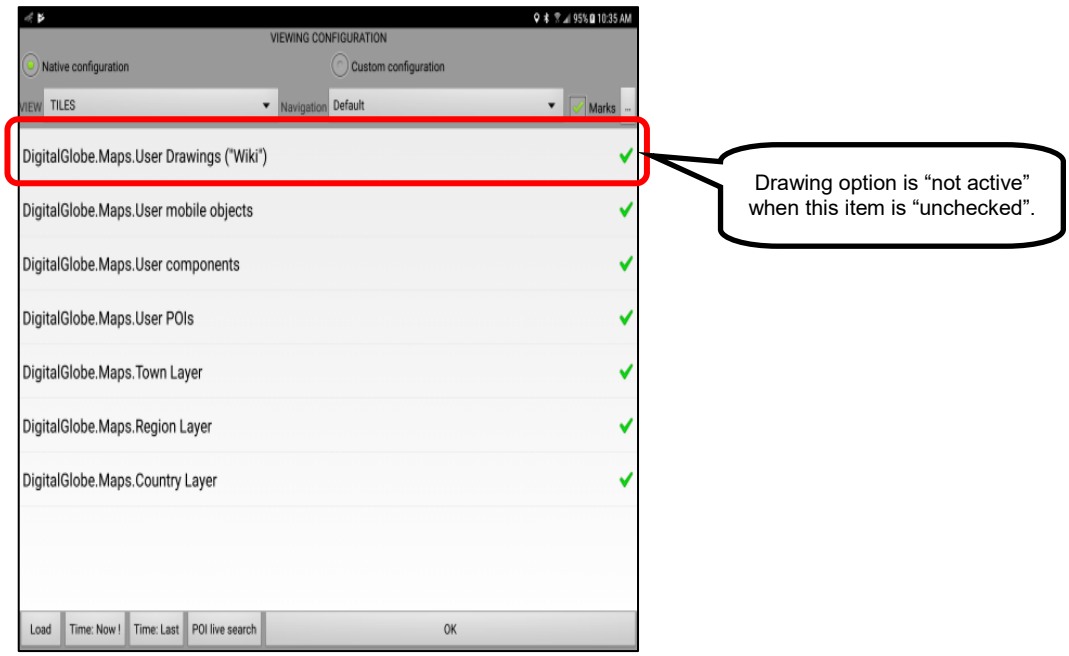
1. ***Turning the DRAWING feature on-off.***
   The Main Menu screen "Drawing" option can be affected by the selection on the Settings Menu. The default setting is for the "Drawings" option to be active on the Main Screen as shown below.

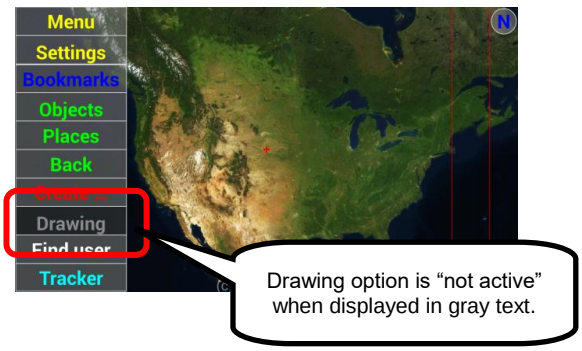
Drawing option is "active" when displayed in red text.

When displayed in “gray” text, the “Drawing” option is not active.



On the Settings Menu, if the “User Drawings” (Wiki) option is “unchecked”, then the Main Menu “Drawings” choice will be made inactive.





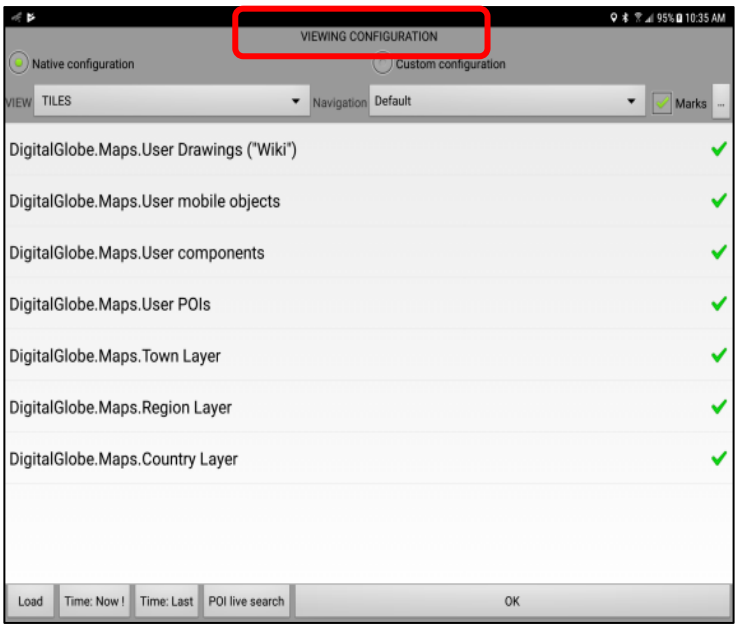
8.13. Satellite Image and Map Tile usage data

Overview:

The Sentry MDU System, as part of our license agreement with the imagery provider, is required to maintain a record of the image tile usage on the device. This information is reported periodically to the Licensor as part of the Imagery Contract. The Sentry MDU App user license allows for a significant usage of map tiles "per user" on a monthly basis. In the unlikely event a User exceeds the designated threshold for their user "class" they may be required to upgrade their account if they wish to continue with high usage rates. This section shows how a user can access the tile usage statistics of their mobile device.

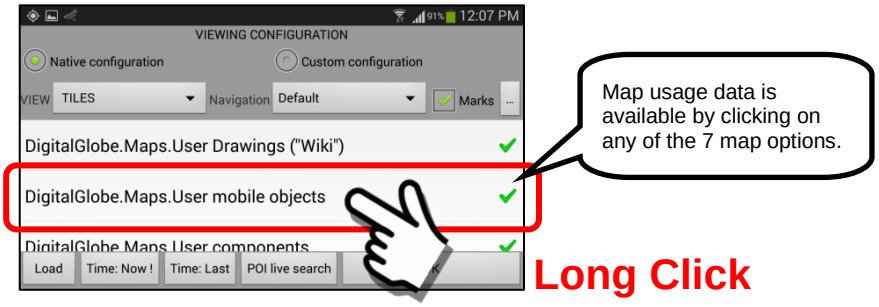
> **Important Note: Tile usage data ONLY applies to Subscription and Licensed Users that purchase enhanced satellite imagery. This does NOT apply to FREE users of the system.**

The data is available on the Viewing Configuration Panel.

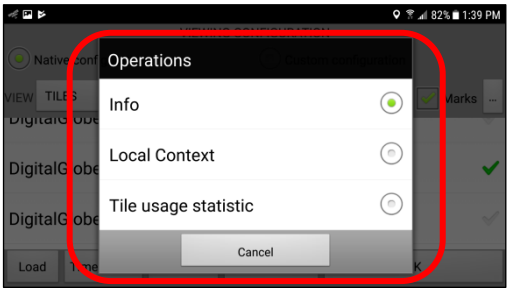


Description of the available Imagery Tile usage options:

1. ***To access the tile usage data.***
   The tile usage data is available by performing a "Long click" next to **any** MapBox/DigitalGlobe Maps Layer object that has a green "checkmark" next to the name.



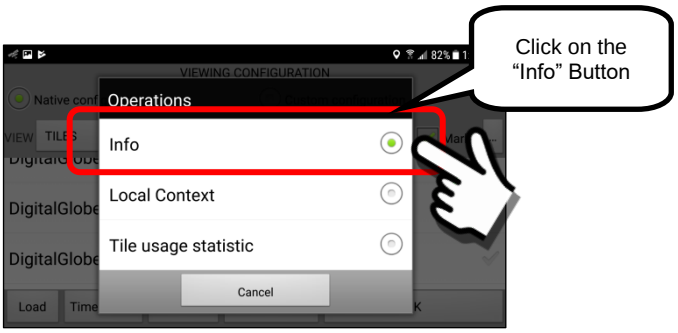
Perform a “Long click” on any Viewing Configuration map layer and the Operations Panel will open.



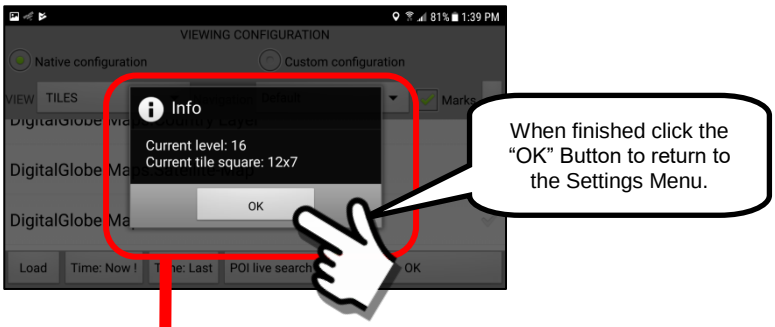
Menu options available for satellite imagery.

2. ***The tile information (Info) Option.***

The “Info” Button provides a User with the map overlay “zoom level” and the current tile square reference point that is at the map center of the Main Screen.



The Info Panel will open showing the tile reference information. Generally, this data is of little use to Users but may be of value to Developers.



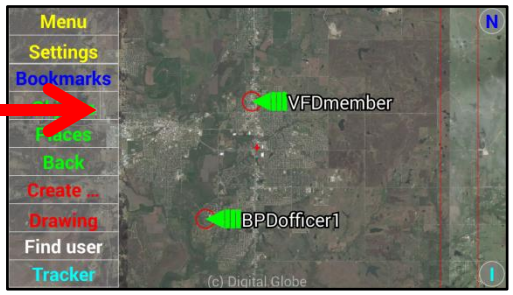


Illustration of Level 16 zoom level

3. *The Local Context menu option.*

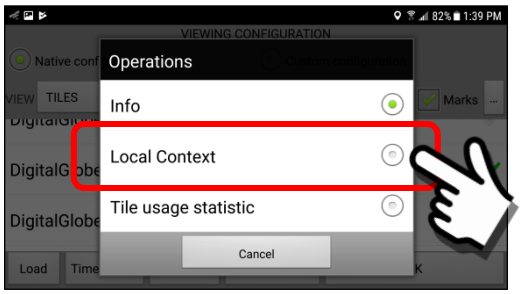
The Local Context menu option allows a user to purge (erase) and re-establish an imagery tile set on the mobile device. In most cases, this option would be used by First Responders and Search & Rescue organizations.

The world is a BIG place. Imagery tiles, by industry standard, are provided in 256 x 256 pixel resolution blocks encompassing almost 20 vertical levels (gives zoom capability). Map and satellite imagery files would take up a lot of memory storage on a mobile device if you were to have the whole world (approx 54 TB). The SentryMDU System, via the MapBox/DigitalGlobe tile server, delivers imagery/map tiles to your mobile device “on-demand”.

The SentryMDU System also allows your mobile device to cache the imagery/map tiles that you use most often on the device (local context). The system does this automatically. This enables faster response and the GPS location functions, relative to tracking and point-of-interest features, to still work even without a network connection. This feature provides “Search & Rescue” and other First Responders the ability to work in a “standalone mode” without a cellular/internet connection (ie natural disasters or remote locations).

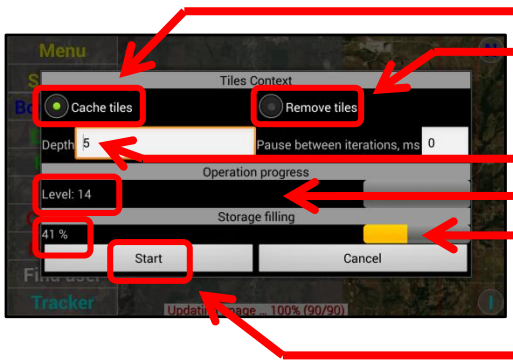
The “Local Context” menu option allows a user to remove the satellite/map tiles that are cached on the local device and “reload” additional/new imagery tiles on the device.

To access the “Local Context” data, click on the **Local Context** choice.



The following screen functions are available.

Tiles Context Panel



Button to install a “new” tile set

Button to remove the existing tile set

Number of file imagery levels to replace/remove

Current zoom “level” of the Main Map Screen

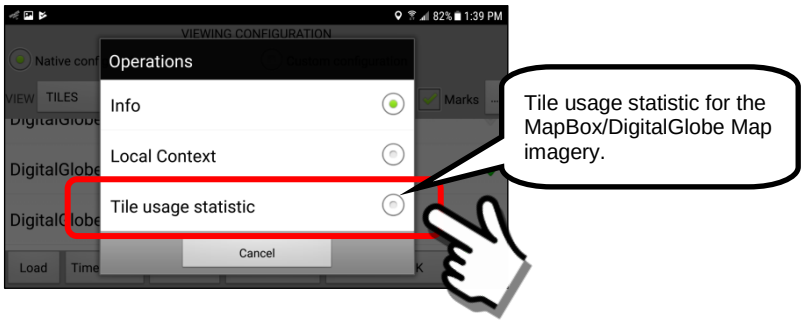
% of memory being used on the mobile device

Button to start the process

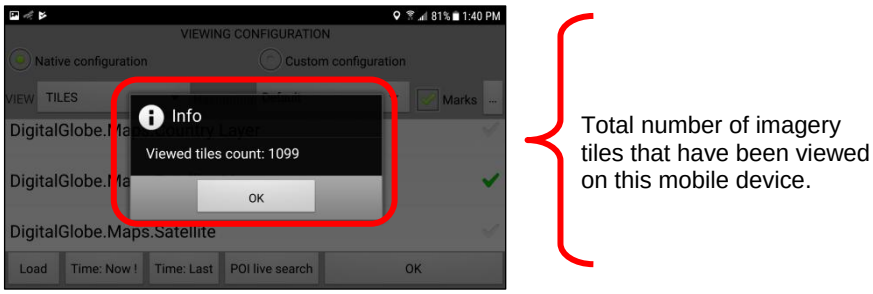
4. ***The "Tile Usage Statistic" option.***

Tile usage data is available for MapBox/DigitalGlobe map sets. To see the data, perform a "Long click" on any Viewing Configuration map layer choice and select the "Tile usage statistic" option.

The steps are illustrated below:



Clicking on the "Tile usage statistic" option will open an Information Panel that will display the total number of viewed tiles accumulated on this mobile device.



This number is reported periodically to the SentryMDU Data Server to satisfy licensing requirements of the imagery content.

9. The “Bookmarks” Button features

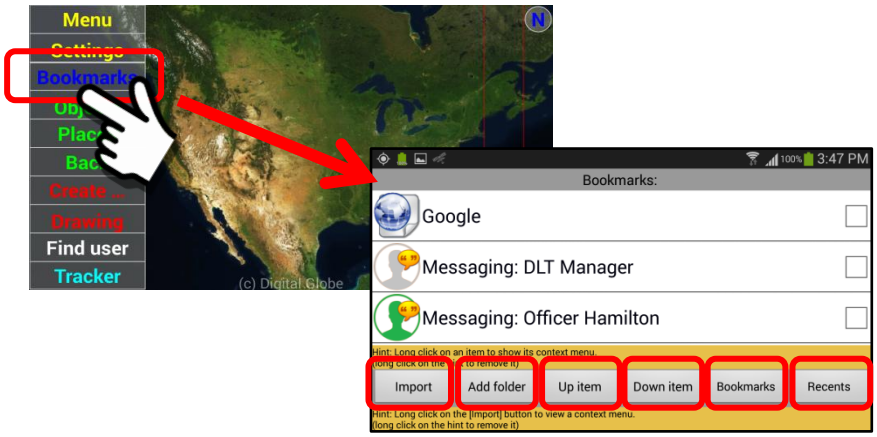
9.1. Overview of the Bookmarks panel

Overview:

The “Bookmarks” feature allows a user to save a SHORTCUT to various functions of the mobile device. If a particular feature is used on a regular basis, a “bookmark” can be created so that a user can access it with a few simple clicks without having to navigate the menus.

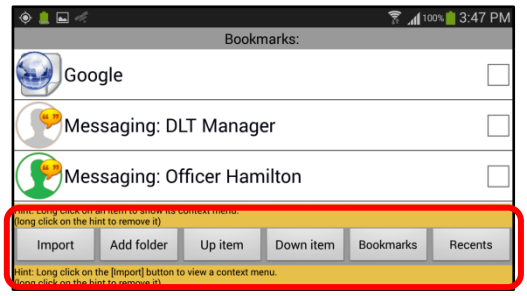
Sentry MDU bookmarks panel:

As shown below the Bookmarks panel has six primary buttons.



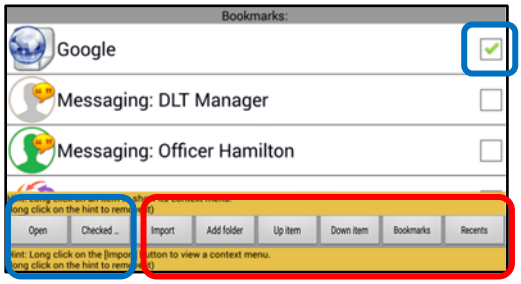
General Layout of the Bookmarks Panel:

The Bookmarks Panel provides two modes of display depending on the level of detail desired by the User. These two formats are shown below.



Standard Menu

The “default” Standard Menu is what normally appears when the Bookmarks Button is clicked.



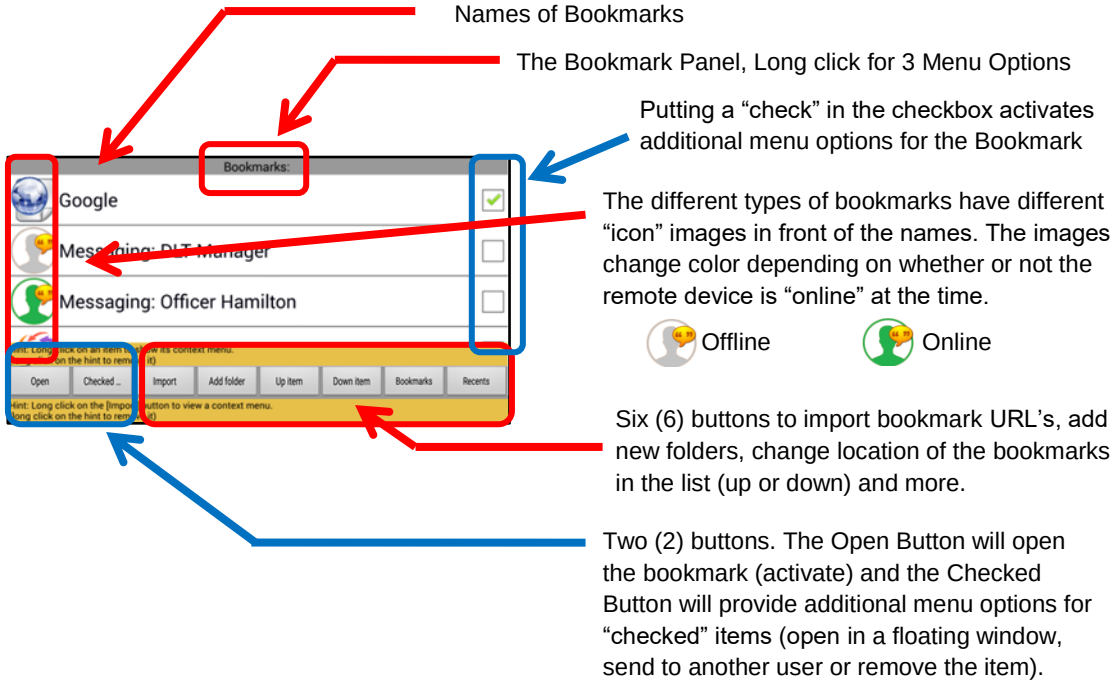
Enhanced Menu

The “Enhanced” Menu is what appears when a checkbox adjacent to any of the bookmark items is “checked”.

Two additional buttons are put on the bottom menu bar.

Description of the Panel Buttons on the “Bookmarks” screen:

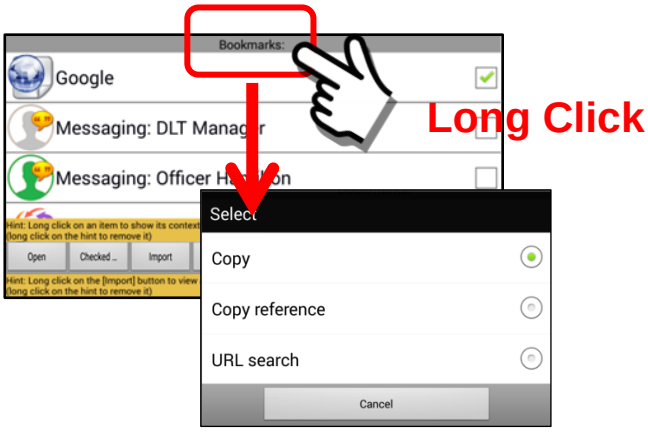
This section will describe the Menu Buttons and their associated features as used on the “Bookmarks” panel.



1. ***Bookmark panel***

   The Bookmark Panel has a top level set of Menu Options that will allow a user to copy bookmarks, copy bookmark references and to perform URL searches.

   To access this top level menu, perform a “Long click” on the Bookmarks Title at the top of the panel.



   Performing a “Long click” on the Bookmarks Title Block will open a pop-up Select Menu with 3 options.

Copy

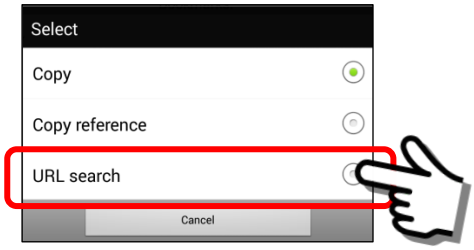
The “Copy” menu option will make a copy of the bookmark URL for the whole panel and store it on the Sentry MDU “clipboard” (.TEMP file folder). A user may then “Import” this bookmark and rename it to another name.

Copy reference

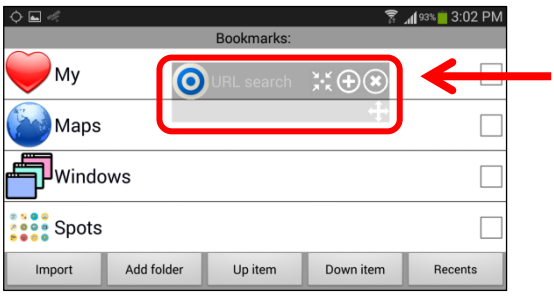
The “Copy reference” menu option is generally used when a large data item (ie Map with multiple objects and layers) needs to be sent as a bookmark. This feature does not actually “copy” the URL data. Instead, it uploads the body of the URL (the data) to the SentryMDU Data Server instance and then creates a reference “link” to that data. In this way, a large data item can still be transferred between mobile devices easily because only the “link” is being sent and not the complete data package. A bookmark created with the “Copy reference” may be sent to other Users the same way as other bookmarks are handled. A user may then “Import” this bookmark and rename it to another name. Allows easy setup of new bookmarks.

URL Search

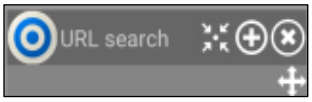
The “URL Search” option provides a Floating Window panel with a “target” button that can launch bookmarks and URL search functions across the SentryMDU App. See **Section 16.2** for a detailed discussion of the URL Search Panel.



This is an example of the “target panel button” that is launched by the URL Search function.

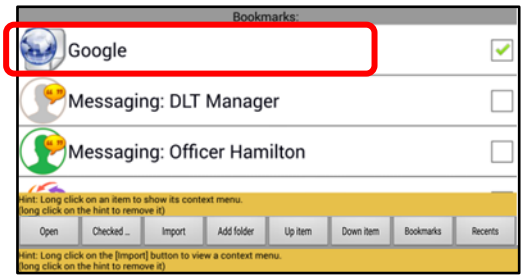


The URL Search Panel will appear as a floating window.



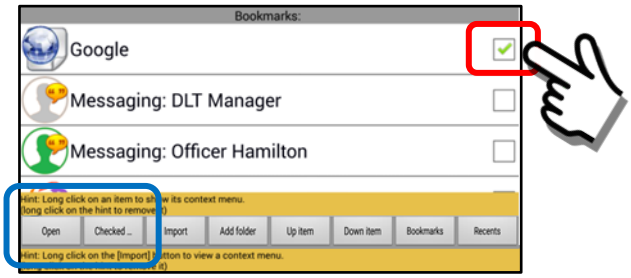
2. ***Bookmark name***

This is the name of the bookmark as stored in the system. Users have the ability to edit and change names as necessary.



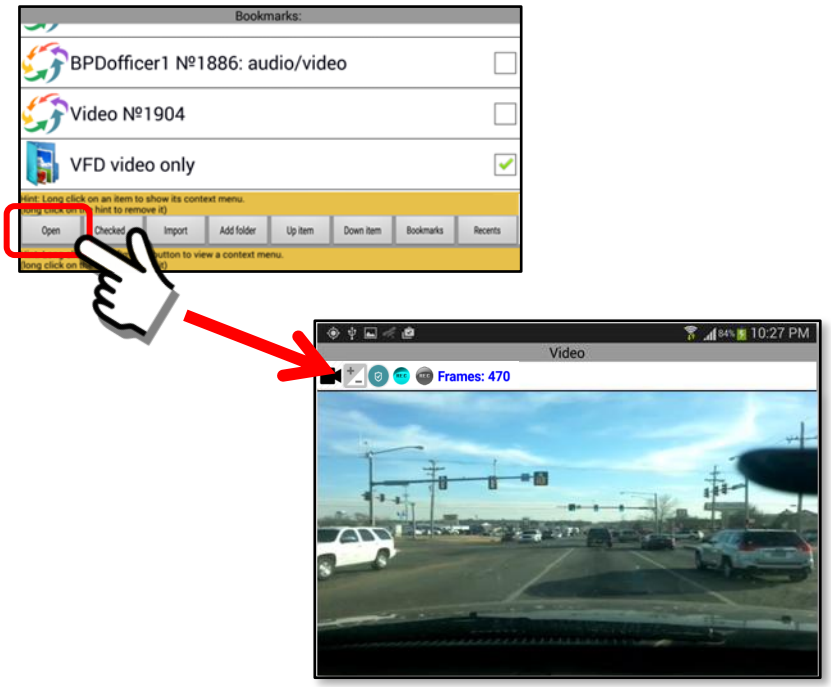
3. ***Bookmark "checkbox"***

Activating the "checkbox" will put two additional buttons on the bottom menu bar. These provide additional features as illustrated below.



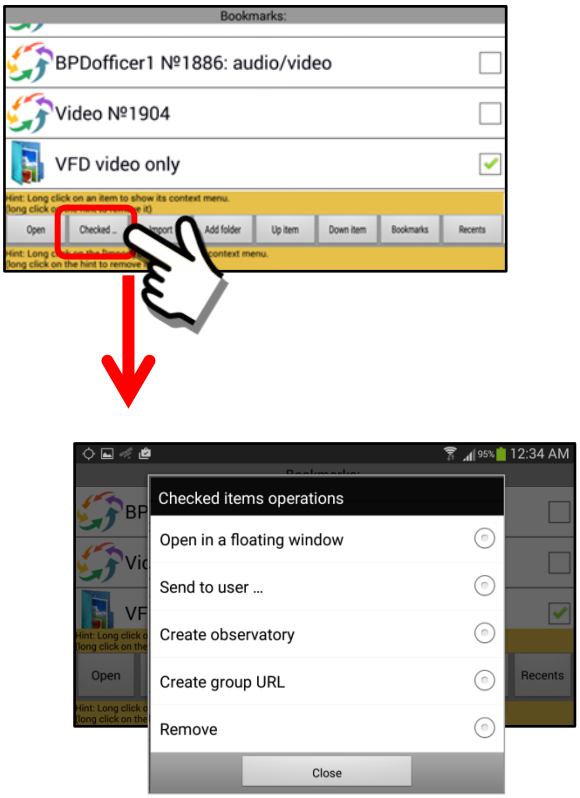
<u>The Open Button</u>

The User may "open" the bookmark of the checked item(s).



The Checked Button

Click on the “Checked …” Button to open additional menu options.



Open in a floating window

Will open the bookmark viewer panel in a floating window. Refer to **Section 9.13** for more details on Floating Windows.

Send to User

Will open a list of users on the Sentry MDU Network from which the user can select someone to send the bookmark to.

Create observatory

Combine “checked” objects into an Object Observatory. See **Section 9.12** for details on Object Observatories.

Create group URL

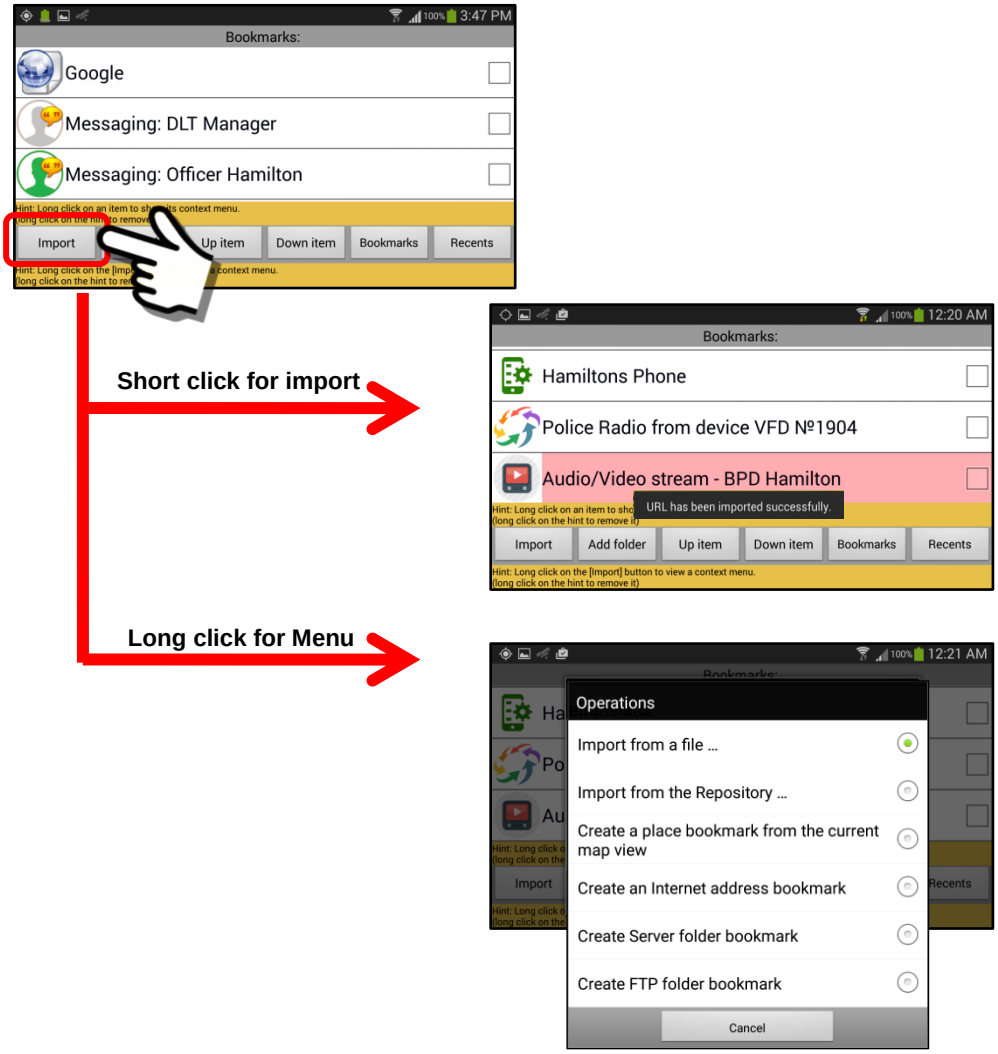
Create a combined URL (group) from the “checked” items selected from the Bookmark List.

Remove

Provides the User the ability to “remove” bookmarks from their mobile device.

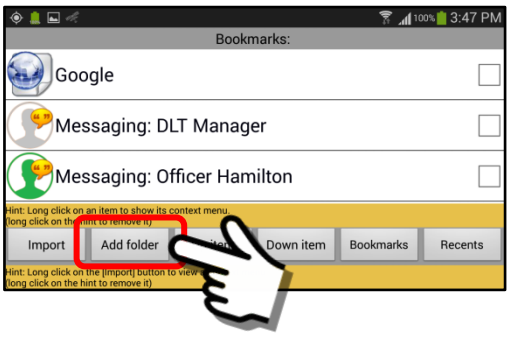
4. ***Import Button***

The “Import” Button will import previously saved bookmarks into the application and create “new” bookmarks from maps, files and the internet.



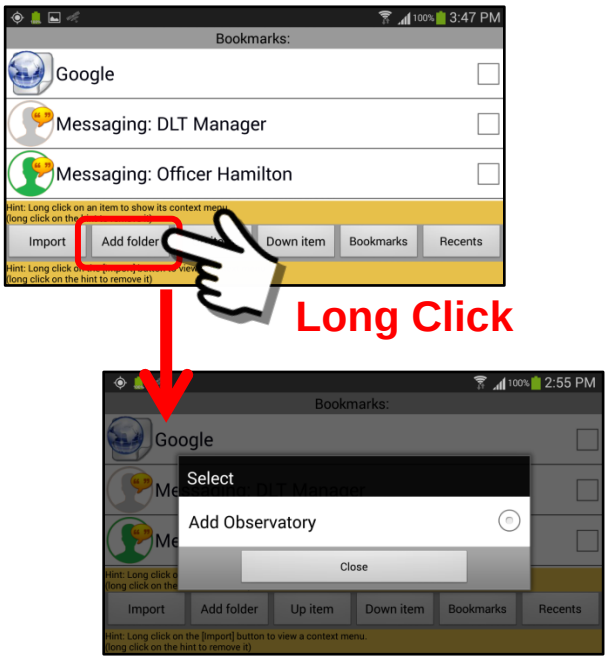
5. ***Add Folder Button – Short click***

Performing a “short click” on the “Add folder” button allows a user to create folders in the bookmark database. This will allow storing of bookmarks by function, department or subject matter.



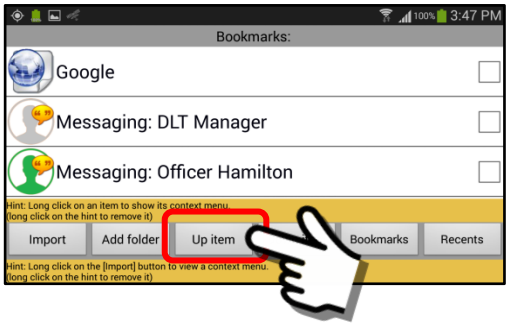
6. ***Add Folder Button – Long click***

Performing a “long click” on the “Add folder” button opens the “Add Observatory” feature which enables a user to create multi-channel bookmarks that allow the monitoring of multiple people and sensors with a single click. See **Section 9.12** for a detailed description of the Object Observatory feature and how to set one up.



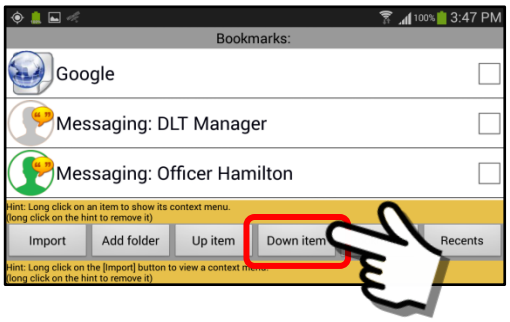
7. ***Up item Button***

Allows a user to move the items in the bookmark list up in the listing order.



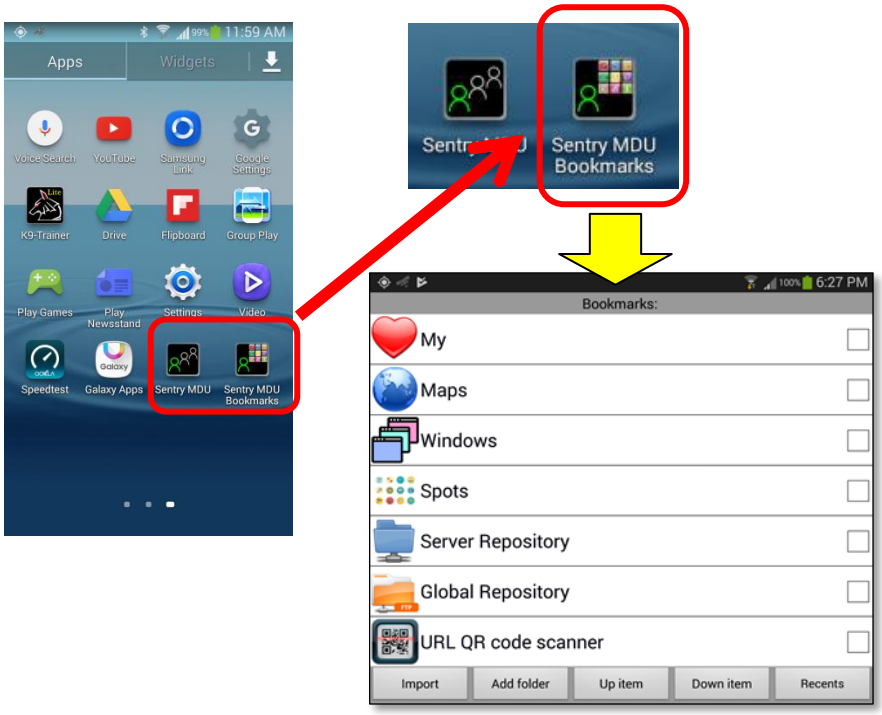
8. ***Down item Button***

Allows a user to move the items in the bookmark list down in the listing order.



9. *Bookmarks Button*

Displays the “Quick Access” Bookmarks that are contained in the separate smartphone icon on the device screen.

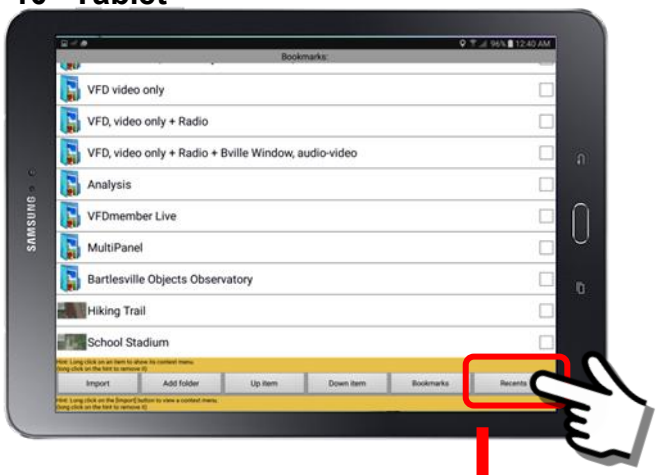


Clicking on the Bookmarks button takes you directly to the “Sentry MDU Bookmarks” Panel. See **Section 9.31** for more details about the quick access bookmarks.

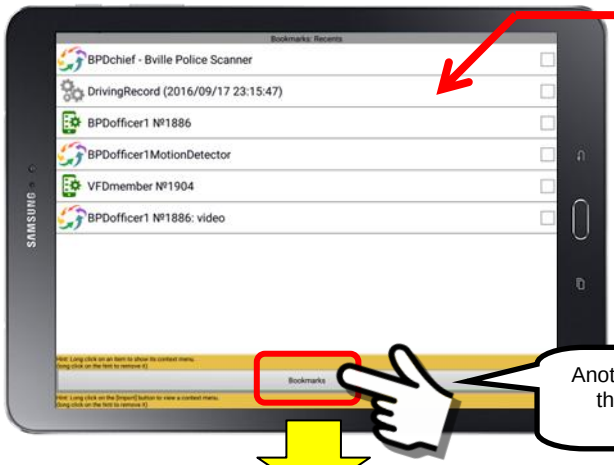
10. Recents Button

Allows a user to view/review items in the bookmark list that have recently been “added” to the bookmark listing. The list will contain the 25 most recent additions to the Bookmarks Panel, sorted by date, with the most recent at the top of the list.

10” Tablet



10” Tablet



Most recent additions at the TOP of the list.

Example of recent additions that are displayed when the Recents Button is clicked.

Another way to access the Quick Access bookmarks

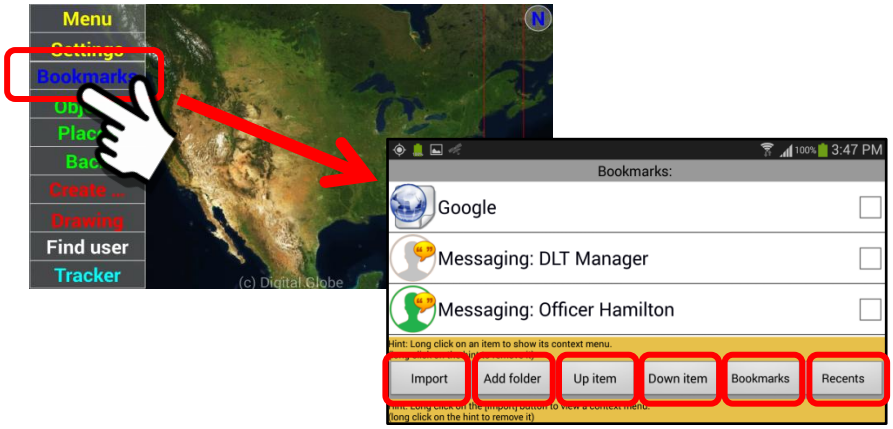
9.2. Navigating the Bookmarks panel

Overview:

The “Bookmarks” Feature includes a variety of menus and options that allow a user to save a SHORTCUT to various functions of the mobile device. This section will describe the available panels and menu options.

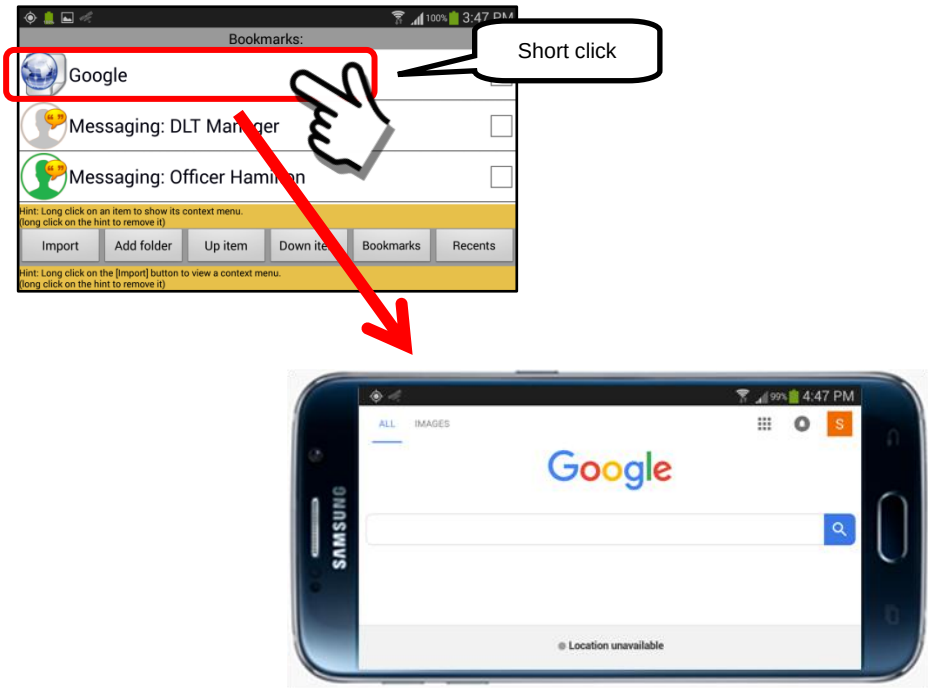
Sentry MDU bookmarks panel:

As shown below the Bookmarks panel has six primary buttons.

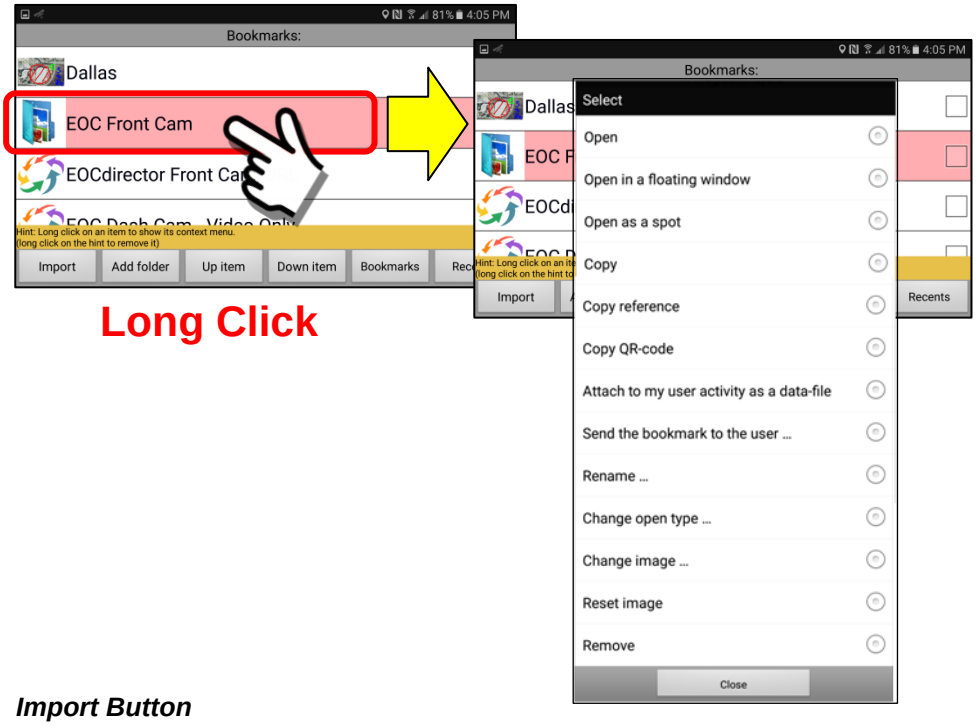


Description of the panel buttons and features:

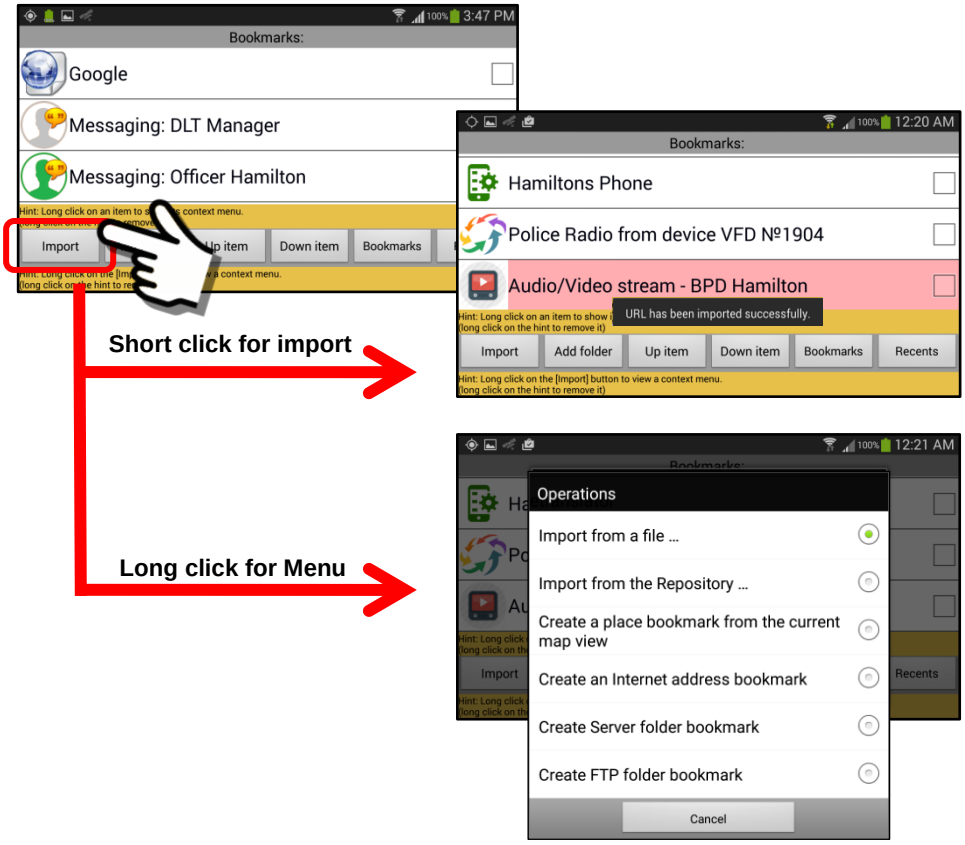
1. ***Launching a “Bookmark” (short click on bookmark name)***
   To launch a bookmark, simply click on the bookmark name.



2. ***Working with existing bookmarks (long click on bookmark name)***
Existing bookmarks can be manipulated in a variety of ways. A “long click” on the bookmark name will launch a menu of options.

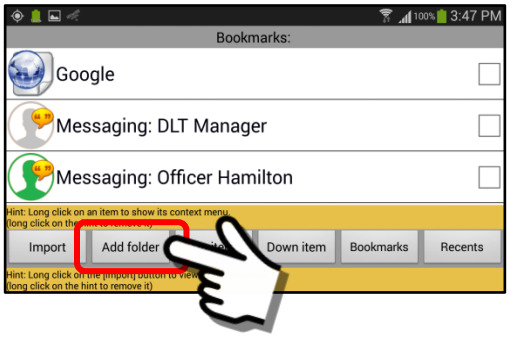


3. ***Import Button***
The “Import” Button will import previously saved bookmarks into the application and create “new” bookmarks from maps, files and the internet.

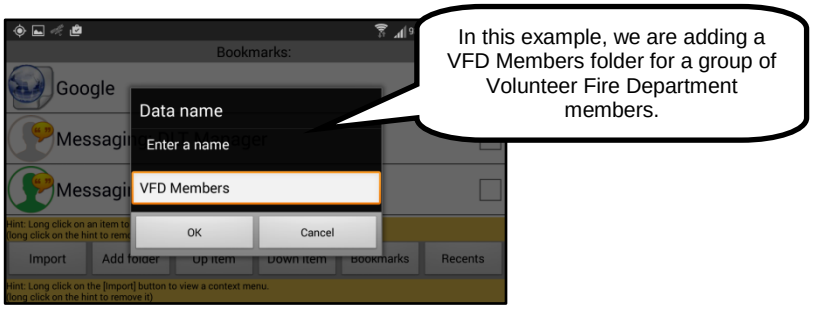


4. *Add Folder Button – Short click*

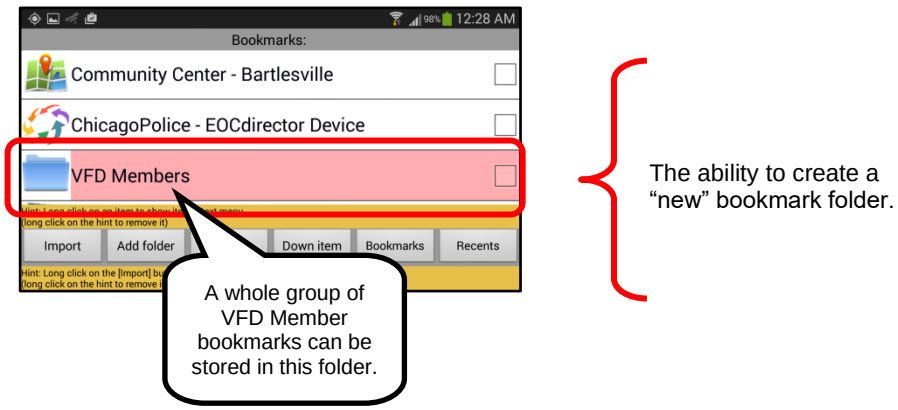
Performing a “short click” on the “Add folder” button allows a user to create folders in the bookmark database. This will allow storing of bookmarks by function, department or subject matter.



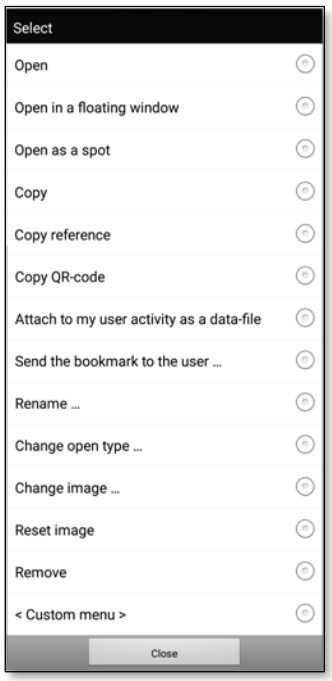
A “short click” will open a pop-up box where you will enter the name of the folder you want to create. The name should describe the feature and User Group that this bookmark will reference. You will have options later to “rename” the folder if you decide you want to change it.



Once created, the folder will appear at the bottom of the bookmark list. It may be necessary to scroll down to the bottom to see the new folder.



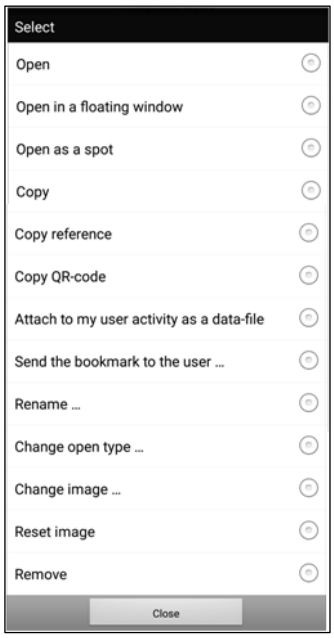
When a “new” folder (bookmark entry) is created, the User has a series of fourteen (14) menu options that are available. The list of menu options is shown below.



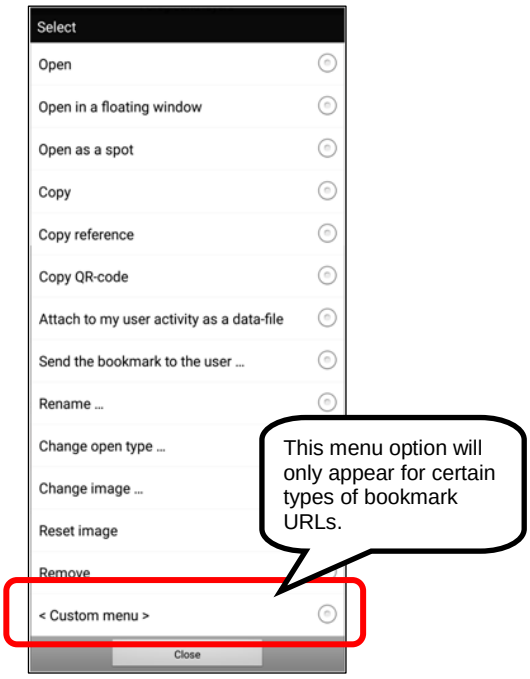
These menu items will be discussed in detail later in this section.

It is important to note that the **<Custom menu>** item (last item in the list) will only appear for specific types of URL bookmarks. For those bookmark entries where a Custom Menu option cannot be used, this menu item will NOT appear on the list.

Standard Menu Option List

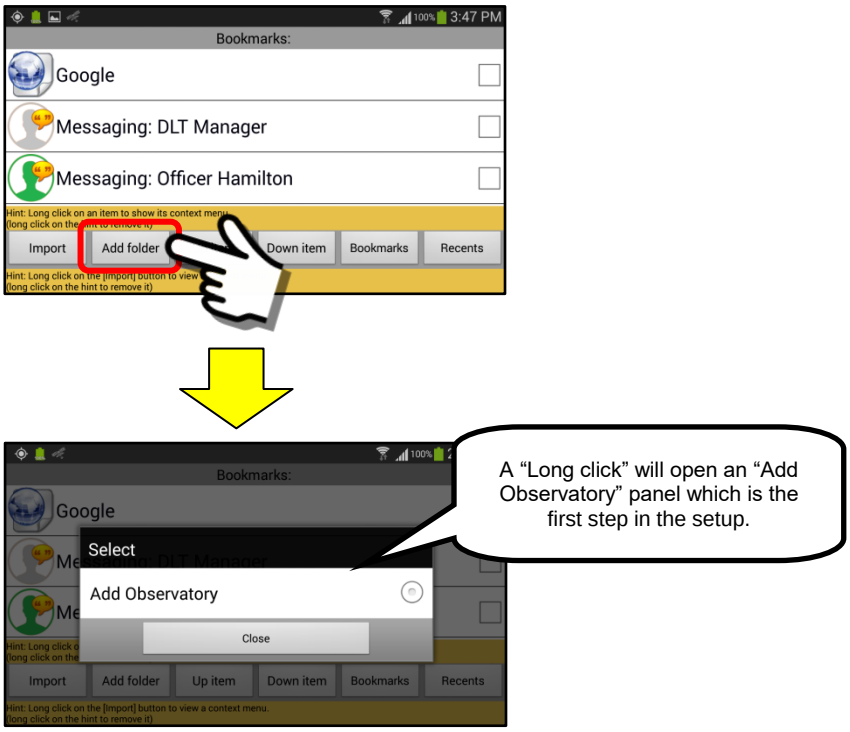


Custom Menu Option List



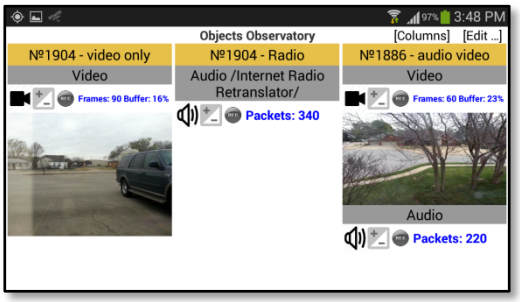
5. ***Add Folder Button – Long click***

Performing a “long click” on the “Add folder” button opens the “Add Observatory” feature which enables a user to create multi-channel bookmarks that allow the monitoring of multiple people and sensors with a single click. Please see **Section 9.12** for a detailed description of the ***Object Observatory*** feature and how to set up everything.



This is a typical view of an Object Observatory panel.
In this example, the screen has 3 sensor inputs. Two video feeds from remote devices and one audio retranslation from the internet. These two panels illustrate both a horizontal view and stacked view configuration.

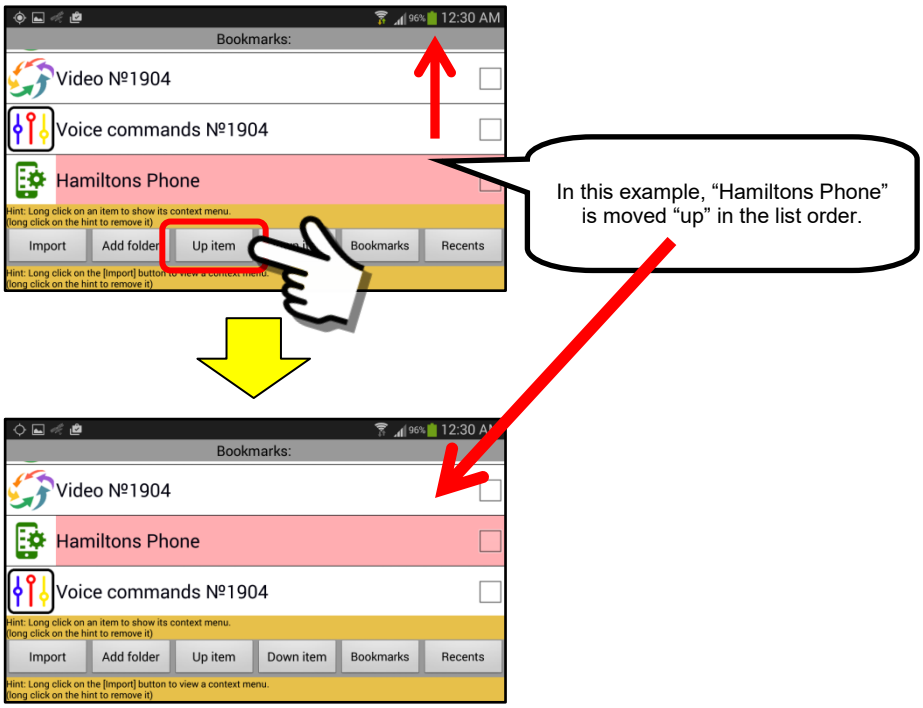
Horizontal View



Stacked View

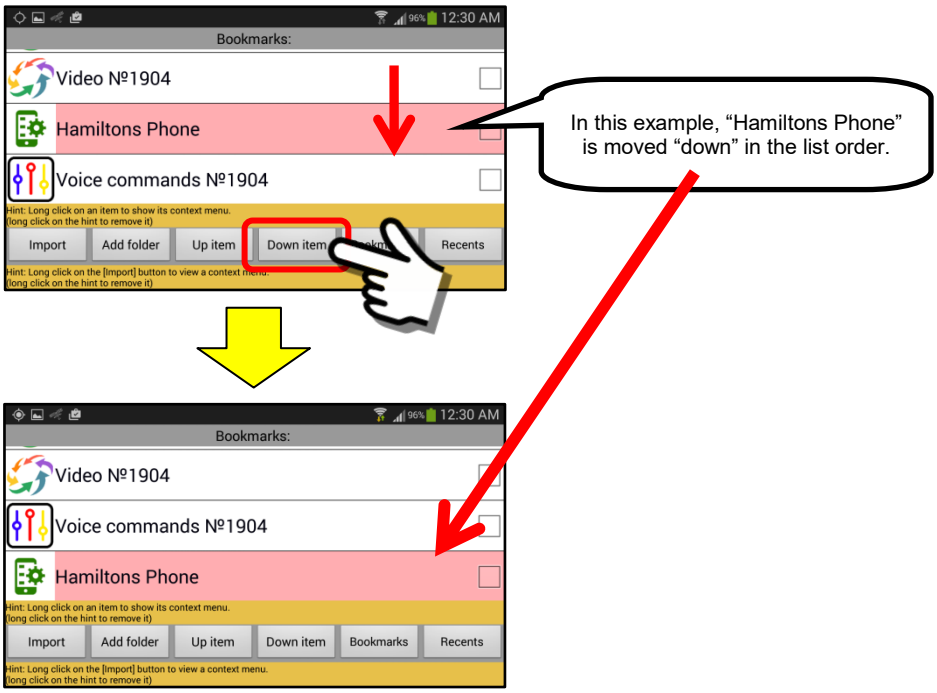
6. *Up item Button*

Allows a user to move the items in the bookmark list up in the listing order.



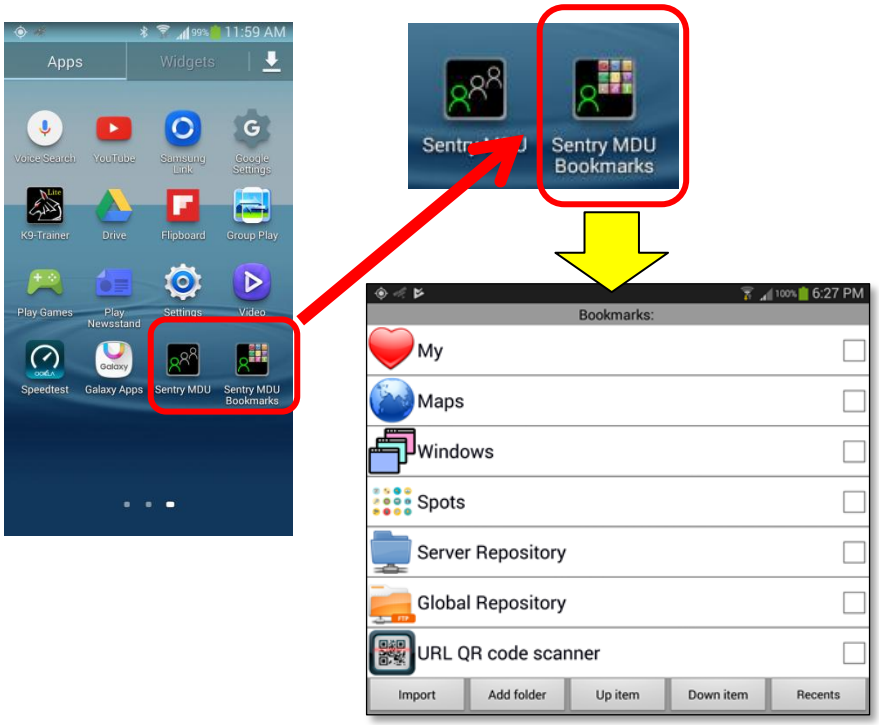
7. *Down item Button*

Allows a user to move the items in the bookmark list down in the listing order.

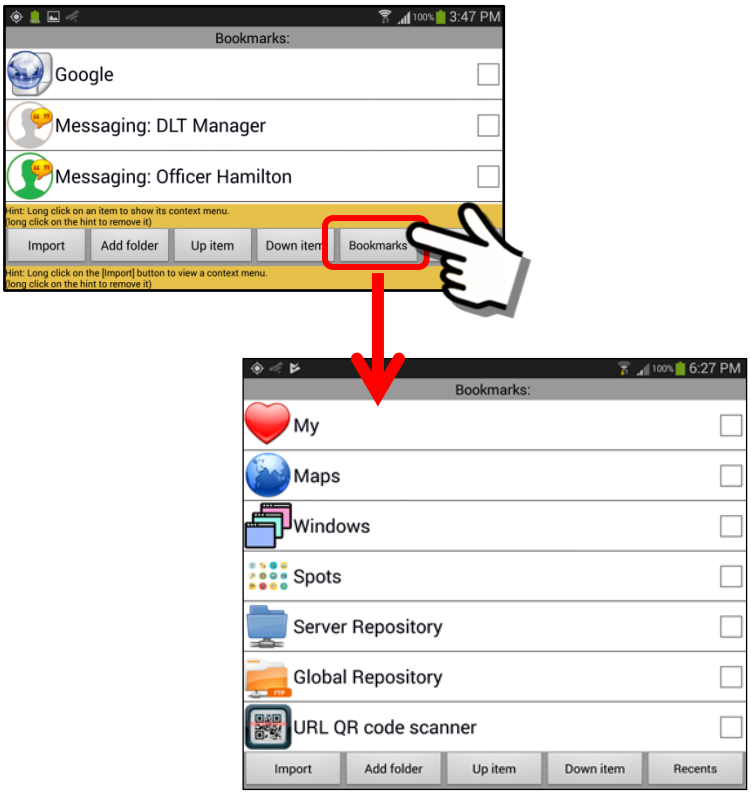


8. *Bookmarks Button*

Displays the “Quick Access” Bookmarks that are contained in the separate smartphone icon on the device screen.



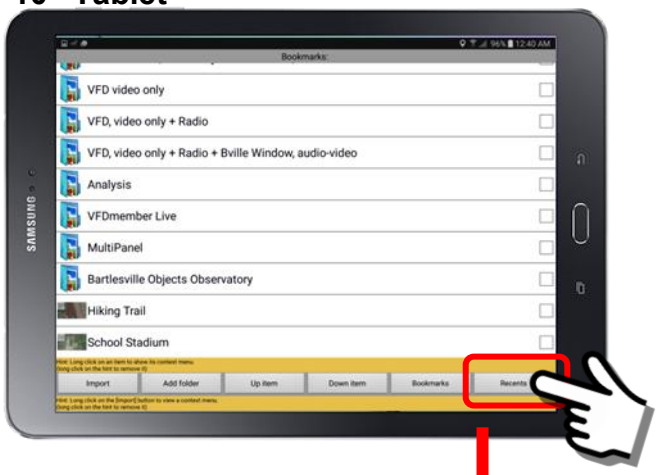
Clicking on the Bookmarks button takes you directly to the “Sentry MDU Bookmarks” Panel. See **Section 9.32** for more details about the quick access bookmarks.



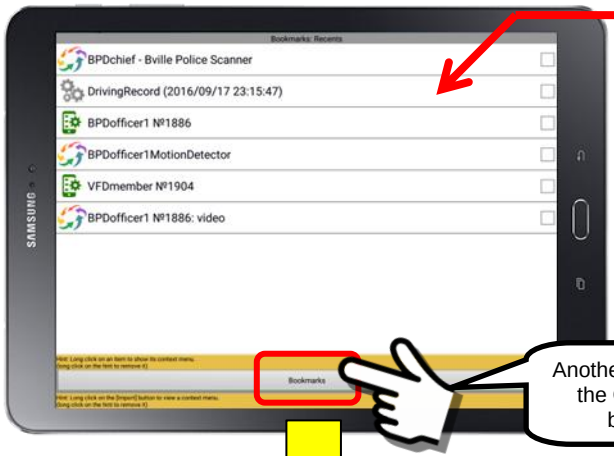
9. ***Recents Button***

Allows a user to view/review items in the bookmark list that have recently been "added" to the bookmark listing. The list will contain the 25 most recent additions to the Bookmarks Panel, sorted by date, with the most recent at the top of the list.

10" Tablet



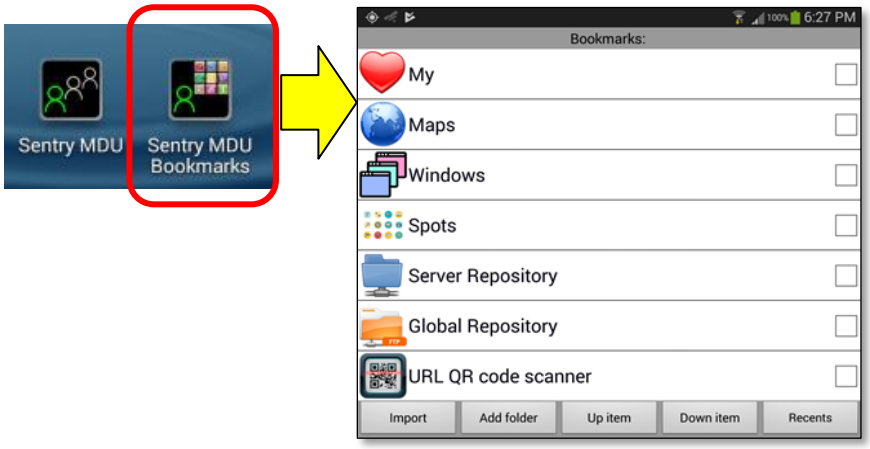
10" Tablet



Most recent additions at the TOP of the list.

Example of recent additions that are displayed when the Recents Button is clicked.

Another way to access the Quick Access bookmarks



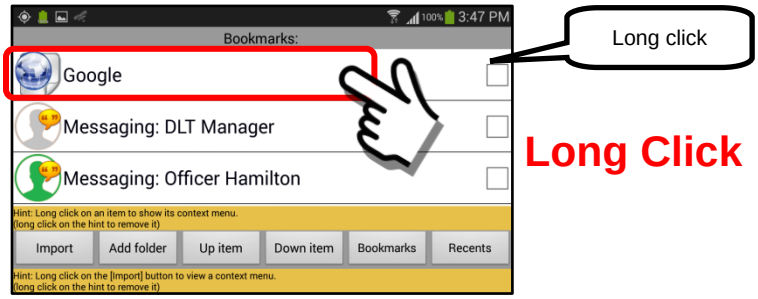
9.3. Menu options on the Bookmarks Panel

Overview:

The standard configuration will show thirteen (13) menu options that a user has available to manipulate bookmark entries. In addition, certain types of bookmark URLs may use a “Custom” configuration option. In this case, fourteen (14) menu options will be displayed. Perform a “long click” on a bookmark name to open the options menu. This section will explain each of the menu options.

Sentry MDU Bookmark options menu:

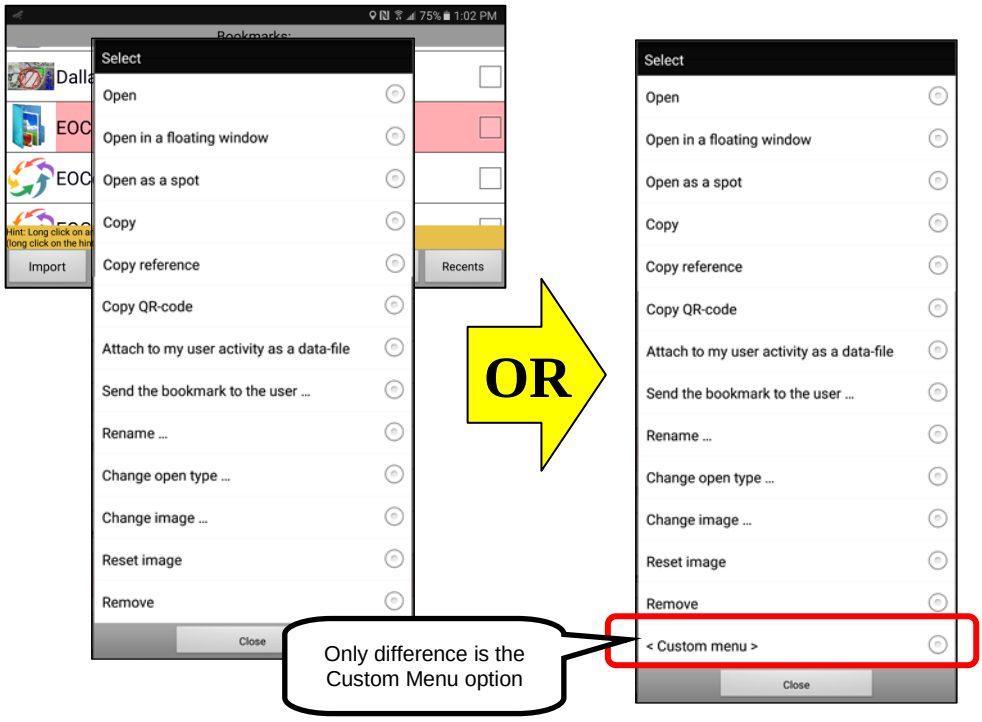
Perform a “long click” on a bookmark name to open the options menu.



Depending on the type of bookmark and whether or not it was created with the <Custom Menu> option, there are two (2) types of Menu Option lists that may be displayed. They are shown below.

Standard Menu Option List

Custom Menu Option List



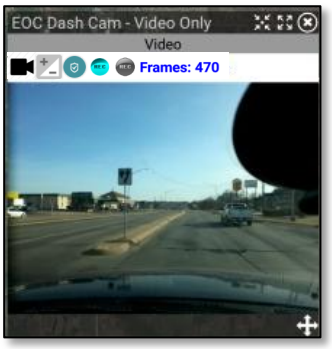
The 14 menu items are explained in detail below.

Open

The “Open” menu option will open the bookmark and display the contents. This may be audio, video, maps and locations. In the case of this example, this bookmark (Google) will open the Google internet search engine.

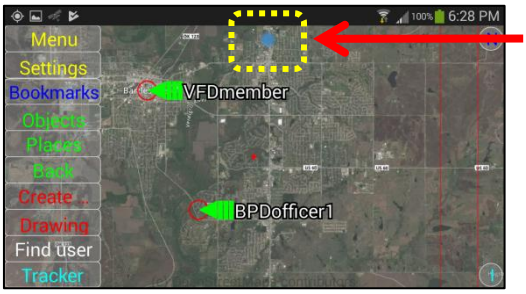
Open in a floating window

This option opens the bookmark data in a “floating window”. The floating window may then be resized and moved about the screen.



Open as a spot

The “Open as a spot” menu option will install a 5mm “colored dot” along the top border of the screen display. When “clicked” this spot will launch the bookmark URL (ie floating window, video panel, etc.).



Example of a “spot” created as a URL link. Click to open a floating window.

Copy

The “Copy” menu option will make a copy of the bookmark and store it on the Sentry MDU “clipboard” (.TEMP file folder). A user may then “Import” this duplicate bookmark and rename it to another name. Allows easy setup of new bookmarks.

Copy reference

The “Copy reference” menu option is generally used when a large data item (ie Map with multiple objects and layers) needs to be sent as a bookmark. This feature does not actually “copy” the URL data. Instead, it uploads the body of the URL (the data) to the SentryMDU Data Server instance and then creates a reference “link” to that data. In this way, a large data item can still

be transferred between mobile devices easily because only the “link” is being sent and not the complete data package. A bookmark created with the “Copy reference” may be sent to other Users the same way as other bookmarks are handled. A user may then “Import” this bookmark and rename it to another name. Allows easy setup of new bookmarks.

Copy QR-code

The “Copy QR-code” menu option will make a copy of the bookmark URL and store it on the Sentry MDU “clipboard” (.TEMP file folder) as a QR-code image. A user may then “Import” this bookmark by scanning the QR-code. Allows easy setup of new bookmarks.

Attach to my user activity as a data-file

This option provides that the URL code in the bookmark can become part of the “content” stored under the user’s Current Activity (ie Default, Summer, Winter, etc.).

Send the bookmark to the user

The Sentry MDU System makes it possible for Users to “share” bookmarks with each other. This will enable users to rapidly share bookmarks of contact information, places and locations with other users. See **Section 9.10** for details. Bookmarks that use “local” sensors cannot be sent to other users since they do not have those “local” sensors on their mobile device.

Rename

This option allows a user to change the name that is attached to a particular data element. When we click on the “Rename” menu option, we are presented with a data entry box to edit/change the name.

Change open type

When a bookmark is “opened”, the default setting is to open the data element from within the Sentry MDU App. This option allows a user to change the “default” such that the data element may be opened as a floating window.

Change image

This option will allow a user to change the thumbnail “icon” image that is displayed on the bookmark list. Depending on the data element, the Sentry MDU System assigns a data type thumbnail to the bookmark. This option allows a user to install custom thumbnail images that may be more relevant to their organization.

Reset image …

This option allows a user to change the icon back to the system “default” image in the event the icon had been changed previously.

Remove

The “Remove” menu option allows a user the ability to permanently remove bookmark data elements that are no longer needed.

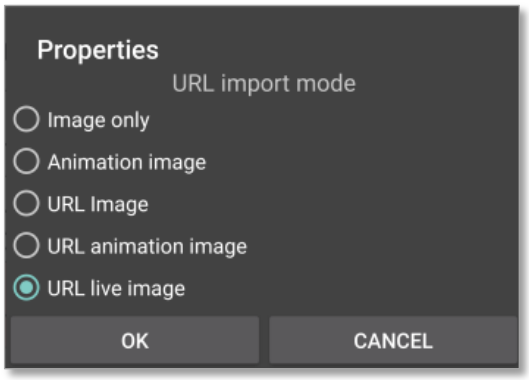
<Custom menu> (does not appear for all bookmark types)

Certain types of bookmark URLs may use a “Custom” configuration option. This following section (9.4) will explain the **<Custom menu>** option.

The use of **User Defined** custom map layers will incorporate this **<Custom menu>** option in the configuration. This option will identify the PROPERTIES available in the URL Import Mode when the **<Custom menu>** option is used.

A “Long click” on a bookmark created as a **User Defined** custom map layer will provide the <Custom menu> option that will provide a pop-up menu of PROPERTIES.

The Properties Panel is shown below:



The Properties Panel sets the **URL Import Mode** for the URL that is being attached to the Custom Map Layer. There are 5 property types that may be specified.

9.4. Using the <Custom menu> option with Map Layers

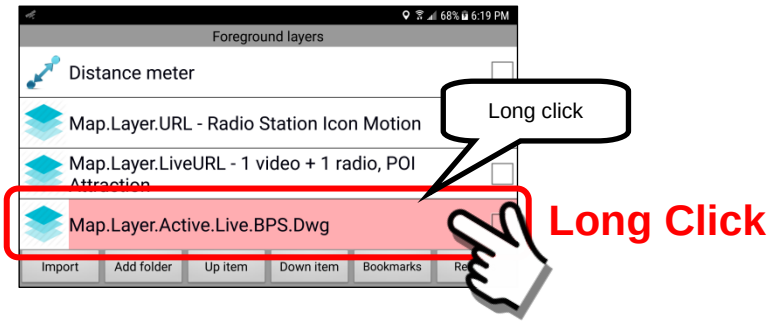
Overview:

Certain types of bookmark URLs may use a “Custom” configuration option. In this case, fourteen (14) menu options will be displayed. Perform a “long click” on a bookmark name to open the options menu. This section will explain the **<Custom menu>** option.

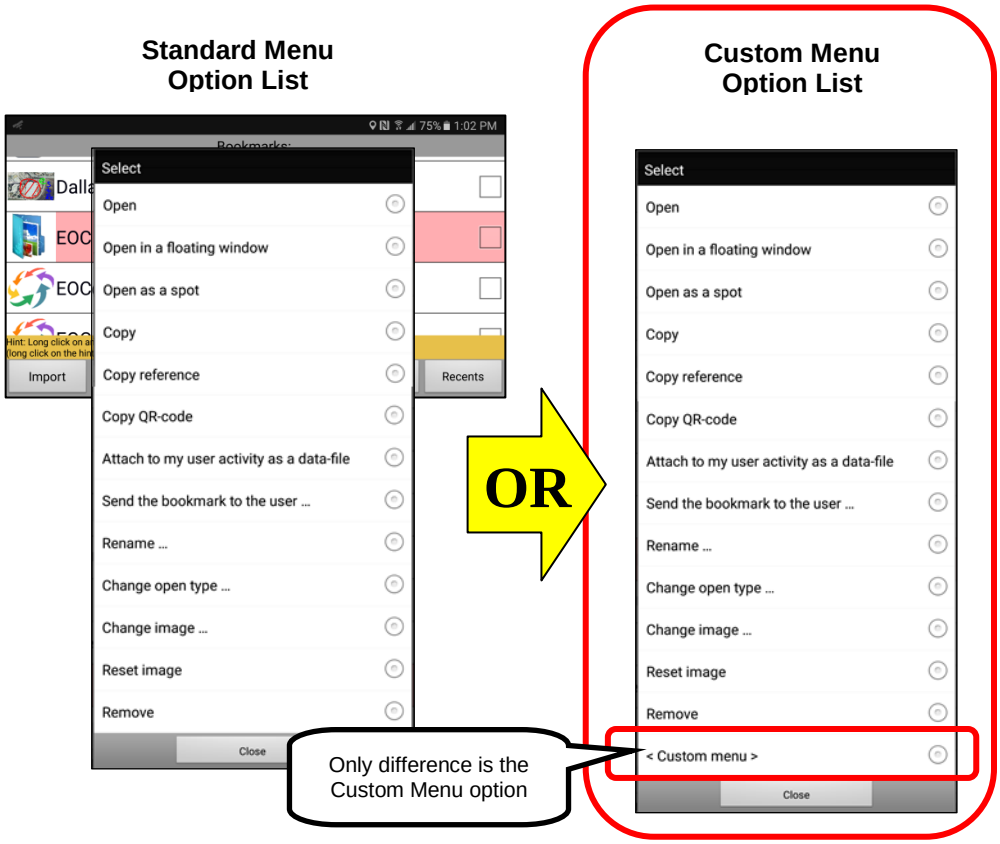
The use of **User Defined** custom map layers will incorporate this **<Custom menu>** option in the configuration. This section will identify the PROPERTIES available in the URL Import Mode when the **<Custom menu>** option is used.

The <Custom menu> options menu:

Perform a “long click” on a bookmark name to open the options menu.



Depending on the type of bookmark and whether or not it was created with the <Custom Menu> option, there are two (2) types of Menu Option lists that may be displayed. They are shown below.

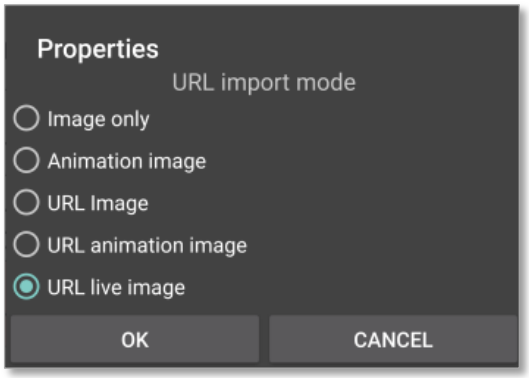


The <Custom menu> option (does not appear for all bookmark types)

User Defined Custom Map Layers

A “Long click” on a bookmark created as a **User Defined** custom map layer will provide a pop-up menu of PROPERTIES.

The Properties Panel is shown below:



The Properties Panel sets the **URL Import Mode** for the URL that is being attached to the Custom Map Layer. There are 5 property types that may be specified.

Image only

This import mode configures the custom map layer to accept an “image” with no corresponding URL link properties. You get just an image.

Animation image

This import mode configures the custom map layer to accept an “image” that HAS animation properties (ie animated GIF). This lets the custom layer know that a particular graphic element has animation properties.

URL image

This import mode configures the custom map layer to accept a “URL image” that DOES HAVE corresponding URL link properties. When a User clicks on the “image” a URL link will be launched.

URL animation image

This import mode configures the custom map layer to accept a “URL image” that HAS animation properties (ie animated GIF) AND has a corresponding URL link property. When a User clicks on the “URL animation image” a URL link will be launched.

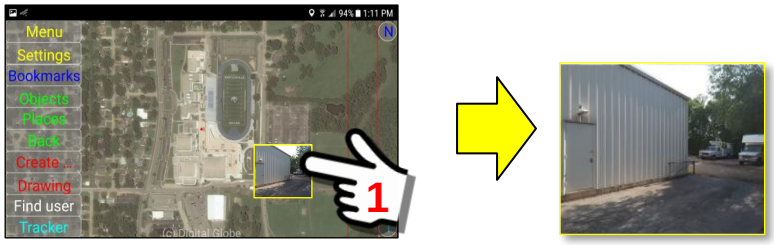
URL live image

This import mode configures the custom map layer to accept a “URL live image” that has a corresponding URL link that will stream “live” data such as audio or video. When a User clicks on the “URL live image” a URL link will be launched.

When configuring multiple URL sources attached to a Custom Map Layer you MUST specify the correct **URL Import Mode** for the particular data type. The system will attempt to guess based on the type of custom map layer "name" that you specify, but if you have multiple embedded objects (doing different things), adjustments are usually required.

For example, if you specify a **Map.Layer.Active.Live** custom map layer, the system will assume the "URL live image" type of URL Import Mode. However, if you have multiple URL types on the same Map Layer you will need to adjust the URL Import Mode setting for each different URL type.

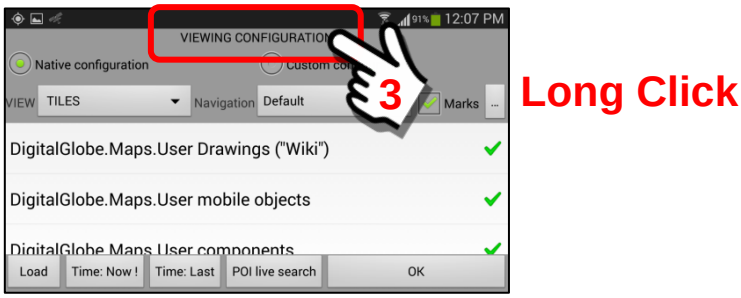
For example, if we want the **BPDofficer1** "Covert Cam" to be transmitting whenever we access this Custom Layer.



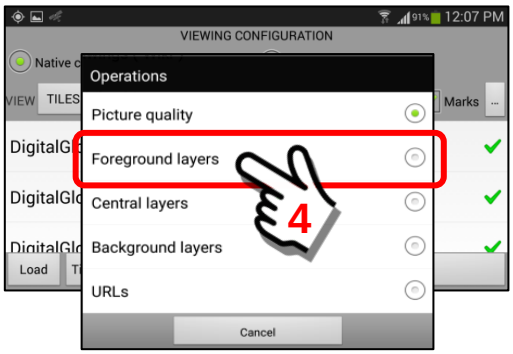
To adjust the URL Import Mode setting for the "Covert Cam" we do the following.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.

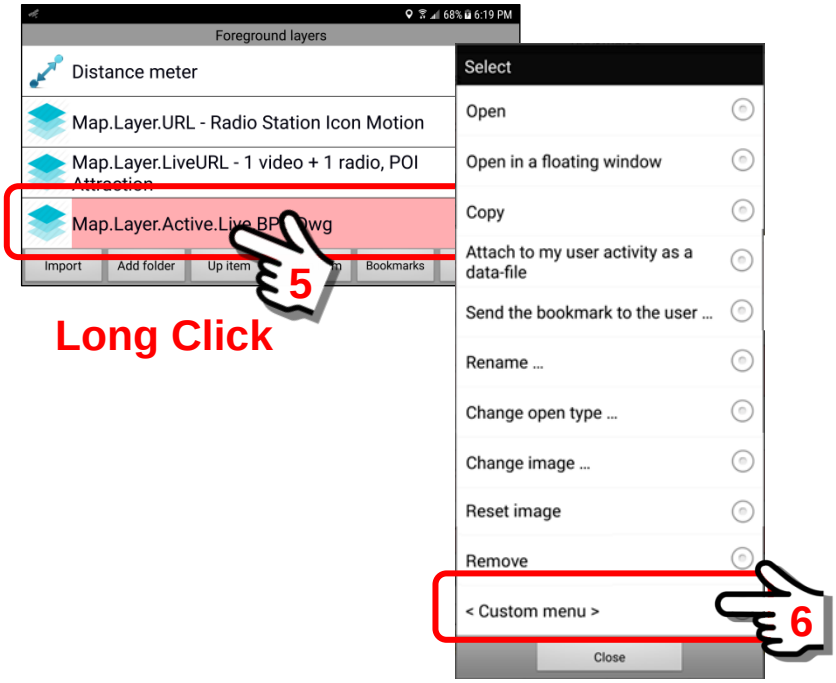


A pop-up Operations Menu will appear. Select the Foreground Layers option.

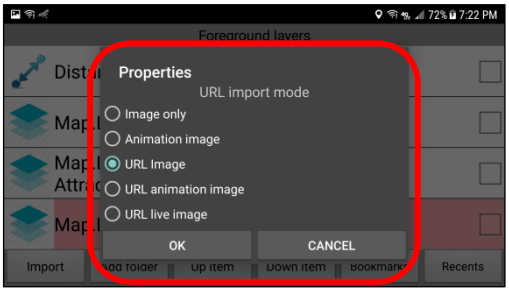


The Foreground Layers menu option will open the Foreground Layers Panel where we have the **Map.Layer.Active.Live.BPS.Dwg** Layer. To adjust the settings, we will go to the "<Custom Menu>" item in the Options Menu

"Long Click" on the Custom Map Layer item.

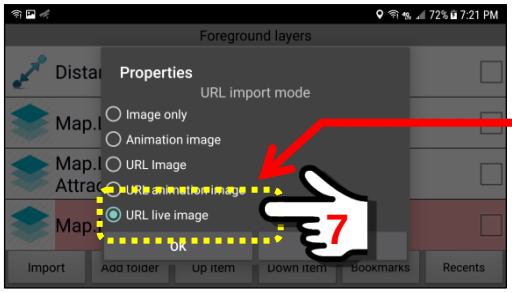


Select the "<Custom menu>" Option from the pop-up menu listing.
A Custom Map Layer pop-up **Properties Panel** will open.
Inspect the default setting for the URL Import Mode.



Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

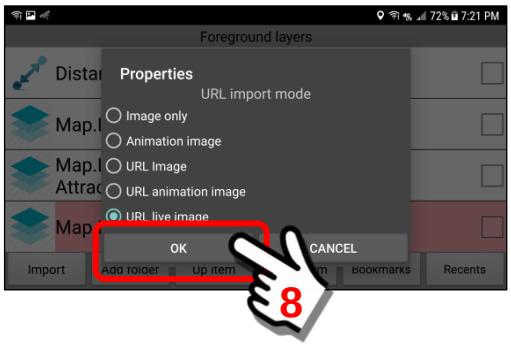
Always be aware that the **URL Import Mode** default setting will be set to whatever it was the last time it was used. In this example, we want the “URL live Image” mode because we want the “Covert Cam” video to be running all the time whenever we launch this Custom Map Layer. Click on the **URL live Image** menu option to activate that mode.



We want to click on a “URL live image” to make sure the Covert Surveillance Camera is always running.

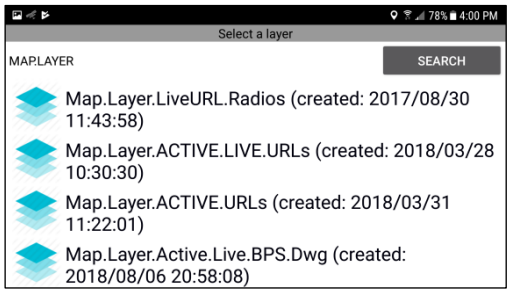
URL live Image

When finished, click the “OK” Button to close the panel settings.



Important Note: You will need to review/adjust these settings for each new type of URL you install on a Custom Map Layer.

This Properties Panel will generally be displayed for bookmarks that are used for **User Defined** Custom Map Layers. Examples are shown below.

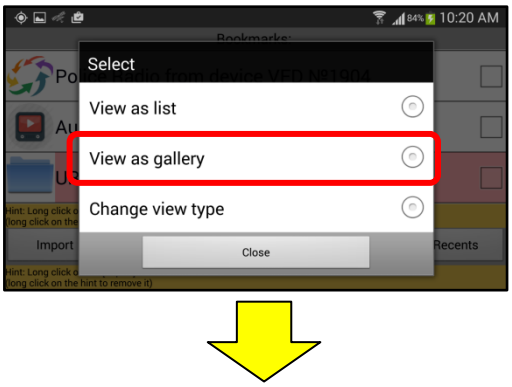


Typical bookmark types that will use the **<Custom menu>** option **Properties Panel**

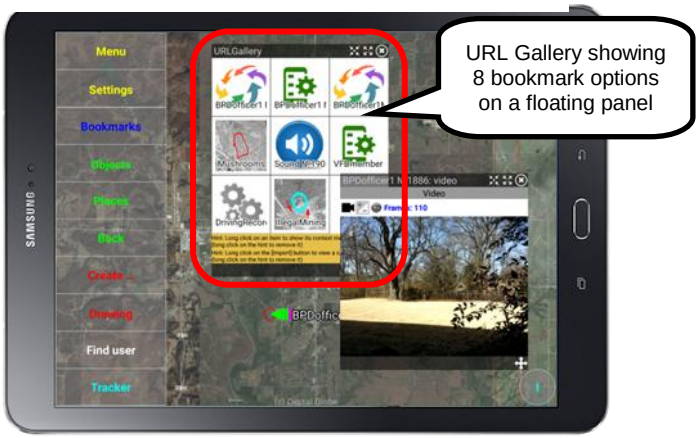
Gallery Bookmark <Custom menu> option

When used with the Gallery Bookmark feature, the “Custom menu” option allows a user to group common bookmarks onto either a “list view” or a “floating panel view” that can be accessed from the device screen. See **Sections 9.14** on how to set up and use a URL Gallery Bookmark.

The example below will show a Floating Panel view.



10” Tablet showing a URL Gallery floating panel



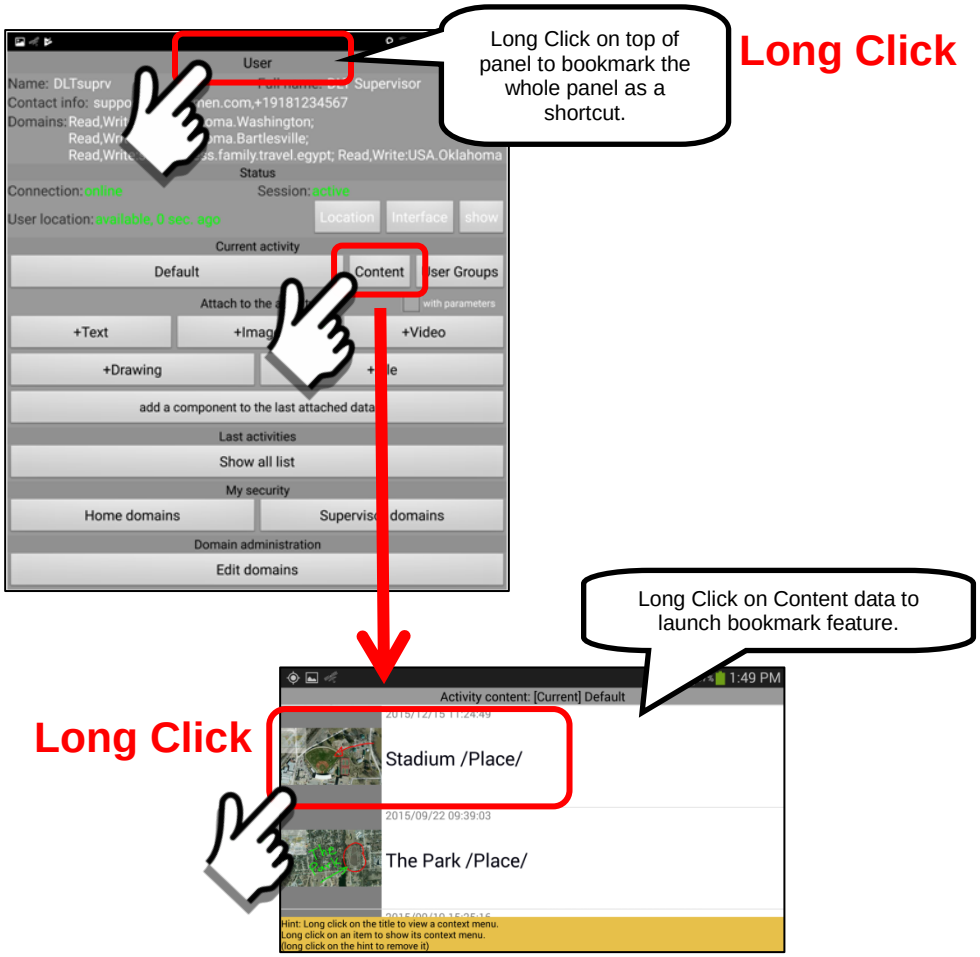
9.5. Discussion of the various bookmark "types" that can be saved

Overview:

The "Bookmarks" feature allows a user to save a SHORTCUT to various functions of the mobile device. If a particular feature is used on a regular basis, a "bookmark" can be created so that a user can access it with a few simple clicks without having to navigate the menus. Note that bookmarks created from "local" sensors on the mobile device may be saved and used on the local device but NOT sent to other users.

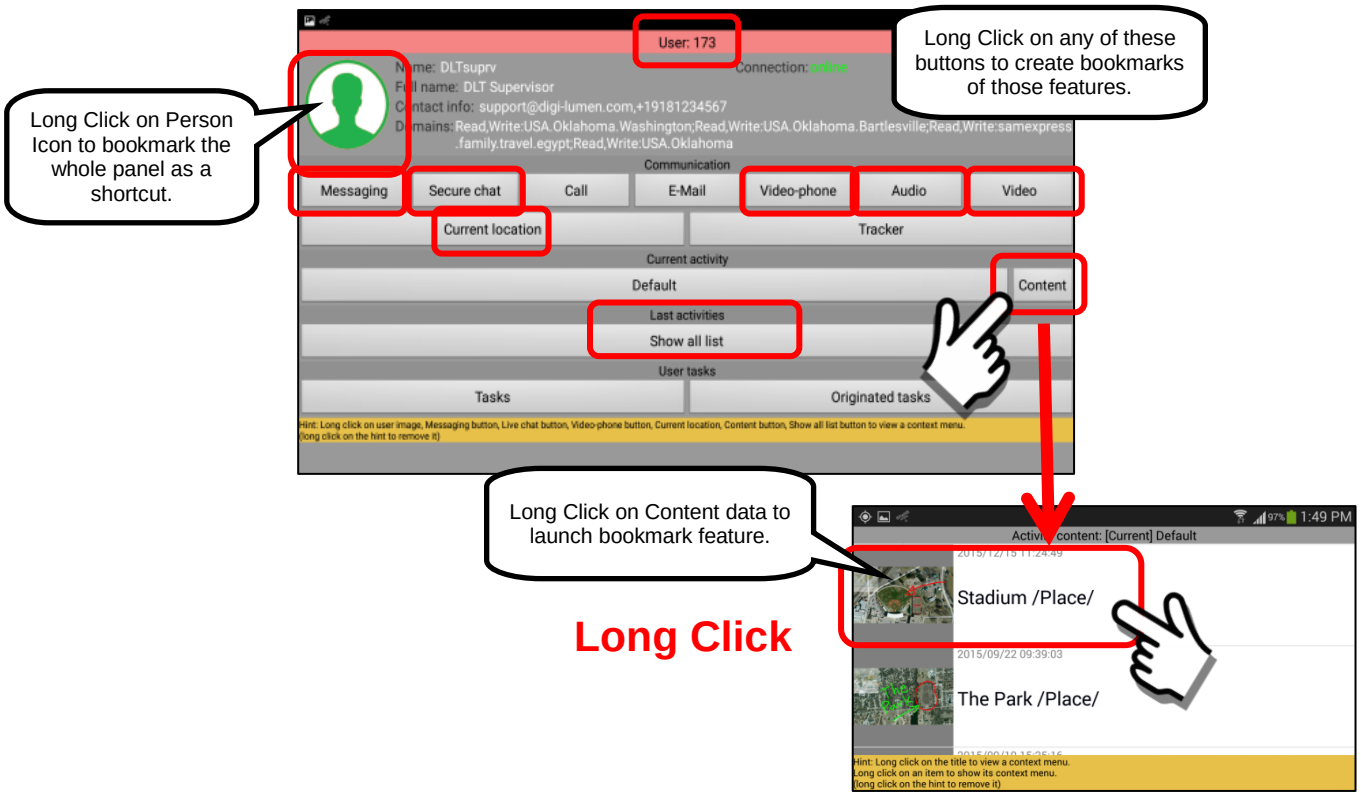
Feature Panels which allow bookmarks:

1. ***User Information Panel***
   The complete "User Information Panel" may be bookmarked as well as the Content stored for the user.



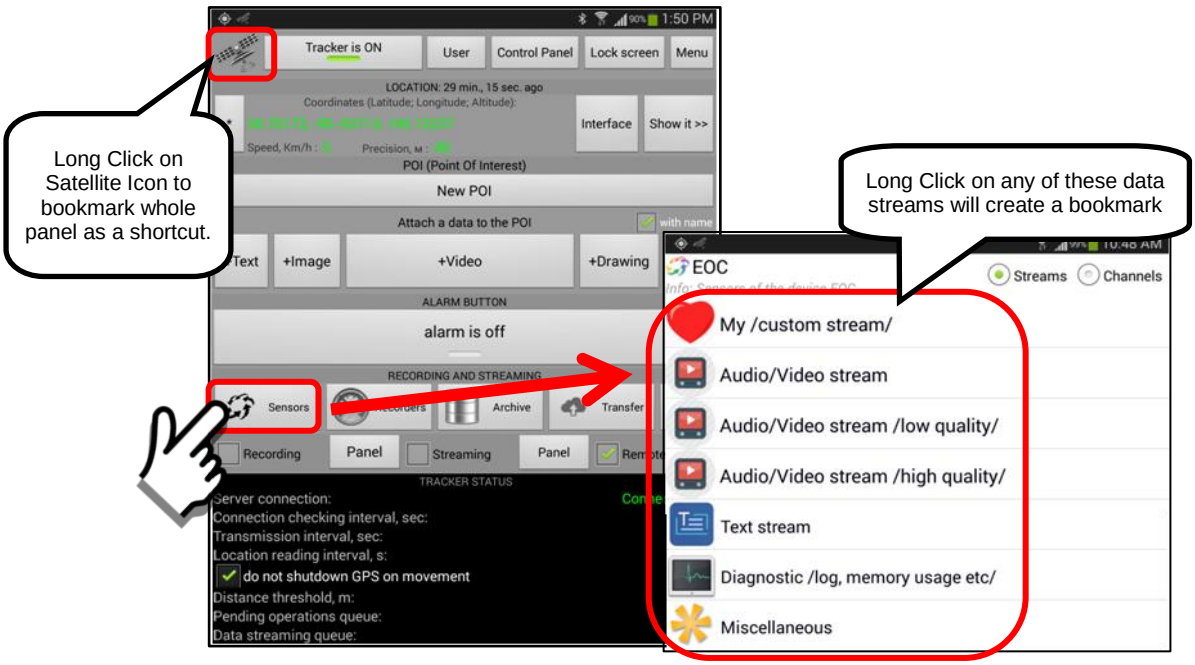
2. *User Panel*

The complete “User Panel” may be bookmarked as well as 6 additional feature buttons. Content stored for this user may also be bookmarked.



3. *Tracker Panel*

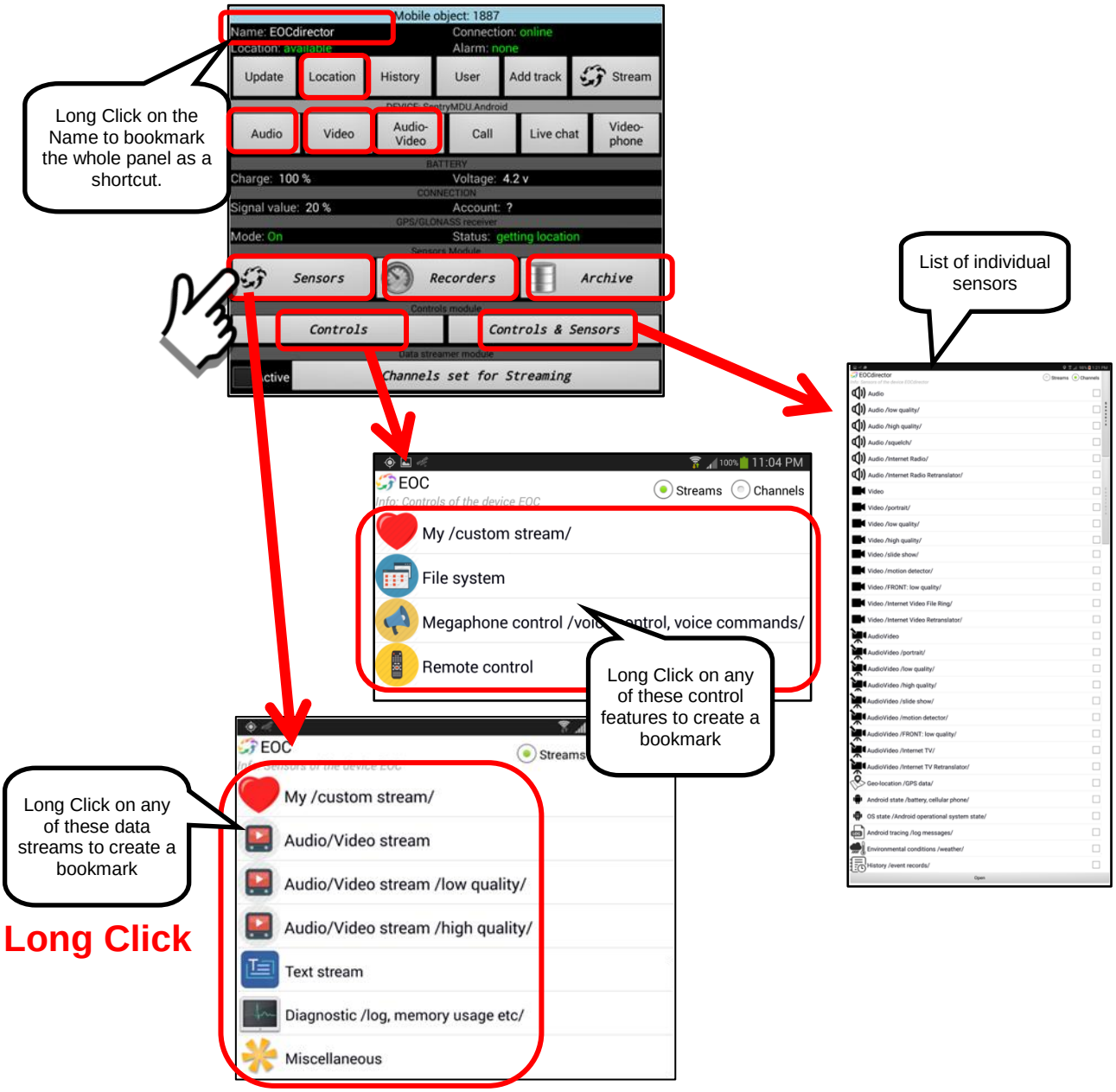
The complete “Tracker Panel” may be bookmarked. In addition, the data streams within the Sensors Section may also be bookmarked.



4. ***Mobile Object Panel***

The complete "Mobile Object Panel" of any user (assuming proper security access rights) may be bookmarked for quick reference. In addition, nine feature buttons may also be bookmarked on the panel.

a. Name
b. Location
c. Audio
d. Video
e. Audio-Video
f. Sensors (plus submenus)
g. Recorders
h. Archive
i. Controls (plus submenus)
j. Controls & Sensors



9.6. Creating bookmarks for Sensors on YOUR mobile device.

Overview:

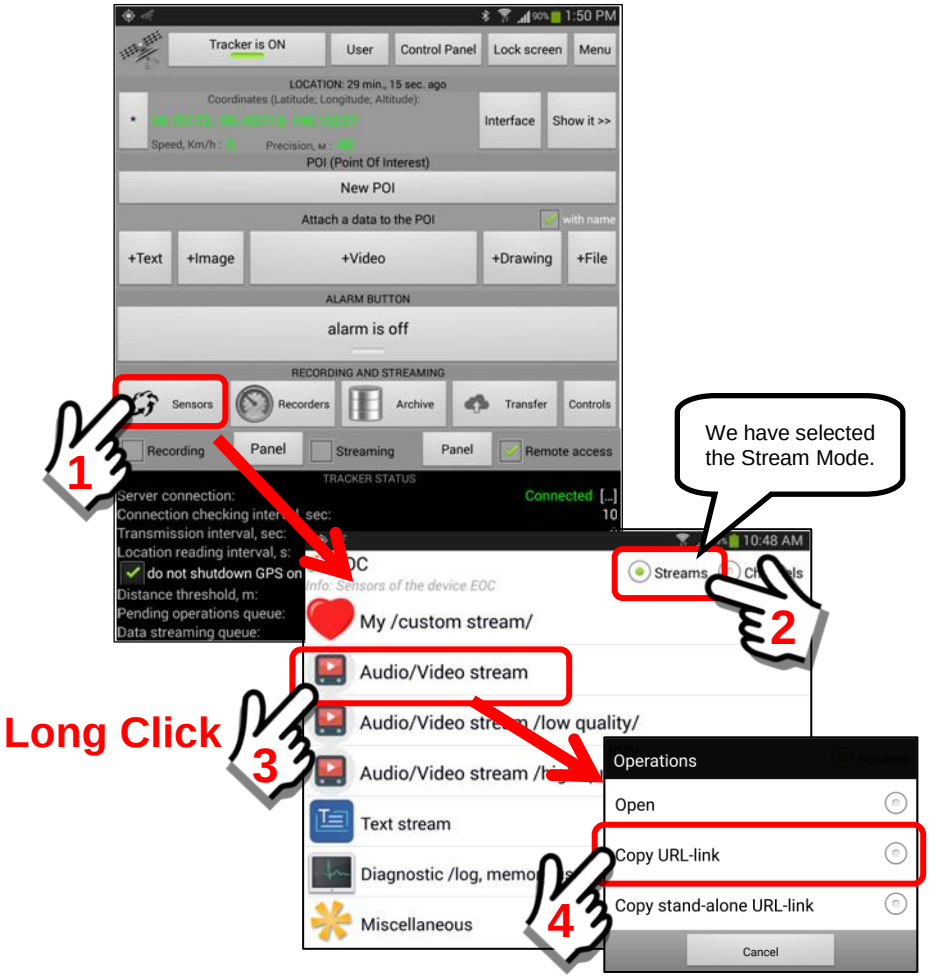
The “bookmark” feature enables a user to create a “shortcut” to specific operations on the mobile device. This section will describe the procedure to create a “new” bookmark for Sensor Channels of YOUR mobile device. Depending on the security access privileges of your device (Security Domain), you may also bookmark the audio/video features of other mobile devices (see following section).

Creating a “new” bookmark from YOUR own mobile device:

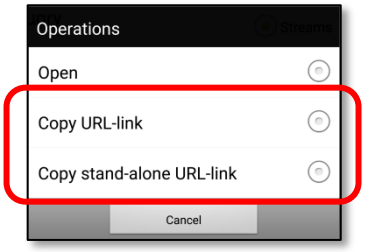
1. ***Navigate to the Tracker or Mobile Object panel to create a bookmark.*** Although it is not used often, this example will illustrate how to create a bookmark for sensors on your OWN mobile device. This can proivide you rapid access (a shortcut) to specific features.

   The “type” and number of menu options will depend on which set of screens you are using to access the Sensor Listing. We will cover both sets of menus in this example.

   Access the sensors list via the Tracker Panel – Stream Mode



Selecting the **Stream Mode** provides us with 3 menu options.



This pop-up menu provides two Bookmarking Options

<u>Bookmark Options</u>

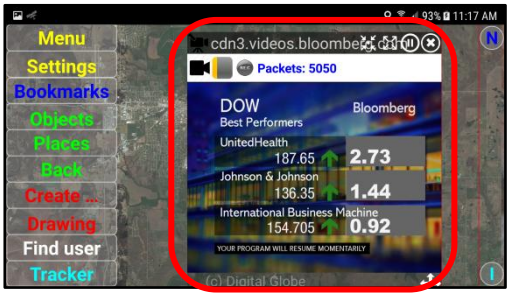
(1) Copy URL-link

The "Copy URL-link" menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU "clipboard" (.TEMP file folder). This URL link may then be "imported" as a bookmark. For this bookmark to "work" (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(2) Copy stand-alone URL-link

The "Copy stand-alone URL-link" menu option creates a stream URL that is "independent" (stand-alone) from the local tracker sensors. Sensor channel profiles have a "Source" field in the Channel Profile configuration panel. In most cases this field is "blank", which means the "source" is the local device sensors (the default). However, this source field may contain outside URL links (such as a Radio or TV channel). If the "Source" field contains outside links, then this stream URL does NOT require that the Tracker Panel on the local device is enabled (running). The channel is "independent" (stand-alone) and may be started even when the Tracker Panel on the originating device is disabled. This option will make a copy of the selected Sensor URL and store it on the Sentry MDU "clipboard" (.TEMP file folder). It may then be imported as a bookmark and sent to other users.

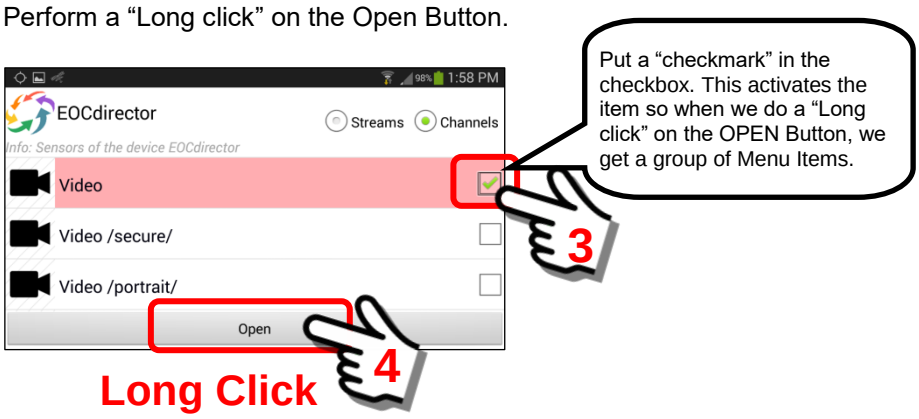
A typical application would be a bookmark of a live-streaming internet TV Channel where the "source" is on the internet and NOT the local device.



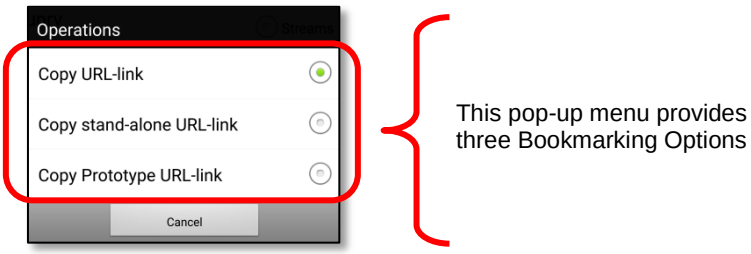
Access the sensors list via the Tracker Panel – Channels Mode

To explore the available Bookmark Options for a Sensor Channel, put a "checkmark" in the checkbox for the item.

Perform a "Long click" on the Open Button.



This will open a pop-up box of 3 menu items.



Bookmark Options

(1) Copy URL-link

The "Copy URL-link" menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU "clipboard" (.TEMP file folder). This URL link may then be "imported" as a bookmark. For this bookmark to "work" (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(2) Copy stand-alone URL-link

The "Copy stand-alone URL-link" menu option creates a stream URL that is "independent" (stand-alone) from the local tracker sensors. Sensor channel profiles have a "Source" field in the Channel Profile configuration panel. In most cases this field is "blank", which means the "source" is the local device sensors (the default). However, this source field may contain outside URL links (such as a Radio or TV channel). If the "Source" field contains outside links, then this stream URL does NOT require that the Tracker Panel on the local device is enabled (running). The channel is "independent" (stand-alone) and may be started even when the Tracker Panel on the originating device is disabled. This option will make a copy of the selected Sensor URL and store it on the Sentry MDU "clipboard" (.TEMP file folder). It may then be imported as a bookmark and sent to other users.

A typical application would be a bookmark of a live-streaming internet TV Channel where the "source" is on the internet and NOT the local device.

(3) Copy Prototype URL-link

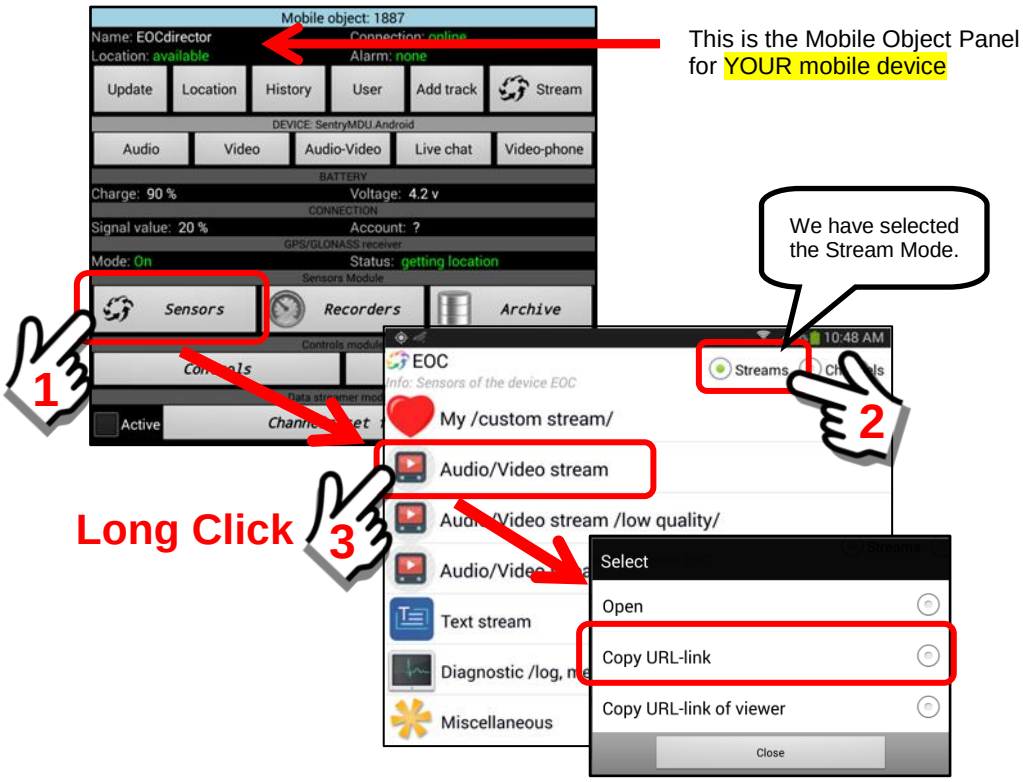
The "Copy Prototype URL-link" menu option will make a copy of an EXISTING sensor channel (ie audio, video, GPS, etc.) and allow a User to use an existing channel as a "prototype" to create a NEW Custom Channel.

The Sensors Button (on the Tracker Panel or Mobile Object Panel) will provide a pre-configured list of built-in channels (audio, video, GPS, etc.). However, the SentryMDU System allows a User to freely construct his own custom channels. These new channels will be stored in the “My /Custom stream/” Folder and channel summary list.

To create a new custom channel, the user needs a “prototype” to use as a basis for the channel profile configuration. The “Copy Prototype URL-link” menu option is used to select the desired prototype.

For example, a user wants to create a “new” Audio Channel with specific “custom” configuration settings. To do that, he would select an existing audio channel with the most similar profile settings, creates a “Prototype URL-link” and use that URL as a starting point for the new configuration. When the URL-link is “opened” it can be edited to the new requirements and saved as a “new” Custom URL.

Access the sensors list via the Mobile Object Panel – Streams Mode



Selecting the **Stream Mode** provides us wirth 3 menu options.

This pop-up menu provides two Bookmarking Options

Bookmark Options

(1) Copy URL-link

The "Copy URL-link" menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU "clipboard" (.TEMP file folder). This URL link may then be "imported" as a bookmark. For this bookmark to "work" (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(2) Copy URL-link of viewer

The "Copy URL-link of viewer" menu option creates a stream URL for a group of Sensor Channels. This option will make a copy of the current Sensor Channels and store it on the Sentry MDU "clipboard" (.TEMP file folder). This type of link, when launched will display the sensor data (ie audio, video, GPS, Environmental, etc.) in a Group Viewer as a live streaming panel (ie Audio/Video stream button).

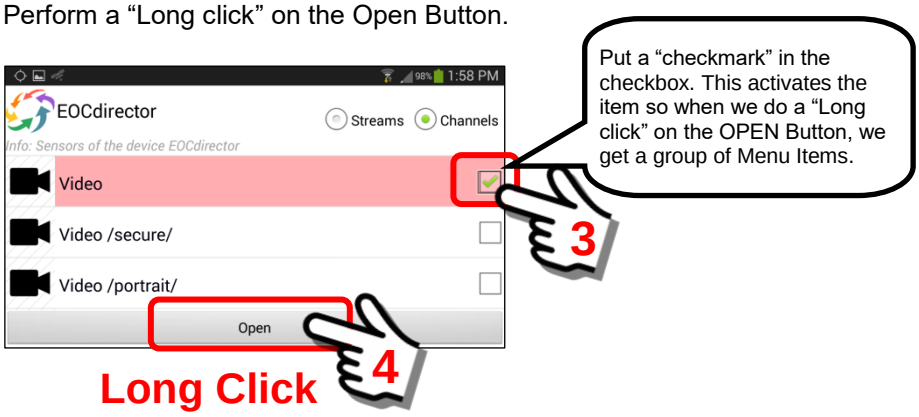
Access the sensors list via the Mobile Object Panel – Channels Mode

This is the Mobile Object Panel for YOUR mobile device

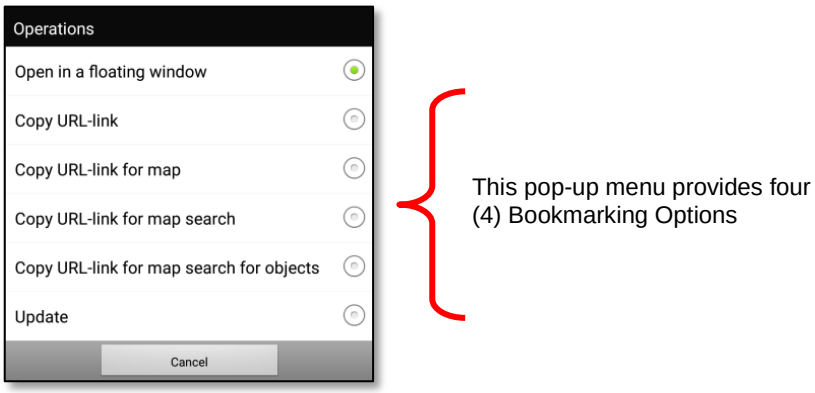
We have selected the Channels Mode.

To explore the available Bookmark Options for a Sensor Channel, put a checkmark in the checkbox for the item.

Perform a “Long click” on the Open Button.



This will open a pop-up box of 6 menu items.



<u>Menu Options Defined</u>

(1) Open in a floating window
The “Open in a floating winodw” menu option will open the selected URL as a floating window panel.

(2) Copy URL-link
The “Copy URL-link” menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. For this bookmark to “work” (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(3) Copy URL-link for map

The “Copy URL-link for map” menu option creates a map “marker” of a selected sensor channel of a remote device. It will show on the Map Screen overlay the GPS location of where the remote Sensor Channel (ie audio, video) of a remote device is transmitting from. The Sensor Channel will be displayed in a floating window.

Since the sensor channel is linked to the “map”, if a user (mobile device) moves, then the floating window is moved synchronously. This feature is useful for monitoring an object’s “location” while monitoring sensors channels (audio, video, etc.). A user may monitor single channels or multiple channels for one remote device or many remote devices. This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(4) Copy URL-link for map search

The “Copy URL-link for map search” menu option creates a URL (bookmark) for searching all objects in a current map window view (the display area showing on the Main Map Screen). As you “open” the “map search URL” the feature will search for the type of “content” that you have specified in selecting the Sensor Channel.

For example, if you selected a “video” channel, then the map search URL will search for all mobile devices in the area (screen view) and you will see video floating windows from all mobile devices in the area. Likewise, if you created a similar URL for “Audio” then you would see audio icons and streaming audio for all mobile devices in the area. As you navigate (zoom in-out) or move to other areas of the Map Screen, new mobile devices (in the search area) will be added and ones will be dropped off as they go “off-screen”.

This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(5) Copy URL-link for map search for objects

The “Copy URL-link for map search for objects” menu option creates a map “marker” of the selected channel. It will show on the Map Screen overlay the GPS location of where the Sensor Channel (ie audio, video) of a remote device is transmitting from. Unlike Item #3 above that searches for ALL objects in the viewing area, this option searches for only those Objects (remote devices) that are “checked” as active on the Objects Menu (Objects Button).

The Sensor Channel for the selected devices will be displayed in a floating window. Since the sensor channel is linked to the “map”, if a user (mobile device) moves, then the floating window is moved synchronously. This feature is useful for monitoring an object’s

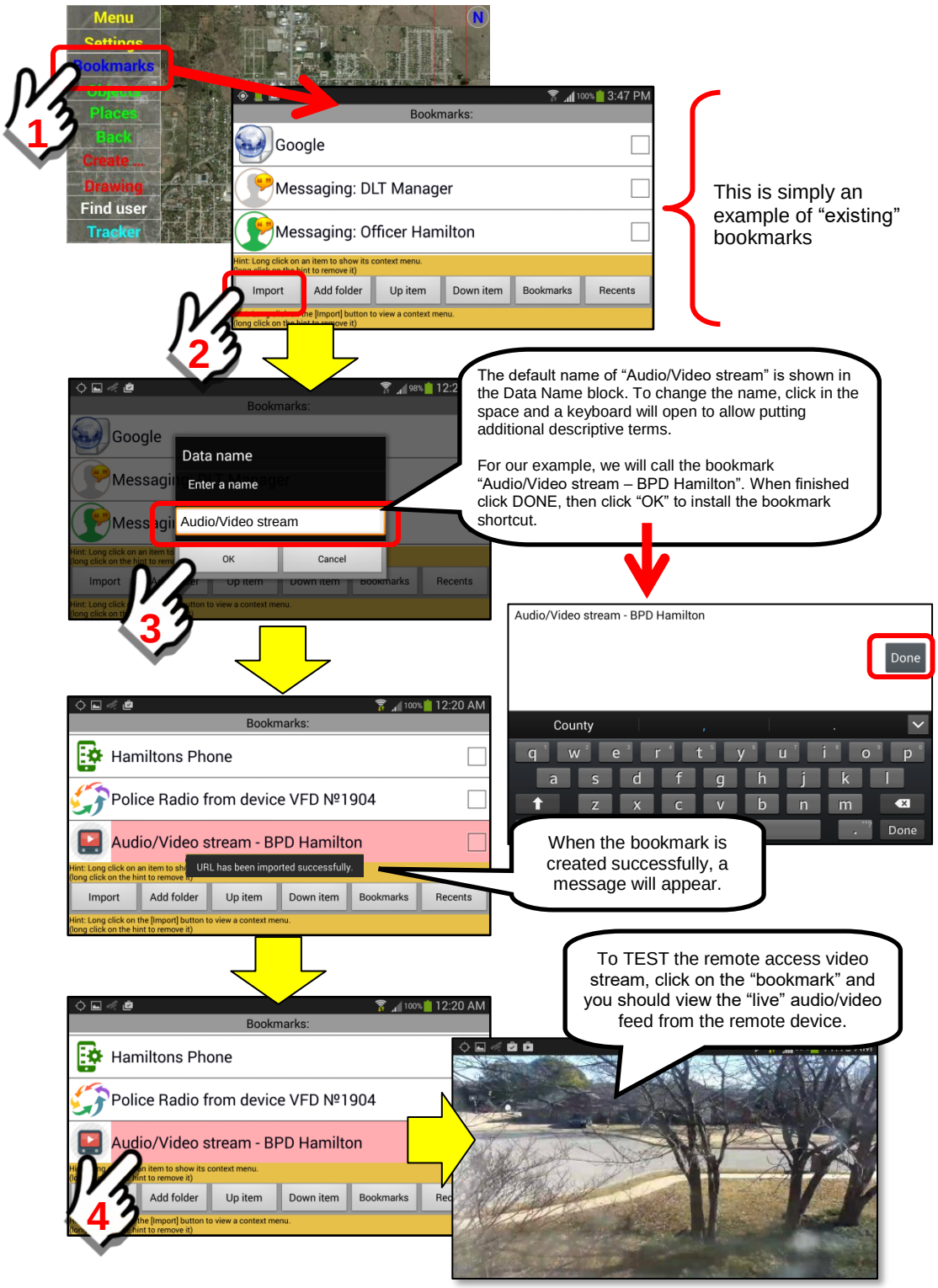
“location” while monitoring sensors channels (audio, video, etc.). A user may monitor single channels or multiple channels for one remote device or many remote devices. This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(6) Update

The “Update” menu option will update any underlying sensor channel lists for status changes (active / not active). This option does NOT create a bookmark link, it is simply an update button.

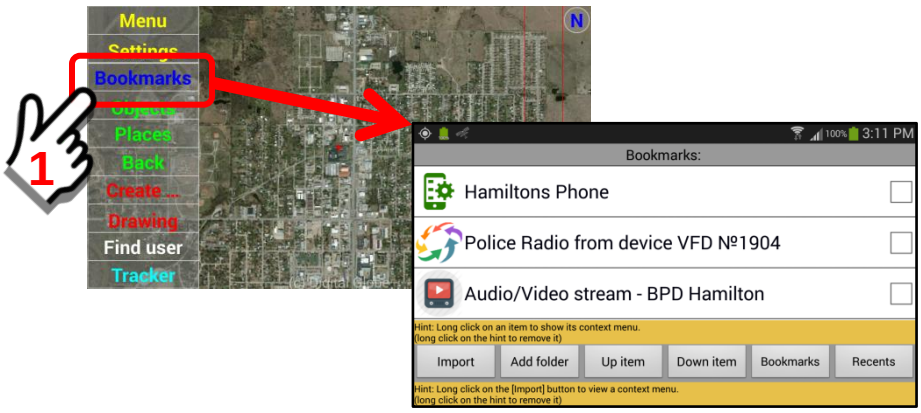
Installing the new bookmark on your device:

1. ***Example - Install the saved "shortcut" as a new bookmark.***
   The "shortcut" to the remote user's audio/video device has been saved on your mobile device. However, it must still be "imported" as a bookmark into YOUR file system. This sequence of steps will show how to create the bookmark on your mobile device.

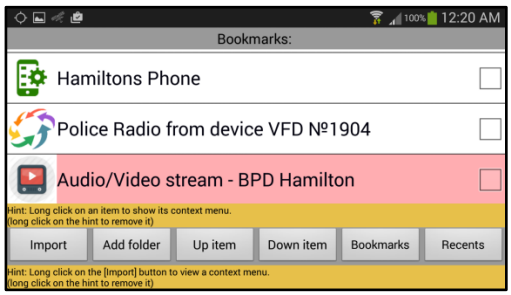


Using a “new” bookmark shortcut that was recently created:

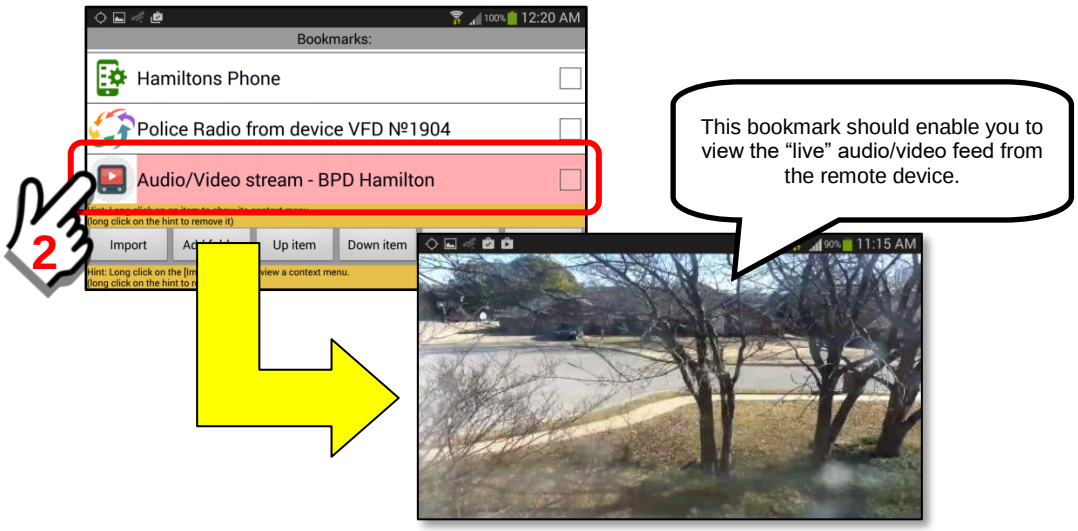
1. ***Navigate to the “Bookmarks” panel.***
   Select the “Bookmarks” menu item from the main map screen.



2. ***Select the desired bookmark from the menu list.***
   Review the available bookmarks from the list and select one. In this example we will select the bookmark we created in the previous section.



3. ***Click on the selected bookmark shortcut to execute the command.***
   Click on the bookmark “Audio/Video stream – BPD Hamilton” to view the data stream from the remote device.



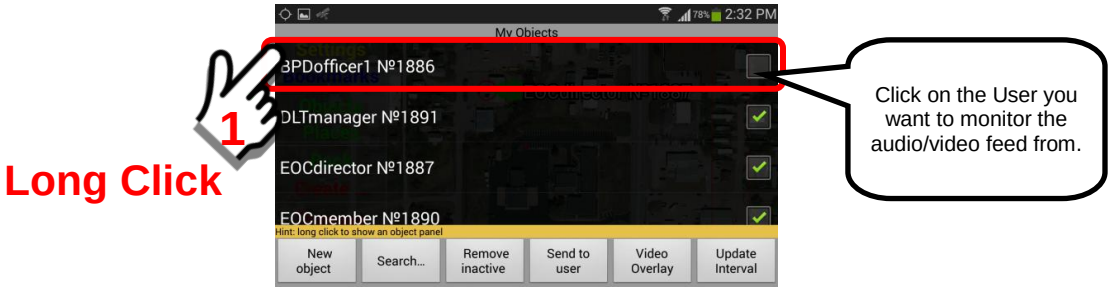
9.7. Creating bookmarks for Sensors on a REMOTE mobile device.

Overview:

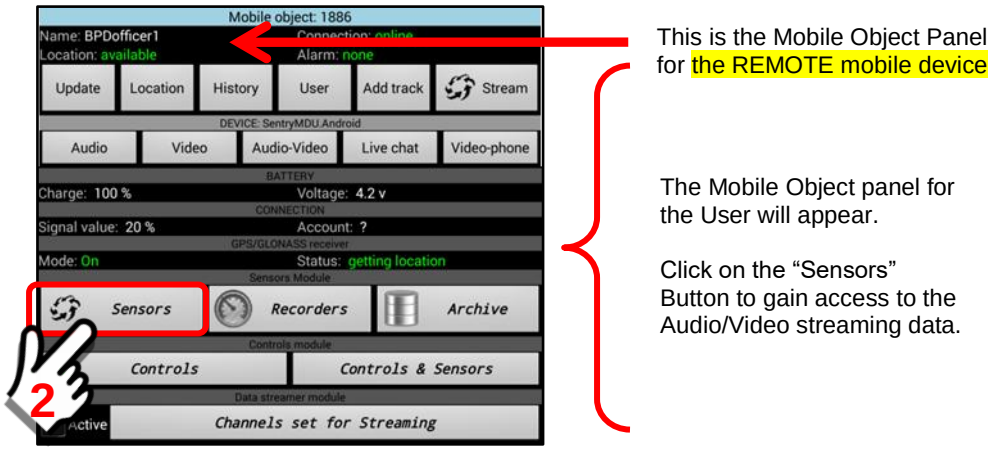
The “bookmark” feature enables a user to create a “shortcut” to specific operations on the mobile device. This section will describe the procedure to create a “new” bookmark for Sensor Channels on another person’s mobile device (Remote Device). Depending on the security access privileges of your device (Security Domain), you may also bookmark other features of their mobile device.

Creating a “new” bookmark from a mobile device of ANOTHER User:

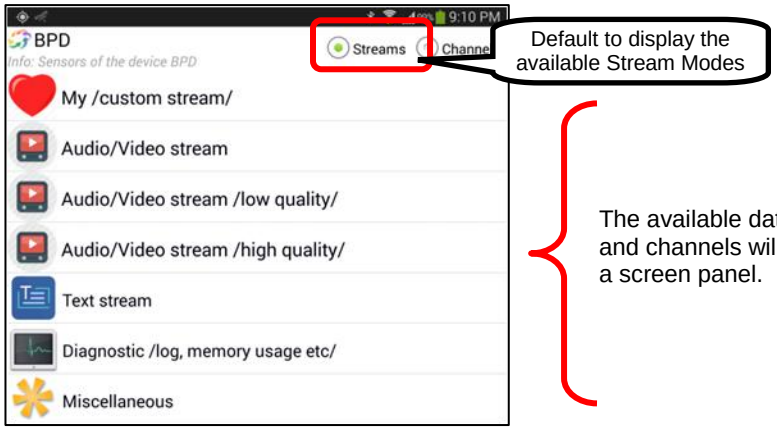
1. ***Navigate to a screen/panel where you want to create a bookmark.***
   In this example, we are going to create a “bookmark” so that we can remotely view the camera (stream audio/video) from another user’s mobile device.



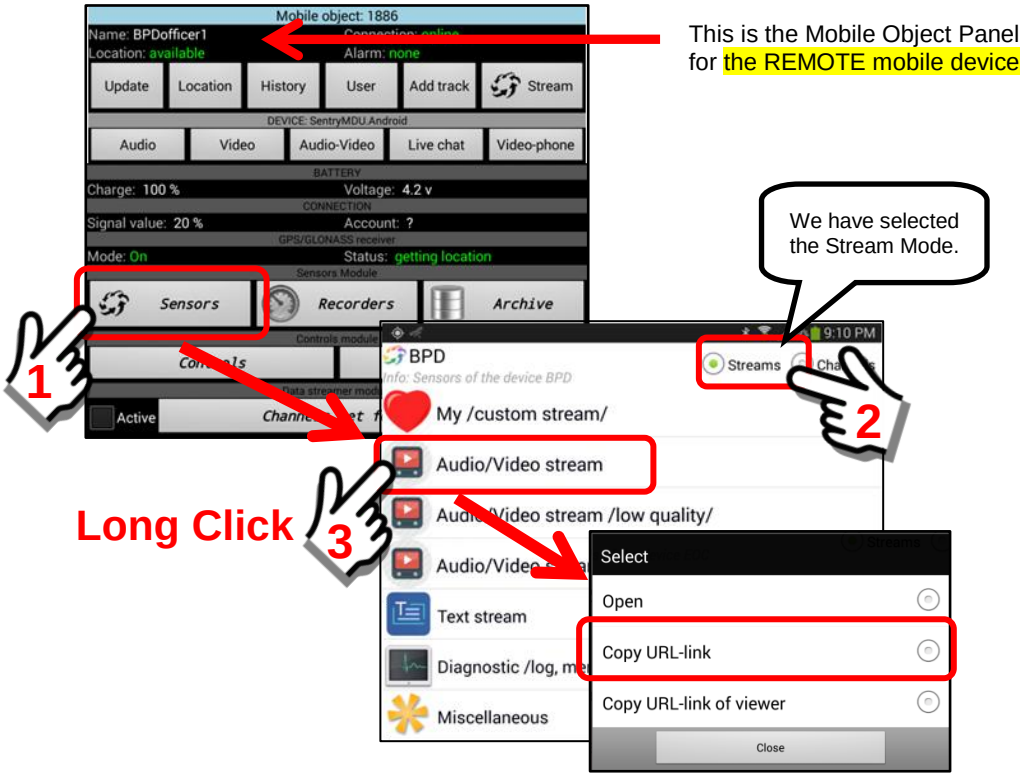
Perform a “Long click” on the object of the other user. The Mobile Object Panel for the other user will open.



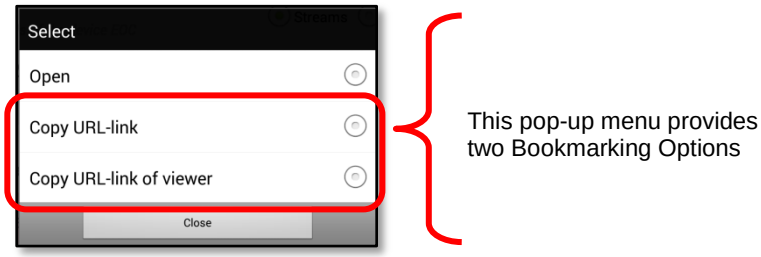
Click on the Sensors Button on the Mobile Object Panel. The Sensors Panel will open. It will default to display the “Streams” Mode.



Access the sensors list via the Mobile Object Panel – Streams Mode



Selecting the **Stream Mode** provides us wirth 3 menu options.



Menu Options Defined

(1) Open

The “Open” menu option will directly “open” the audio-video data stream and begin displaying as an audio-video panel. This is primarily for testing so you can see what it will look like.

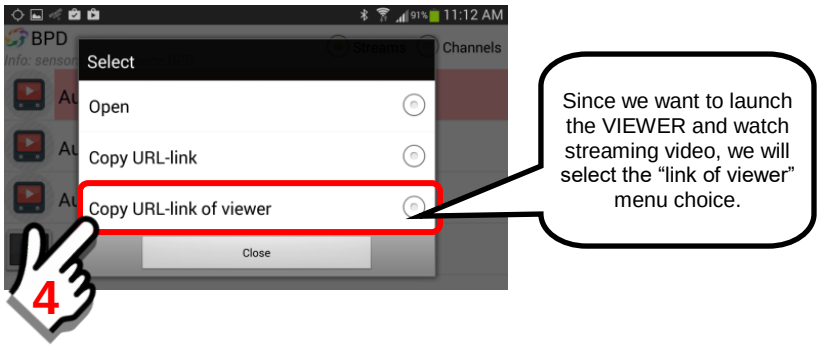
(2) Copy URL-link

The “Copy URL-link” menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. For this bookmark to “work” (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

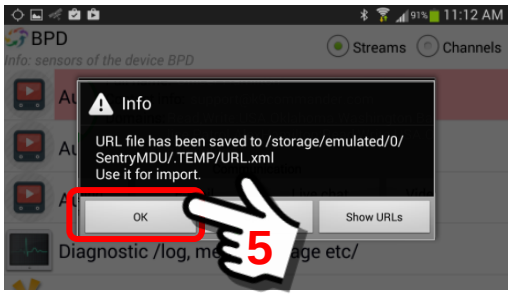
(3) Copy URL-link of viewer

The “Copy URL-link of viewer” menu option creates a stream URL for a group of Sensor Channels. This option will make a copy of the current Sensor Channels and store it on the Sentry MDU “clipboard” (.TEMP file folder). This type of link, when launched will display the sensor data (ie audio, video, GPS, Environmental, etc.) in a Group Viewer as a live streaming panel (ie Audio/Video stream button).

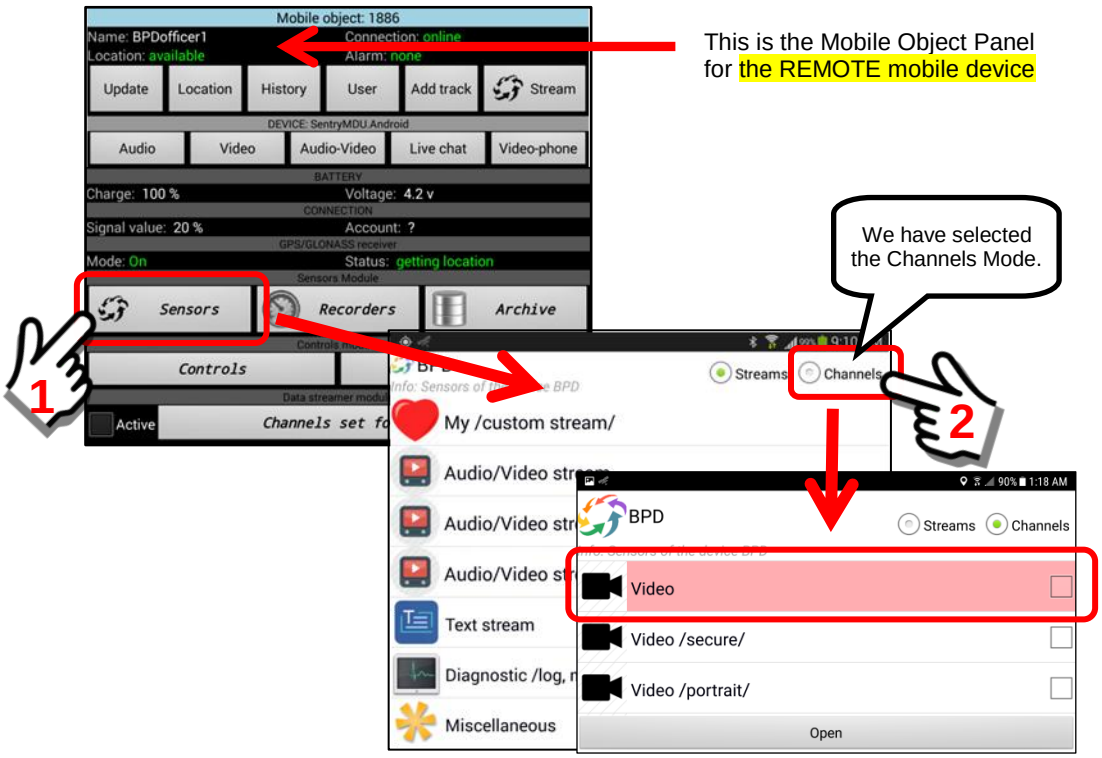
For this example, we are selecting “Copy URL-link of viewer”.



If the operation is successful, a pop-up box with a confirmation message will appear. Click “OK” to continue.

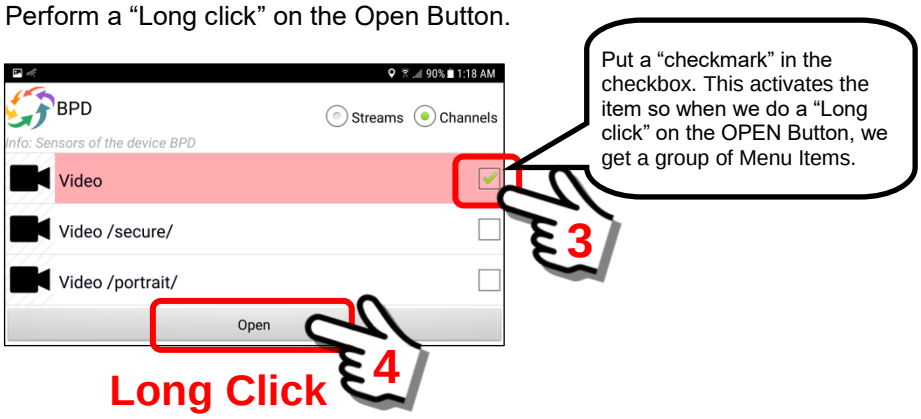


Access the sensors list via the Mobile Object Panel – Channels Mode

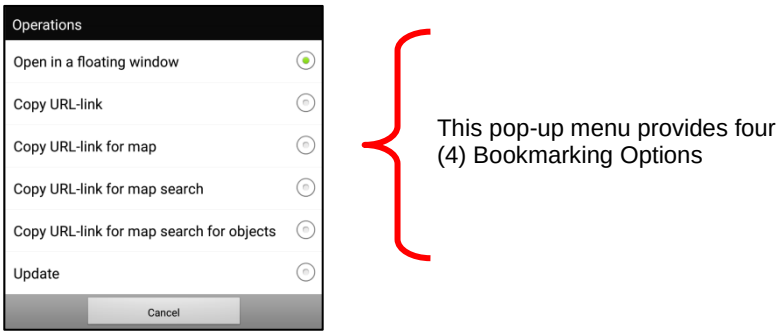


To explore the available Bookmark Options for a Sensor Channel, put a checkmark in the checkbox for the item.

Perform a “Long click” on the Open Button.



This will open a pop-up box of 6 menu items.



Menu Options Defined

(1) Open in a floating window

The “Open in a floating winodw” menu option will open the selected URL as a floating window panel.

(2) Copy URL-link

The “Copy URL-link” menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. For this bookmark to “work” (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(3) Copy URL-link for map

The “Copy URL-link for map” menu option creates a map “marker” of a selected sensor channel of a remote device. It will show on the Map Screen overlay the GPS location of where the remote Sensor Channel (ie audio, video) of a remote device is transmitting from. The Sensor Channel will be displayed in a floating window.

Since the sensor channel is linked to the “map”, if a user (mobile device) moves, then the floating window is moved synchronously. This feature is useful for monitoring an object’s “location” while monitoring sensors channels (audio, video, etc.). A user may monitor single channels or multiple channels for one remote device or many remote devices. This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(4) Copy URL-link for map search

The “Copy URL-link for map search” menu option creates a URL (bookmark) for searching all objects in a current map window view (the display area showing on the Main Map Screen). As you “open” the “map search URL” the feature will search for the type of “content” that you have specified in selecting the Sensor Channel.

For example, if you selected a “video” channel, then the map search URL will search for all mobile devices in the area (screen view) and you will see video floating windows from all mobile devices in the area. Likewise, if you created a similar URL for “Audio” then you would see audio icons and streaming audio for all mobile devices in the area. As you navigate (zoom in-out) or move to other areas of the Map Screen, new mobile devices (in the search area) will be added and ones will be dropped off as they go “off-screen”.

This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(5) Copy URL-link for map search for objects

The “Copy URL-link for map search for objects” menu option creates a map “marker” of the selected channel. It will show on the Map Screen overlay the GPS location of where the Sensor Channel (ie audio, video) of a remote device is transmitting from. Unlike Item #3 above that searches for ALL objects in the viewing area, this option searches for only those Objects (remote devices) that are “checked” as active on the Objects Menu (Objects Button).

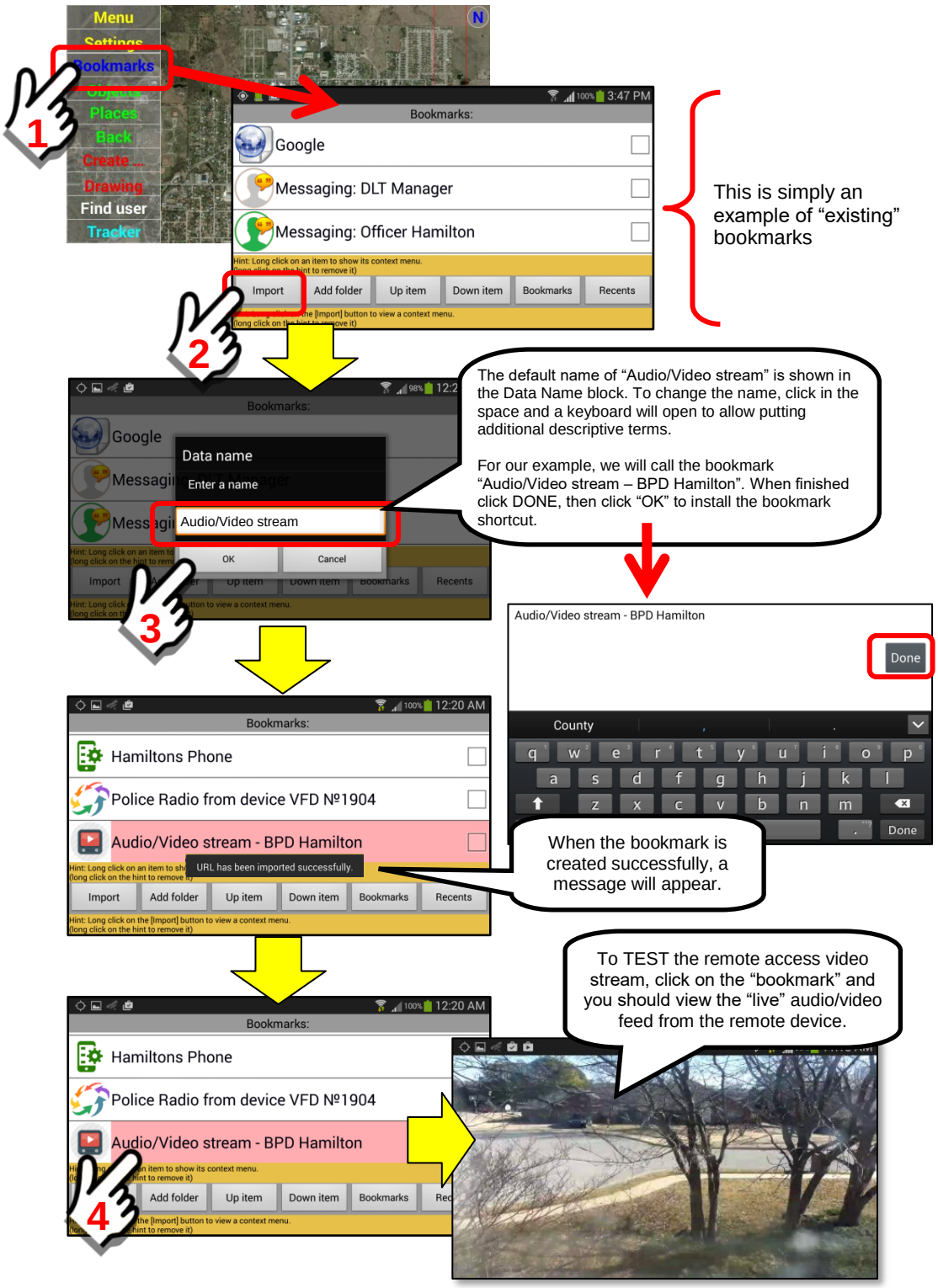
The Sensor Channel for the selected devices will be displayed in a floating window. Since the sensor channel is linked to the “map”, if a user (mobile device) moves, then the floating window is moved synchronously. This feature is useful for monitoring an object’s “location” while monitoring sensors channels (audio, video, etc.). A user may monitor single channels or multiple channels for one remote device or many remote devices. This option will make a copy of the selected Sensor URL and store it on the SentryMDU “clipboard” (.TEMP file folder) so it may be imported into bookmarks or custom map layers.

(6) Update

The “Update” menu option will update any underlying sensor channel lists for status changes (active / not active). This option does NOT create a bookmark link, it is simply an update button.

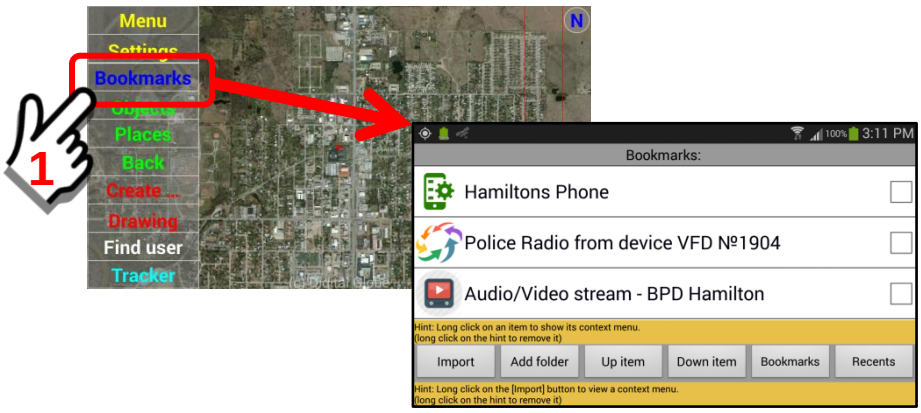
Installing the new bookmark on your device:

1. ***Example - Install the saved "shortcut" as a new bookmark.***
   The "shortcut" to the remote user's audio/video device has been saved on your mobile device. However, it must still be "imported" as a bookmark into YOUR file system. This sequence of steps will show how to create the bookmark on your mobile device.

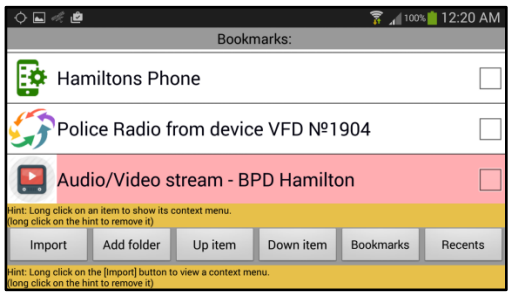


Using a “new” bookmark shortcut that was recently created:

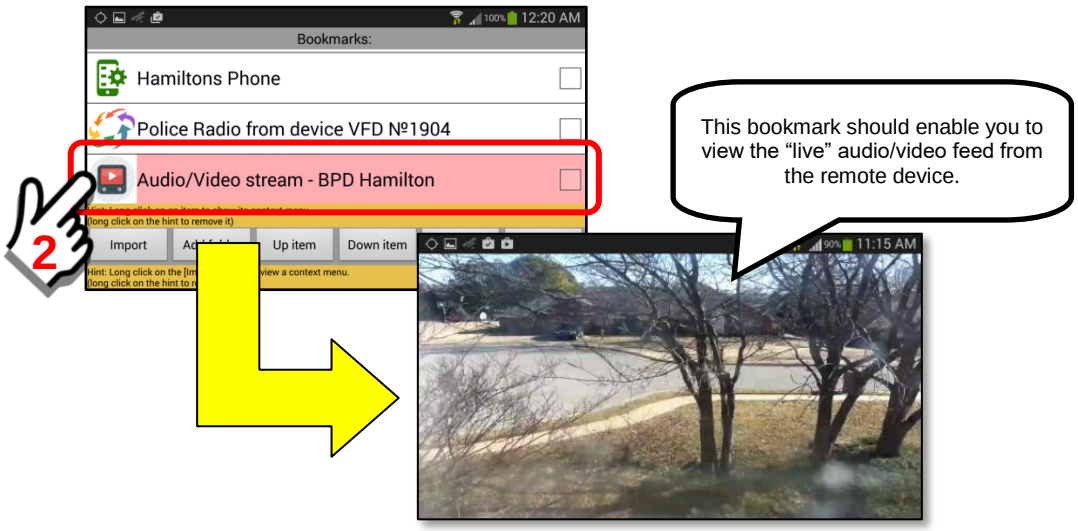
1. ***Navigate to the “Bookmarks” panel.***
   Select the “Bookmarks” menu item from the main map screen.



2. ***Select the desired bookmark from the menu list.***
   Review the available bookmarks from the list and select one. In this example we will select the bookmark we created in the previous section.



3. ***Click on the selected bookmark shortcut to execute the command.***
   Click on the bookmark “Audio/Video stream – BPD Hamilton” to view the data stream from the remote device.



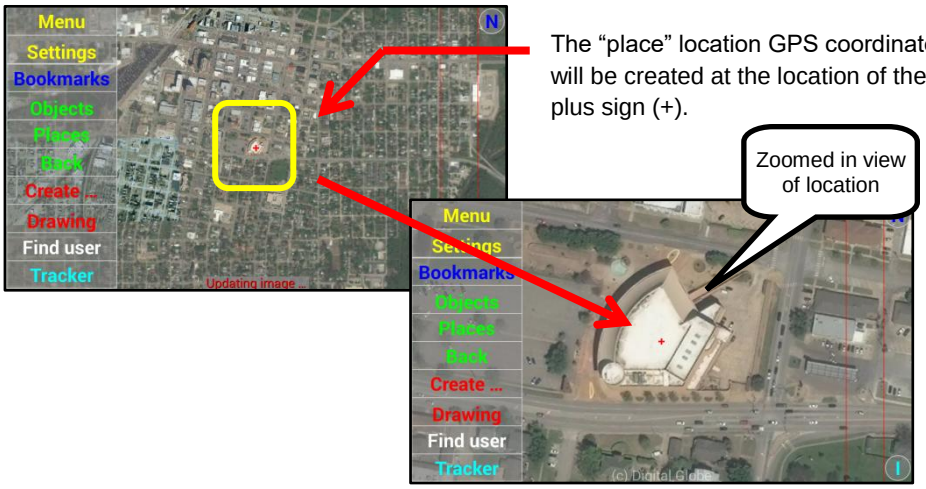
9.8. Creating a new bookmark for “Places” on a map.

Overview:

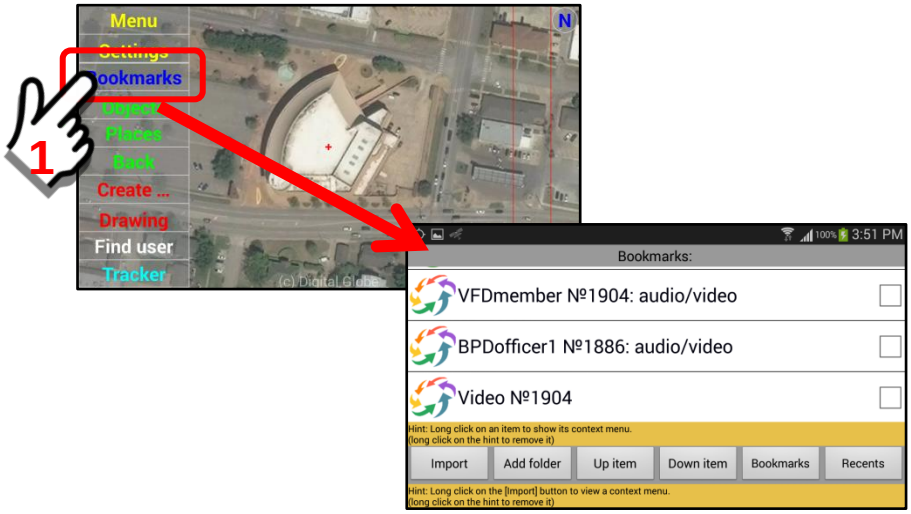
The “bookmark” feature enables a user to create a “shortcut” to specific operations on the mobile device. This section will describe the procedure to create a “new” bookmark for a specific GPS location on a Map. Bookmarks can be created for your own mobile device and the mobile devices of other users. Depending on the security access privileges of your device (Security Domain), you may also bookmark features of other mobile devices.

Creating a “new” bookmark for a PLACE on the map:

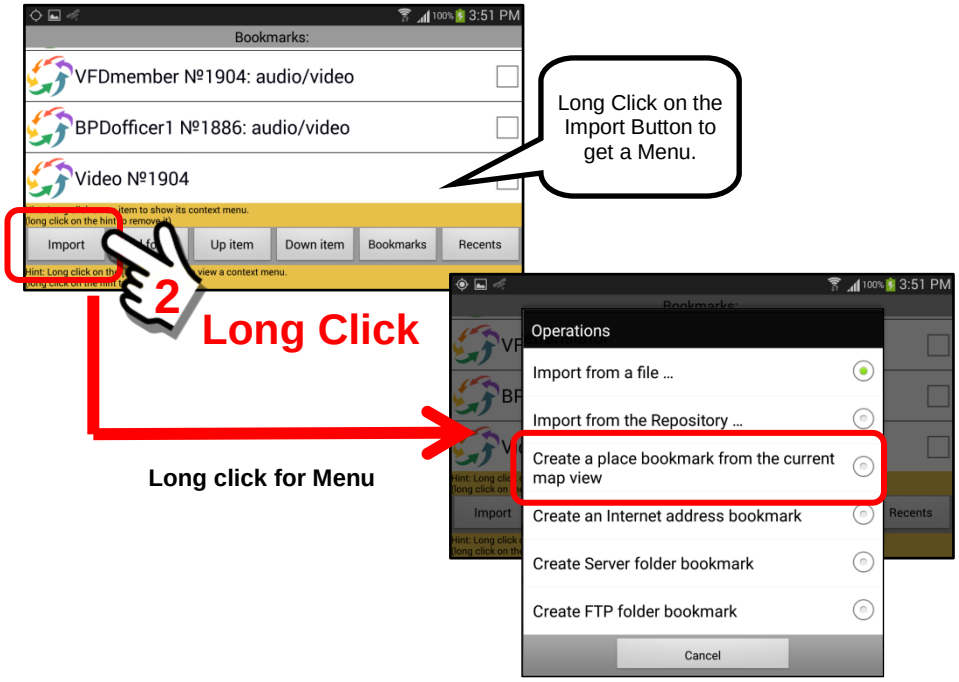
1. ***Locate the “place” on the map that you want to bookmark.***
   Locate a place on the main map screen by centering the red plus sign (+) over the location on the map. Using the “zoom” tools, zoom in to the location to make sure you are at the exact spot you desire.



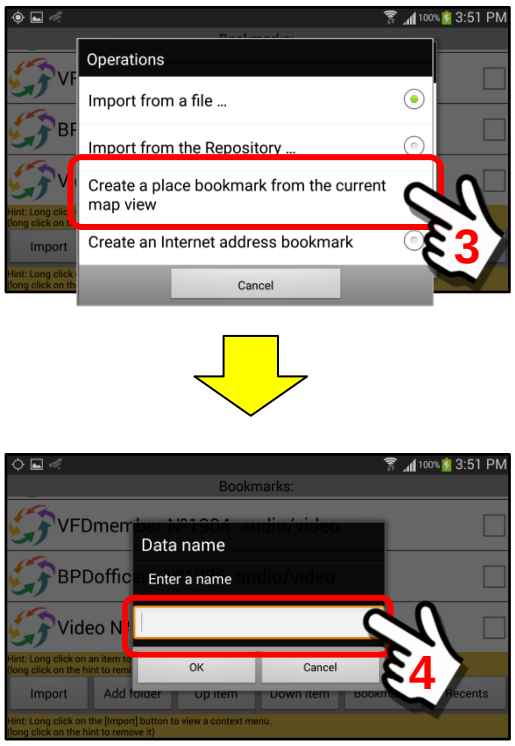
2. ***Navigate to the Bookmark Section.***
   Once you have centered the Map Screen over the desired location, click on the Bookmark Menu Option. You will see a list of the existing bookmarks stored on the device.



3. ***Perform a "Long Click" on the Import Button to open Menu Options.***
Select the Import Button and perform a "long click" to open the option menu. We are looking for the option to "Create a place bookmark from the current map view".



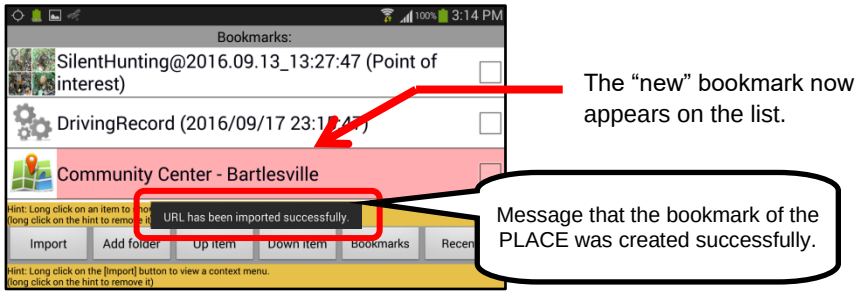
4. ***Create a name for the PLACE you want to bookmark.***
Select the option to create a place. Create a name for the place that you want displayed on the list of bookmarks.



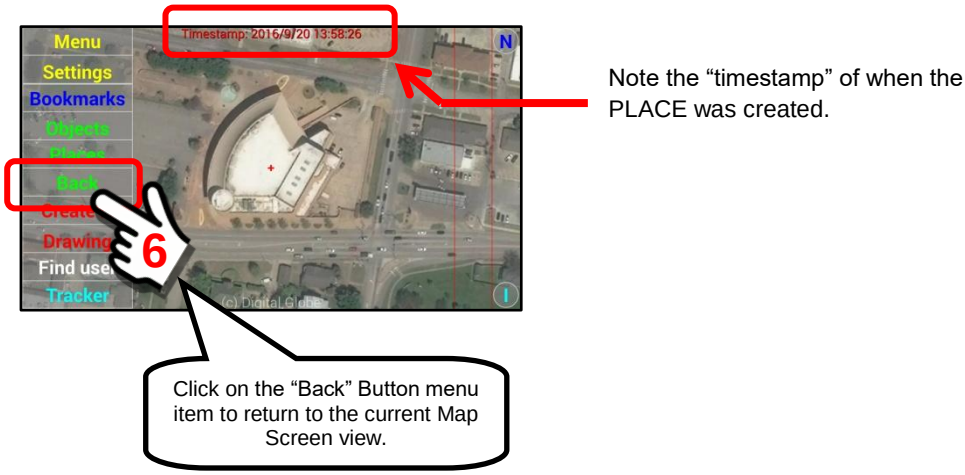
The on-screen keyboard feature will open. Type in the name you would like to use for the place. Click “OK” when finished.

5. ***Review the “new” bookmark PLACE you have created.***

Once you have named the place and click “OK”, the Sentry MDU System will create the bookmark and add it to the list of available bookmarks on the mobile device. If everything goes well, a message will be displayed that the bookmark creation was successful.



To view the newly created place location, click on the bookmark item. You will be taken to the GPS coordinates of the screen location that was saved.

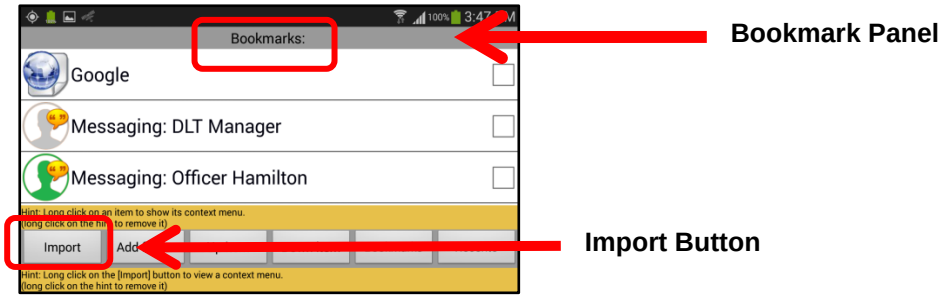


9.9. Importing bookmarks from Maps, Files and the Internet

Overview:

The SentryMDU System makes it possible for Users to “import” bookmarks not only from sources within the network, but from designated map locations, files and external internet addresses. This will enable users to rapidly create and share bookmarks of contact information, places and locations with other users.

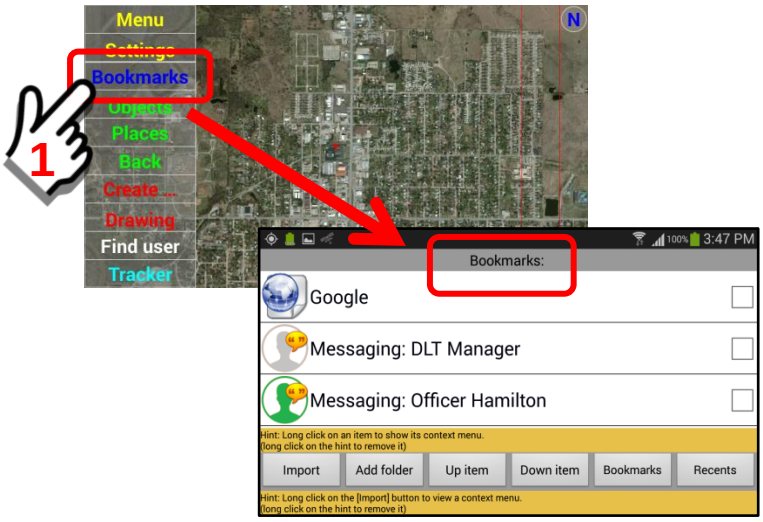
This section will describe how to create bookmarks for the following data sources.



(1) Import from a file
(2) Import from the SentryMDU Repository
(3) Create a “place” bookmark from the current Main Map Screen view
(4) Create an internet address bookmark
(5) Create a Server Folder bookmark
(6) Create an FTP Folder bookmark

Steps to import bookmarks from alternate sources:

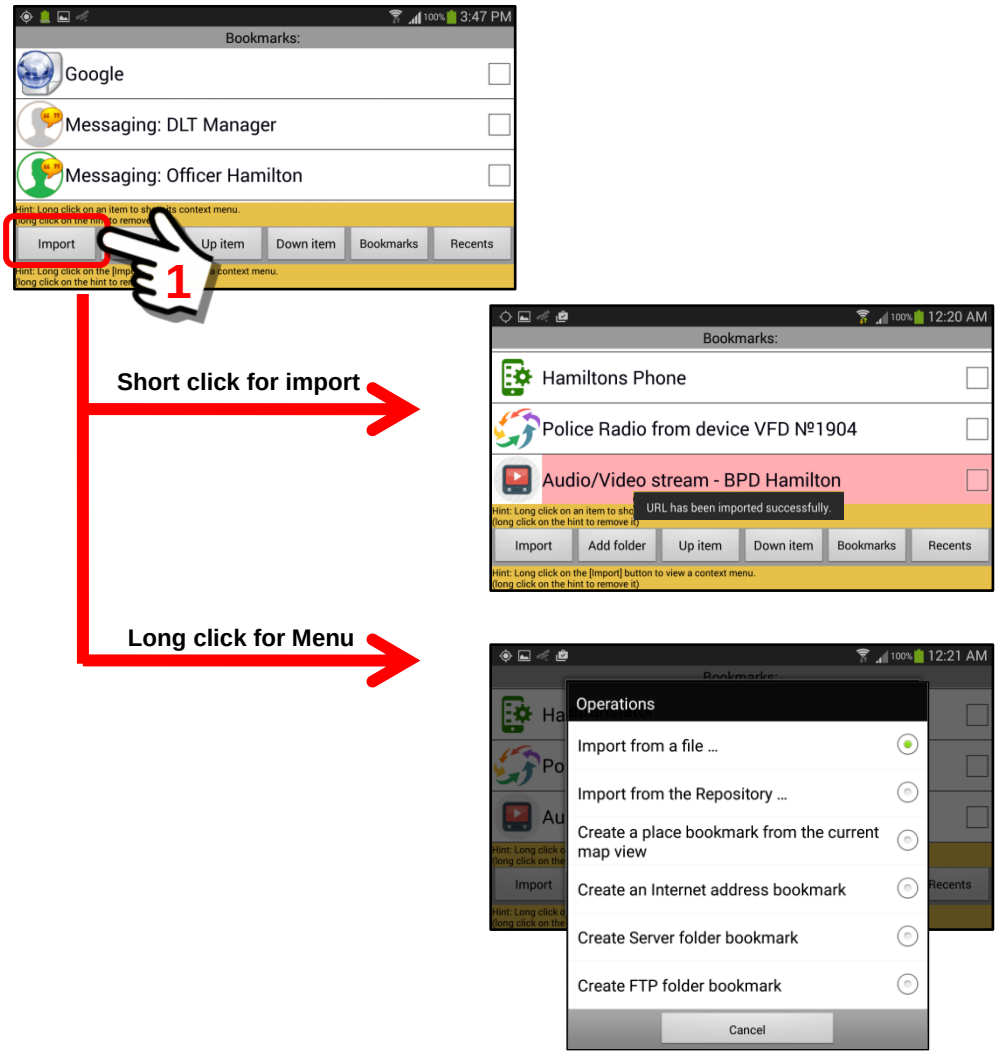
1. ***Navigate to the Bookmarks panel.***
   Click on the Bookmarks menu item to launch the Bookmarks Panel.



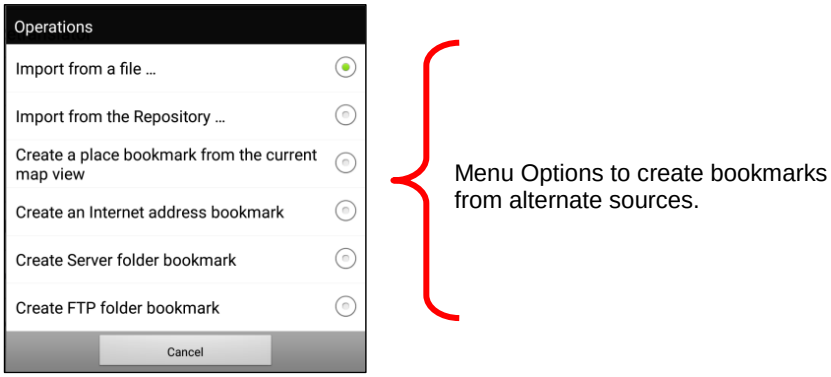
2. ***The Import Button.***

In this “Import” Button will import previously saved bookmarks into the application and create “new” bookmarks from maps, files and the internet. In this section we will focus on the “Long click” Menu that will allow us to create bookmarks for Maps, Files and from external sources.

Perform a “Long click” on the Import Button.



A “Long Click” on the Import Button will open a pop-up Operations Panel with six (6) menu options.

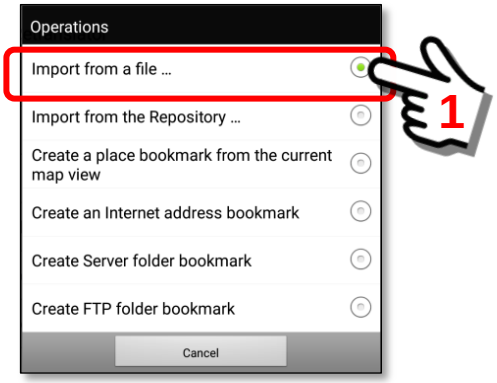


3. *Import from a File.*

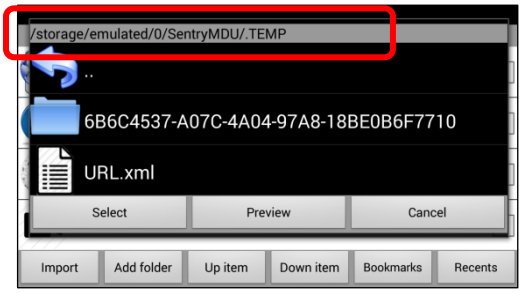
The “Import from a file” menu item will create a bookmark from an XML file configured as a bookmark. All bookmark files are in XML format. This option is available for those that would like to create bookmarks “programmatically” or use file transfers to install bookmarks into a file system to which the mobile device has access.

In this exercise, we will import a bookmark that contains a document for a Flood Level Report.

Click on the “Import from a file” Button.



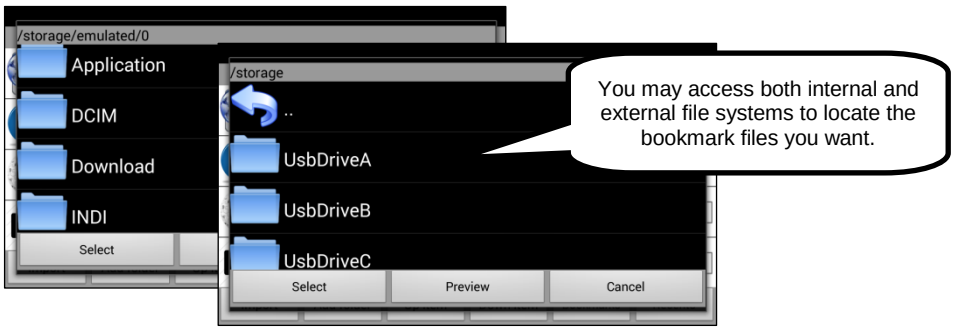
Since we are looking to retrieve an XML bookmark file from the file system, the application will default to looking in the .TEMP Folder as shown below. In the SentryMDU file structure, the .TEMP Folder is a “hidden” folder.



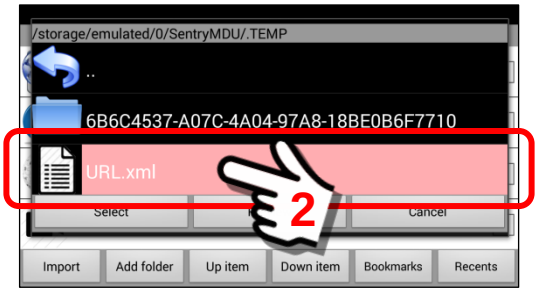
The system will look in the default location for XML files.

/SentryMDU/.TEMP

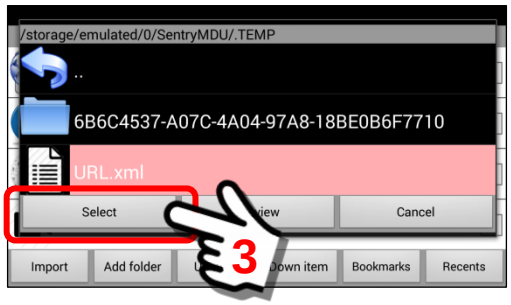
You may navigate the files system of the device and attached devices such as SD-Cards and USB Drives that may be attached.



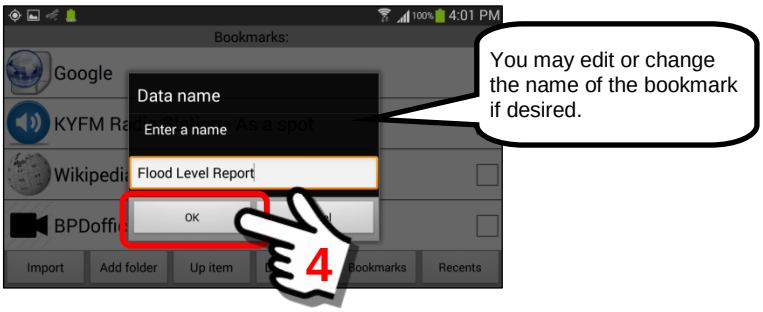
When you have located the desired XML file, click to choose the item.



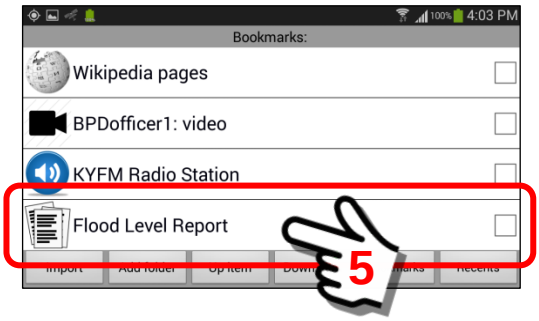
Click the “Select Button” to execute your choice.



The format of a bookmark XML file includes a default name. You may edit this name. When finished, click the “OK” Button to continue.



The “new” bookmark is now installed in the Bookmark Listing.

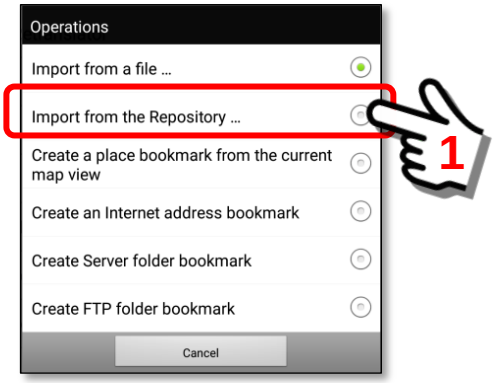


4. ***Import from the SentryMDU Bookmark Repository.***
The "Import from the Repository" menu item will open the SentryMDU bookmark repository that resides on the SentryMDU Server Instance that you are registered with. If you are a Server License Holder and run your own server instance, you may put custom bookmarks that are specific to your business in your Server Repository.

If you are a Subscription User or have "free" access on a DLT Managed Server Instance, then you will have access to a default set of bookmarks. All bookmark files are in XML format.

In this exercise, we will import a bookmark from the Radios Folder in the SentryMDU Bookmark Repository.

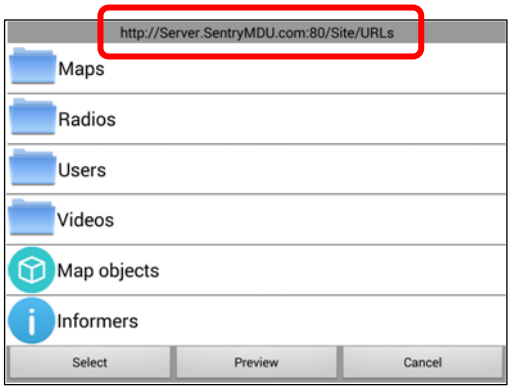
Click on the "Import from the Repository" Button.



Since we are looking to retrieve a bookmark from the SentryMDU Repository, the application will default to looking in the URLs Folder as shown below.

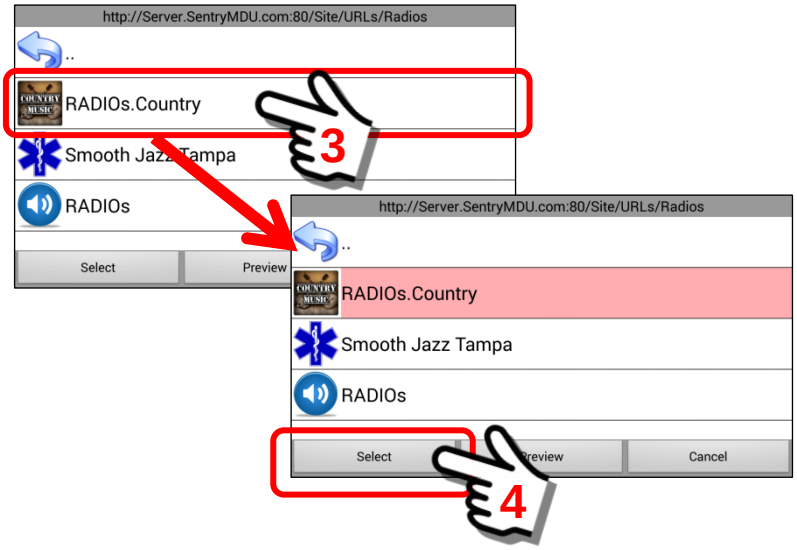
http://Server.SentryMDU.com:80/Site/URLs

Depending on the YOUR Server Instance, your Repository may be at a different internet address.



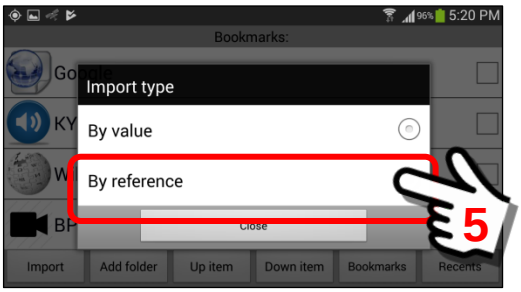
In this example, we will be selecting a bookmark set from the Radios Folder. Click on the Radios Folder to open it.

The Radios Folder will open and display the contents.
Select **RADIOs.Country** as your choice.

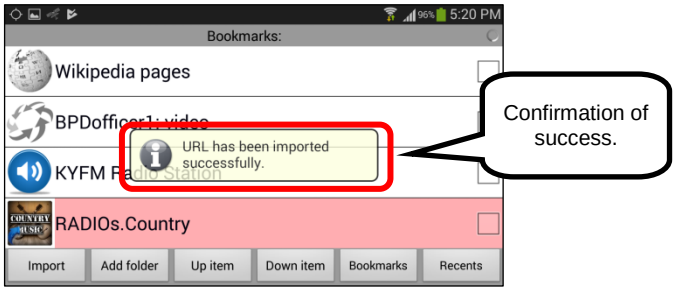


When you make your selection, the system will display a pop-up menu that will ask for the “Import Type” … whether it is by a value or a reference.

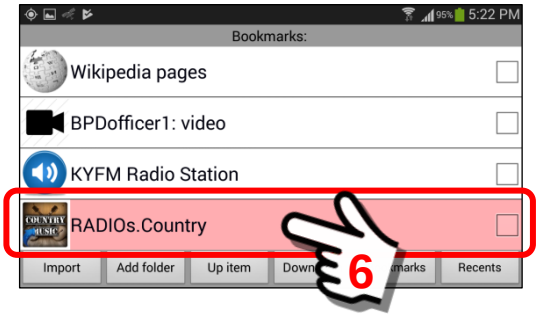
Select “By Reference” since we are referencing the name **RADIOs.Country**.



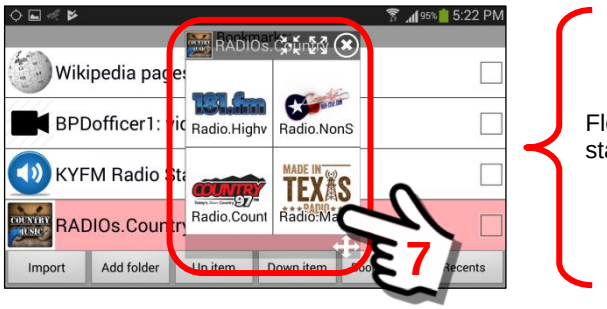
The **RADIOs.Country** bookmark will now be installed in your Bookmarks Folder.



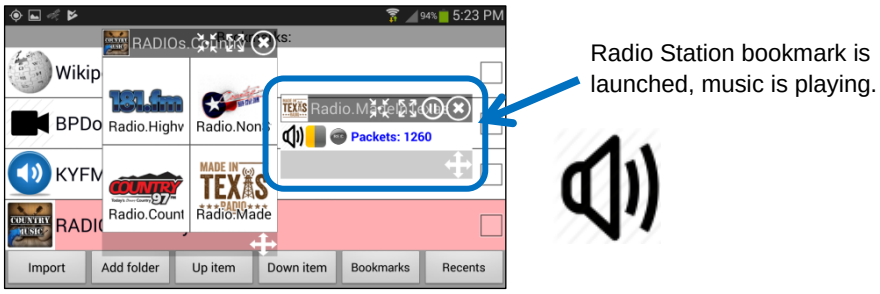
To test our new bookmark, click on the Bookmark item.



This particular bookmark will open in a floating window. In addition, you will notice that THIS BOOKMARK includes a gallery grid of 4 individual radio station bookmarks incorporated into a single floating window.

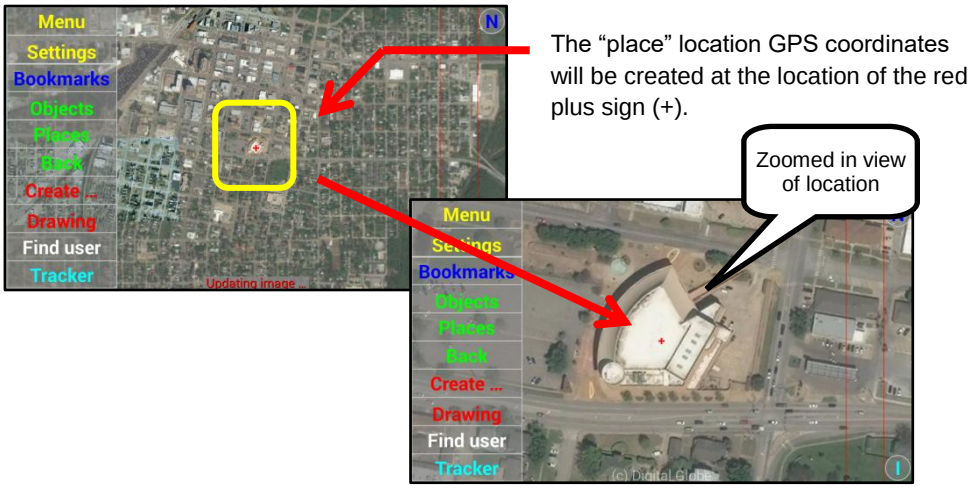


For our example, we will click on the station in the lower-right hand corner of the floating window … ***Made in Texas***. When clicked, the "Made in Texas" grid block will open another floating window, the URL will be launched and you should hear country music playing from your mobile device.



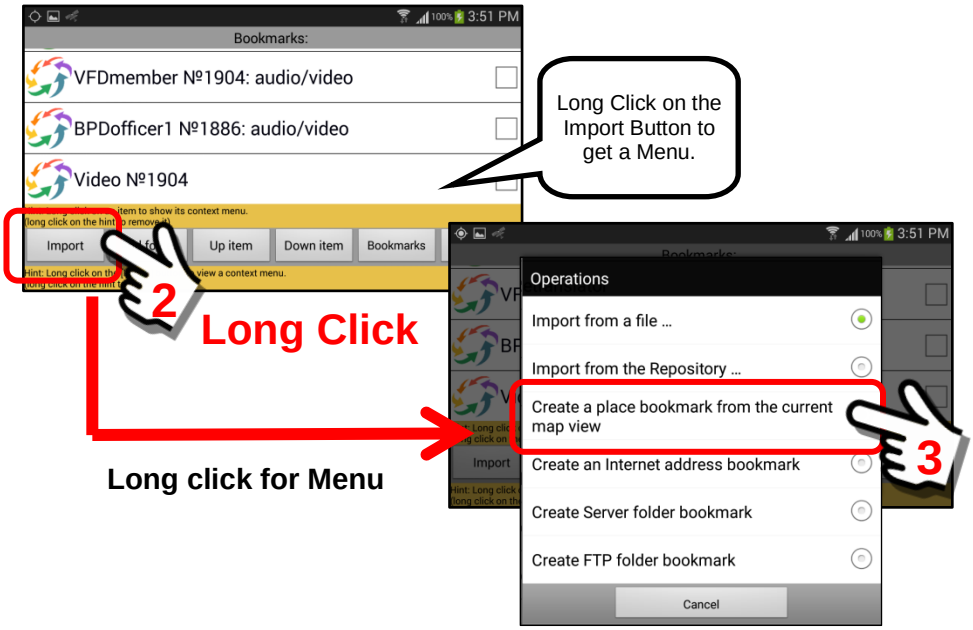
5. ***Create a "place" bookmark from the current Map View.***
This menu item will create a bookmark that will take the User to a specific map location (GPS coordinate spot). This has application when you would like to rapidly go to a specific location on the map. For example, Police Officers may want to create individual bookmarks for all schools in their area or for their local Community Center.

Locate a place on the main map screen by centering the red plus sign (+) over the location on the map. Using the "zoom" tools, zoom in to the location to make sure you are at the exact spot you desire.

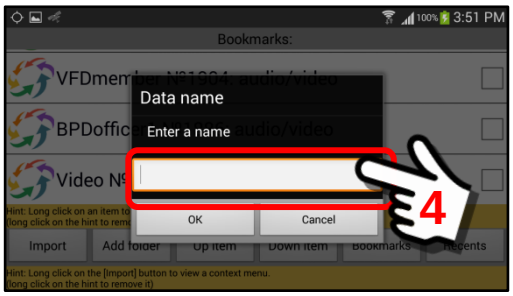


Once you have centered the Map Screen over the desired location, click on the Bookmark Menu Option. You will see a list of the existing bookmarks stored on the device.

Select the Import Button and perform a “long click” to open the option menu. We are looking for the option to “Create a place bookmark from the current map view”.

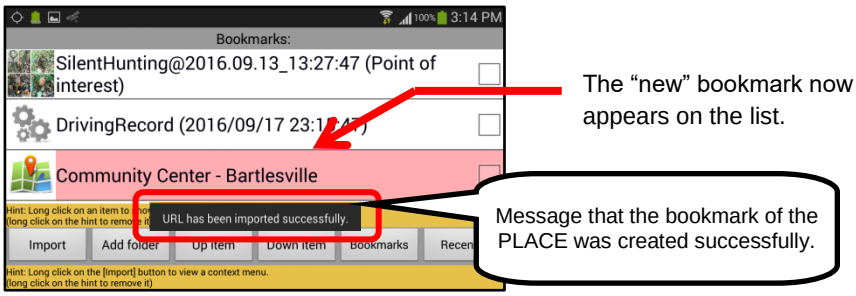


Select the option to create a place. Create a name for the place that you want displayed on the list of bookmarks.

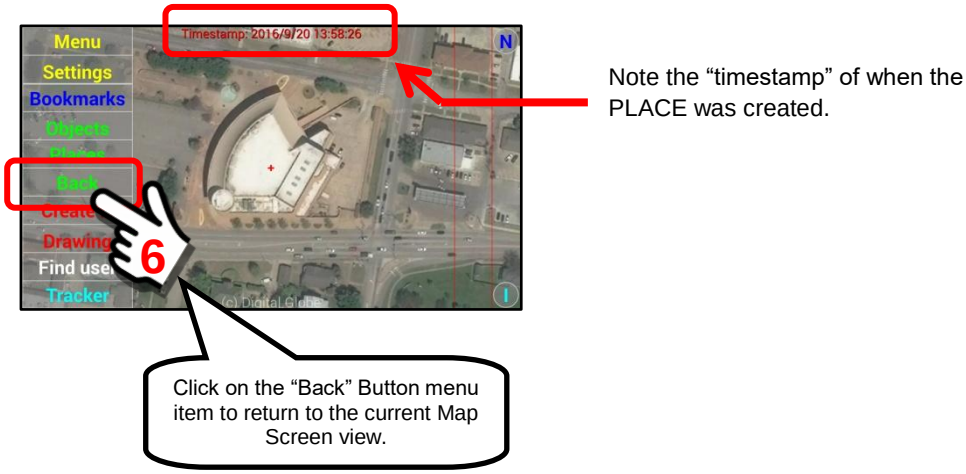


The on-screen keyboard feature will open. Type in the name you would like to use for the place. Click “OK” when finished.

Once you have named the place and click “OK”, the Sentry MDU System will create the bookmark and add it to the list of available bookmarks on the mobile device. If everything goes well, a message will be displayed that the bookmark creation was successful.



To view the newly created place location, click on the bookmark item. You will be taken to the GPS coordinates of the screen location that was saved.

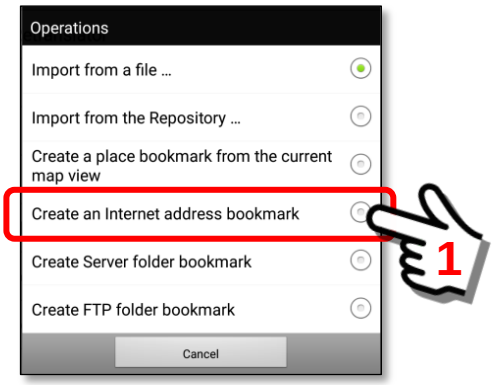


6. ***Create an internet address bookmark.***

This menu item will create a bookmark that will retrieve information from an external internet site. This will allow a “one click” access to often used information.

In this example, we will create a bookmark to retrieve a slide show of sample SentryMDU screens from the DLT public website.

Click on the “Create an internet address bookmark” Button.



Since we are looking to retrieve a slide show from the DLT Website, we will use the following address as shown below.

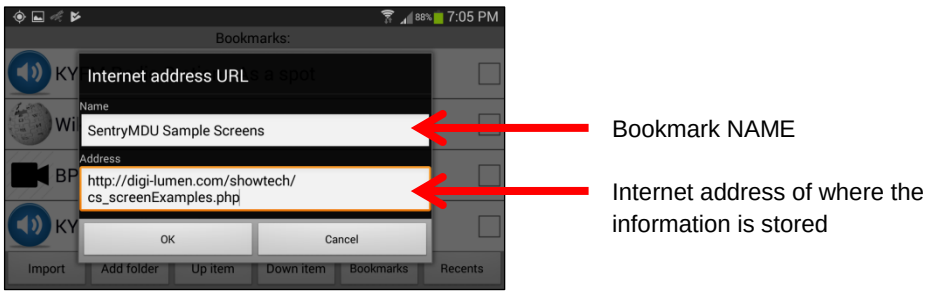
http://digi-lumen.com/showtech/cs_screenExamples.php

This feature will allow a user to retrieve information from almost any external source in almost any format that the mobile device can process.

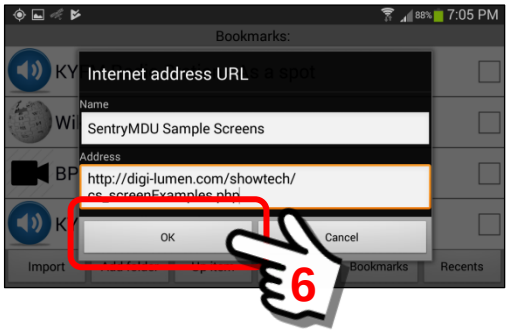
Clicking on the “Create an internet address bookmark” Button will open a pop-up window with fields to enter a Name for the bookmark and the internet address.

We have entered a NAME for the bookmark.
Now enter the internet address to retrieve the information.

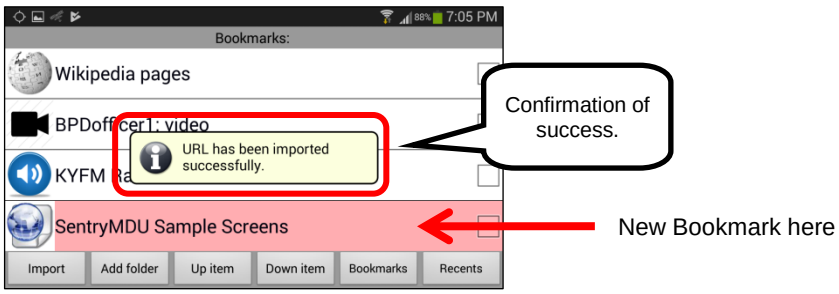
At this point in the example, we have entered both a NAME and ADDRESS for the bookmark information.



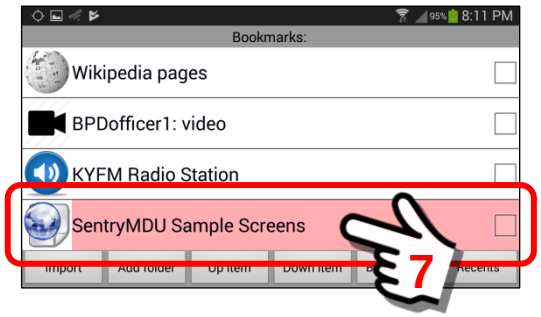
When you are satisfied, click the “OK” Button to save the information and create the bookmark.



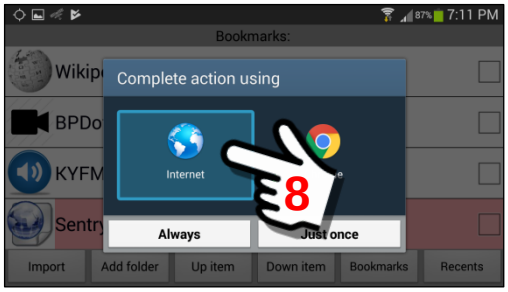
The bookmark is now saved in the Bookmark List as shown below.



To “test” the bookmark, click on the bookmark name.



Depending on the settings of your mobile device, a pop-up box may open for you to select an “App” to open the website folder.



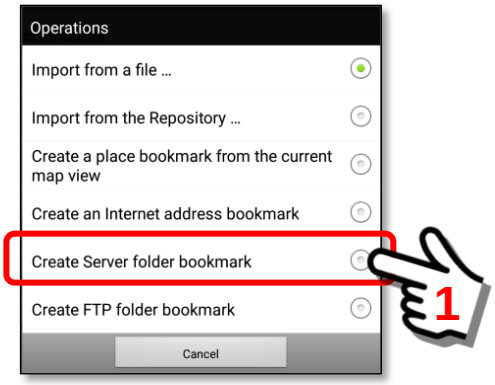
The DLT Website screen examples will now be displayed on the mobile device.

7. ***Create Server Folder bookmark.***

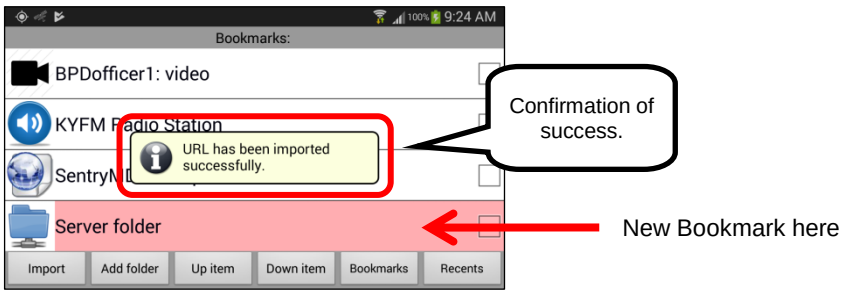
This menu item will create a Server Folder bookmark on your mobile device and import the full set of Server Repository Bookmarks that are available on your SentryMDU Server instance. This will allow a “one click” access to the full Server Repository.

In this example, we will demonstrate how to install the Server Folder on your device.

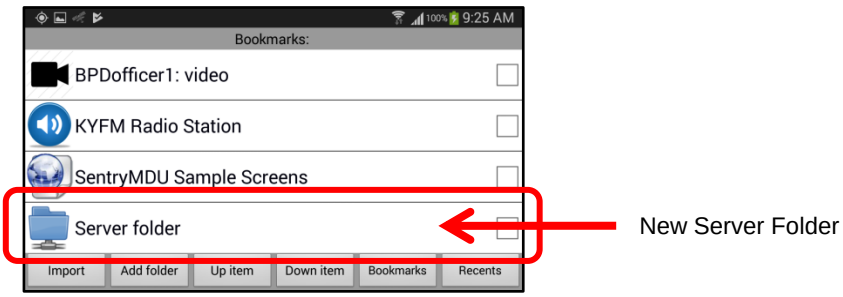
Click on the “Create Server Folder bookmark” Button.



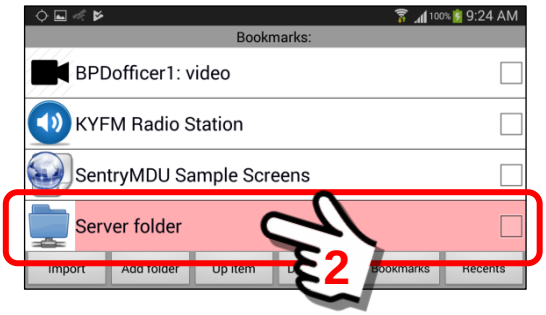
The Server Folder will be added to your bookmark list.



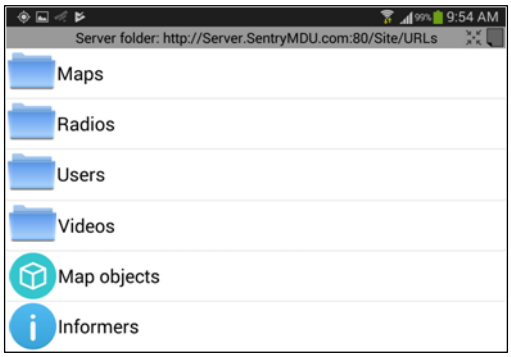
The Server Folder bookmark now becomes simply one more bookmark in your list. You may edit/change the name if you desire.



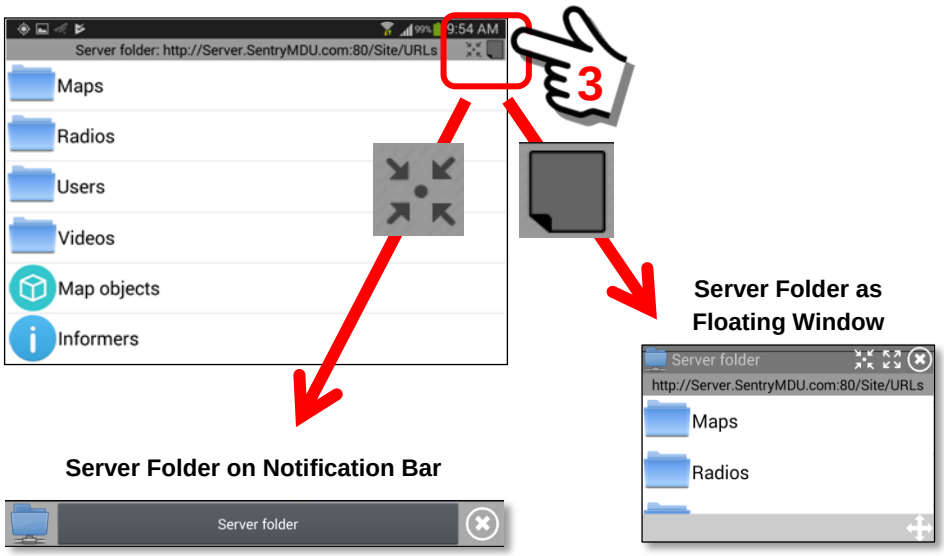
To view the bookmarks that are available in the Server Repository, click on the “Server folder” bookmark name.



The Server Folder will open a directory of additional sub-folders and other bookmarks. You now have a full set of the bookmarks that were in the Server Bookmark Repository.



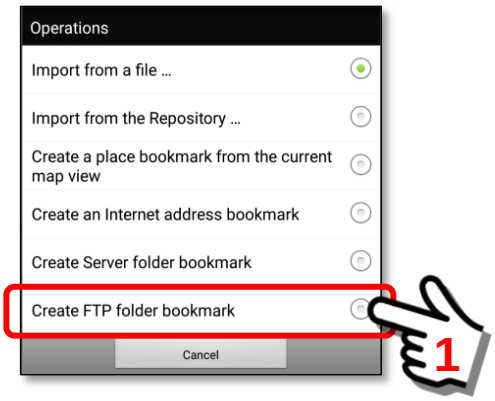
As with other panels on the SentryMDU System, you have the ability to minimize this bookmark panel to the Notification Bar or reduce it to a Floating Window.



8. ***Create FTP Folder bookmark.***

This menu item will create an FTP Bookmark Folder that will retrieve information from an external internet site that is running an FTP Server. This will allow a “one click” access to additional bookmark data.

Click on the “Create FTP folder bookmark” Button.



Since we are looking to retrieve data from an FTP Server, we will use the following address as shown below.

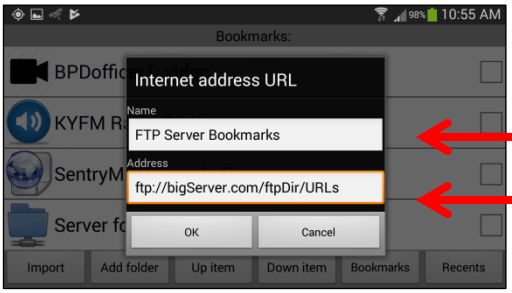
ftp://bigServer.com/ftpDir/URLs

This feature will allow a user to retrieve bookmark information from almost any external FTP source that the mobile device can access.

Clicking on the “Create FTP folder bookmark” Button will open a pop-up window with fields to enter a Name for the bookmark and the internet address.

We have entered a NAME for the bookmark.
Now enter the internet address to retrieve the information.

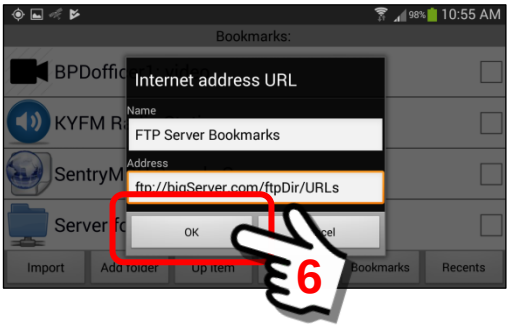
At this point in the example, we have entered both a NAME and ADDRESS for the bookmark information.



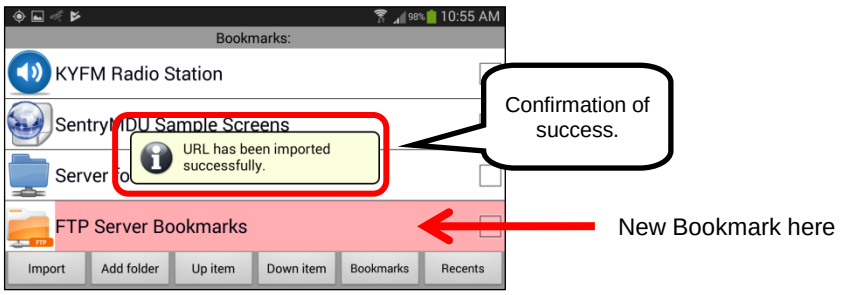
Bookmark NAME

Internet address of where the information is stored

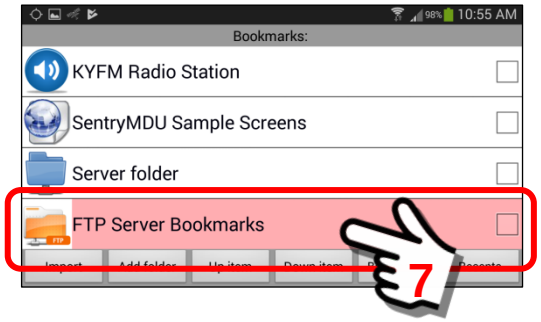
When you are satisfied, click the “OK” Button to save the information and create the bookmark.



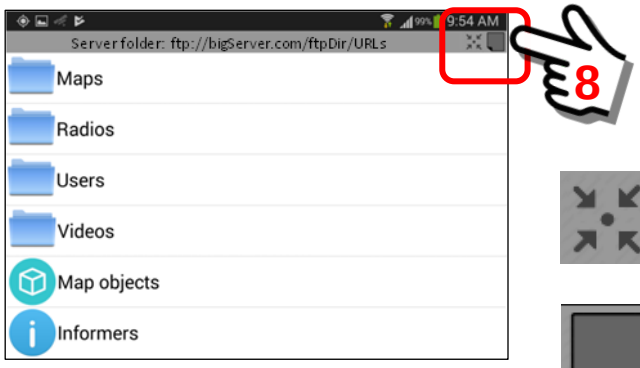
The bookmark is now saved in the Bookmark List as shown below.



To “test” the bookmark, click on the bookmark name.



The system will retrieve bookmarks from the FTP Server.



Put Server Folder on Notification Bar

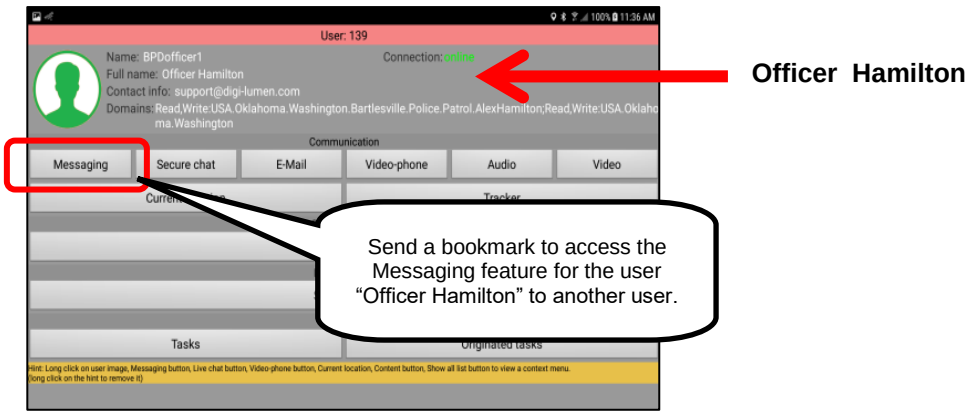
Put Server Folder as Floating Window

9.10. Sending bookmarks TO another user

Overview:

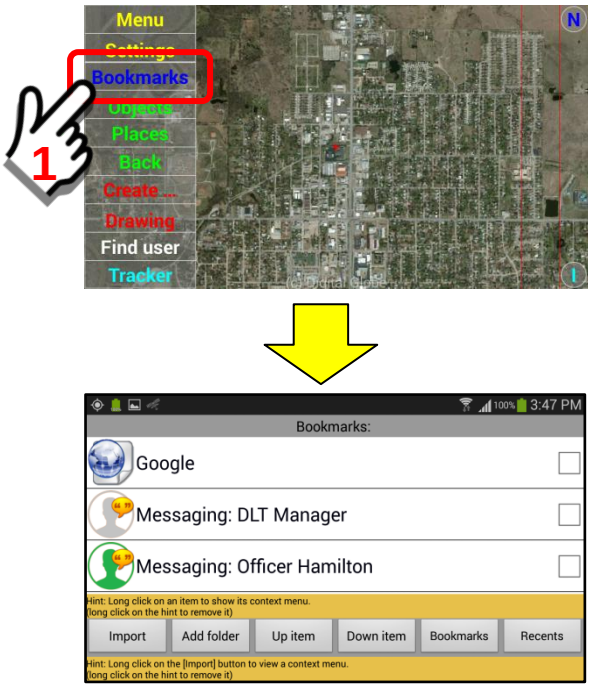
The Sentry MDU System makes it possible for Users to “share” bookmarks with each other. Of course, those sharing bookmarks must have the proper security privileges. This will enable users to rapidly share bookmarks of contact information, places and locations with other users. Note that bookmarks created from “local” sensors on the mobile device may be saved and used on the local device but NOT sent to other users.

In this example we will have a user share a bookmark of another users “text messaging” address with another user.

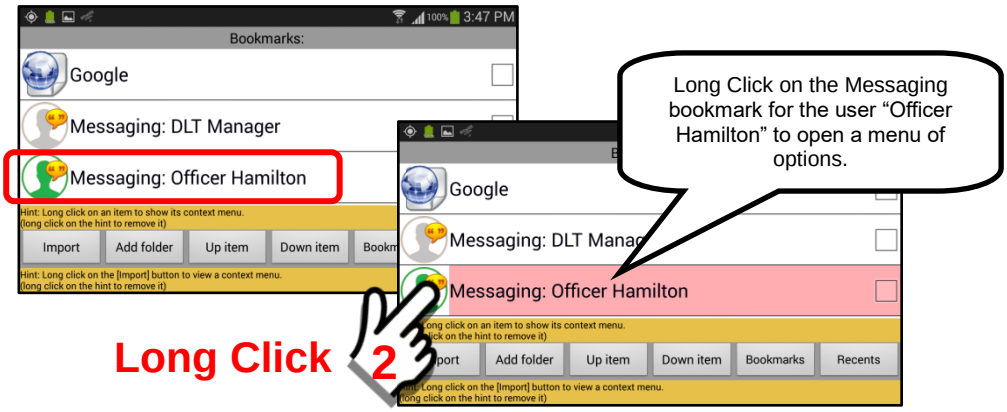


Steps to send a bookmark to another User:

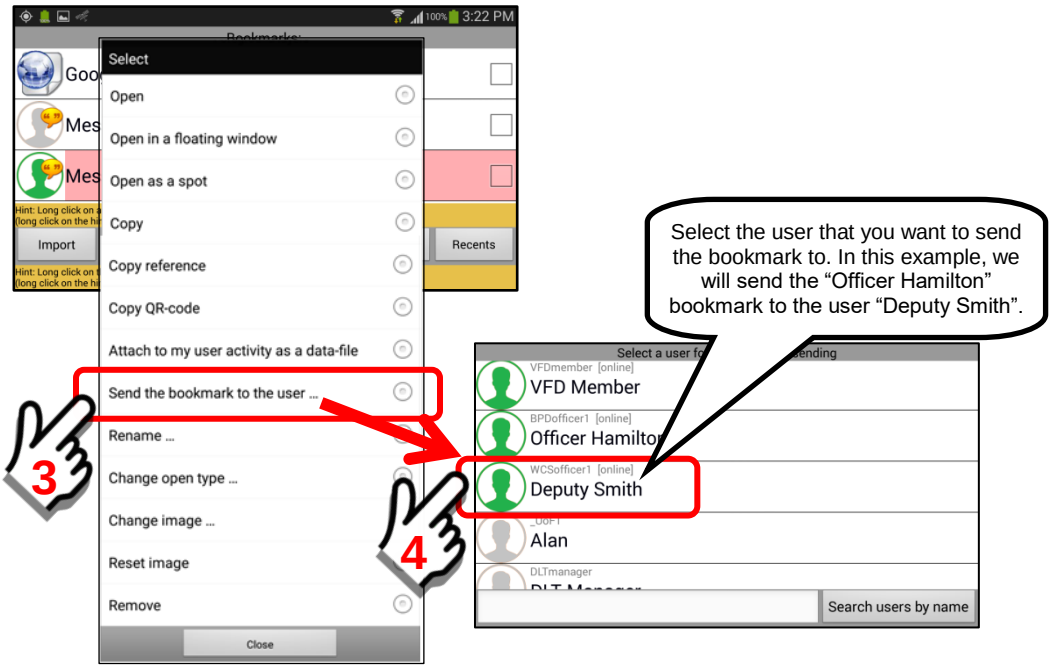
1. ***Navigate to the Bookmarks panel.***
   Click on the Bookmarks menu item to launch the Bookmarks Panel.



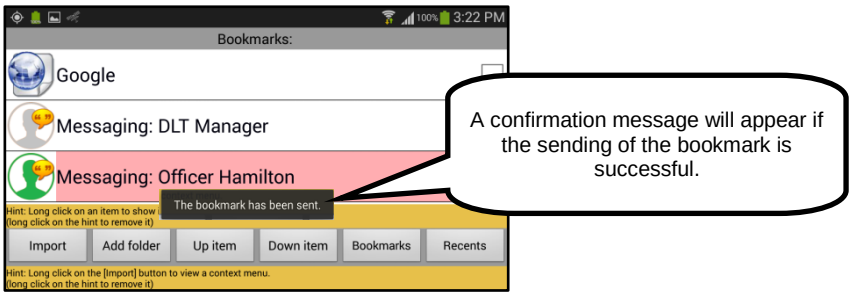
2. ***Select the desired bookmark to send from the menu list.***
In this example, we will select the "*Messaging: Office Hamilton*" bookmark to send to another user.



3. ***Select the User that you want to send the bookmark TO.***
A "Long Click" on the bookmark will open a selection panel. Pick the menu choice to send the bookmark to another user.

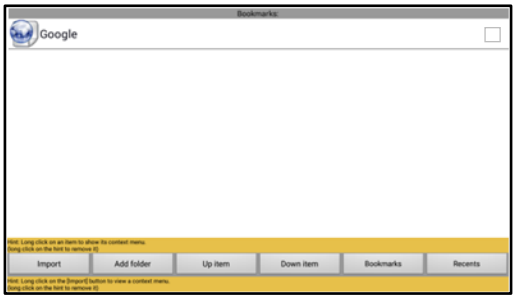


4. ***Send the bookmark.***
Click on the user name to send the bookmark. If the transfer is successful, a confirmation message will appear.



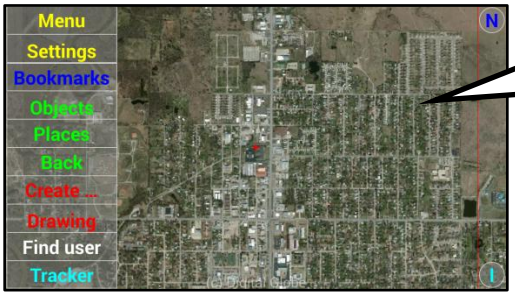
5. ***The other user receives the bookmark.***

The user receiving the new bookmark will get a *Confirmation Box* on their main map screen indicating they have received a new bookmark.

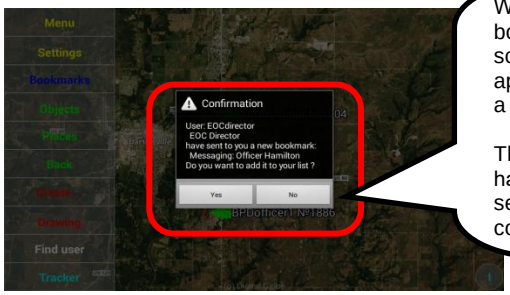


This is the tablet screen of the user receiving the bookmark.

In our example, this is showing that we only have one bookmark shortcut on file.

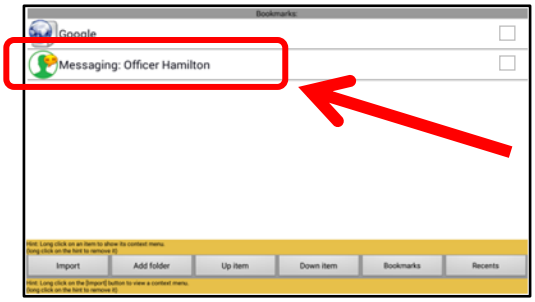


The user RECEIVING the bookmark will get notification on the main map screen.



When a "new" bookmark is received, a pop-up box will appear on the main map screen. The screen will go dark and a confirmation box will appear asking the user if they want to receive a bookmark from another user.

The user receiving the new bookmark does not have to be "online" at the time. The system will send the bookmark whenever the user connects to the Sentry MDU System.



In our example, this is the Bookmark Panel of the user receiving the new bookmark.

As you can see, we now have two bookmark shortcuts on file.

9.11. Receiving bookmarks FROM another user

Overview:

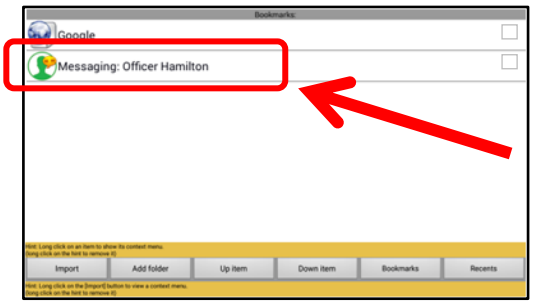
This section describes the screens a user will see when receiving a new bookmark from another user. The user receiving the new bookmark will get a *Confirmation Box* on their main map screen indicating they have received a new bookmark.

Receiving a new bookmark SENT from another user:

The user RECEIVING the bookmark will get notification on the main map screen.

When a "new" bookmark is received, a pop-up box will appear on the main map screen. The screen will go dark and a confirmation box will appear asking the user if they want to receive a bookmark from another user.

The user receiving the new bookmark does not have to be "online" at the time. The system will send the bookmark whenever the user connects to the Sentry MDU System.



In our example, this is the Bookmark Panel of the user receiving the new bookmark.

As you can see, we now have two bookmark shortcuts on file.

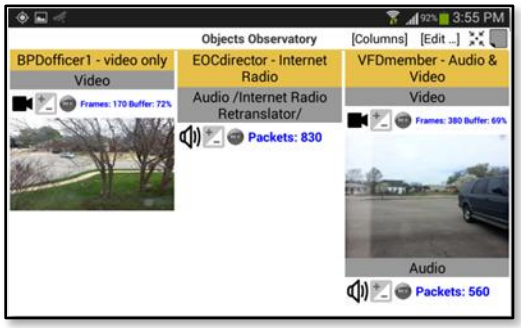
9.12. Create an Object Observatory to view multiple remote devices

Overview:

The Sentry MDU System provides an Object Observatory feature which allows a user to bookmark and simultaneously display/monitor a group of remote devices and sensors. This allows a “one click” access to monitor often tracked remote devices.

In this example we will explain the available features and how to set up 3 different sensor groups. As shown below, the monitored devices may be displayed on the screen in combinations of column or stacked views.

3 – Column View with Smartphone



2 – Column, stacked View with a Tablet

Description of the panel buttons and features:

<u>Parts of the Objects Observatory Panel</u>

Objects Observatory Panel Heading

Buttons to configure the Observatory layout, launch as a floating panel and minimize to the notification bar.

[Columns] Set the number of display columns

[Edit …] Create and change the embedded audio/video panels in the Observatory

Minimize the panel to the device notification bar

Launch the Observatory as a floating window panel

Individual data panels that have been installed into the Objects Observatory.

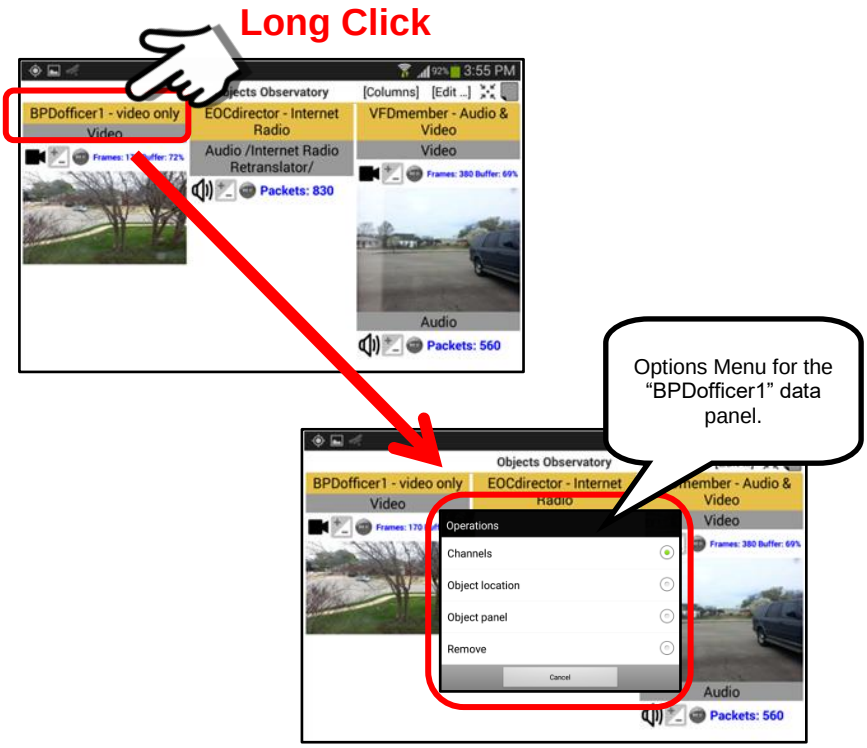
In addition to the general setup and configuration options for the Observatory Panel, each individual “Data Panel” has options specific to the displayed data.

Click on the Video display to go “Full Screen”

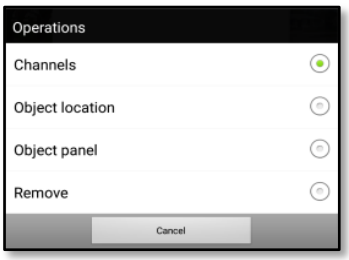
Click on the picture to go “full screen”, click again on the full screen image to return to the Object Observatory display.

“Long click” on the individual data panel heading to open an Options Menu

Performing a “Long Click” on the heading of the individual data element will open an Options Menu for that specific data panel.



The following Menu Options are available for the selected data element.



Channels

This option opens the individual “sensor” channels that make up the audio/video data transmission. This provides access to the channels on the remote device.

Object Location

This option shows the GPS location, on a Map Screen, of the remote device that is being monitored.

Object Panel

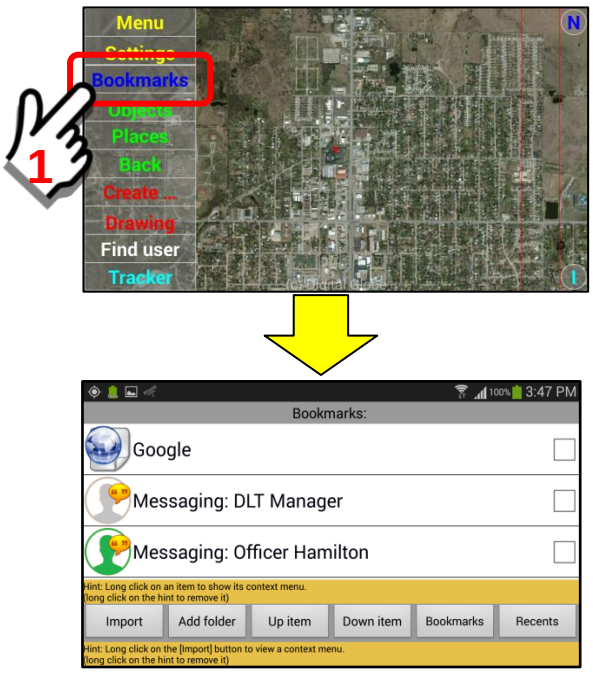
This options opens the *Mobile Object Panel* for this particular User.

Remove

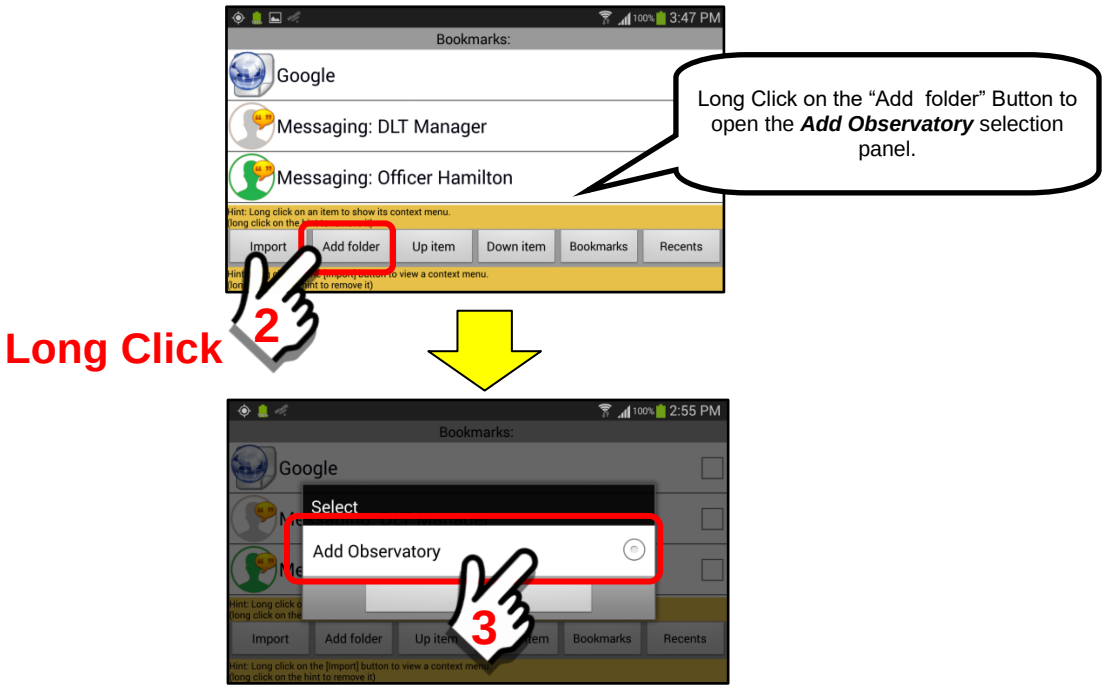
This option will remove the selected data element from the current display session. It does NOT remove it permanently from the Object Observatory, only from this current viewing session.

Steps to create a bookmark for a multiple device observatory:

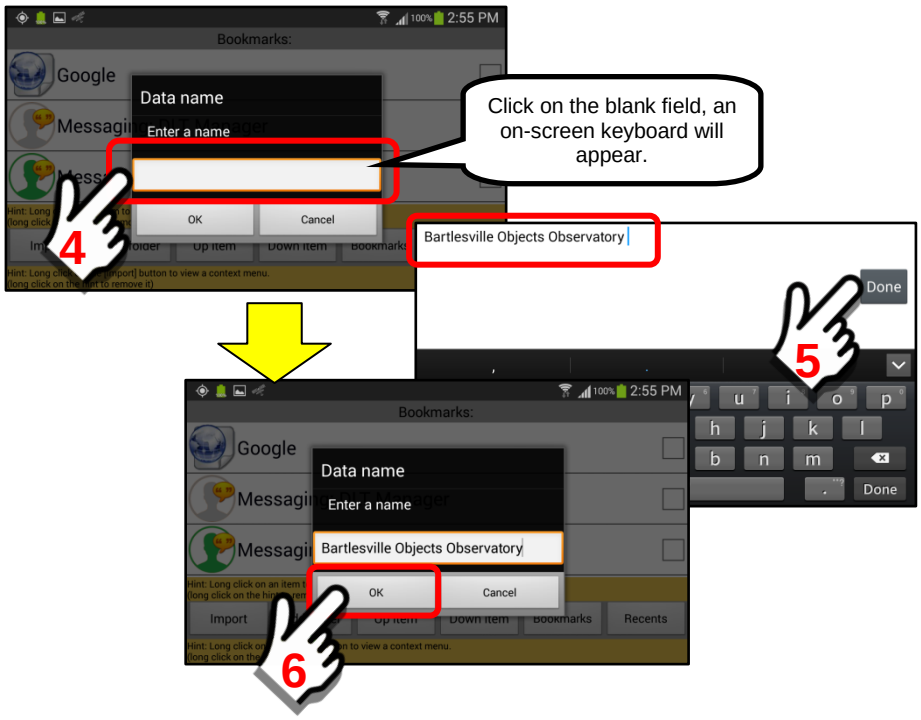
1. ***Navigate to the Bookmarks panel.***
   Click on the Bookmarks menu item to launch the Bookmarks Panel.



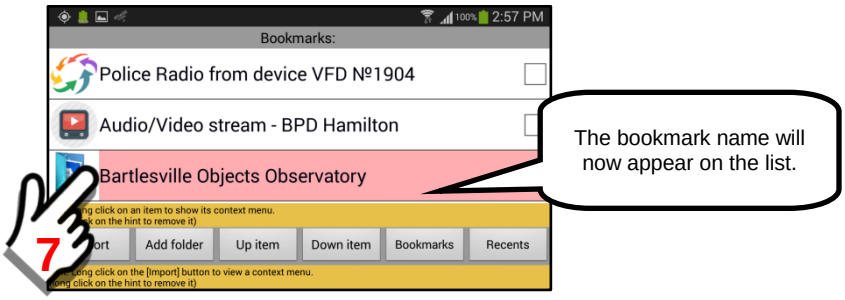
2. ***Perform a "Long click" on the "Add folder" Button.***
Long click on the "Add Folder" Button. This will open the Add Observatory selection panel. Click on the Add Observatory text block.



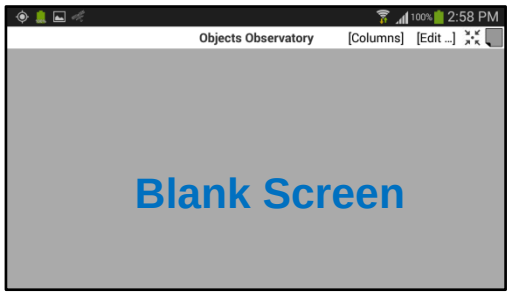
3. ***Select a NAME for the bookmark "observatory" you are creating.***
Enter a NAME for the bookmark you want to create. In our example, we will call our bookmark …. ***Bartlesville Objects Observatory***. Click "OK" when done.



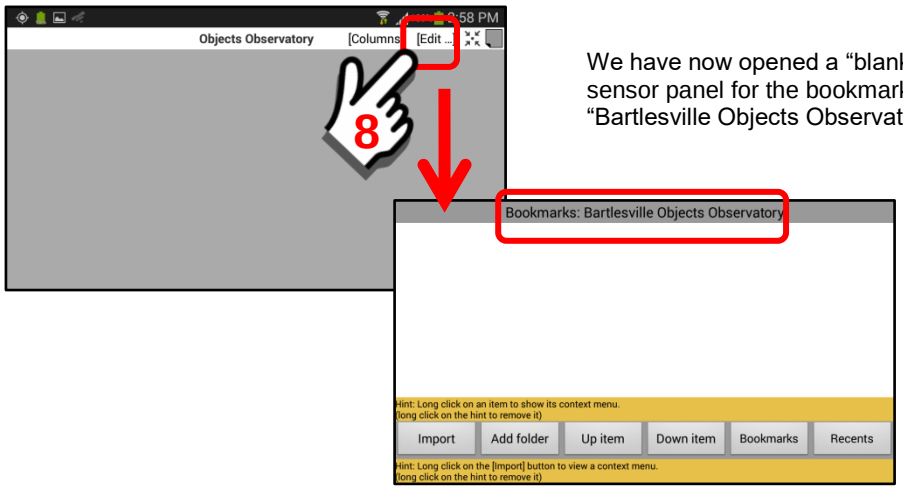
4. ***Verify that bookmark panels have been created.***
Once we have created the bookmark "Name" we check to verify that empty data panels have been created.



Click on the bookmark name and you will be presented with a "blank" bookmark configuration screen as shown below.



To add the Sensors for our bookmark we will need to click on the "Edit" button. This will give us access to import new sensor channels to monitor.



We have now opened a "blank" sensor panel for the bookmark of "Bartlesville Objects Observatory".

Use the "back" button and return to the Sentry MDU main map screen.

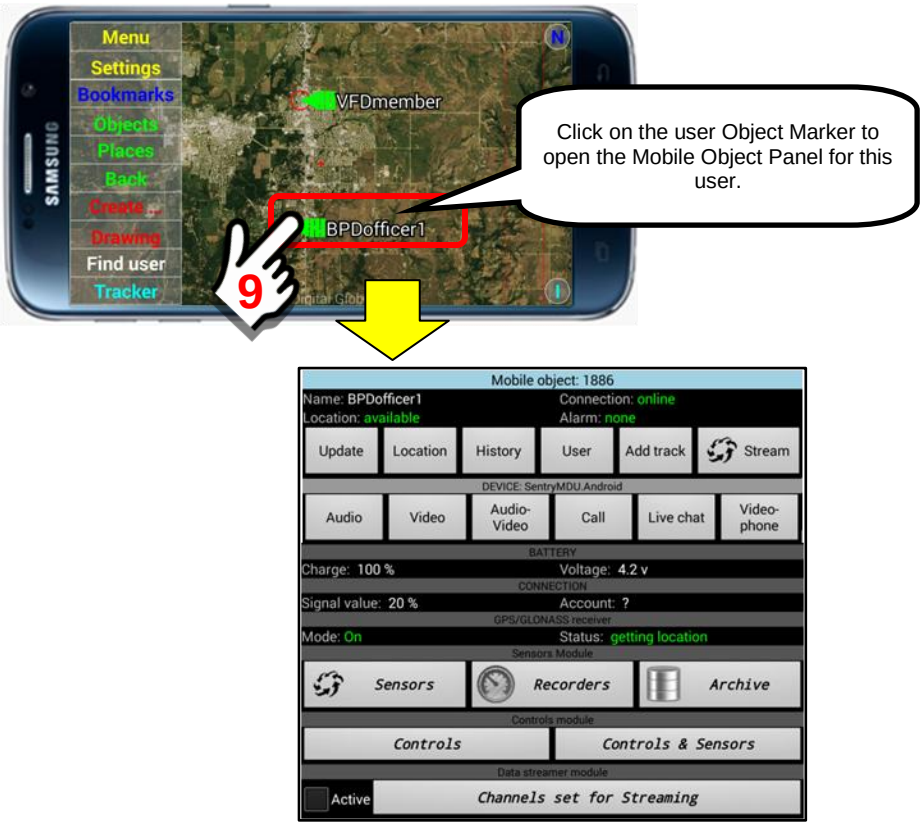
5. ***Select the Sensors (ie Audio, Video, Radio, etc.) to include.***
Once we have created the bookmark "Name" and verified that we have an available bookmark panel, we must now specify the sensors that we want to have included in the bookmark.

In this example, we will select to monitor the following data sources:

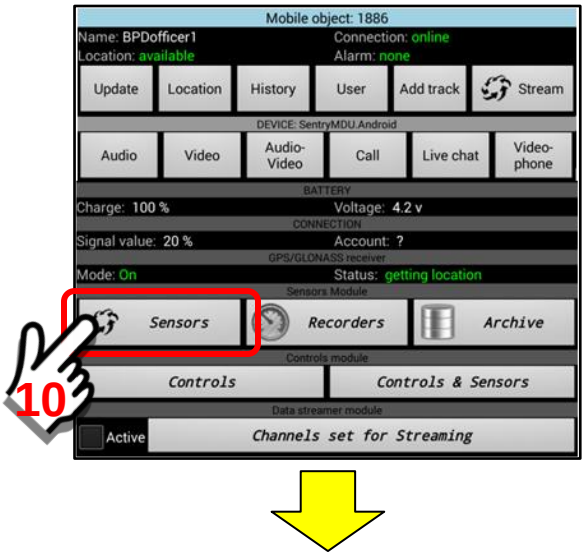
a. Video feed from User = BPDofficer1
b. Police Radio Broadcast from a internet source
c. Audio-Video feed from User = VFDmember

As explained in other sections of this guide, we may access these user's data from the Mobile Objects Menu or directly from the Main Map screen if they are currently displayed.

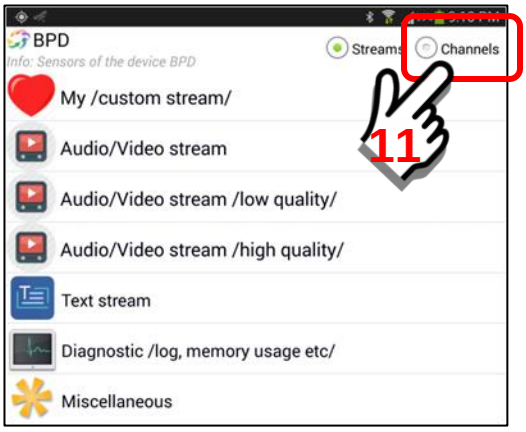
We will start with User = BPDofficer1 and select him from the Main Map screen.



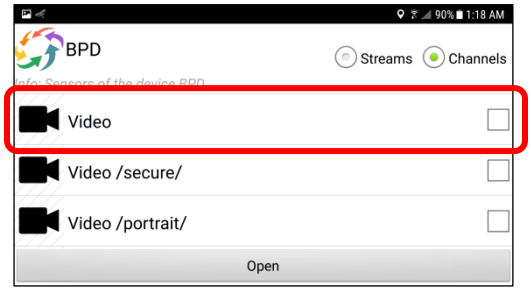
Open the “Sensors Section” for this user by clicking on the “Sensors” Button as shown below.



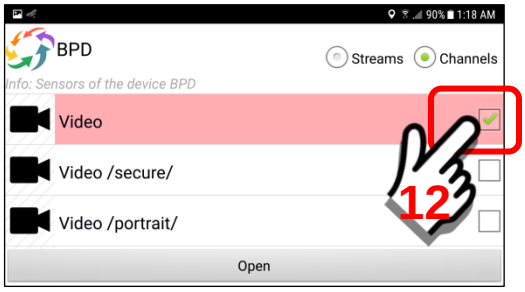
Clicking on the Sensors Button, we are presented with the sensors panel for User = BPDofficer1. This panel has options for BOTH “Streams” and “Channels”. Since we want a single video channel for this example, we will select the “Channels” option. Click on the Channels button.



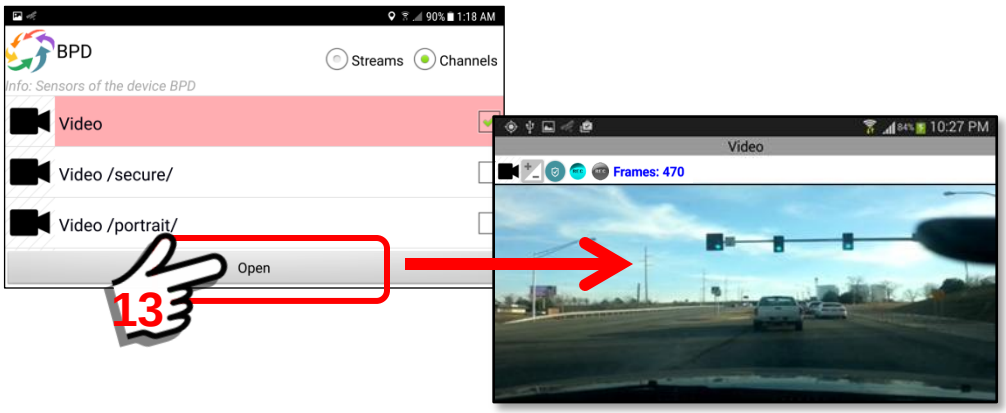
We are presented with a list of over 30 preconfigured sensor channels which may be selected. Scroll down until we find the “Video” channel.



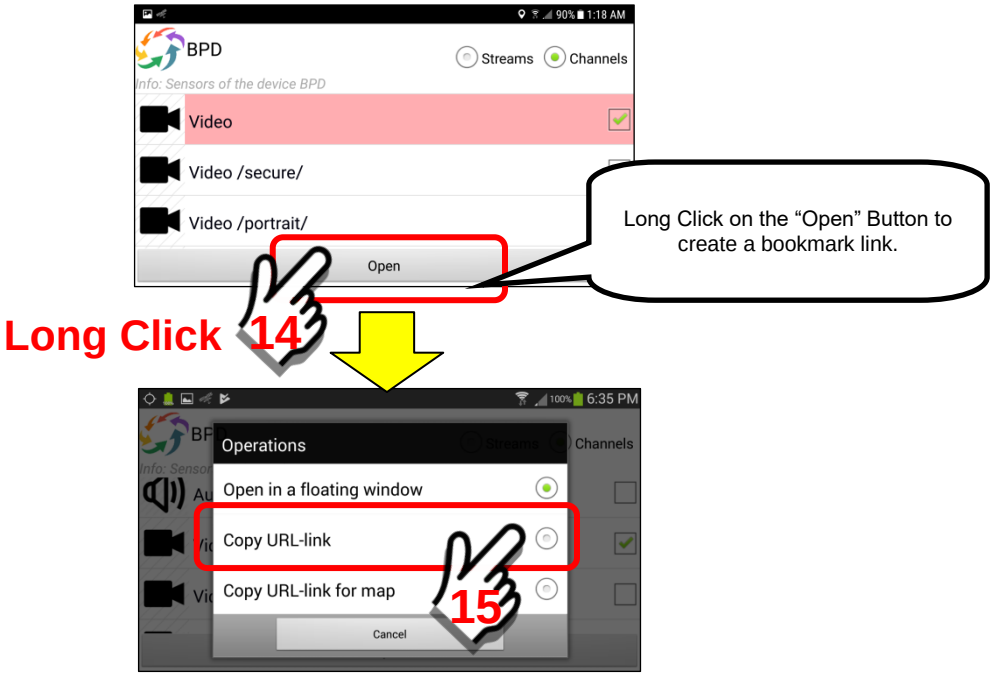
Put a “checkmark” in the checkbox to select the Video channel.



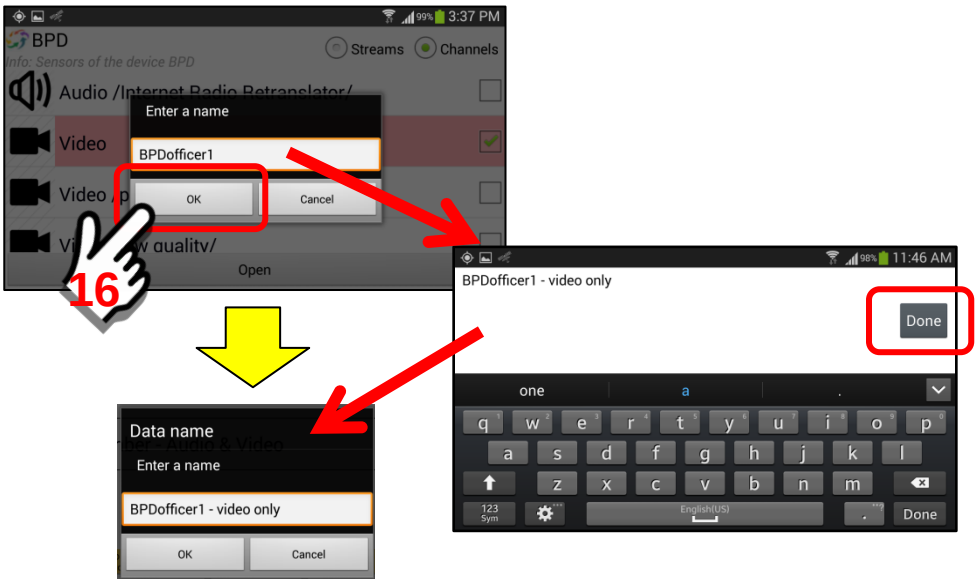
If you wish to TEST the video channel in order to see how it looks then click on the “Open” button … this will start the video showing.



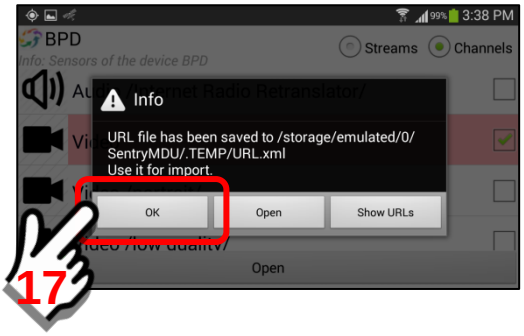
Once you are satisfied that the video parameters are what you want, we will want to SAVE the parameter settings for the remote device in a bookmark “link”. Perform a “Long click” on the “Open” Button. You will see an Operations selection box. Click on the “Copy URL-link” button.



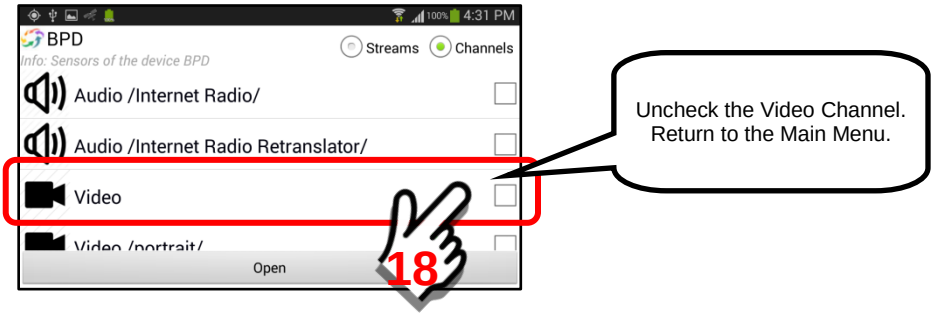
When the URL Link is created, the system will ask for a “name” for the sensor data. It will default to the name of the remote user. You may change this name to anything you wish. Click “OK”, or if editing the name, “Done” when finished.



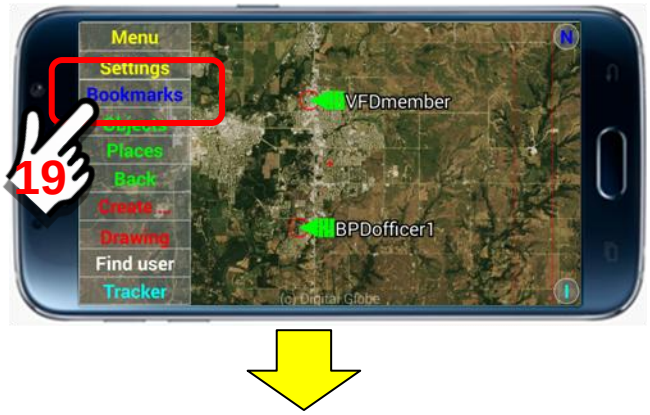
The SentryMDU system will now save the bookmark link you have created for the video channel in a temporary folder. This will be ready to “import” into the “Bartlesville Objects Observatory” you have created.



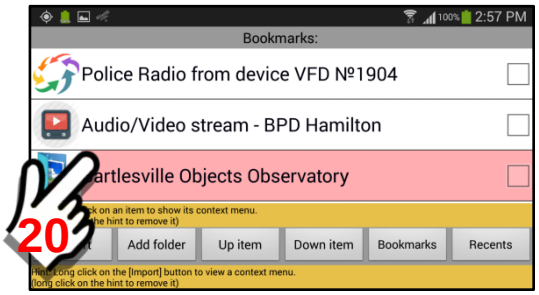
Once you have saved the URL link, you may “uncheck” the video channel and return to the Main Menu in order to import the URL link you have just created.



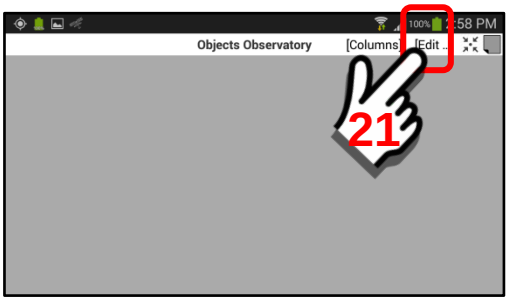
At this point in the example, we will assume you are back at the Main Menu screen as shown below.



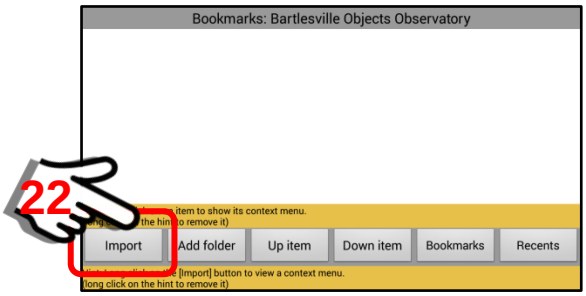
Click on the Bookmarks Menu Option and then scroll down to the “Bartlesville Objects Observatory” item in the list. Click on this selection.



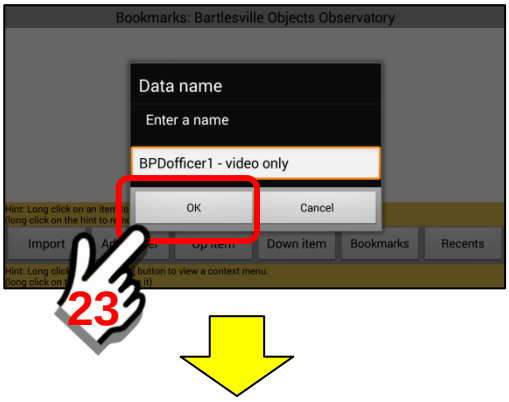
You will be presented with a blank screen since no channels have been installed yet. Click on the “Edit” Button.



The bookmarks import screen will now appear

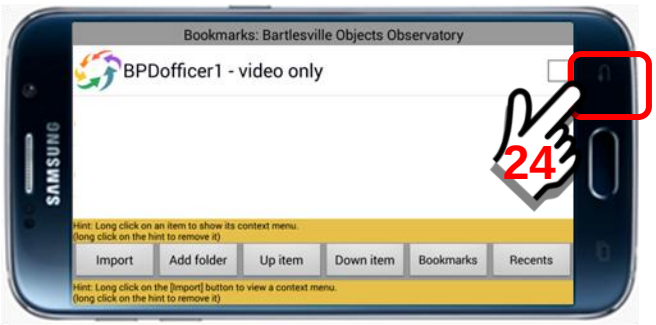


Click on the “Import” Button and the URL-link (for the Video Channel) that you placed in the temporary folder previously will now appear. You may edit/change the name if you wish. When finished, click “OK”.

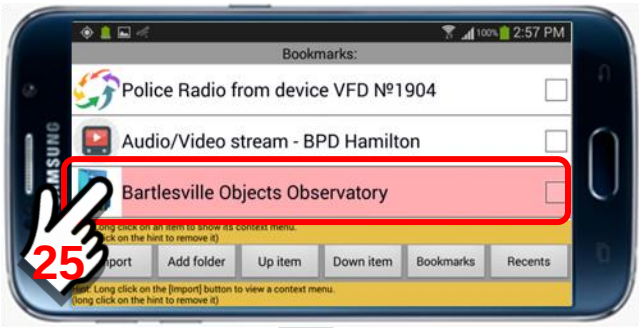


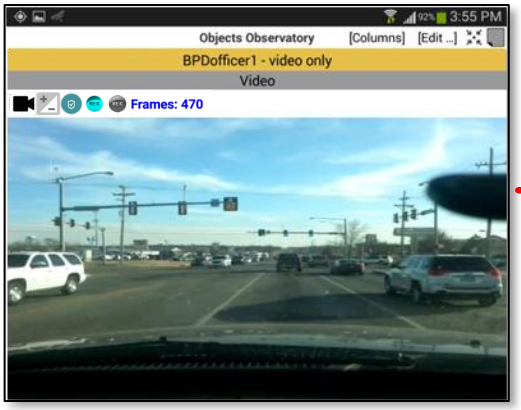
As the URL–link for the Video Channel is installed, the BPDofficer1 name will be displayed on the bookmark panel. If the transfer is successful, a message will appear in the lower part of the screen.

We have now installed ONE of the three sensor channels. To test the bookmark of the video channel we have created, we will return to the Main Bookmark screen. Click the “back” button on the phone/tablet.



To test the video channel just installed, click on the Bartlesville Objects Observatory bookmark menu selection.





Channel #1 is live video from BPDofficer1's mobile device

<u>Adding a second sensor to the Observatory</u>

We will now add a second sensor to the bookmark observatory. In this part of the example, we will be adding an internet data stream from a Police Department patrol division radio rebroadcast.

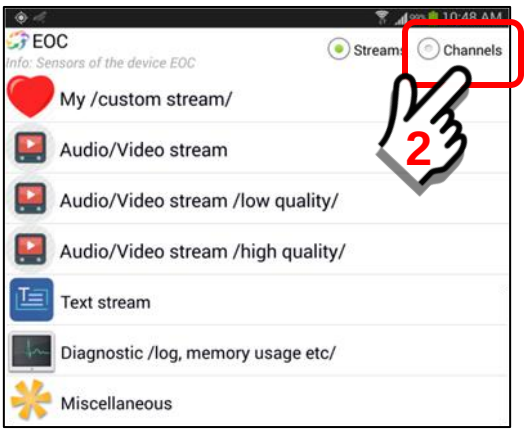
The device we will receive this radio broadcast from will be our own mobile device. In this example, our mobile device is user = EOCdirector.

Open the Mobile Object Panel of the device. Click on the Sensors Button.

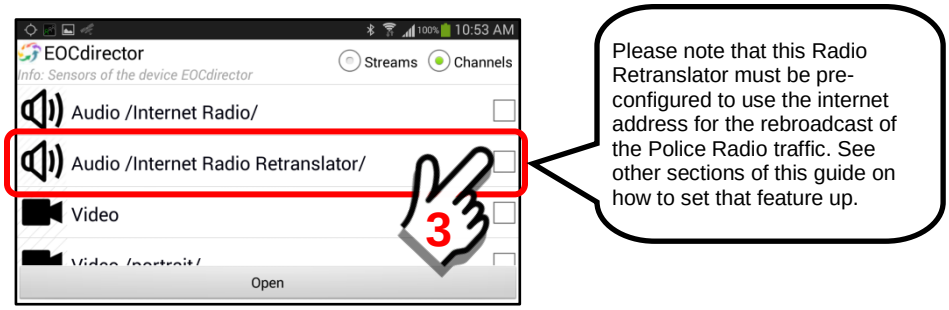
Make sure this is the Mobile Object panel for the user you want.

We select the Sensors from the mobile device we want to monitor.

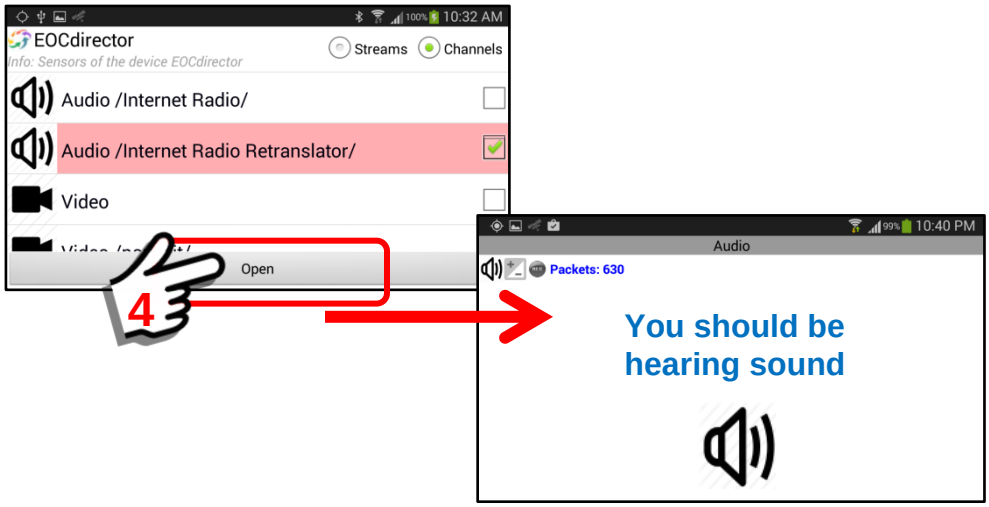
Clicking on the Sensors Button, we are presented with the sensors panel for User = EOCdirector. This panel has options for BOTH “Streams” and “Channels”. Since we want a single radio channel for this example, we will select the “Channels” option. Click on the Channels button.



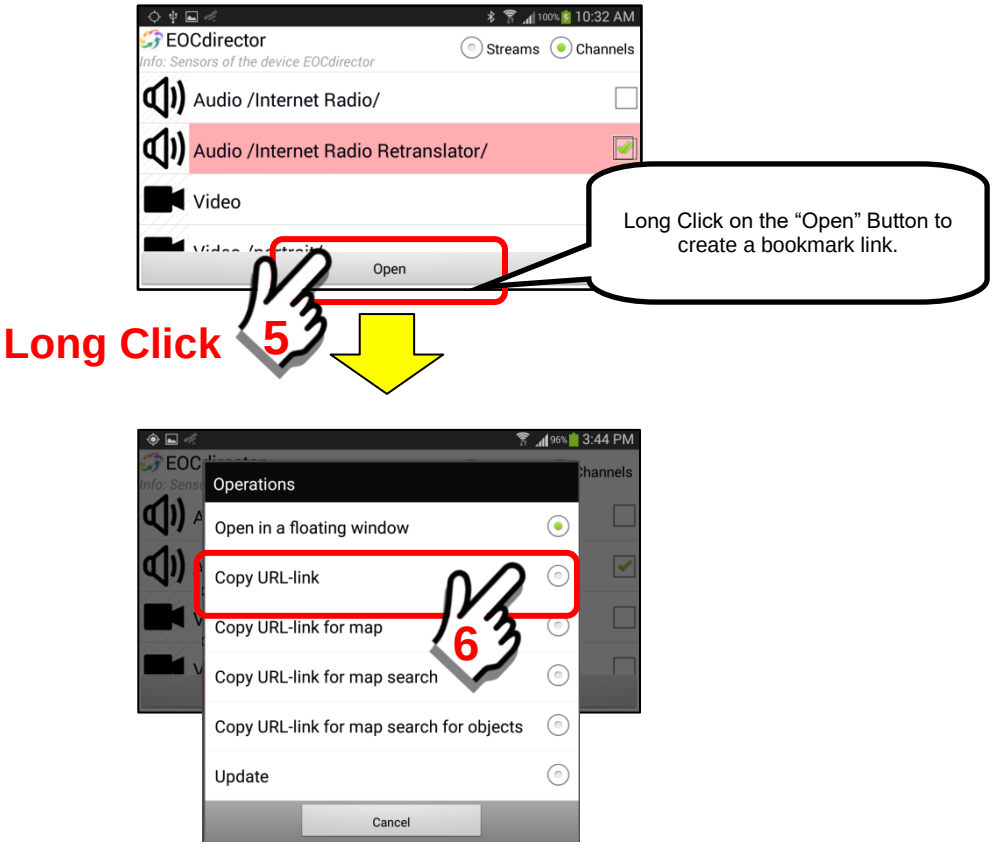
We are presented with a list of over 30 preconfigured sensor channels which may be selected. Scroll down until we find the “Internet Radio Retranslator” channel. Put a checkmark in the checkbox to select it.



If you wish to TEST the Radio channel in order to see how it sounds then click on the “Open” button … this will start the audio transmission.

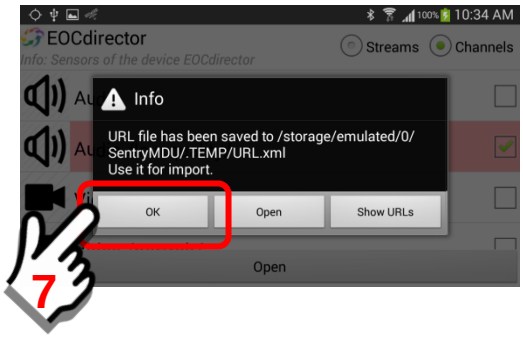


Once you are satisfied that the audio parameters are what you want, we will want to SAVE the parameter settings for the Radio Retranslator in a bookmark “link”. Perform a “Long click” on the “Open” Button. You will see an Operations selection box. Click on the “Copy URL-link” button.

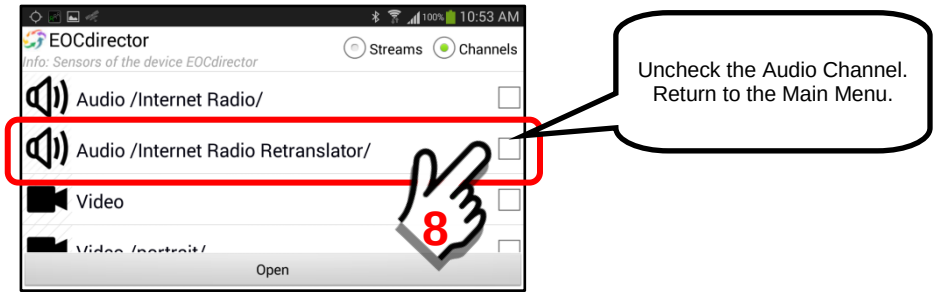


When the URL Link is created, the system will ask for a “name” for the sensor data. It will default to the name of the user from the Mobile Object panel. You may change this name to anything you wish. Click “Done” when finished.

The SentryMDU system will now save the bookmark link you have created for the video channel in a temporary folder. This will be ready to “import” into the “Bartlesville Objects Observatory” you have created.

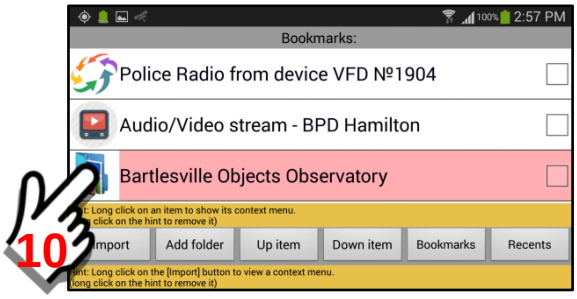


Once you have saved the URL link, you may “uncheck” the audio channel and return to the Main Menu in order to import the URL link you have just created.

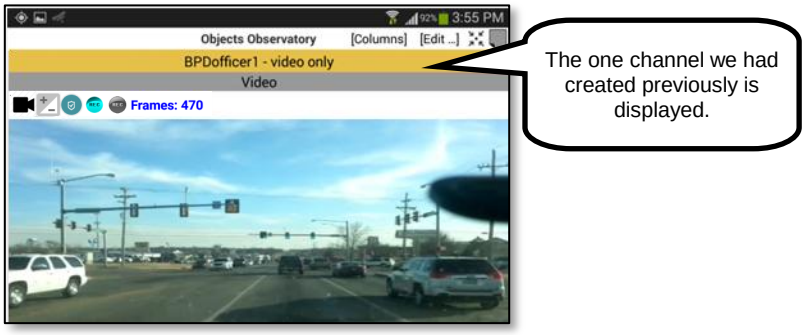


At this point in the example, we will assume you are back at the Main Menu screen as shown below.

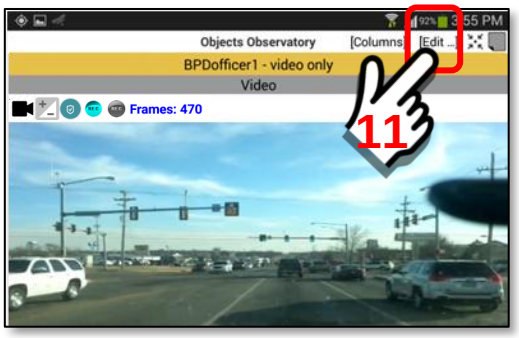
Click on the Bookmarks Menu Option and then scroll down to the “Bartlesville Objects Observatory” item in the list. Click on this selection.



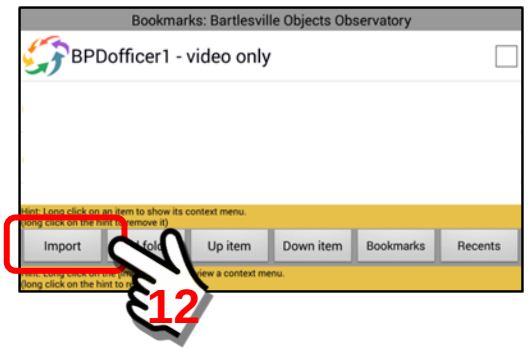
Since we have already installed ONE channel (BPDofficer1 – video only) when you click on the Bartlesville Objects Observatory bookmark, you will see the one channel displayed on the screen.



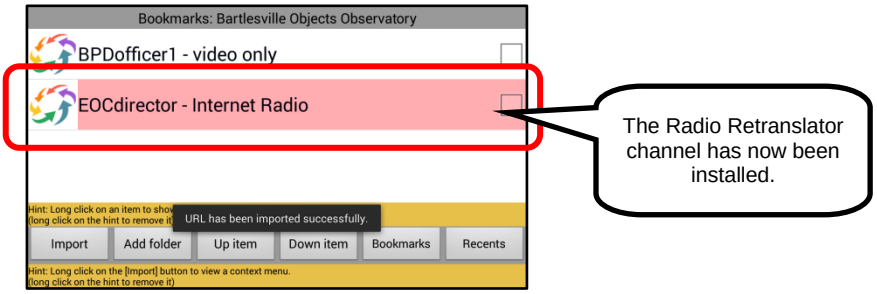
We now wish to install the Radio Retranslator channel into the Bartlesville Objects Observatory. To install this “new” channel, click on the [Edit] Button at the top right side of the display panel.



The bookmarks import screen will now appear with the one existing channel listed (BPDofficer1 – video only). We now want to “Import” the Radio Retranslator channel that we created previously that is stored in the TEMP Folder.

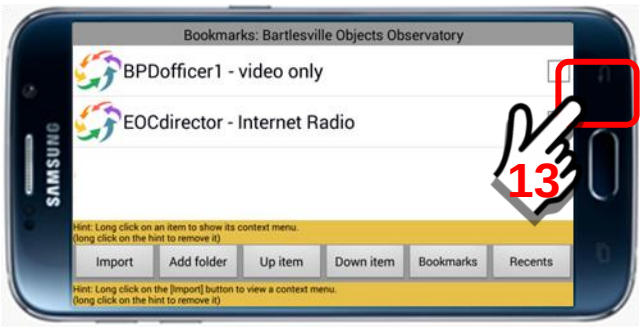


Click on the “Import” Button and the URL-link (for the Radio Retranslator Channel) that you placed in the temporary folder previously will now appear. Follow the same process you used with the previous entry. You may edit/change the name if you wish. When finished, click “OK”.



As the URL–link for the Audio Channel is installed, the EOCdirector name will be displayed on the bookmark panel together with the BPDofficer1 name. If the transfer is successful, a message will appear in the lower part of the screen.

We have now installed TWO of the three sensor channels. We will return to the Main Bookmark screen. Click the “back” button on the phone/tablet.



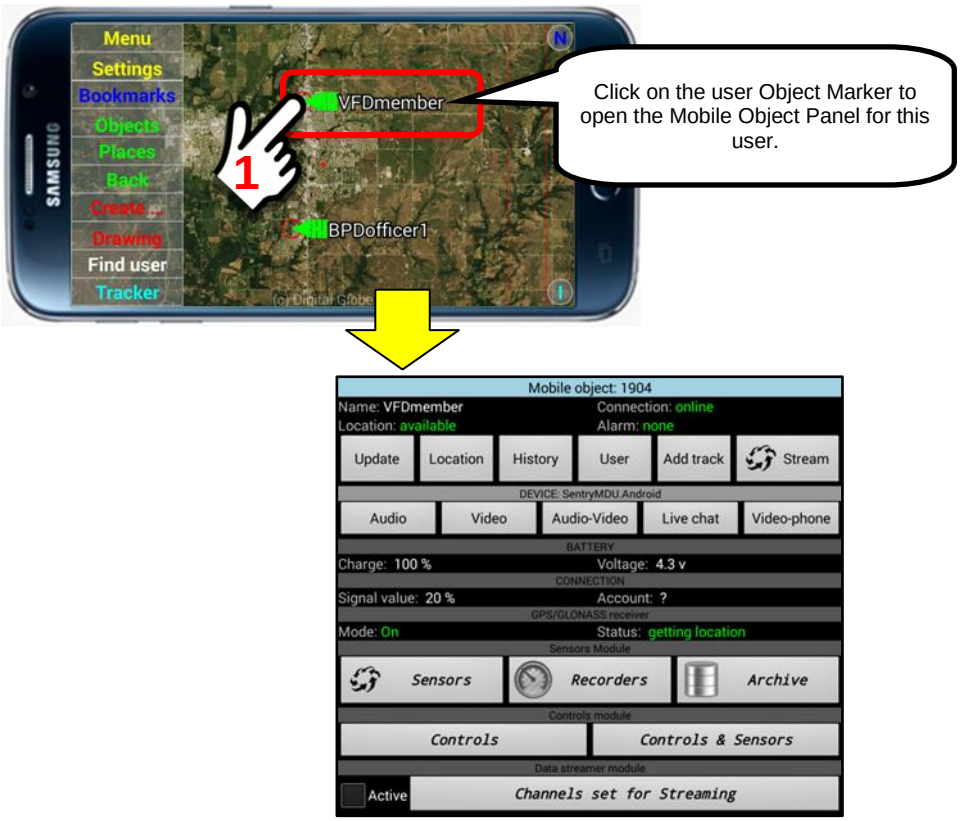
To test the Radio Channel just installed, click on the Bartlesville Objects Observatory bookmark menu selection.

<u>Adding a third sensor to the Observatory</u>

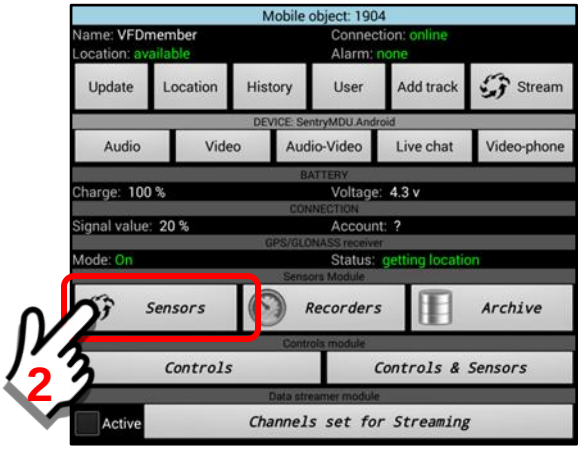
We will now add the THIRD and final sensor to the bookmark observatory. In this part of the example, we will be adding an Audio-Video stream from another remote mobile device.

In this example, we will use mobile device user = VFDmember.

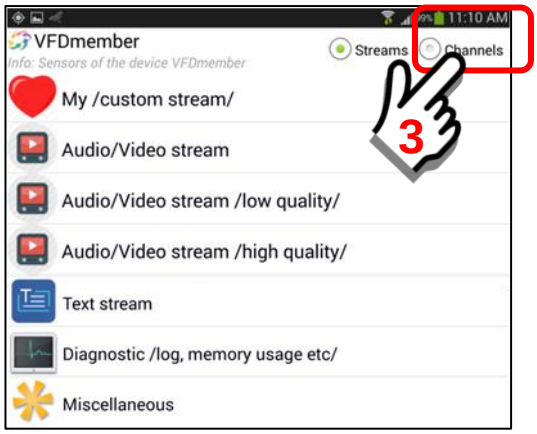
On the Main Map screen, click on the object icon of VFDmember.



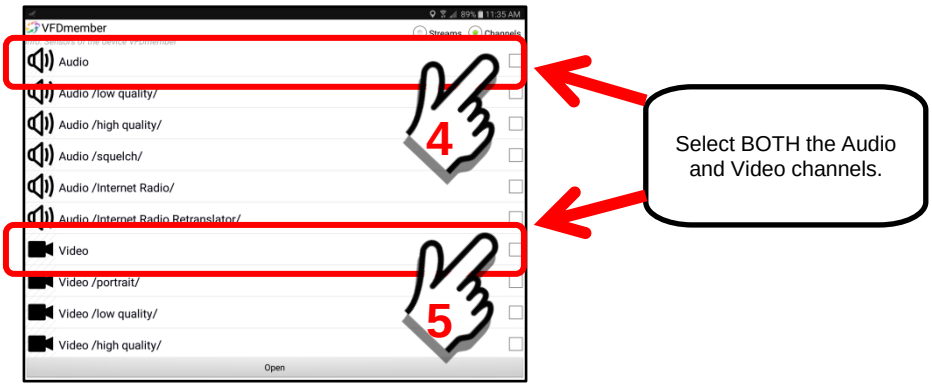
Open the “Sensors Section” for this user by clicking on the “Sensors” Button as shown below.



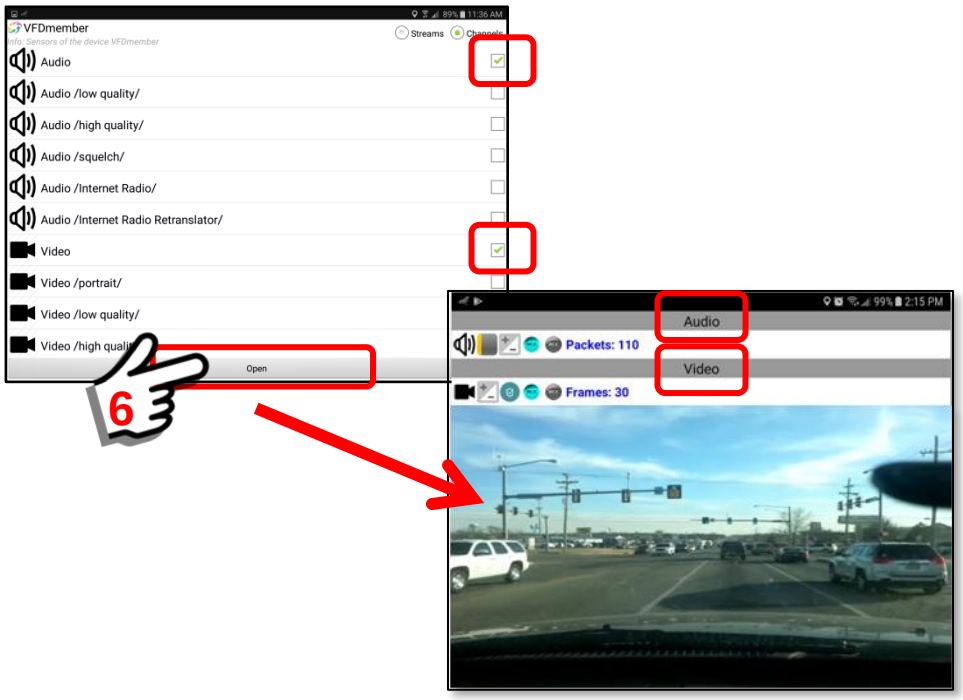
Clicking on the Sensors Button, we are presented with the sensors panel for User = VFDmember. This panel has options for BOTH “Streams” and “Channels”. Since we want two channels (audio and video) for this example, we will select the “Channels” option. Click on the Channels button.



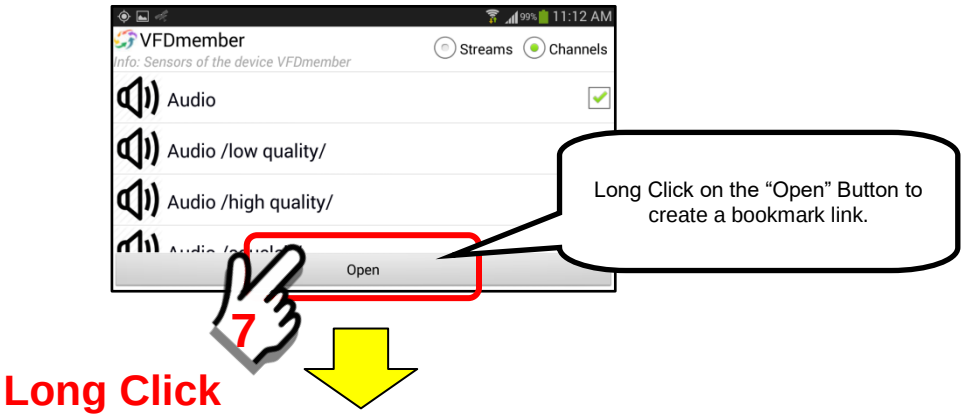
We are presented with a list of over 30 preconfigured sensor channels which may be selected. For this example we want to select BOTH the “Audio” and “Video” channels. Put a checkmark in the checkbox of these two channels.

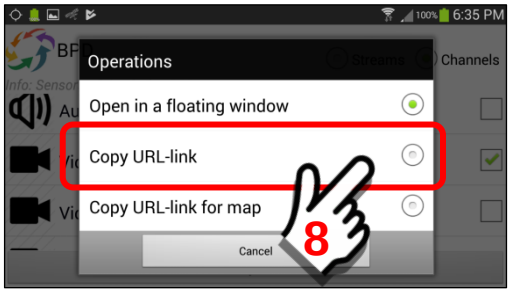


If you wish to TEST the audio-video channels in order to see how it looks then click on the “Open” button … this will start the video showing.

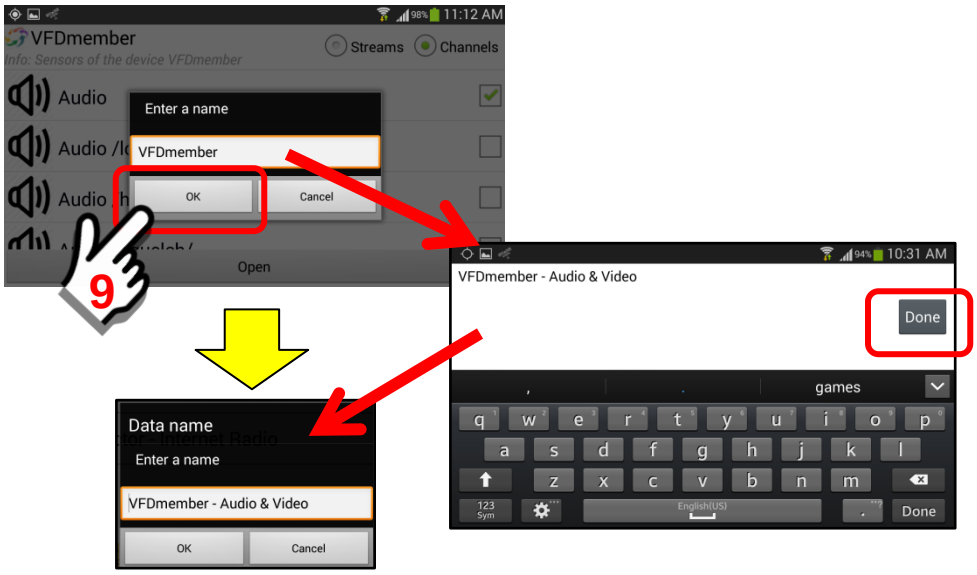


Once you are satisfied that the audio-video parameters are what you want, we will want to SAVE the parameter settings for the remote device in a bookmark “link”. Perform a “Long click” on the “Open” Button. You will see an Operations selection box. Click on the “Copy URL-link” button.

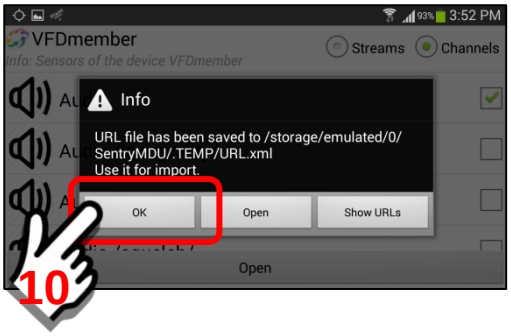




When the URL Link is created, the system will ask for a “name” for the sensor data. It will default to the name of the remote user. You may change this name to anything you wish. Click “OK”, or if editing the name, “Done” when finished.



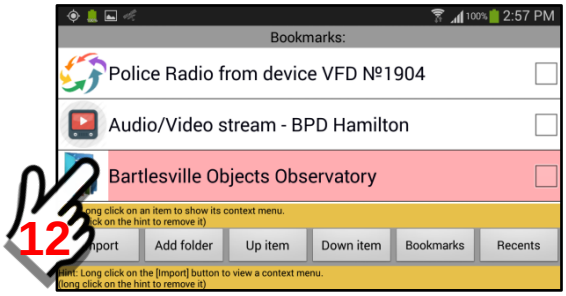
The SentryMDU system will now save the bookmark link you have created for the audio-video channel in a temporary folder. This will be ready to “import” into the “Bartlesville Objects Observatory” you have created.



Once you have saved the URL link, you may “uncheck” the audio and video channels and return to the Main Menu in order to import the URL link you have just created.

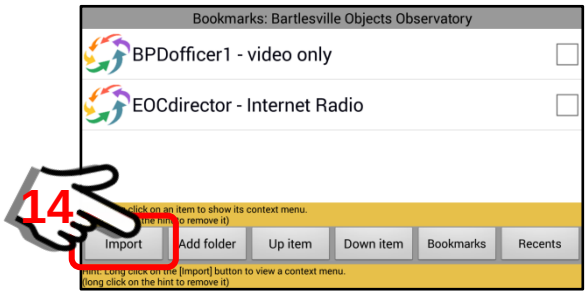
At this point in the example, we will assume you are back at the Main Menu screen as shown below.

Click on the Bookmarks Menu Option and then scroll down to the “Bartlesville Objects Observatory” item in the list. Click on this selection.

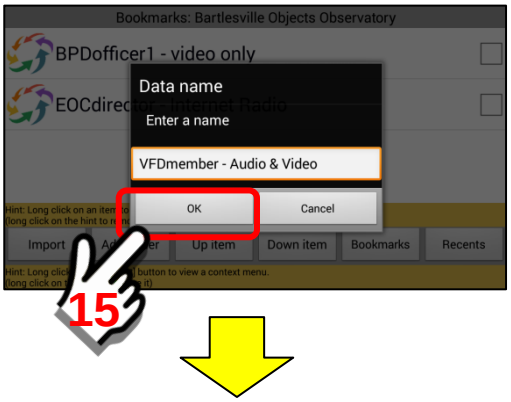


Since we have already installed TWO channels (BPDofficer1 and EOCdirector Radio Retranslator) when you click on the Bartlesville Objects Observatory bookmark, you will see both channels displayed on the screen.

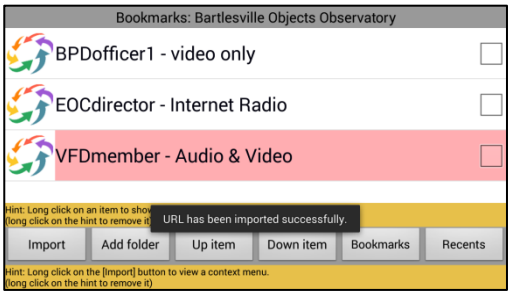
Click on the “Edit” Button.
The bookmarks import screen will now appear with the two existing channels shown.



Click on the “Import” Button and the URL-link (for the Audio-Video Channel) that you placed in the temporary folder previously will now appear. You may edit/change the name if you wish. When finished, click “OK”.

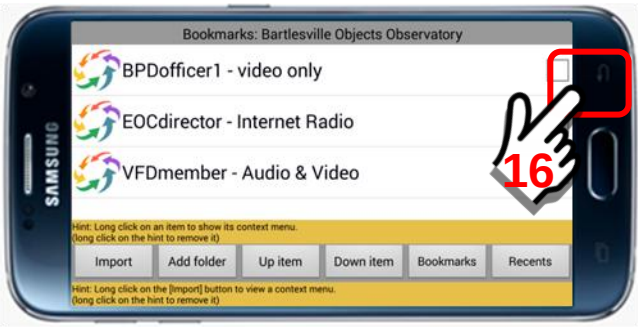


As the URL–link for the Audio-Video Channel is installed, the VFDmember name will be displayed on the bookmark panel. If the transfer is successful, a message will appear in the lower part of the screen.

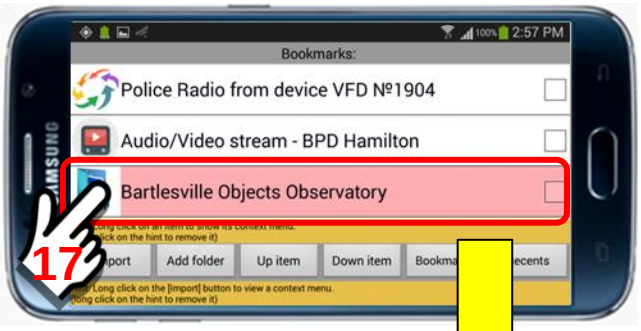


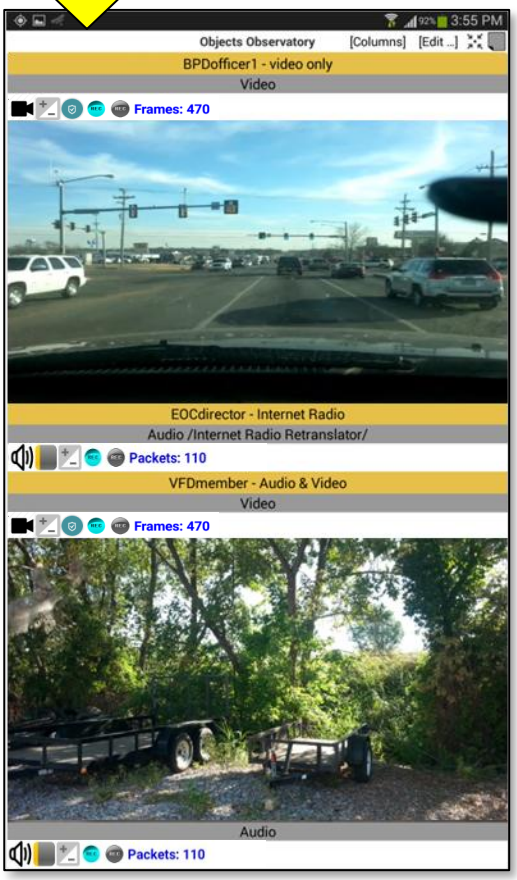
We have now installed the three sensor channels.

To test the bookmark of the 3 channels we have created, we will return to the Main Bookmark screen. Click the “back” button on the phone/tablet.



To test the 3 channel bookmark, simply click on the Bartlesville Objects Observatory bookmark menu selection.





Channel #1 is live video from BPDofficer1’s mobile device

Channel #2 is the radio transmission via the internet for the local law enforcement frequency.

Channel #3 is live audio and video from VFDmember’s mobile device

6. ***Organize the sensor panels to display as rows or columns.***

In the previous examples, the sensor panels have been arranged in a vertical "stacked" orientation. The default view is a Column Width = 1. However, the system will allow a combination of both vertical and horizontal panels. This section will illustrate some of the display options available as you build Bookmark Object Observatories.

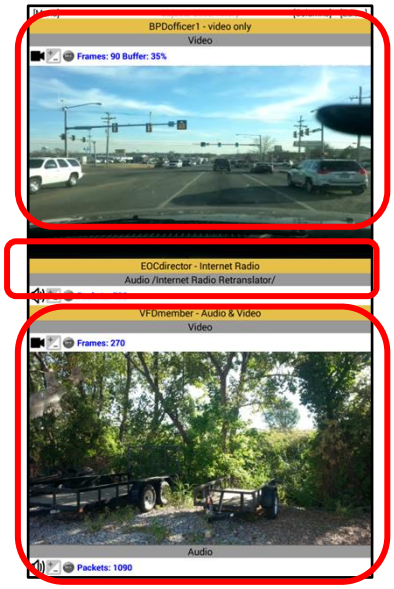
The screen size and resolution of a display device (Phone or Tablet) will dictate the number of panels that may be displayed.

<u>The following guidelines apply:</u>

a. The maximum column width = 5
b. Number of stacked channels = No limit (limited by device resources)
c. Columns may include multiple stacked channels.
d. Channels may be any of the available sensors (audio, video, GPS, maps, accelerometer, etc.).
e. To access the sensors of another mobile device, security settings for each device must allow access.

<u>A few of the possible combinations are illustrated below</u>

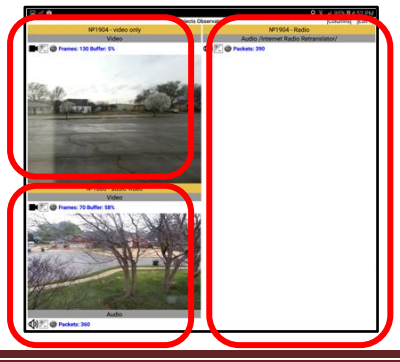
Single Column, 3 channels, stacked orientation



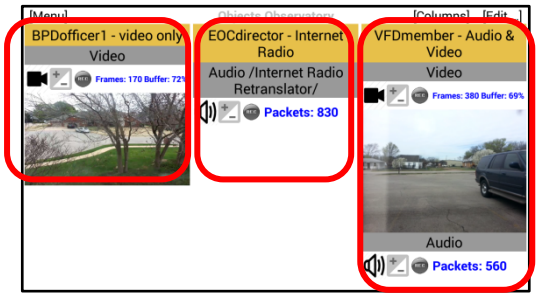
In our example, this is the Bookmark Panel of the user receiving the new bookmark.

As you can see, we now have two bookmark shortcuts on file.

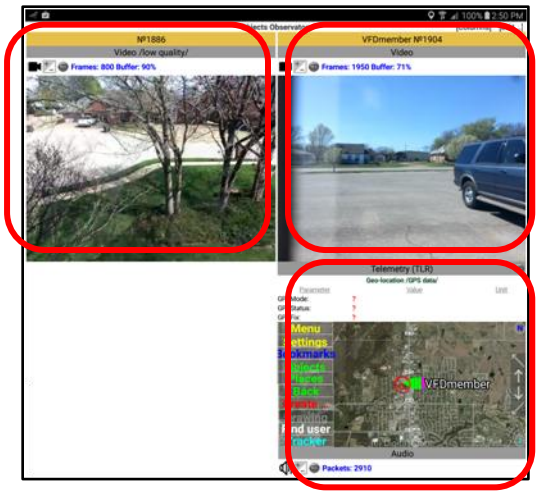
Two Columns, 3 channels



Three Columns, 3 channels



Two Columns, 3 channels, GPS Map channel



To set the number of columns of display width, open the Object Observatory and click on the [Columns] button. Options are between 1 – 5 columns.

Select the number of Columns to display and click “OK”.

To adjust the order in which the channels are displayed on the screen, you may re-order the list by using the “up” and “down” buttons on the Bookmark Panel.

Bookmarks created from “local” sensors on the mobile device may be saved and used on the local device but NOT sent to other users.

9.13. Create “floating windows” to monitor Remote Devices

Overview:

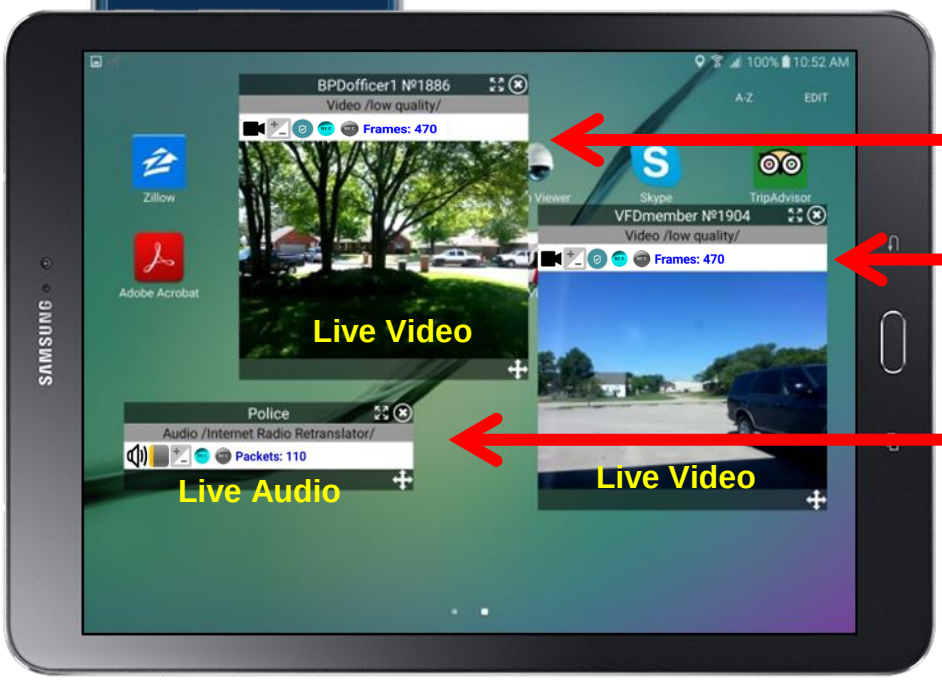
The Bookmarks Section allows a user to save a SHORTCUT that will create “floating windows” that can display input/audio/video from a remote device. If a particular remote device is monitored on a regular basis, a “floating window bookmark” can be created so that a user can access it with a few simple clicks without having to navigate the menus.

The floating window is a “re-sizable” Sentry MDU panel that will overlay most any application running on the mobile device. A User could be listening to music, or reviewing a web page on their mobile device and the “floating window” will remain on top of all other applications. The number of floating windows is only limited by the available resources of the mobile device (CPU, Memory and network bandwidth).

The Sentry MDU floating windows panel:

Shown below are several examples of floating window panels. The panels may be resized and moved around the screen as desired.

Example of 3 Floating Windows on the screen of a Smartphone



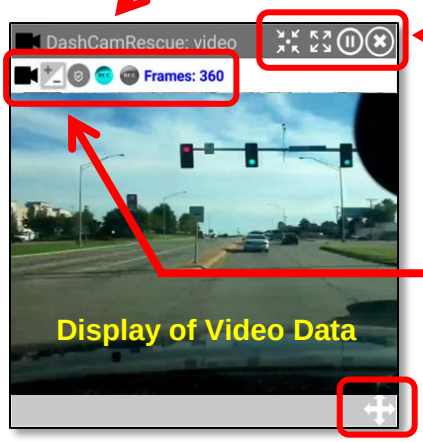
Example of 3 Floating Windows on the screen of a 10” Tablet

Description of the panel buttons and features:

1. ***Features of the Floating Window Panel***

   This section will describe the buttons and features available to the User on the Floating Window panel.

Video Floating Window



Name of the Remote Device monitored

Button to "close" the floating window

Button to "pause" the audio/video data feed

Button to make the floating window "full screen"

Button to collapse floating window to the Notification Bar (hide the floating window)

User controls for video and recording

Adjustable Reliability Mode Button

Custom settings to decrease latency in video transmission via UDP-RSPP

Two Options for Recording the Content:

Blue

(1) Starts recording and saving the data on the **remote device** where the particular sensor is running.

Gray

(2) Starts recording and saving the data on **YOUR device** if you are

Button to "drag" and resize panel

Audio Floating Window

Button to "close" the floating window

Button to "play/start" the audio transmission

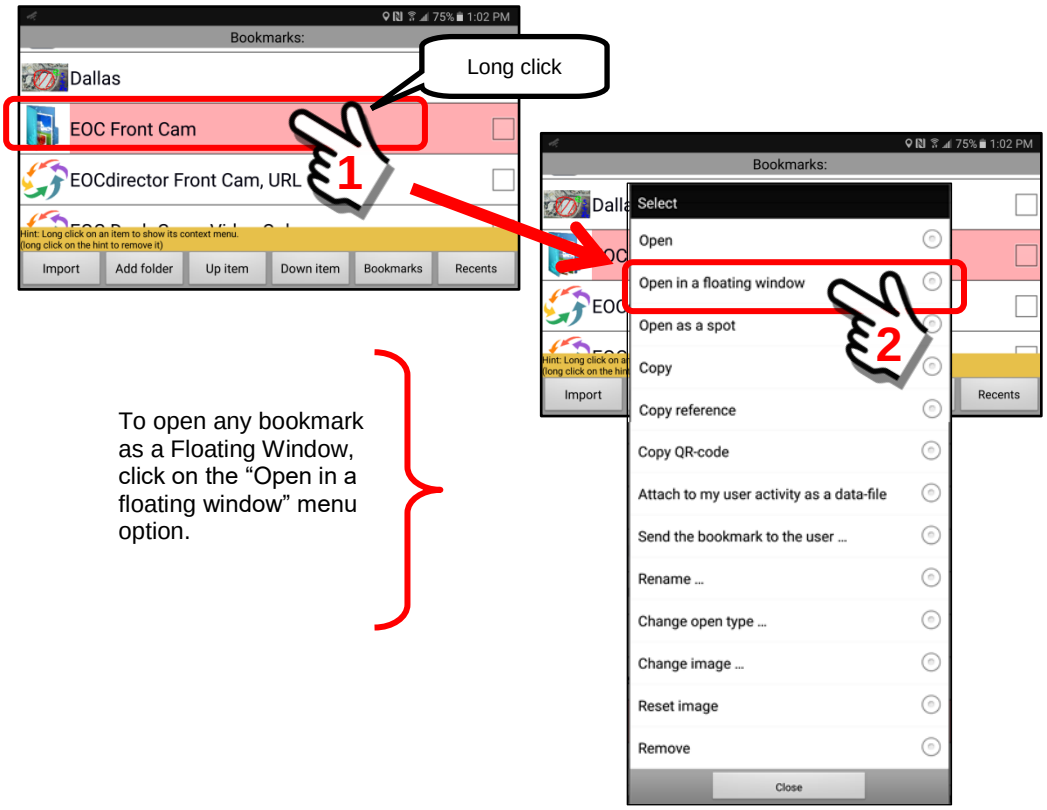
Button to make the floating window "full screen"

Button to collapse floating window to the Notification Bar (hide the floating window)

Button to "drag" and resize panel

2. *Launching floating panels with existing bookmarks*

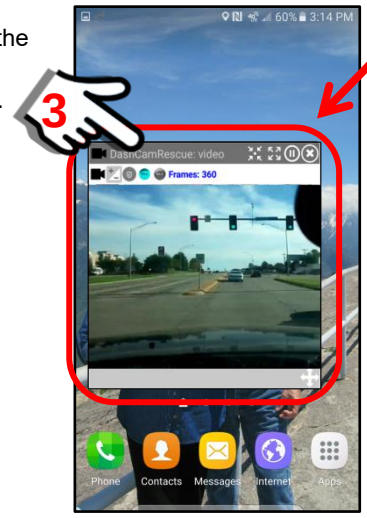
Existing bookmarks can be manipulated in a variety of ways. A “long click” on the bookmark name will launch a menu of options.



To open any bookmark as a Floating Window, click on the “Open in a floating window” menu option.

When a bookmark is selected to “open” in a Floating Window, the device will revert to the home screen with the floating window centered in the display. An example is shown below.

Touch here to “drag” the floating window panel around on the screen.



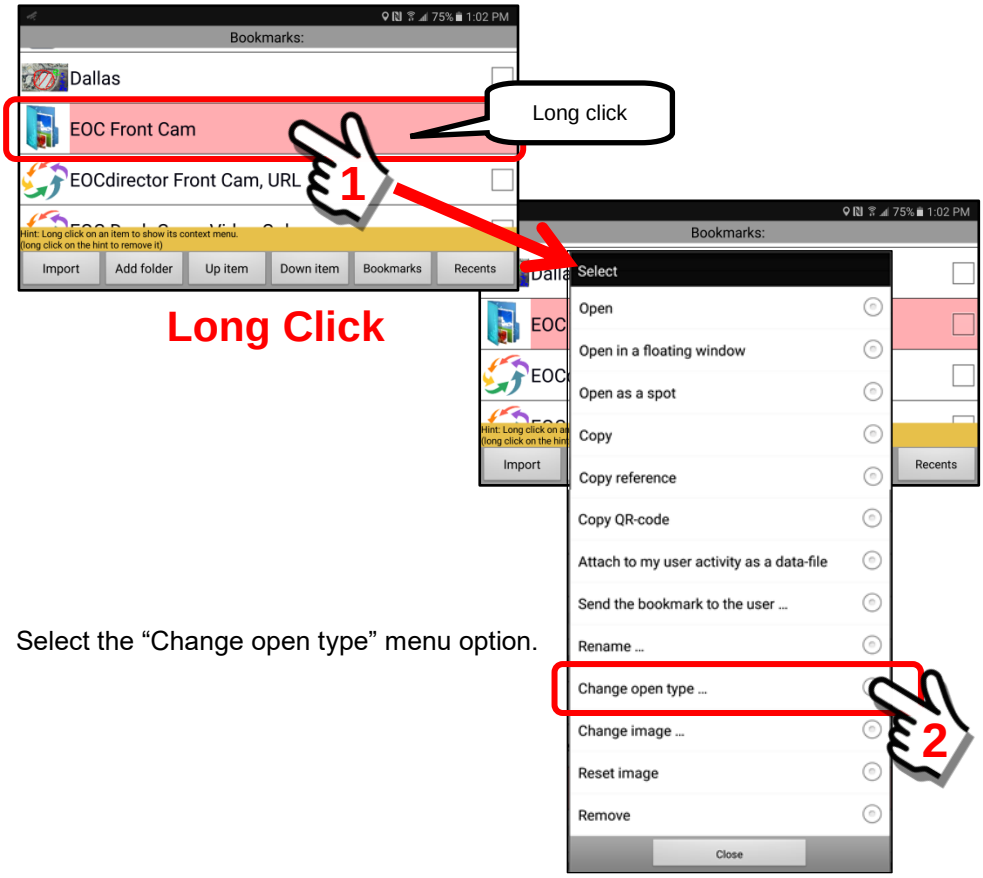
Note that this window is displaying a “live” video feed from a remote device mounted as a Dash Cam in a vehicle.

Floating Window opens on the device “home” screen. You may now resize the floating window and open other programs. The floating window will remain on “top” of other windows.

3. *Setting bookmark to always open as a floating panel*

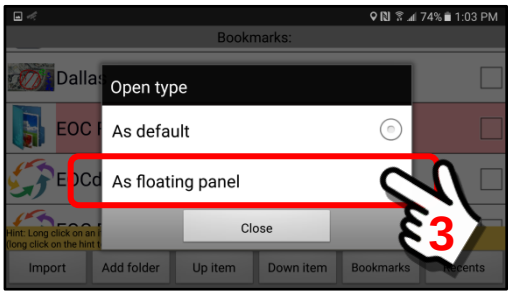
The default setting for a bookmark is to “open” as a new panel from within the Sentry MDU App. Users have the option to change the way in which a bookmark is opened on the device. This example will illustrate this feature.

Select a bookmark item and perform a “long click” to open the options menu.

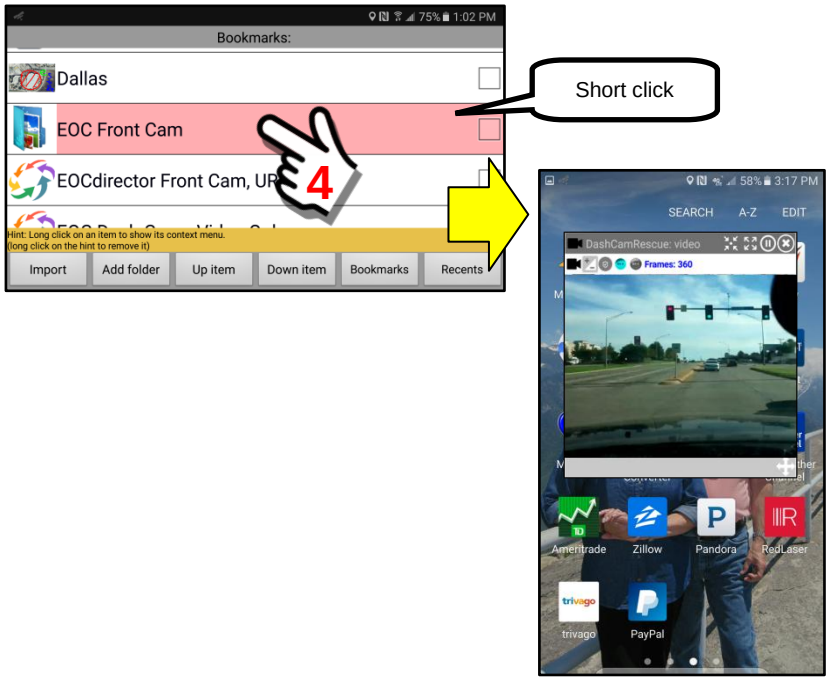


Select the “Change open type” menu option.

A pop-up menu will appear. Select the “As floating panel” menu option.



Now, the next time you click on the Bookmark item it will open as a “Floating Window” panel. It will remain at this setting until you change it back to the default.

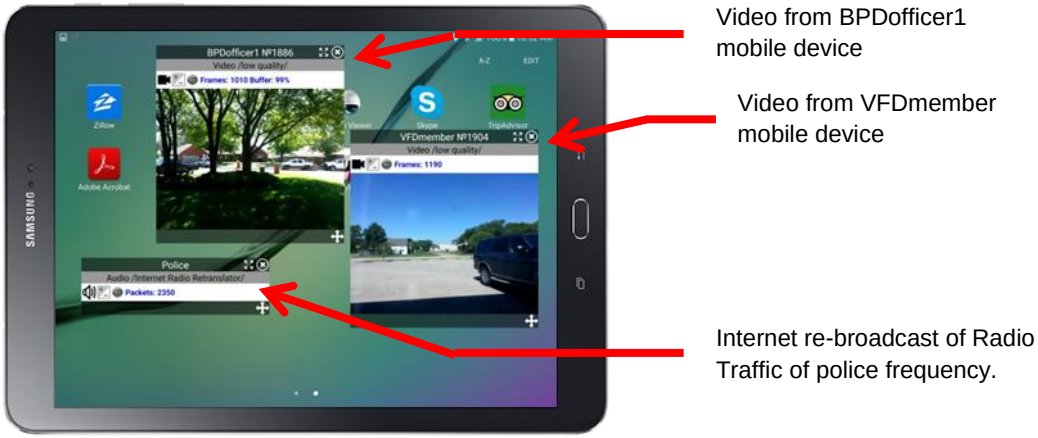


4. ***Moving a floating window to other regions of the display screen***
Floating windows may be resized and moved around on the screen. On large display devices, such as Tablets, floating windows will provide the User with enough screen space to work with other Apps while still monitoring a remote device via the floating windows feature.

In this example, we will show how to move 3 floating windows around the screen of a 10” Tablet. In the screen image below we have two remote users displayed on the tablet showing their GPS locations.

We want to monitor a “live” video feed from each remote device and also monitor the radio traffic via a re-broadcasting from the internet. For this example, we will assume we have previously set up a Bookmark for these three data feeds (see **Section 9.7**).

As we launch the floating windows, you can see they are just randomly displayed on the “Home” screen of the Tablet.



Since a feature of “floating windows” is that they will remain on TOP of other applications, we will re-open the Sentry MDU App and align the floating windows with the GPS locations of the remote devices.

In this image, we have opened the Main Map screen of the Sentry MDU App and have displayed the Mobile Objects of users VFDmember and BPDofficer1. As you can see, the floating windows are in the same relative position as before, but they are covering the GPS locations of the remote devices we would like to monitor.

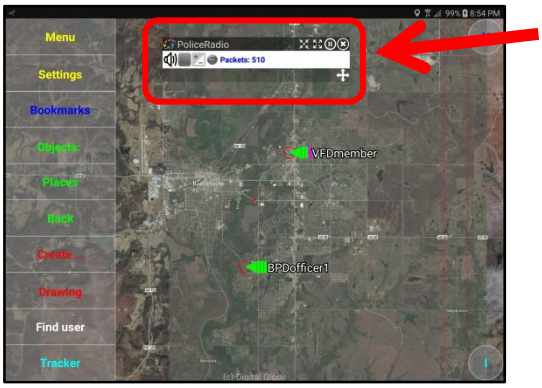
We now want to re-arrange the floating windows and make them smaller so that we can see the GPS locations of the remote devices.

In addition to dragging the floating windows to “new” locations, we want to “resize” the windows to provide additional room on the display.

When finished, the Tablet Screen would look as follows.

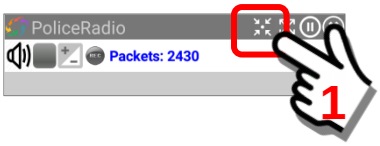
5. ***Collapse the floating window to the device Notification Bar***
A feature of the Sentry MDU System is that floating windows may be “collapsed” (minimized) to the notification bar of the device. They will still be active, but are hidden. A user may then click on the icon and restore the floating window to the active screen on the device. This section will describe the feature.

In this example (as shown on a 10” Tablet) we have a floating window that was created to monitor a Police Department radio transmission using the “Audio /Internet Radio Restranslator/” sensor channel.



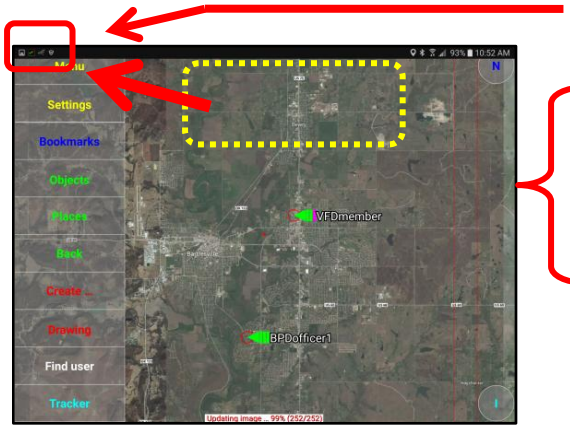
The “PoliceRadio” Floating Window that monitors police department radio transmissions.

To minimize the floating window, click on the”Minimize Icon” located on the right side of the floating window title bar.



Button to collapse floating window to the Notification Bar (hide the floating window)

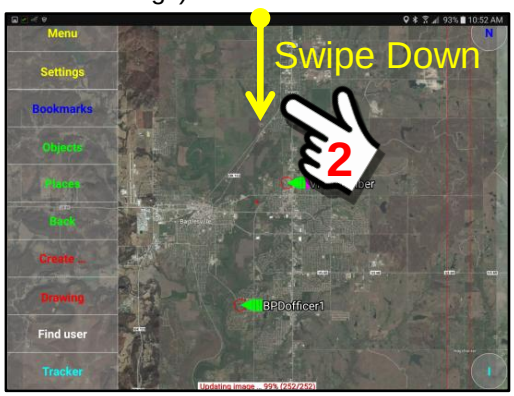
When the floating window minimizes to the device Notification Bar, the icon associated with the panel is put on the bar to indicate that a floating window is stored there.



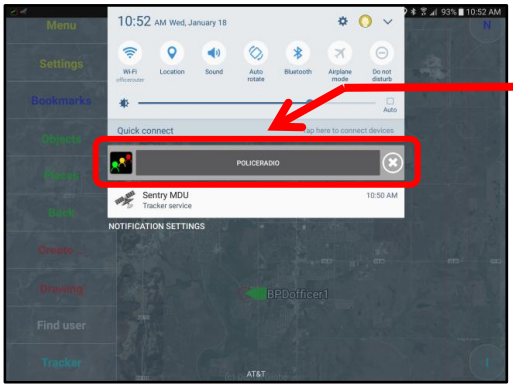
Icon on Notification Bar that indicates a Floating Window is stored there.

The Floating Window that was here is now minimized to the Notification Bar of the device.

To review the items stored on the notification bar of the mobile device, swipe down from the top of the screen as shown below (procedure may depend on device settings).

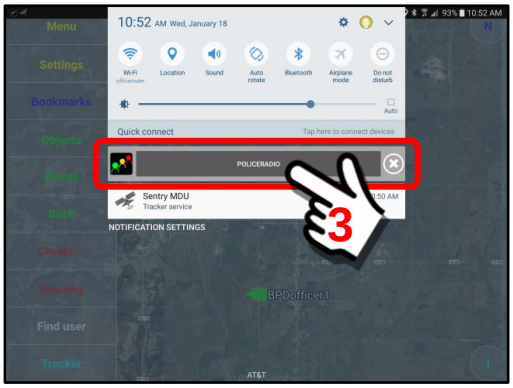


The device will now display the items on the Notification Bar.

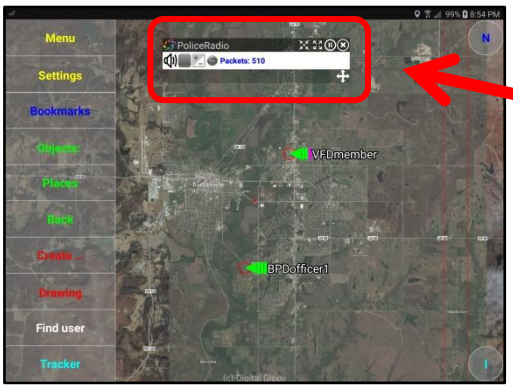


The “PoliceRadio” floating window is shown as stored on the notification bar.

To restore the floating window back onto the display screen, click on the Notification Bar button for “PoliceRadio”.



The “PoliceRadio” floating window is now restored.



The “PoliceRadio” Floating Window that monitors police department radio transmissions.

9.14. The “URL Gallery” Feature (create bookmark groups)

Overview:

The “URL Gallery” feature allows a user to save a SHORTCUT that will create a “floating window” panel that can display a “grid” of buttons comprising several remote devices or other URLs. From this grid of buttons a user can select one (or more) of the audio-video data feeds to display.

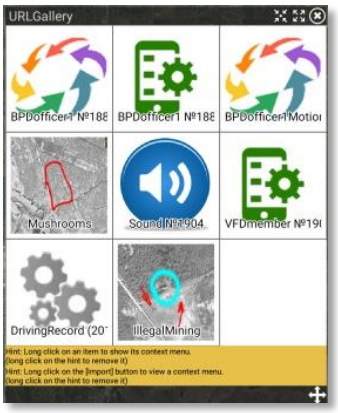
The “URL Gallery” feature is a “re-sizable” floating window panel that will overlay most any application running on the mobile device. A User could be listening to music, or reviewing a web page on their mobile device and the “floating window” will remain on top of all other applications. The number of floating windows is only limited by the available resources of the mobile device (CPU, Memory and network bandwidth).

<u>We will perform the following steps:</u>

a. Create a new URL Folder.
b. Add the desired URL’s into this new folder.
c. Open the Context Menu and change the view type to “gallery”.
d. Open the Context Menu and set the “Change open type” to Floating Panel.
e. Open the Context Menu and set the “Change image” item to a desired image.
f. Test the new URL Gallery feature.

The URL Gallery floating window panel:

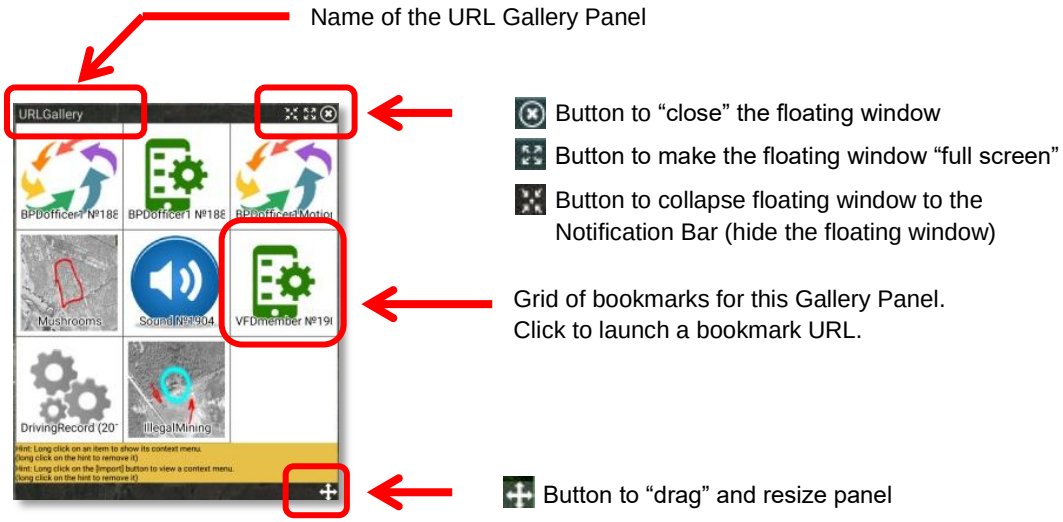
Shown below are examples of a URL Gallery floating window panel. The panels may be resized and moved around the screen as desired.



Example of “URL Gallery” floating window on the screen of a Tablet Device

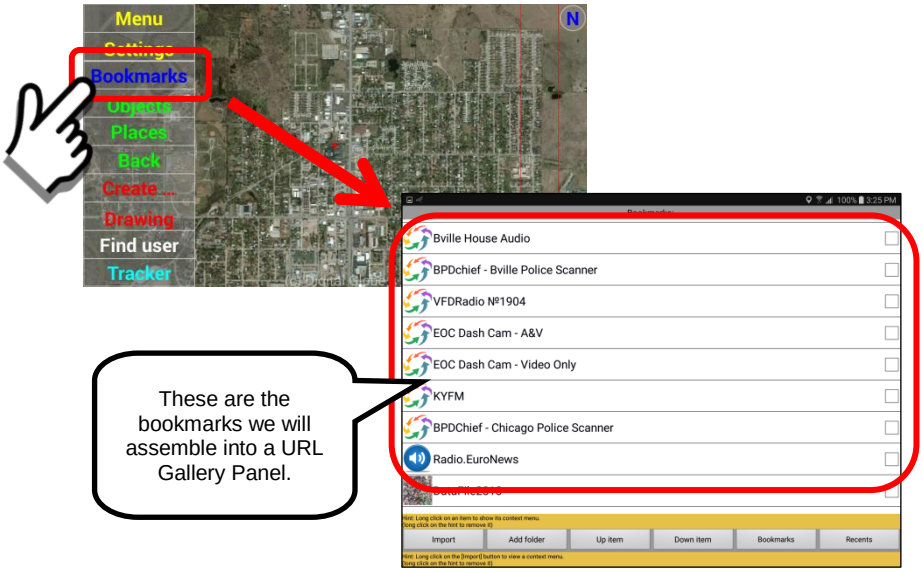
Description of the panel buttons and features:

1. ***Features of the "URL Gallery" Floating Window Panel***
   This section will describe the buttons and features available to the User on the "URL Gallery" Floating Window panel.



2. ***Preparation for creating the URL Gallery***
   To create a URL Gallery, you will first need to have existing bookmarks on your device. These can be bookmarks you have created or bookmarks that "other" users have sent you. The URL Gallery gives you the option to assemble groups of bookmarks on a dedicated panel in either a "list" or "gallery" view.

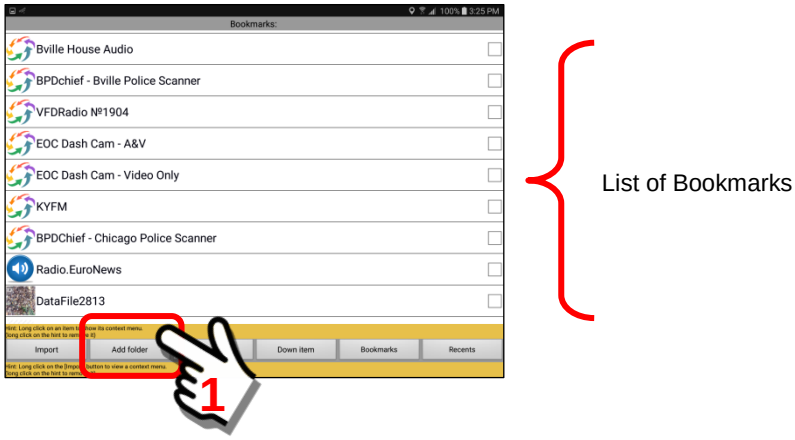
   In the illustration below we have a list of eight (8) existing bookmarks we want to assemble into a gallery view.



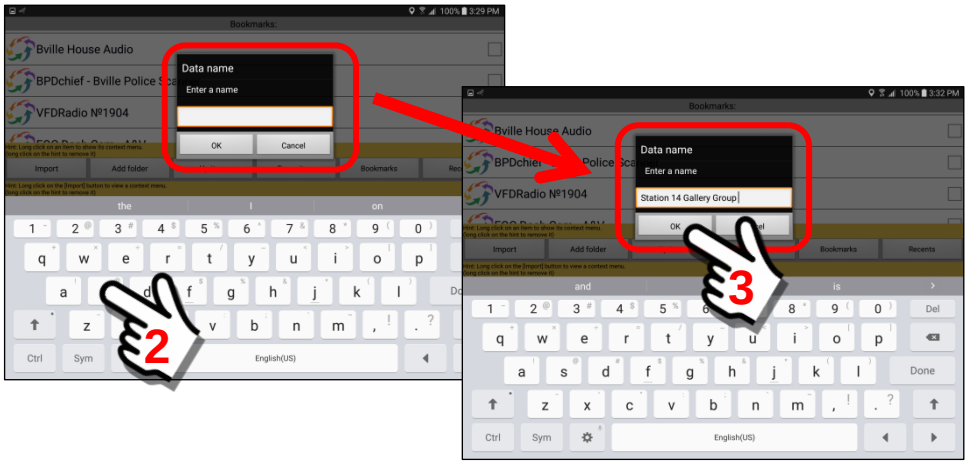
3. *Creating the URL Gallery of bookmark items*

We will be creating a new bookmark folder under which we will create our gallery of other bookmarks. Later in this section we will also change the "image" that is displayed adjacent to the bookmark.

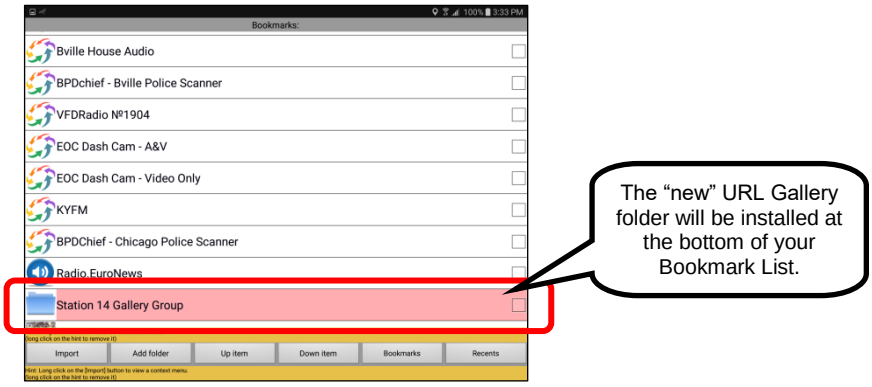
Create a "new" bookmark folder by pressing the "Add folder" button.



A pop-up box will appear to enter the "name" of the new folder that you will be adding. Type in a name and click the "OK" Button.



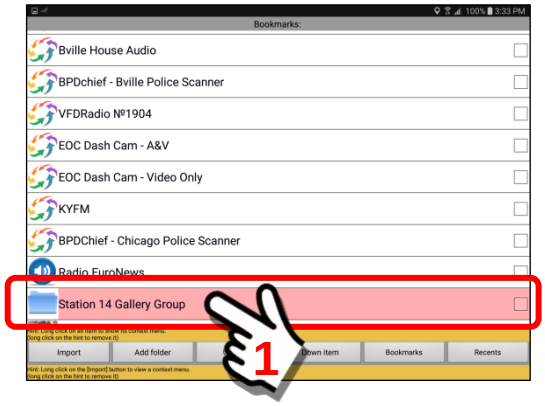
The new folder (Station 14 Gallery Group) will now appear as a folder on your Bookmark List.



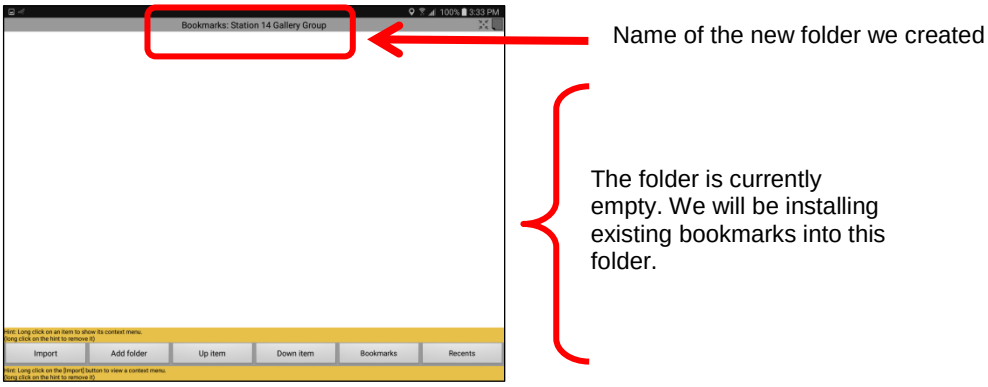
4. ***Adding additional bookmark items to the Gallery***

In this example, we will assemble a group of 8 existing bookmarks under our new folder (Station 14 Gallery Group).

When we created the “new” folder, it is currently empty. Click on the folder name to open the “new” folder.

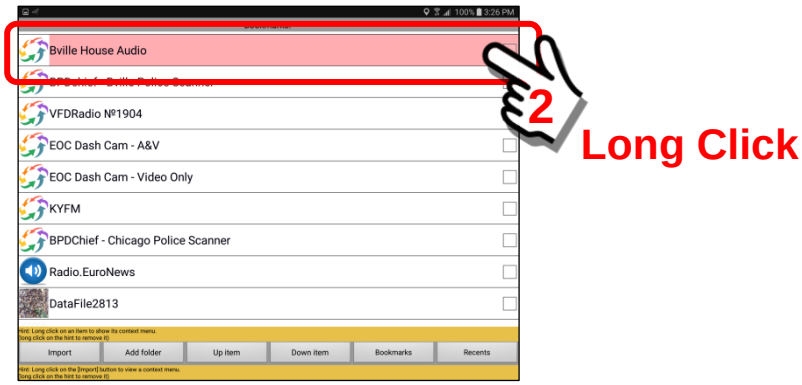


Open the ***Station 14 Gallery Group*** folder to view the contents (empty).



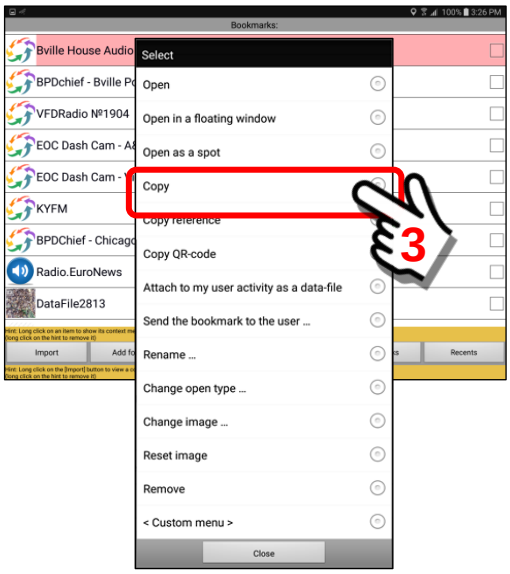
<u>Create the 1st Bookmark</u>

Return to the bookmark list and select the first bookmark that you want to copy to the new URL Gallery. Perform a “Long click” to get the Context Menu.

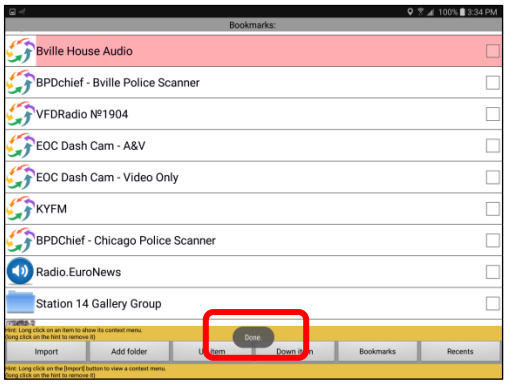


The “Context Menu” for the bookmark will be displayed. We want to “Copy” this bookmark into our new URL Gallery folder.

Click on the “Copy” menu option.

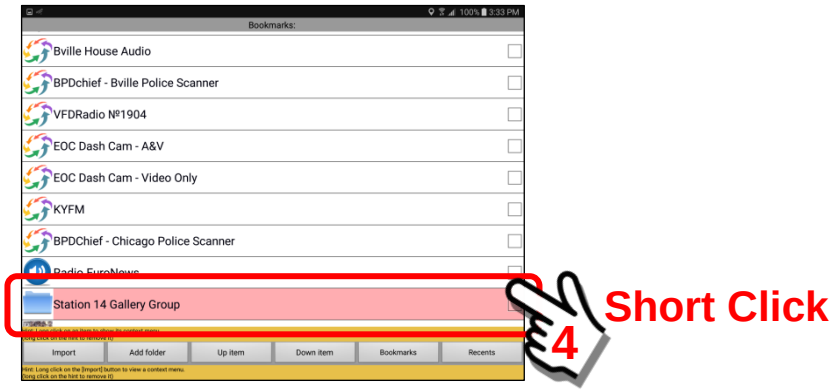


If the copy operation is successful, a message “Done” will flash briefly on the screen as shown below.



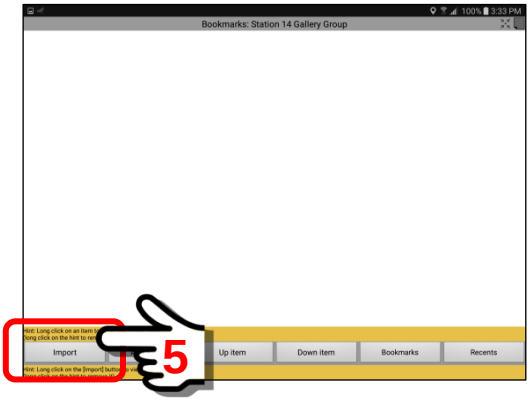
The URL (code for the bookmark) will be stored in a temporary file on the mobile device (.TEMP folder). It is now ready to “import” into the new URL Gallery folder we have created (Station 14 Gallery Group).

Return to the Bookmark List and select the ***Station 14 Gallery Group*** folder.

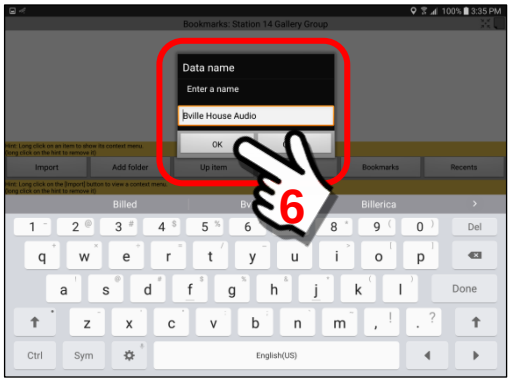


The empty folder will be displayed. We will be “importing” the URL of the “Bville House Audio” bookmark we have saved previously.

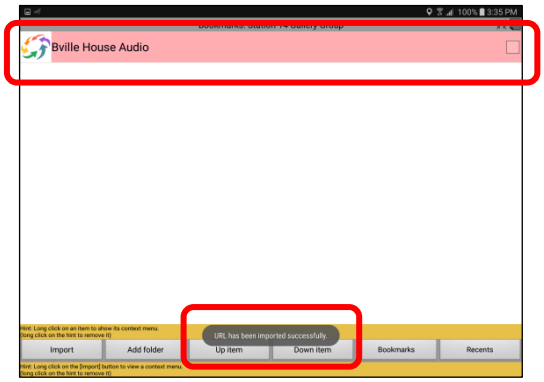
Click on the Import Button.



The bookmark that was saved (Bville House Audio) will be displayed in a pop-up box. The description name may now be edited if desired. When finished, click on the “OK” Button to save the bookmark to the folder.



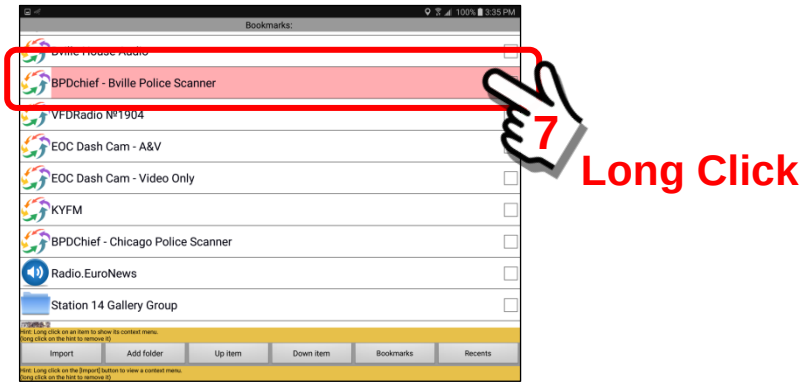
If the operation is successful, the bookmark (Bville House Audio) will be shown on the folder screen and a brief message will be displayed at the bottom of the screen.



We now have the first of 8 bookmarks created in the *Station 14 Gallery Group* folder.

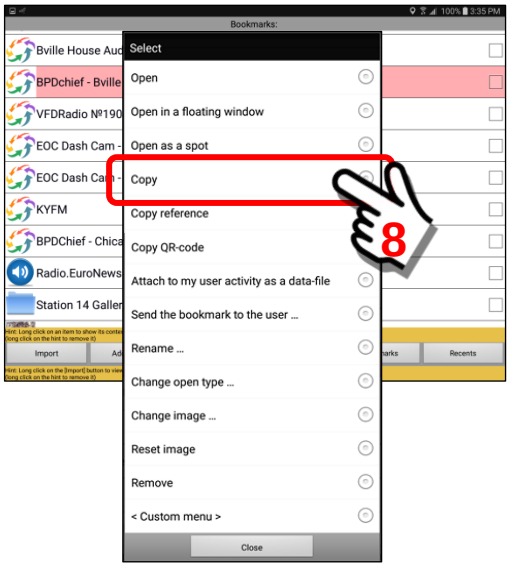
Create the 2nd Bookmark

Return to the bookmark list and select the next bookmark that you want to copy to the new URL Gallery. Perform a “Long click” to get the Context Menu.

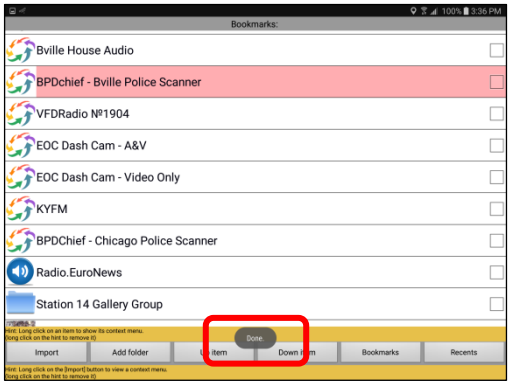


The “Context Menu” for the bookmark will be displayed. We want to “Copy” this bookmark into our new URL Gallery folder.

Click on the “Copy” menu option.

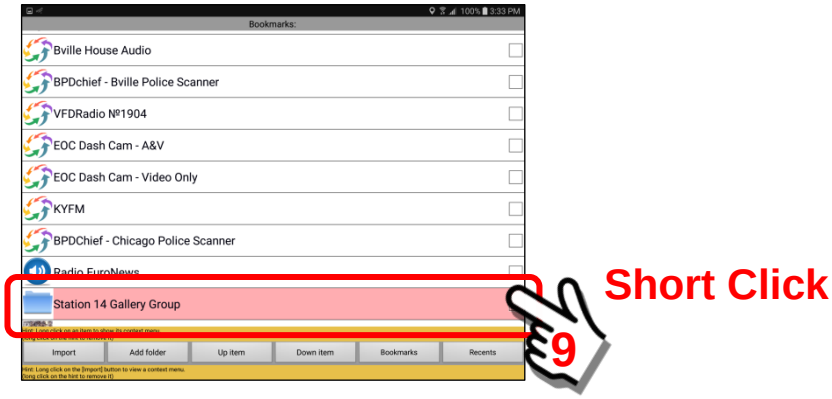


If the copy operation is successful, a message “Done” will flash briefly on the screen as shown below.



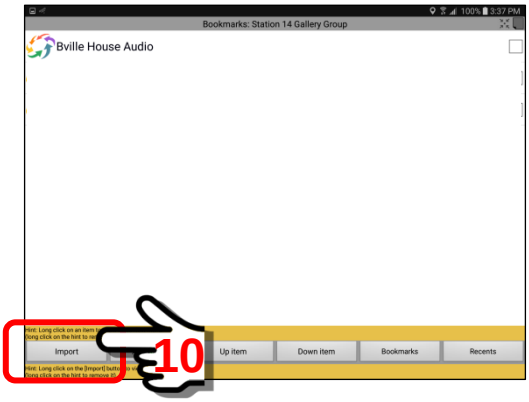
The URL (code for the bookmark) will be stored in a temporary file on the mobile device (.TEMP folder). It is now ready to “import” into the new URL Gallery folder we have created (Station 14 Gallery Group).

Return to the Bookmark List and select the ***Station 14 Gallery Group*** folder.

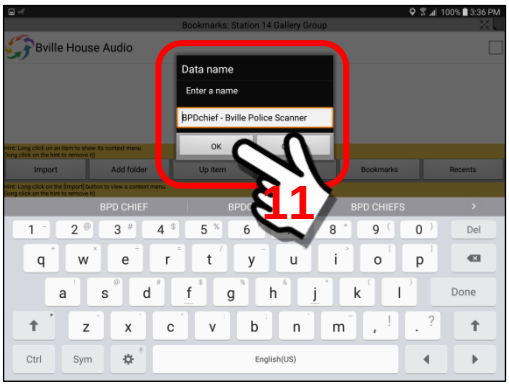


The folder will be displayed and it currently holds the one bookmark we have installed. We will now be “importing” the URL of the “BPDchief – Bville Police Scanner” bookmark we have saved previously.

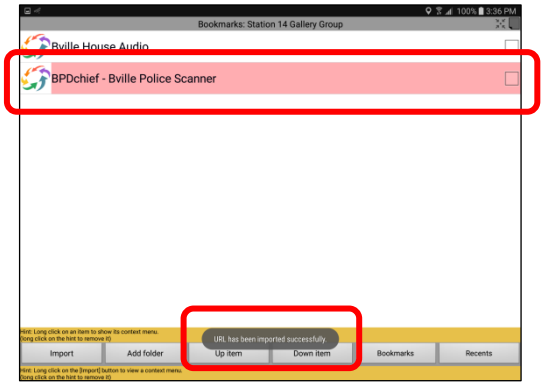
Click on the Import Button.



The bookmark that was saved (BPDchief – Bville Police Scanner) will be displayed in a pop-up box. The description name may now be edited if desired. When finished, click on the “OK” Button to save the bookmark to the folder.



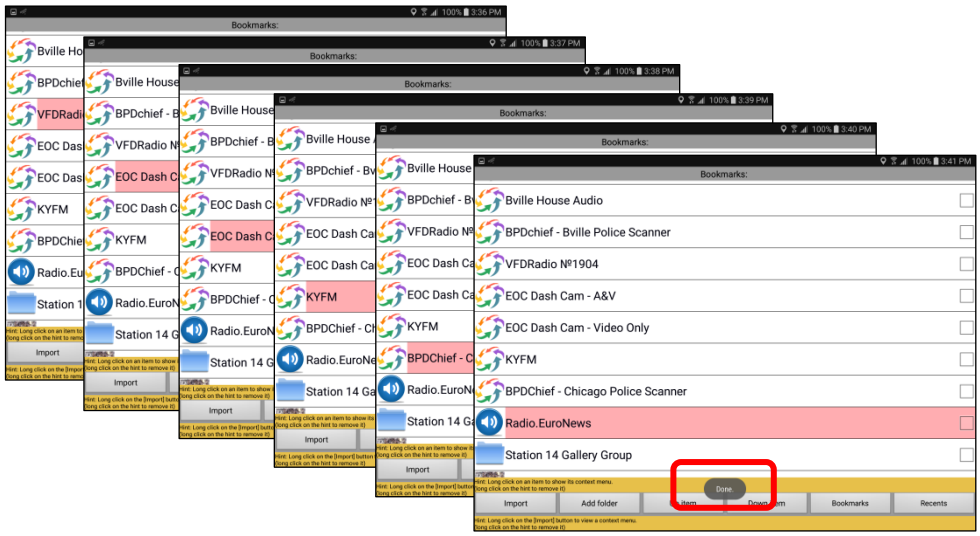
If the operation is successful, the bookmark (Bville House Audio) will be shown on the folder screen and a brief message will be displayed at the bottom of the screen.



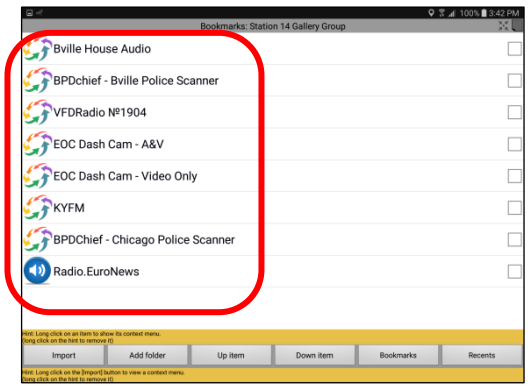
We now have the second of 8 bookmarks created in the *Station 14 Gallery Group* folder.

<u>Create Bookmarks 3 – 8 using the same process</u>

Return to the bookmark list and select the next bookmark that you want to copy to the new URL Gallery. Perform a "Long click" to get the Context Menu and then follow the process used previously to copy the bookmark.



We have now copied all 8 bookmarks into our new URL Gallery folder.
The *Station 14 Gallery Group* folder should look similar to that shown below.

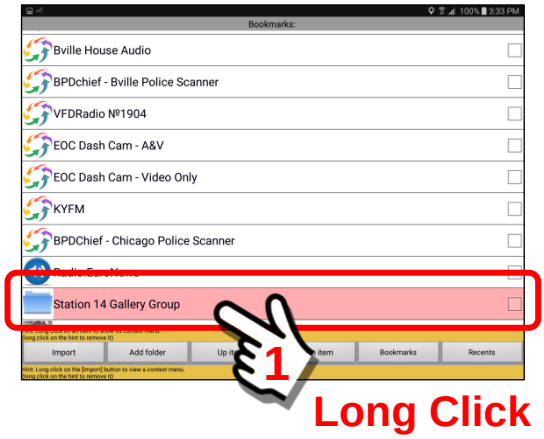


The folder is holding the 8 bookmarks.

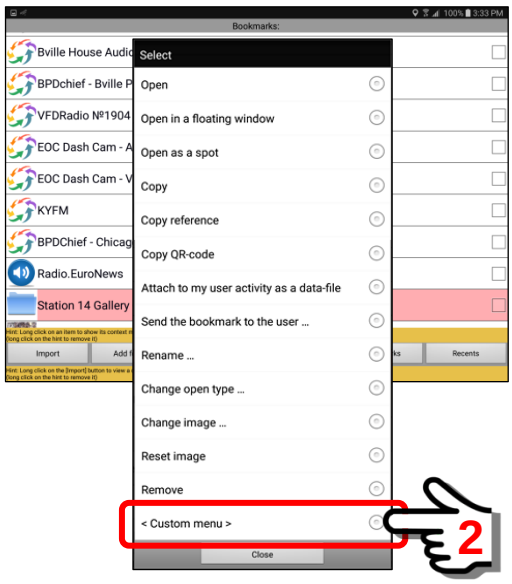
5. ***Configuring the URL Gallery to open as a "Gallery View" panel***

Now that we have all 8 bookmarks copied into the *Station 14 Gallery Group* folder we need to set up the Gallery View Panel.

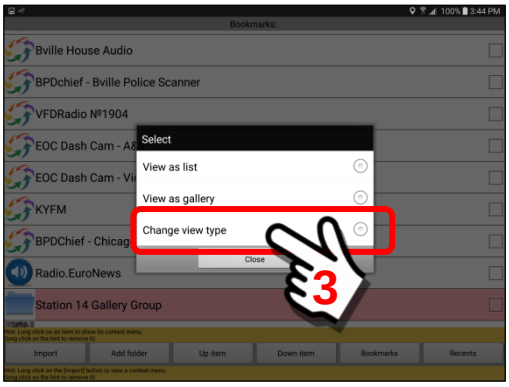
Open the Context Menu for the *Station 14 Gallery Group* folder. Perform a "Long click" on the folder name.



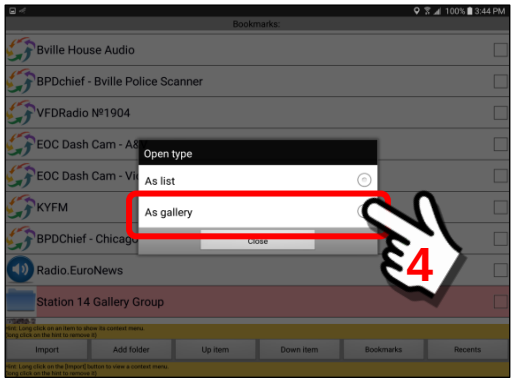
Scroll down the Context Menu and select the "<Custom menu>" option at the bottom of the list.



Click on the "Change view type" Button.

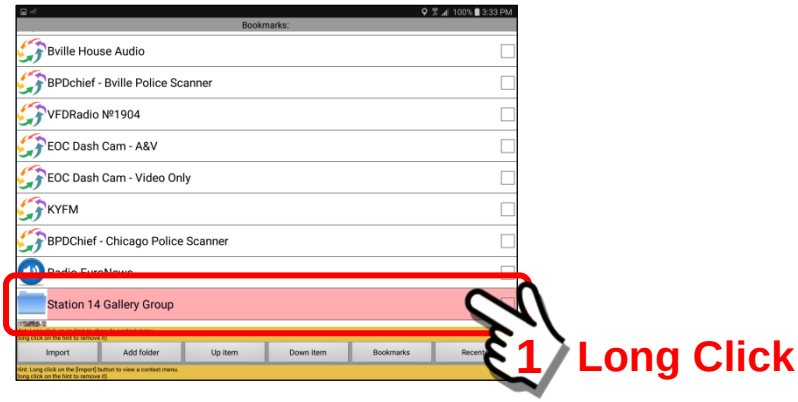


Select the “As gallery” option.
We want the 8 bookmarks to be displayed as a URL gallery grid of buttons.

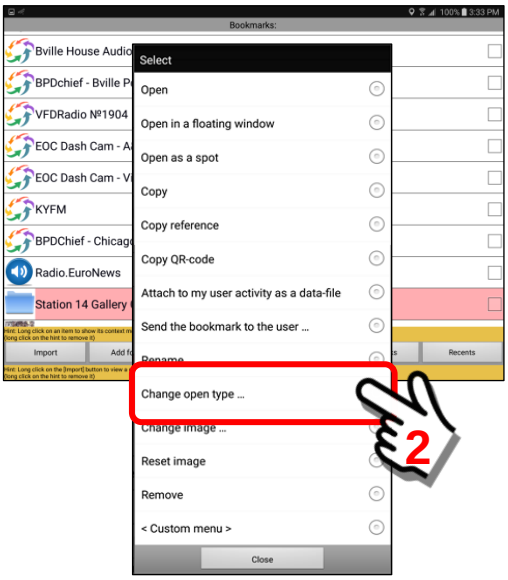


6. ***Configuring the URL Gallery to open as a floating window***
We have now created a URL Gallery view for the 8 bookmarks. However, the next step is to make this Gallery View a “Floating Window” that can be moved about on the screen of the mobile device.

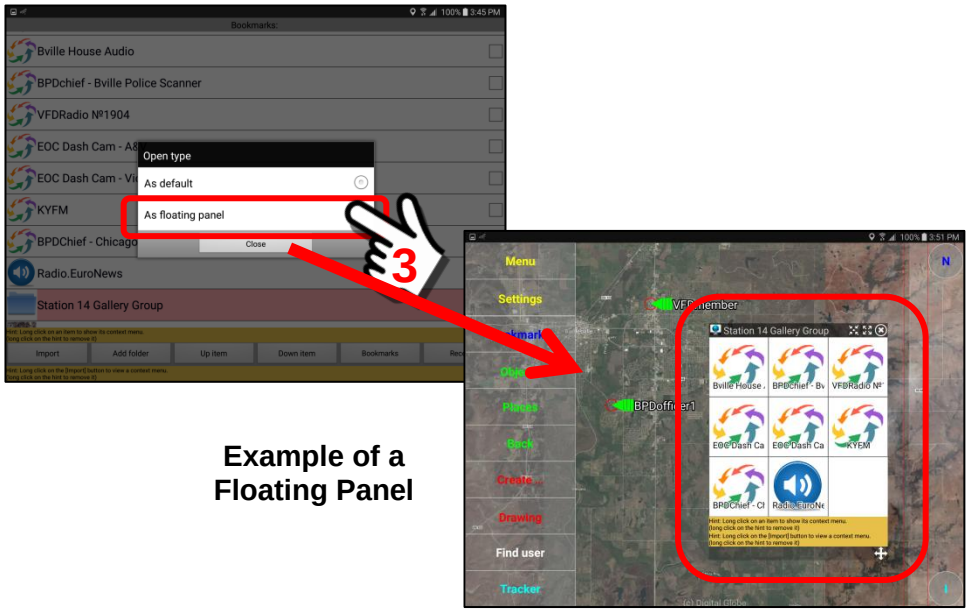
Perform a “Long click” on the ***Station 14 Gallery Group*** folder to open the Context Menu for this folder again.



Select the “Change open type …” option from the menu list.



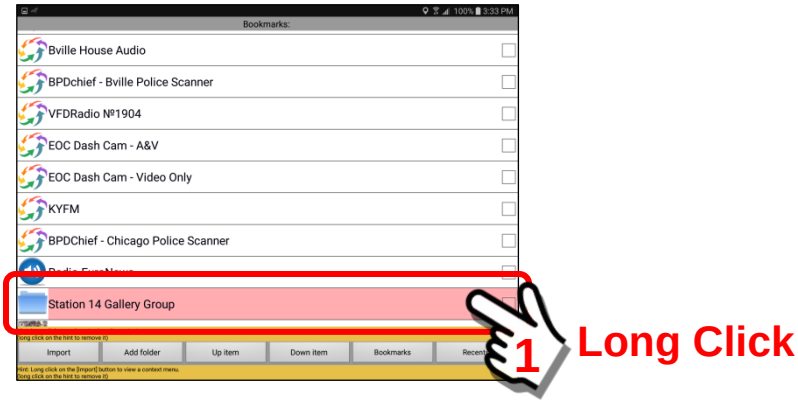
Select the “As floating panel” from the pop-up box. This will now cause the URL Gallery group of 8 bookmarks to open as a floating panel each time you click on the ***Station 14 Gallery Group*** folder.



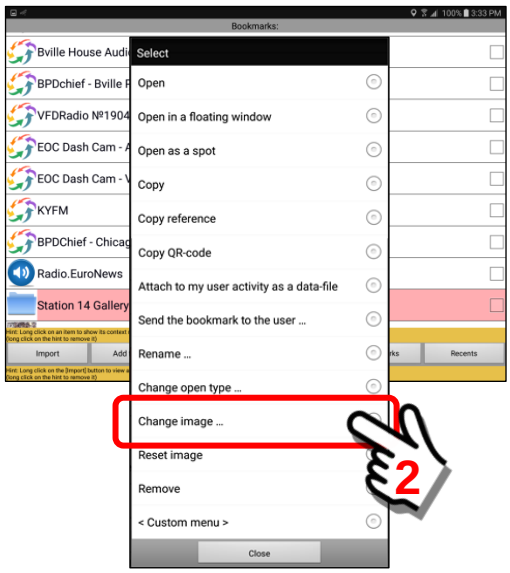
Example of a Floating Panel

7. ***Change the thumbnail “image” for the new URL Gallery folder***
Depending on the type of bookmark, the user may edit/replace the thumbnail images associated with a bookmark. In our example, we will change the image of a blue folder to one indicating a URL. This section will explain how to change the image.

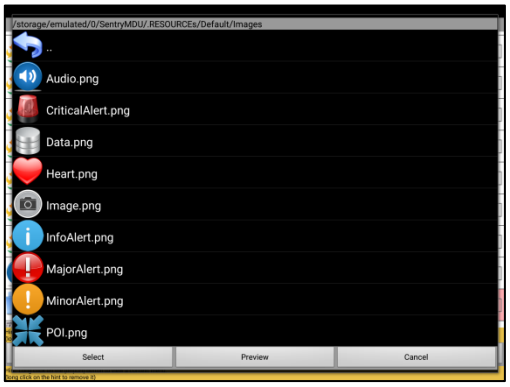
Perform a “Long click” on the ***Station 14 Gallery Group*** folder to open the Context Menu for this folder again.



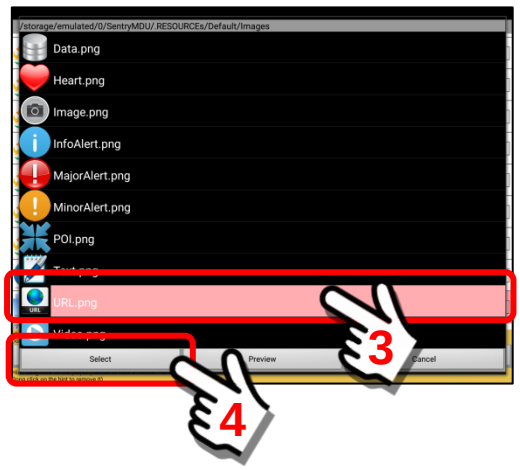
Select the “Change image …” option from the menu list.



When the “Change image …” menu item is selected, a file directory of available images is opened.



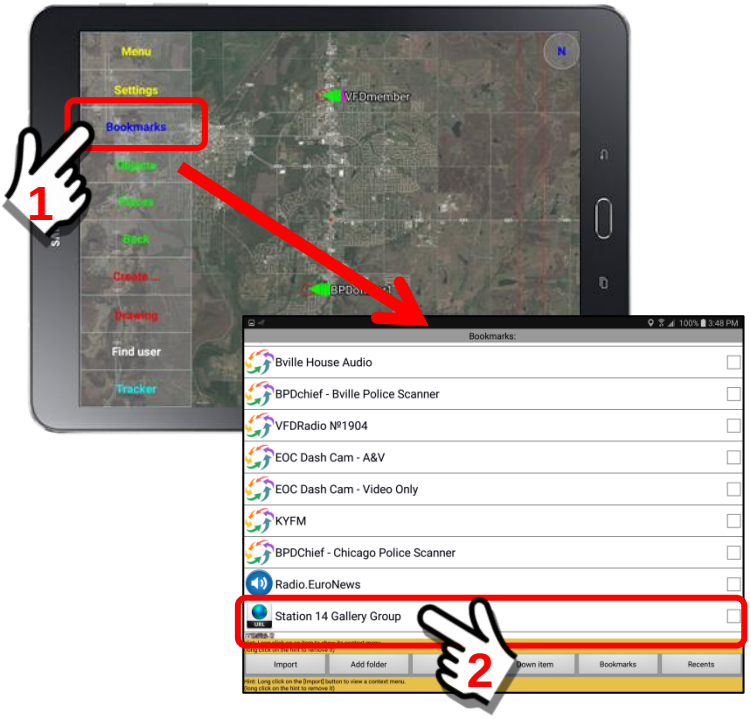
From the available images, select a “new” image that you would like to use as a thumbnail. In this example, we will select the URL.png image to replace the image we had. Click on the “Select” Button to save the new choice.



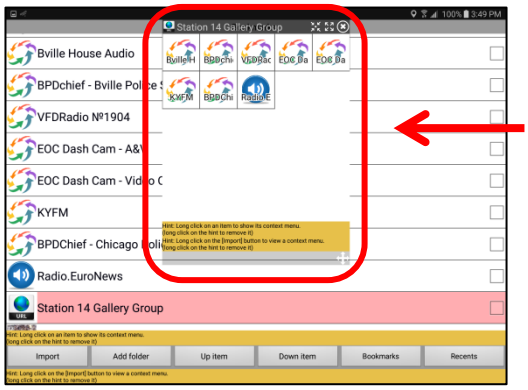
8. ***Using the buttons on the URL Gallery to monitor remote devices***

Once the URL Gallery is created, it is simply one more bookmark on the list. In this example, we will illustrate the functions of the URL Gallery as shown on a 10” Tablet.

Click on the Bookmark Menu item.

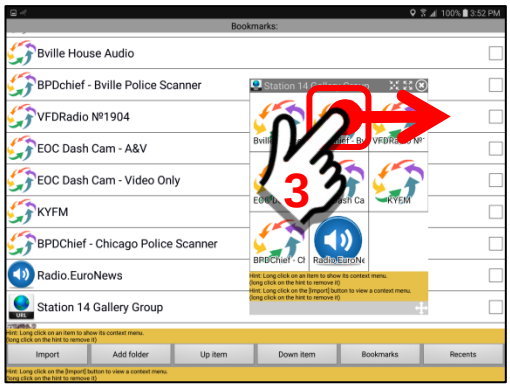


Select and click on the URL Gallery we have created (Station 14 Gallery Group). The URL Gallery will appear as a floating window with 8 button regions within the grid. Notice in the picture below that the 8 bookmark items are small and grouped near the top of the floating window.



URL Gallery displayed as a Floating Window

To make the bookmark buttons larger, simply touch one of the buttons and “swipe” to the right with your finger. The buttons will now become larger, as shown below.

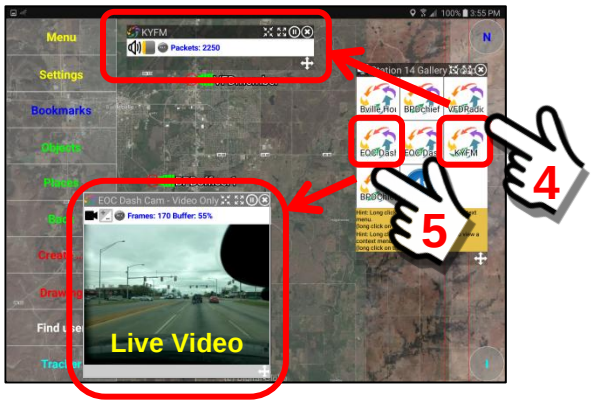


Swipe to the right to make boxes larger.

Swipe to the left to make boxes smaller.

The URL Gallery floating window is on “top” of other screens. You may now navigate to other screens within the SentryMDU App … or other programs on the mobile device.

Click on any of the URL Gallery “buttons” to launch a desired bookmark. The example below shows that 2 of the bookmarks have been activated on the Main Map Screen.



The URL Gallery floating panel has launched two additional floating windows.

All of the standard “Floating Window” controls are available for these panels.

Button to “close” the floating window

Buttons to Pause / Play audio transmissions

Button to make the floating window “full screen”

Button to collapse floating window to the Notification Bar (hide the floating window)

Button to “drag” and resize the floating window panel

9.15. Example - select and monitor a single remote device

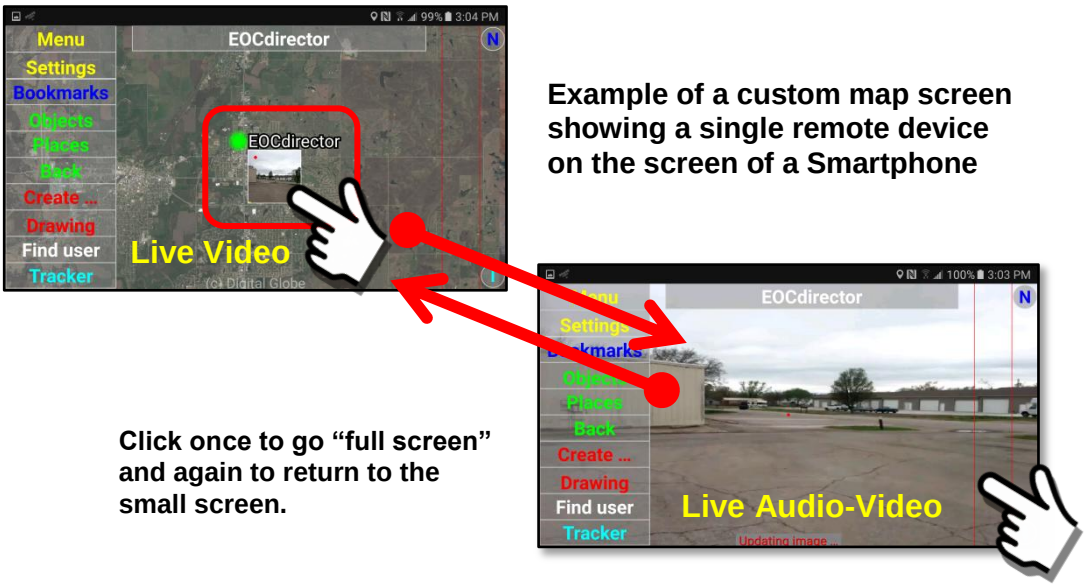
Overview:

This feature of the Bookmarks Section allows a user to save a SHORTCUT that will create a “custom map panel” that can display audio/video from a remote device. If a particular remote device (or group of devices) is monitored on a regular basis, a custom map screen bookmark can be created so that a user can access it with a few simple clicks without having to navigate other menus.

This example will illustrate how to create a Custom Map Bookmark that will display the audio-video from a single remote device.

The Custom Map Screen panel:

Shown below is an example of a custom map screen panel. The panels may also be configured as “floating windows” so they can be moved and resized.

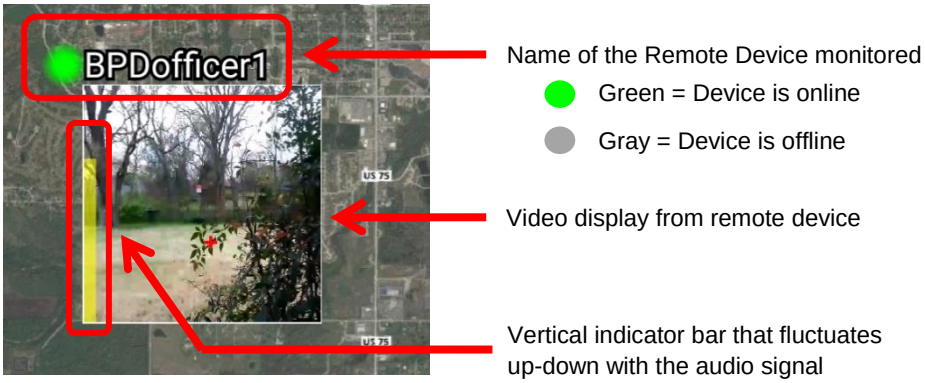


Example of a custom map screen showing a single remote device on the screen of a Smartphone

Click once to go “full screen” and again to return to the small screen.

Description of the panel buttons and features:

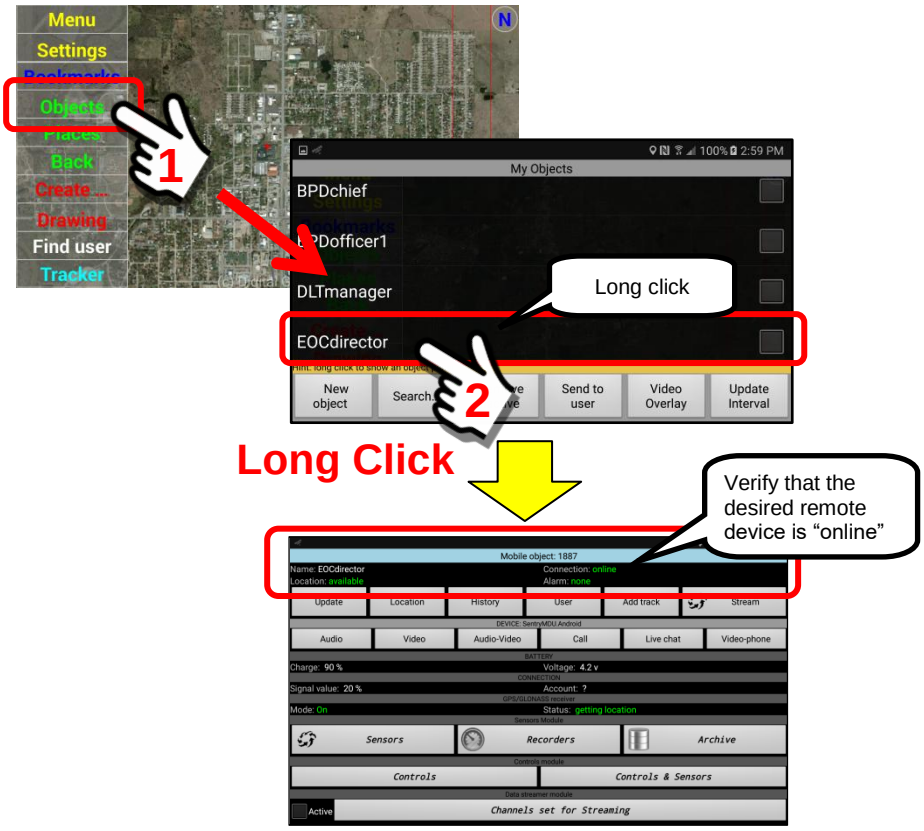
1. ***Review of the “Single Object” Custom Panel***
   This section will describe the features available on the display panel.



2. ***Preparing to create the single object custom layer***

A single object custom map layer is best created while the remote object is "online". This is to ensure that the parameter settings of the camera and microphone sensors on the remote device are adequate for the task.

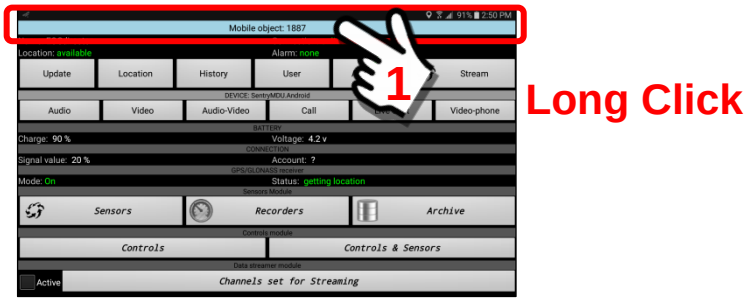
In this example, we will make sure that the selected user (EOCdirector) is online.



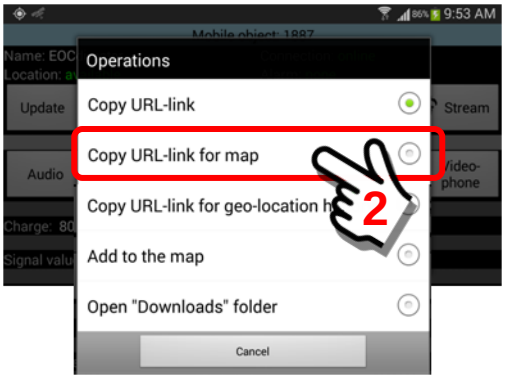
3. ***Configuration of the Single Object custom map screen.***

The menu to create a single object custom map layer is located on the Mobile Object Panel of the selected remote device.

Perform a "long click" on the selected users Mobile Object Panel heading to open the options menu.

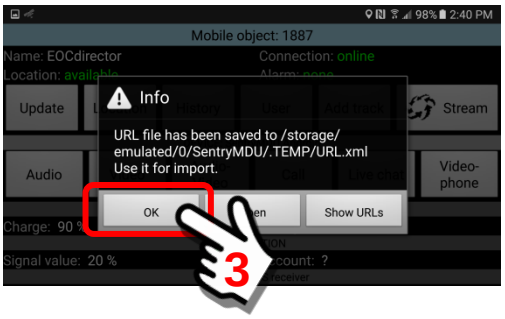


At the Operations Menu, select the “Copy URL-link for map” choice.



A pop-up Info Box will appear. The URL “link” for the remote mobile device will be saved in a temporary file, ready to be imported into the bookmark folder.

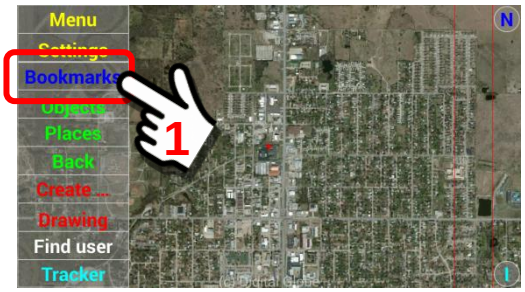
Click on the “OK” Button to save the URL.



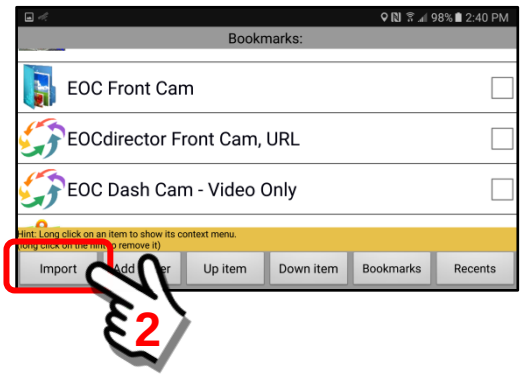
Now that the URL link for the remote device has been saved, return to the Main Map Screen.

4. ***Create the Bookmark entry for a Single Object custom map layer.***
Once the URL link for the remote device has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.



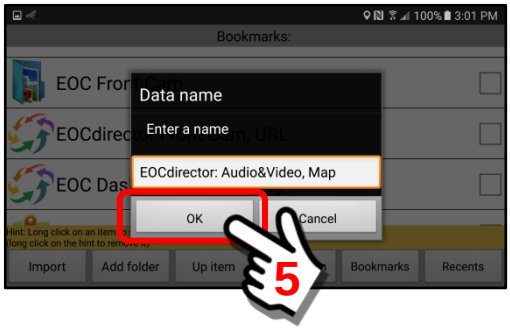
At the Bookmarks Panel, click on the Import Button



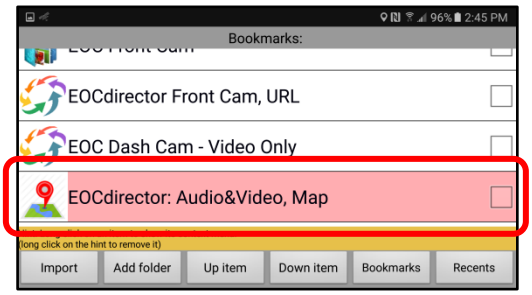
The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the ***EOCdirector*** remote device. The system will default to the name of the selected remote device (ie EOCdirector). We recommend editing the text and putting a better description as shown below.

Click inside the text block to open an onscreen keyboard for editing.

When finished, click the "OK" Button to save the new description.

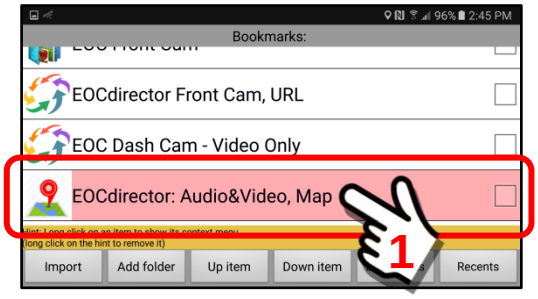


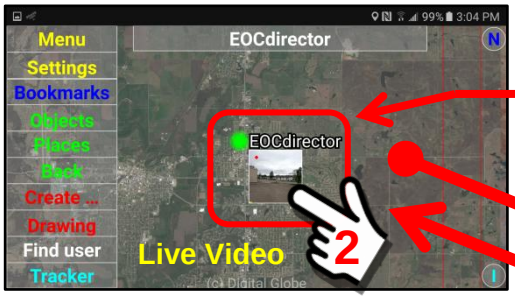
The system will now create a bookmark entry with the new name.



5. ***Launching the Single Object custom map layer bookmark***

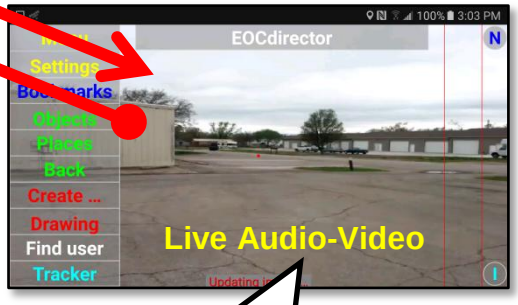
To launch the bookmark entry, click on the name. A custom map panel with a single remote device will be displayed. It may take a few seconds for the video to connect to the source, but soon you should see live video being transmitted from the remote device.





Live video from the ***EOCdirector*** mobile device

Click once to go "full screen" and again to return to the small screen.



When showing full screen, the "audio" feature will be active and sound will be heard from the remote device.

9.16. Example - select and monitor multiple remote devices

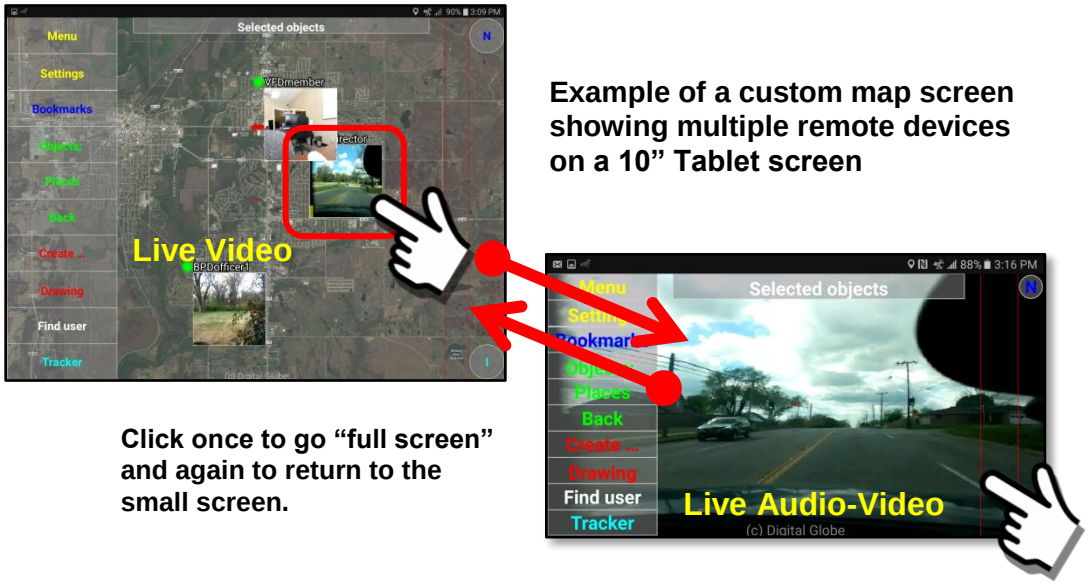
Overview:

A feature of the Bookmarks Section allows a user to save a SHORTCUT that will create a "custom map panel" that can monitor the audio/video from multiple remote devices. If a group of devices is monitored on a regular basis, a custom map screen bookmark can be created so that a user can access all of them with a few simple clicks without having to navigate other menus.

This example will illustrate how to create a Custom Map Bookmark that will display the audio-video from a group of remote devices.

The Custom Map Screen panel:

Shown below is an example of a custom map screen panel with multiple remote devices. The panel may also be configured as a "floating window" to be moved and resized.

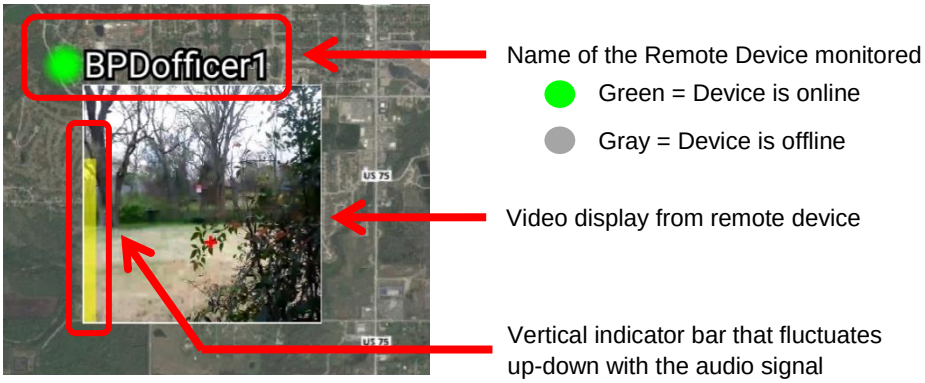


Example of a custom map screen showing multiple remote devices on a 10" Tablet screen

Click once to go "full screen" and again to return to the small screen.

Description of the panel buttons and features:

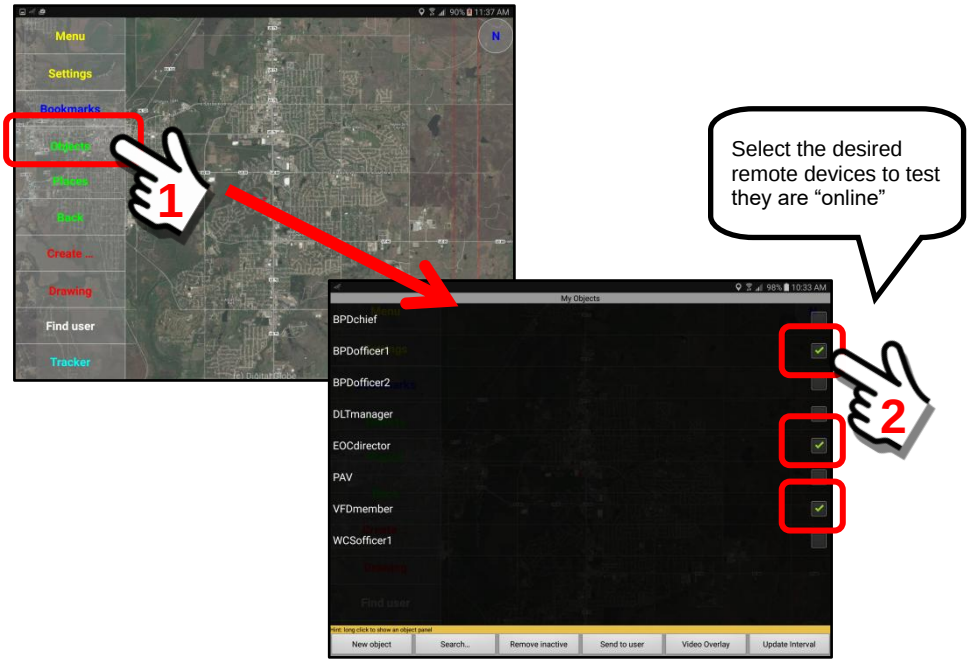
1. ***Review of the "Multiple Object" Custom Map Panel***
   This section will describe the features available on the display panel.



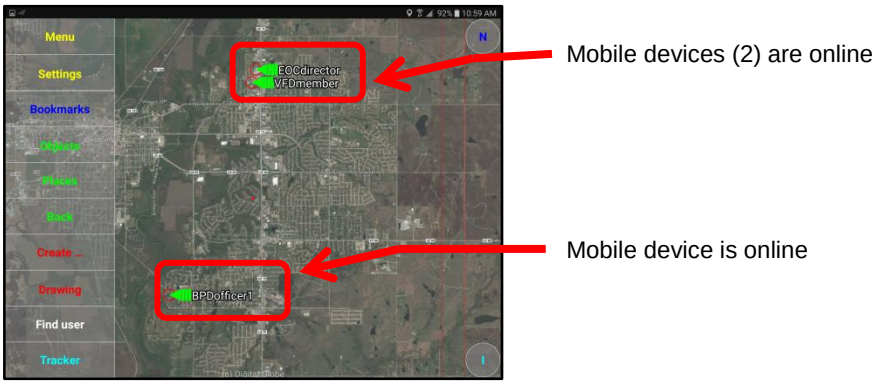
2. ***Preparing to create the multiple object custom map layer***

A multiple object custom map layer is best created while the remote devices are “online”. This is to ensure that the parameter settings of the camera and microphone sensors on the remote devices are adequate for the task.

In this example, we will select 3 remote devices and make sure that they are online.



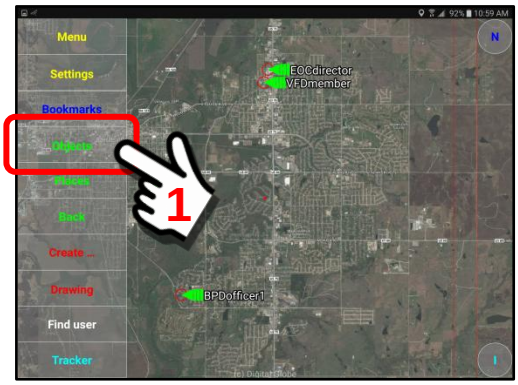
When we select the 3 remote devices and return to the Main Map Screen we can see that each device is currently “online”.



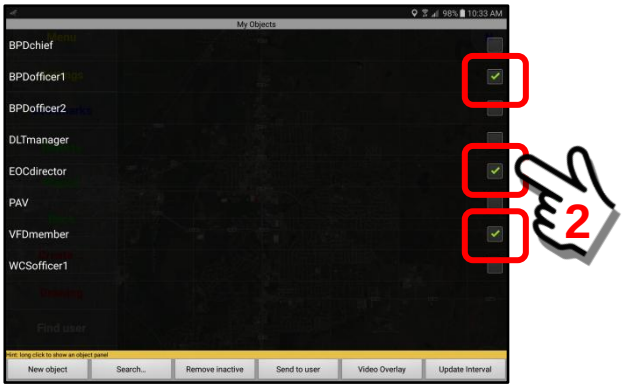
3. ***Configuration of the Multiple Object custom map screen.***

The menu to create a multi-object custom map layer is located on the “My Objects” Panel.

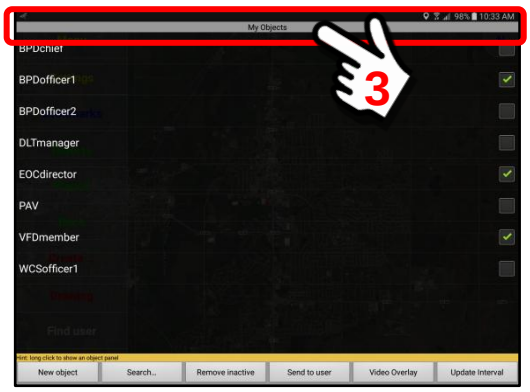
Starting at the Main Map Screen, click on the Objects Menu Button.



Select (or verify the selection) of the Users (remote devices) that you want to include in the monitoring. In this example, we are selecting 3 User devices.

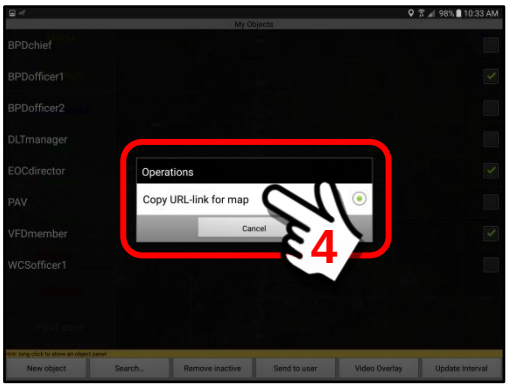


Perform a “long click” on the “My Objects” Panel heading to open the options menu.



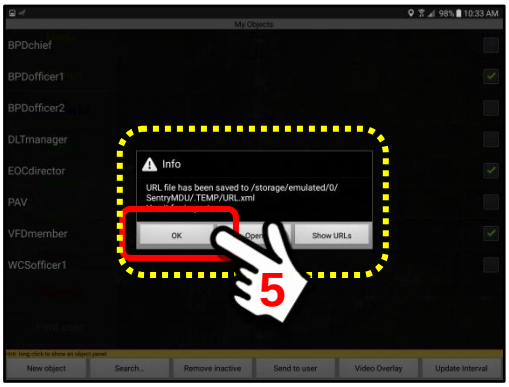
Long Click

At the Operations Menu, select the “Copy URL-link for map” choice.

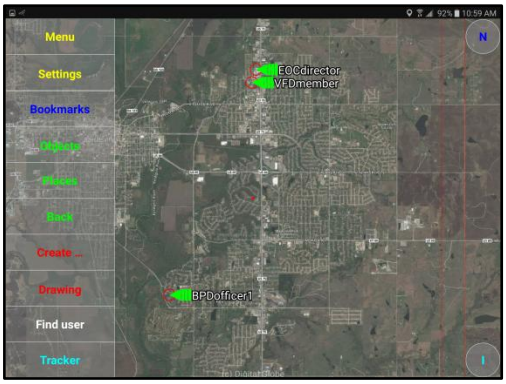


A pop-up Info Box will appear. The URL “link” for the 3 remote mobile devices will be saved in a temporary file, ready to be imported into the bookmark folder.

Click on the “OK” Button to save the URL.

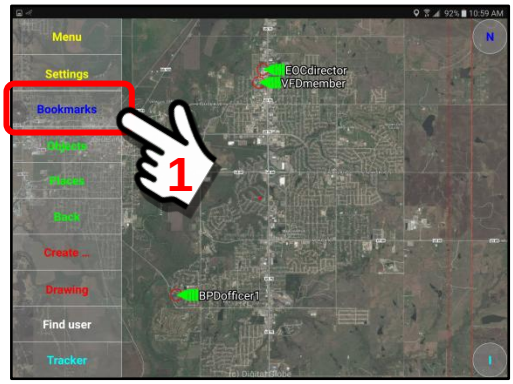


Now that the URL link for the remote devices has been saved, return to the Main Map Screen.

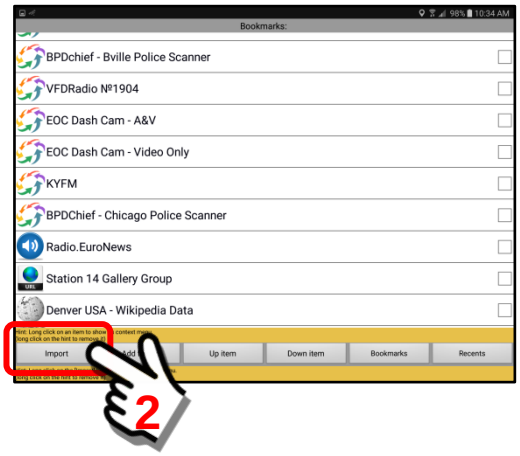


4. ***Create the Bookmark entry for a Multi-Object custom map layer.***
Once the URL link for the 3 remote devices has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

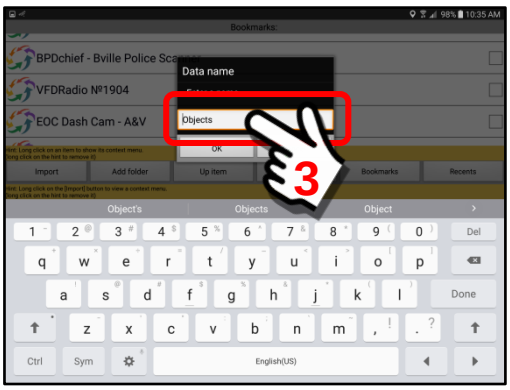


At the Bookmarks Panel, click on the Import Button

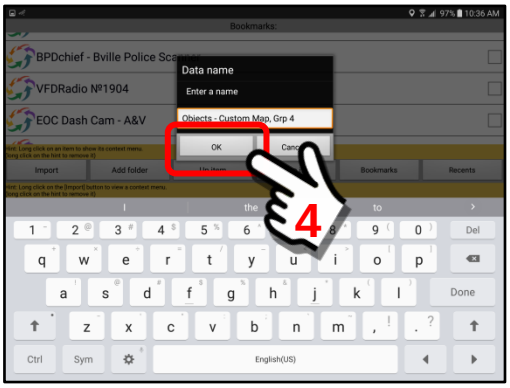


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the 3 remote devices. The system will default to the name "Objects" (since there are several objects). We recommend editing the text and putting a better description as shown below.

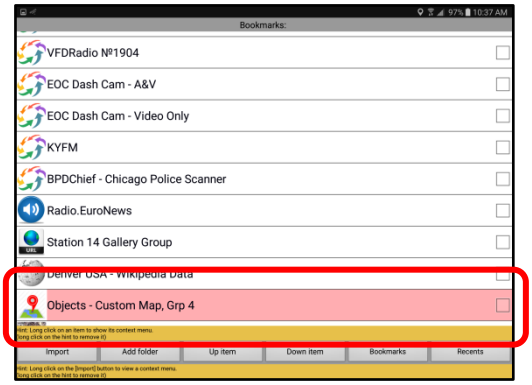
Click inside the text block to open an onscreen keyboard for editing.



Edit the text to make a better description. When finished, click the “OK” Button to save the changes.

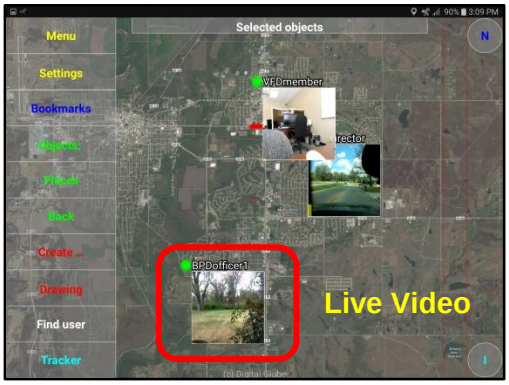


The system will now create a bookmark entry with the new name.



5. ***Launching the Multiple Object custom map layer bookmark***

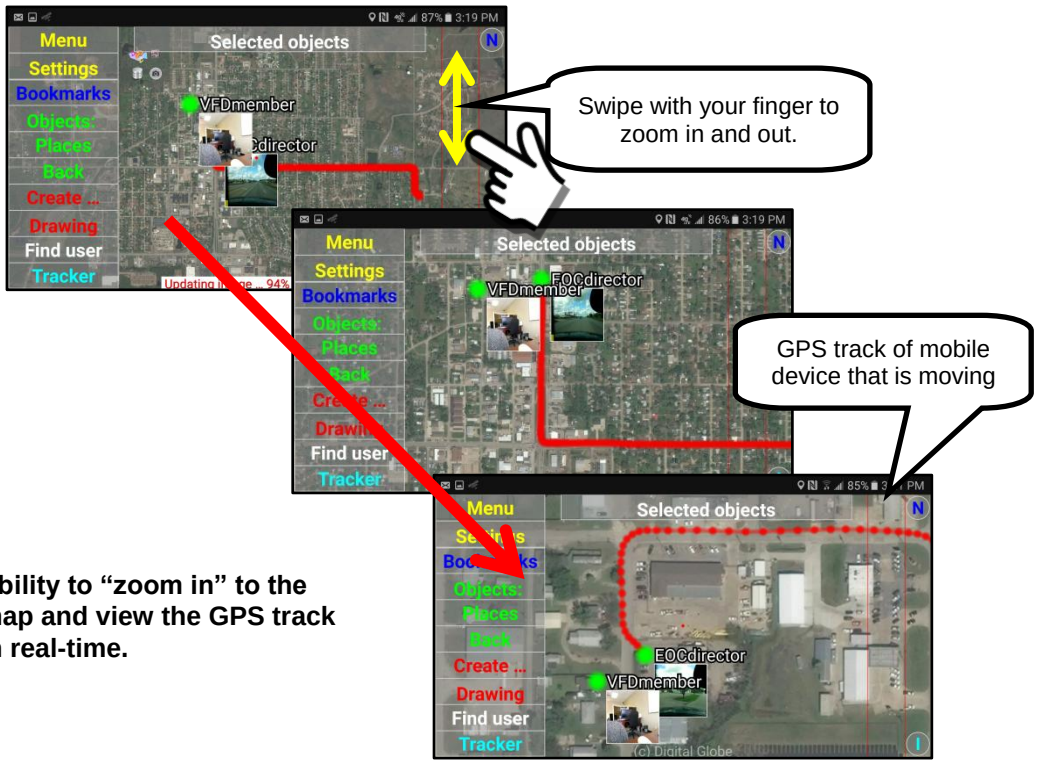
To launch the bookmark entry, click on the name. A custom map panel with the 3 remote devices will be displayed. It may take a few seconds for the video to connect to each of the sources, but soon you should see live video being transmitted from the remote devices.



Live video from the 3 remote devices

The data streams from each remote device may be toggled to “full screen”. Simply “click” on the individual picture for the remote device and it will enlarge to full screen. In addition, when full screen, the audio stream from that particular remote device will now be active and you can listen.

Note: A device that is “moving” will leave a GPS track of where is has been. An example is shown below. Zoom in to the scene for better detail.



Ability to “zoom in” to the map and view the GPS track in real-time.

9.17. Example - search for ALL remote devices in Security Domain

Overview:

A feature of the Bookmarks Section allows a user to save a SHORTCUT that will create a "custom map panel" that can perform a domain-wide ***search*** for remote devices. This feature will search for all devices within a specific geographical area as viewed on a map (assuming security credentials allow). As the screen is zoomed in-out, remote devices will be added in or drop out.

<u>This feature has 5 user selectable display/data formats</u>

a. General Search of Users: Shows location of active and inactive users
b. Audio Only: No video component, audio from all devices simultaneously
c. Audio-Video: Video images with audio optional when selected
d. Active-Audio-Video: Video + audio from all devices simultaneously
e. User Selectable Operation: User may draw polygons to select devices

Depending on the selected criteria, this feature can display general locations, play audio only or audio-video.

This example will illustrate how to create a Custom Map Bookmark that will display Audio-Video data (Item c.) from a search area containing several remote devices.

Important Note: You must be in the same or higher security domain level in order to view data feeds from other remote devices.

The Custom Map Screen panel:

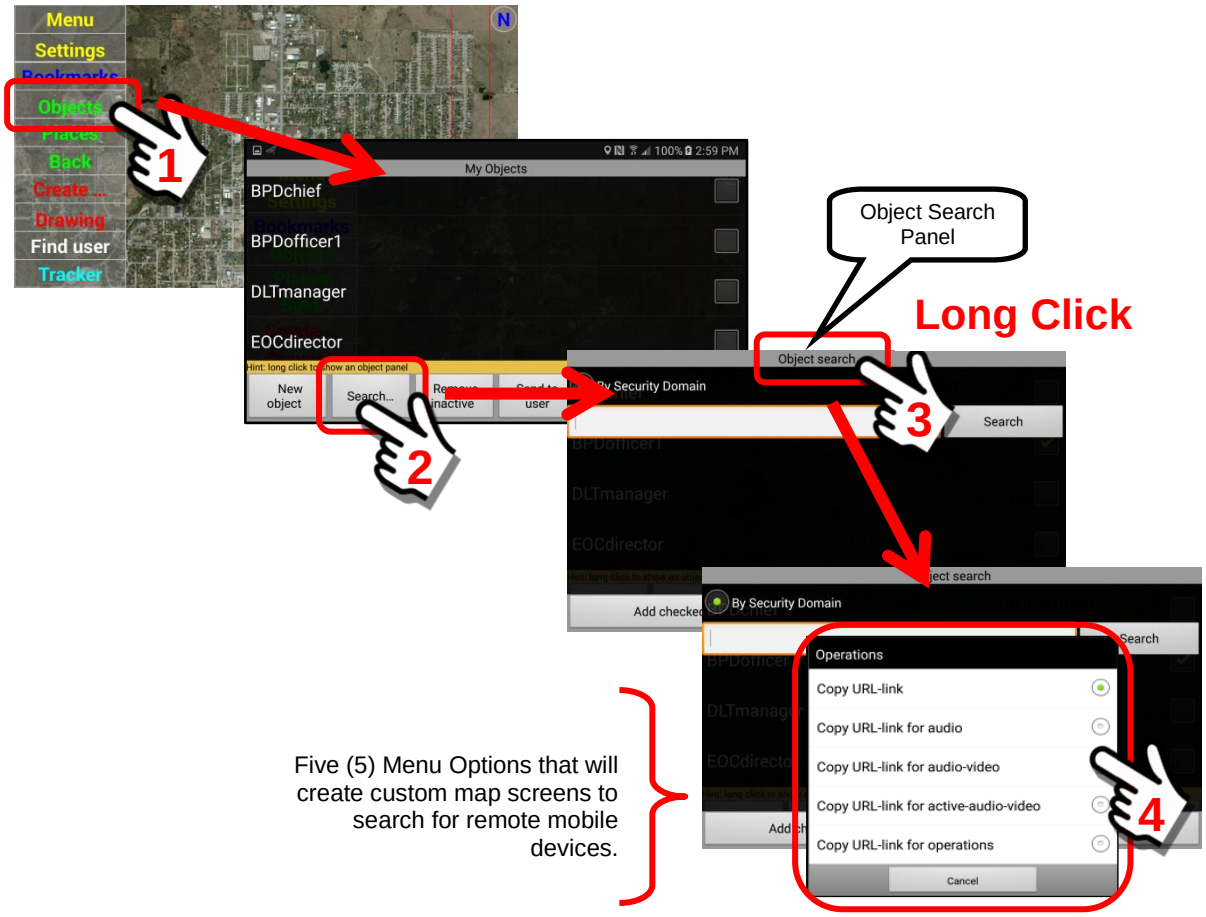
Shown below is an example of a custom map screen panel with multiple remote devices that have been detected within the search area.

Example of a custom map screen showing multiple remote devices on a 10" Tablet screen

Click once to go "full screen" and again to return to the small screen.

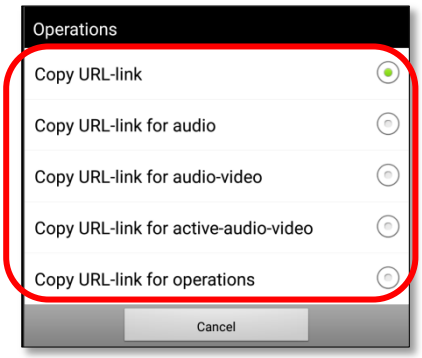
Access to the "Object search" Panel feature set:

To gain access to the Custom Map features of the Object Panel, follow the steps shown below.



Description of the search panel buttons and features:

1. ***Review of menu choices for the Custom Map Panel***
   This section will describe the 5 menu choices that are available for the search function.

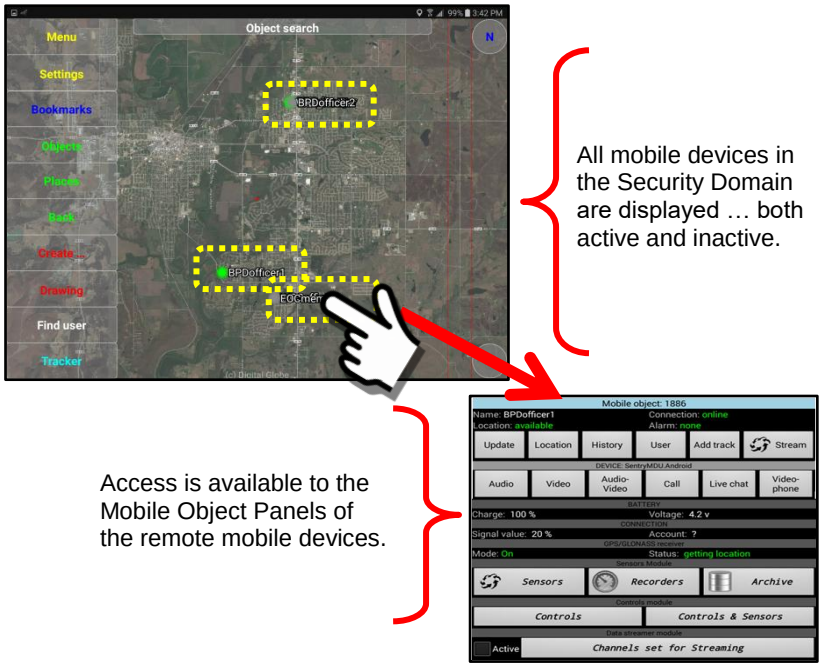


These 5 options create a custom map panel and will be discussed below.

Copy URL-link

Provides a search for all users in the Security Domain (both online and offline) and displays a map screen with the last known GPS location and name of each remote device.

The links for each remote device are active and the Mobile Object Panel for each device may be accessed from this screen.



Copy URL-link for audio

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a picture of a small speaker icon.

Audio from all devices are active.
Audio from all devices within the viewing area are played simultaneously. Devices can be selected to monitor their audio individually.

Copy URL-link for audio-video

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a live streaming video thumbnail.

Audio from all devices are muted.
Each remote device can be toggled full screen. In full screen mode the audio channel will be played.

Copy URL-link for active-audio-video

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a live streaming video thumbnail.

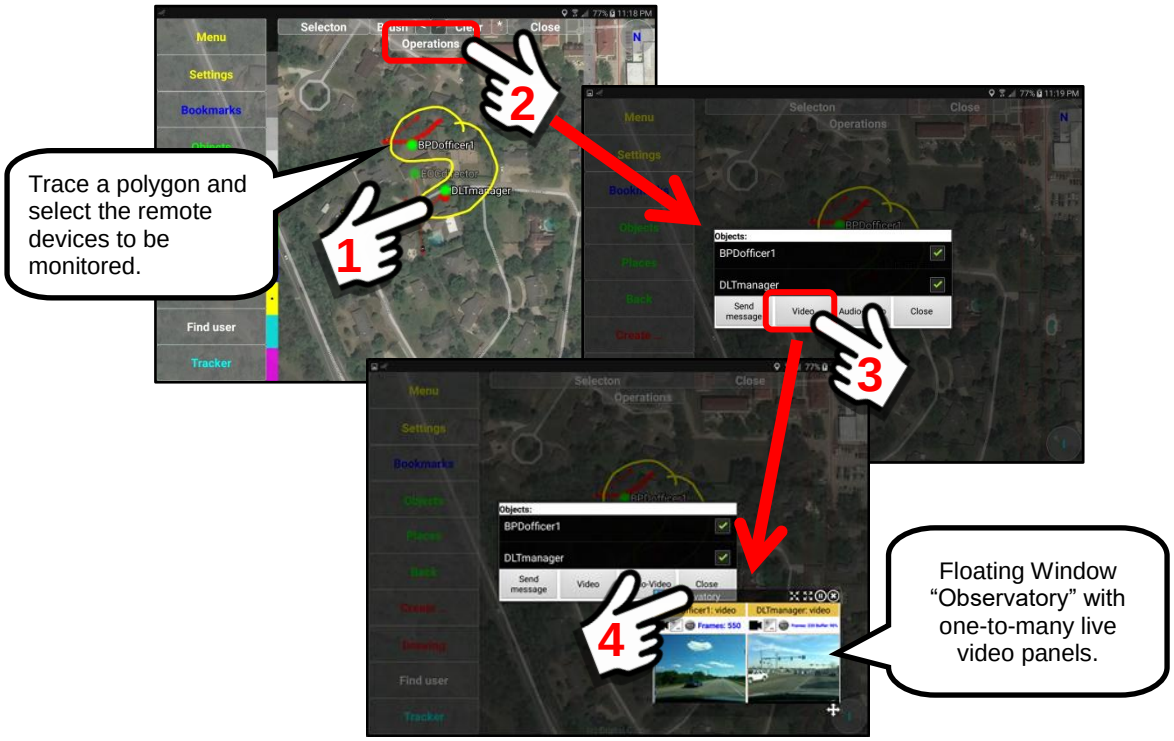
Audio from all devices are active.
Each remote device can be toggled full screen. In full screen mode the audio channel for the particular remote device will be played.

Copy URL-link for operations

Provides a drawing canvas map upon which a user can view the Object Marker and GPS location of remote mobile devices. The User will then draw a polygon around those mobile devices of interest. From an available pop-up menu the user can then perform several operations on those selected remote devices:

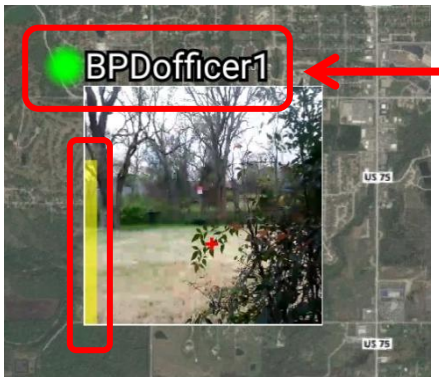
a. Send a message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

This feature will be discussed in detail in **Section 9.18**.



2. ***Features of the audio and video display modes***

The custom map layer displays output from the remote devices in two different formats. The Audio format uses a speaker icon and the audio-video format uses a live-streaming video thumbnail. These formats are shown below.



Name of the Remote Device monitored

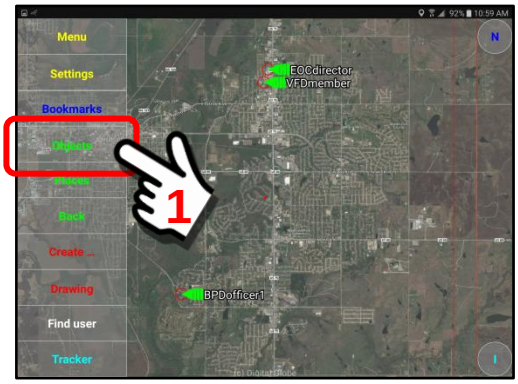
Green = Device is online

Gray = Device is offline

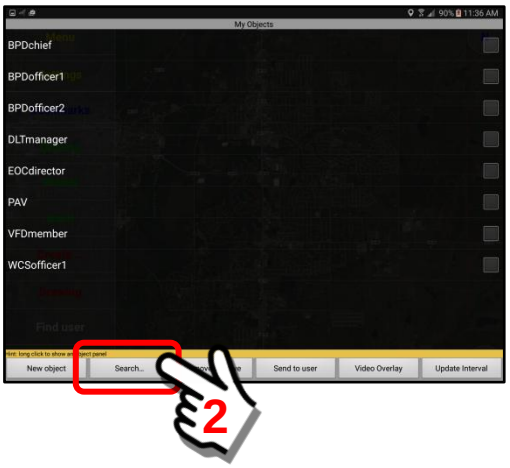
Description of the Audio-Video map features:

1. ***Configuration of the Audio-Video custom map screen.***
   This section will use the "*Copy URL-link for audio-video*" menu option to create a custom map panel that will search for all remote devices within the selected map viewing area. The number of devices that can be processed is only limited by available resources (CPU, memory and internet bandwidth).

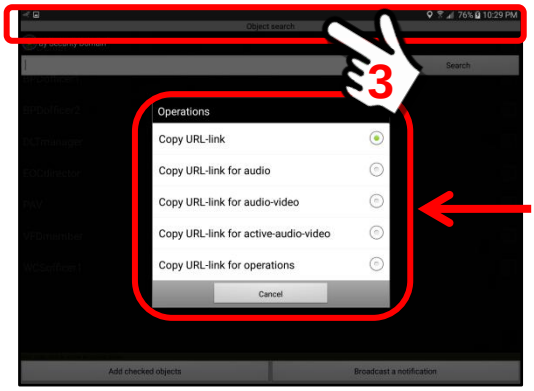
   Starting at the Main Map Screen, click on the Objects Menu Button.



   Since we are to be using a "search" function, click on the "Search …" Button at the bottom of the My Objects panel.



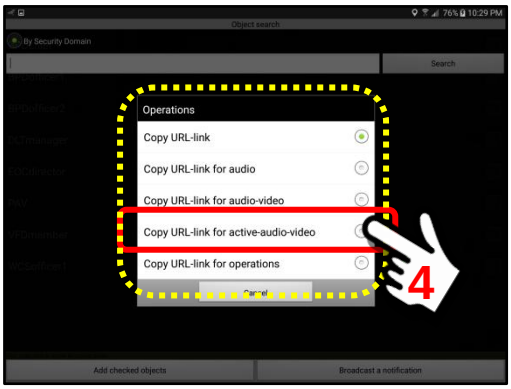
   At the Object Search Panel, perform a "long click" on the panel heading to open the Operations menu.



Long Click

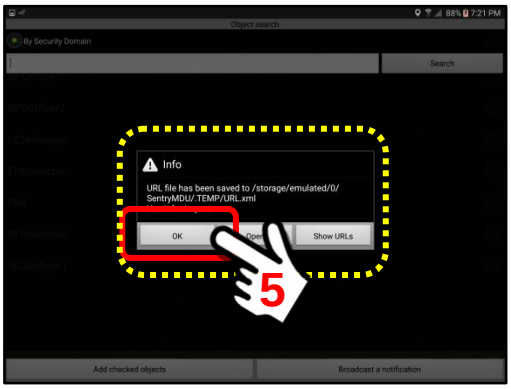
Pop-up Operations Menu will open

At the Operations Menu, select the “Copy URL-link for audio-video” choice.



A pop-up Info Box will appear. The URL “link” for the audio-video custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

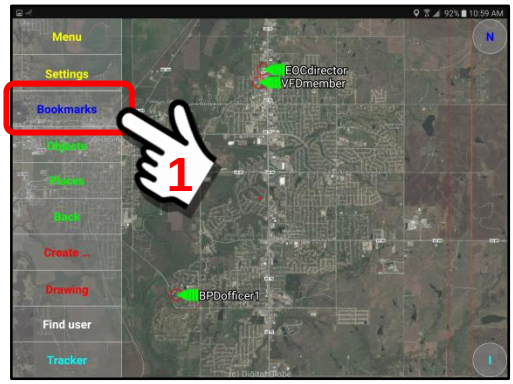
Click on the “OK” Button to save the URL.



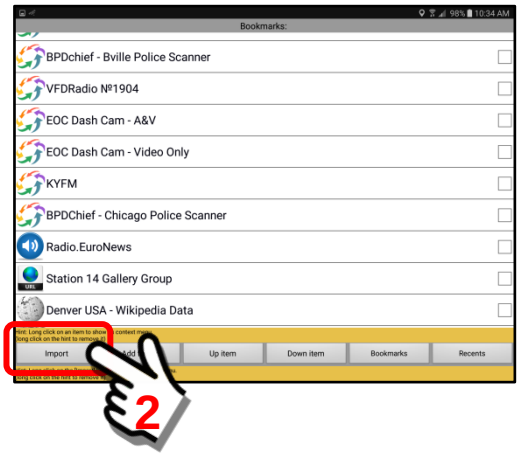
Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

2. ***Create the Bookmark entry for an Object Search custom map layer.***
Once the URL link for the custom map panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

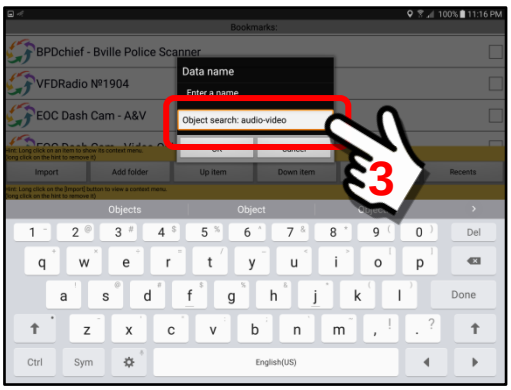


At the Bookmarks Panel, click on the Import Button

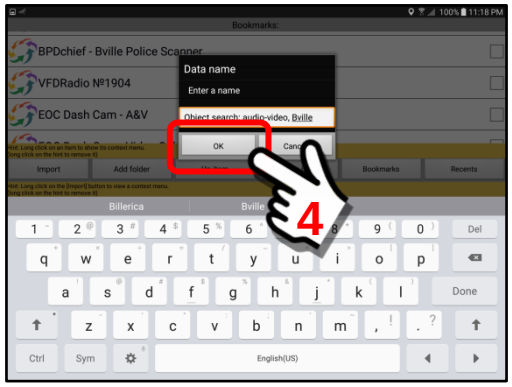


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the audio-video custom map panel. The system will default to the name "Object search: audio-video". We recommend editing the text and putting a better description as shown below.

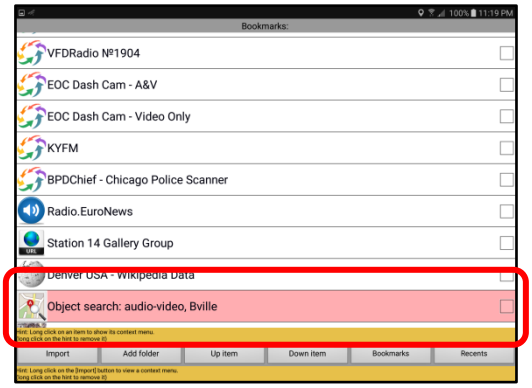
Click inside the text block to open an onscreen keyboard for editing.



Edit the text to make a better description. When finished, click the “OK” Button to save the changes.

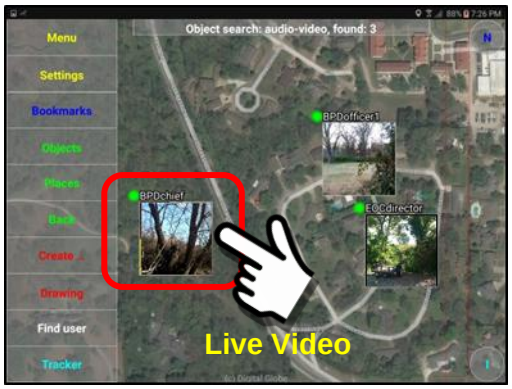


The system will now create a bookmark entry with the new name.



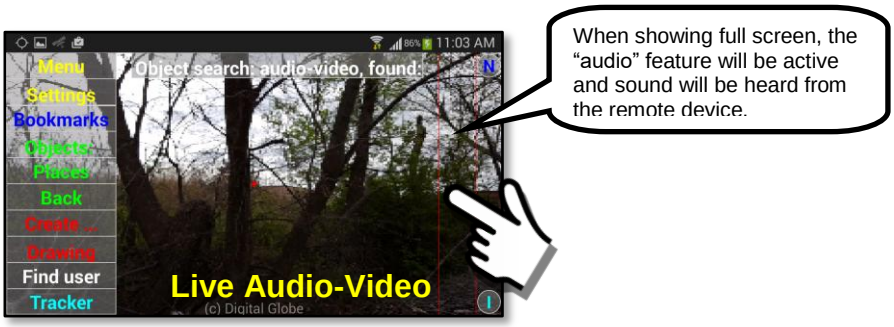
3. *Launching the Object Search custom map layer bookmark*

To launch the bookmark entry, click on the name. A custom map panel will open, searching for remote devices within the displayed area on the screen. It may take a few seconds for the video to connect to each of the sources, but soon you should see live video being transmitted from the remote devices that are discovered.



Live video from remote devices discovered during the search process.

The data streams from each remote device may be toggled to “full screen”. Simply “click” on the individual picture for the remote device and it will enlarge to full screen. In addition, when full screen, the audio stream from that particular remote device will now be active and you can listen.



Click once to go “full screen” and again to return to the small screen.

4. ***Monitoring the GPS track of a Search Object remote device***

As the remote mobile device moves, a GPS track (red line) is left on the screen to show active movement. In the example below, User ***EOCdirector*** is shown moving in a southeasterly direction away from user ***BPDofficer1***.

9.18. Example – select remote devices with finger tracing

Overview:

A feature of the Bookmarks Section which allows a user to save a SHORTCUT of a "custom map panel" that can be used to select (using the Drawing Feature) groups of remote devices in a geographical area (menu item "Copy URL-link for Operations"). From the group of selected users, additional menu options are available.

<u>This feature has 3 user selectable menu options</u>

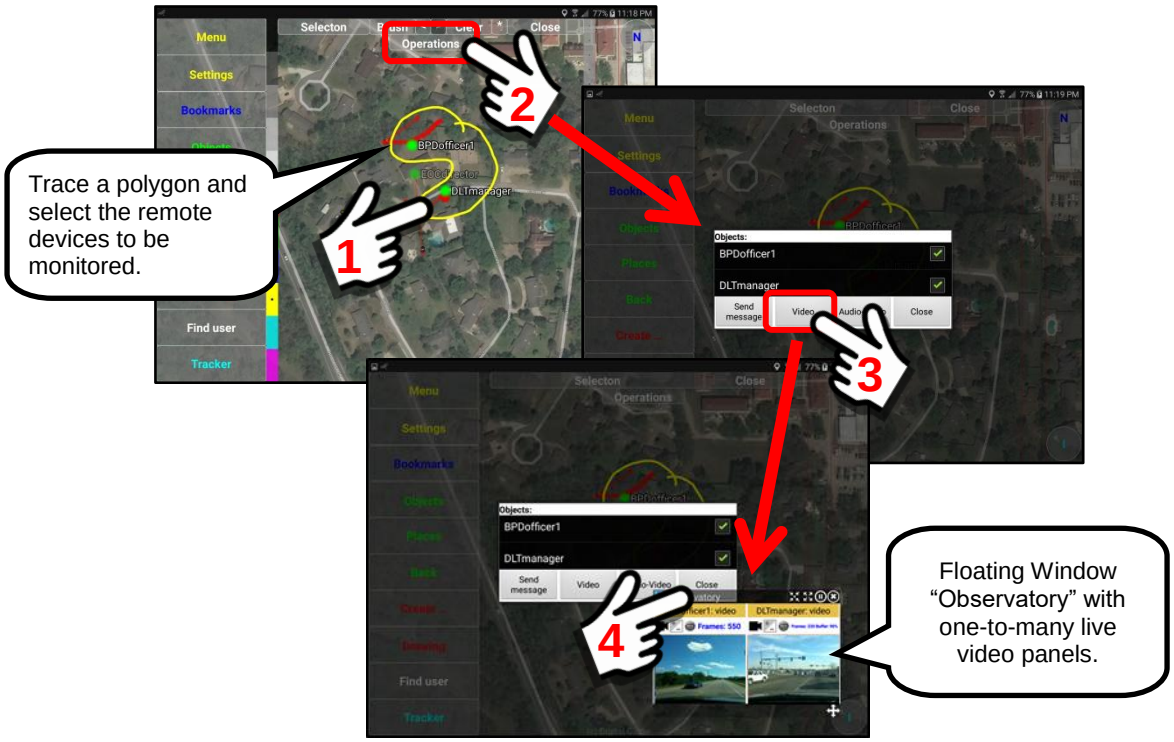
a. Messaging: Send text message notifications to designated groups of users
b. Video Only: No audio component, video from all devices simultaneously
c. Audio-Video: Video images with optional audio output when selected

Important Note: You must be in the same or higher security domain level in order to view data feeds from other remote devices.

This example will illustrate how to create a Custom Map Bookmark that will display the graphical selection of a group of remote devices.

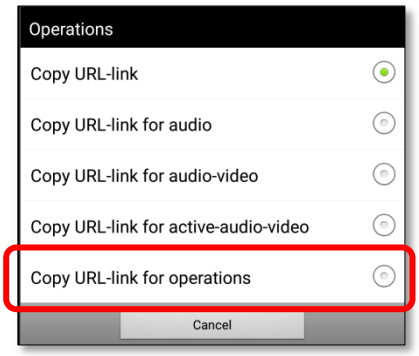
The "Operations" Custom Map Screen panel:

Provides a drawing canvas map upon which a user can view the Object Marker and GPS location of remote mobile devices. The User will then draw a polygon around those mobile devices of interest. From an available pop-up menu the user can then perform several operations on those selected remote devices:



Steps to create a Map Search Panel with multi-Operation menus:

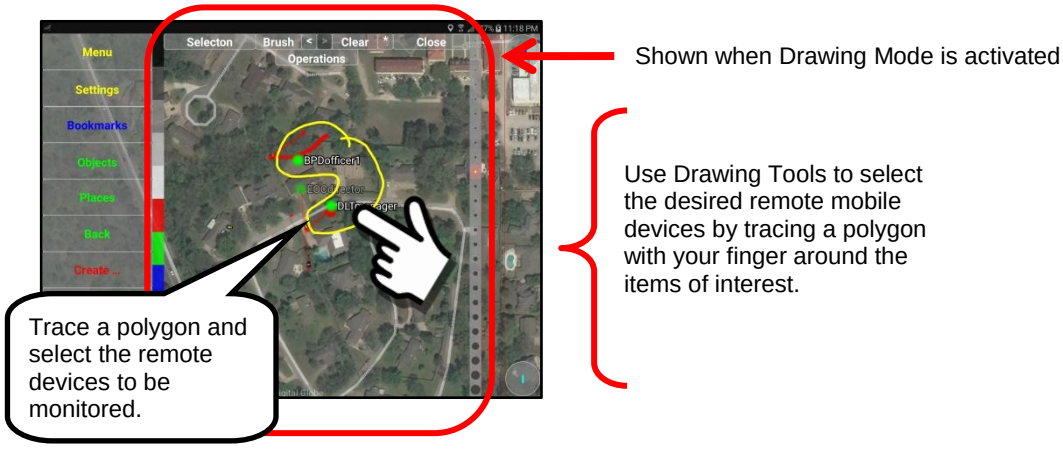
1. ***Screens of the Map Search Panel and multi-Operation menu.***
   This section will use the "*Copy URL-link for operations*" menu option to create a custom map panel that will search for all users in the Security Domain.



This feature provides a drawing canvas map upon which a user can view the Object Marker and GPS location of remote mobile devices. The User will then draw a polygon around those mobile devices of interest. From an available pop-up menu the user can then perform several operations on those selected remote devices:

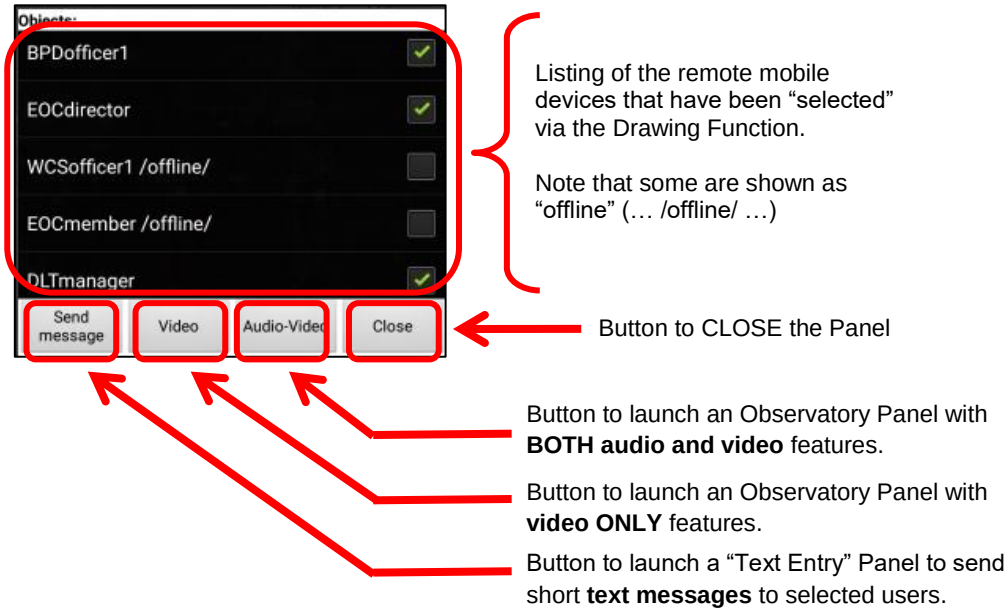
a. Send a "text" message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

<u>The Map Search Panel with Drawing Tools activated</u>



See ***Section 13*** of this guide for additional details on using the SentryMDU Drawing Tools.

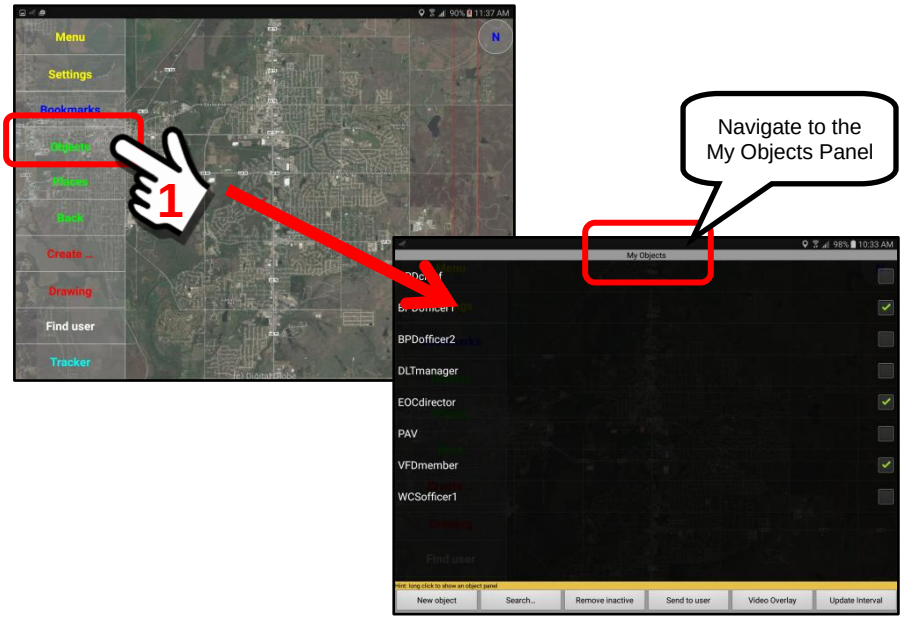
The multi-Operation Menu pop-up panel



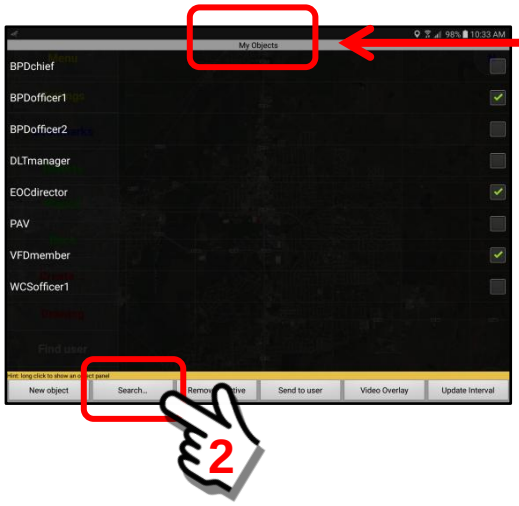
2. ***Preparing to create the multi-Operations custom map layer***

The Operations custom map layer is best created while the remote devices are "online" (although this is not a requirement). This is to ensure that the parameter settings of the camera and microphone sensors on the remote devices are adequate for the task and that you can do a "test" before using in production.

At the Main Map Screen, click on the Objects Button.

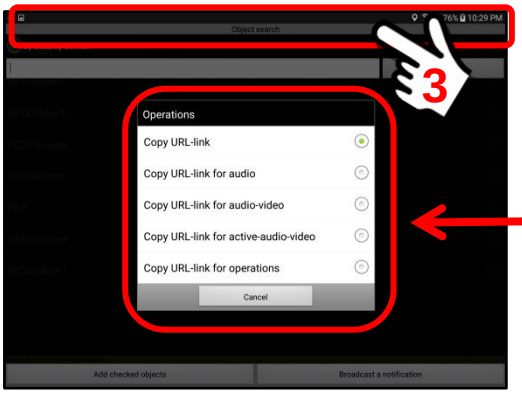


Since we will be doing a system wide “search” using the Drawing Features, we will select the “Search…” Button located at the bottom of the **My Objects** Panel.



My Objects Panel

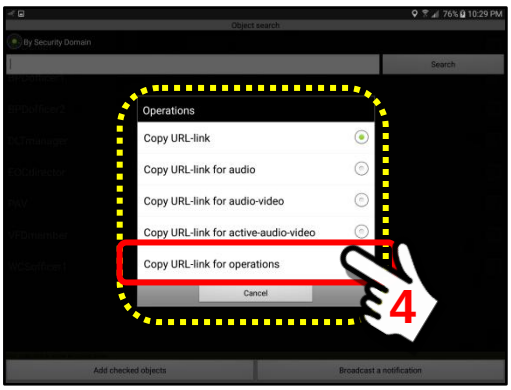
The “Search …” Button opens the Object Search Panel. This panel allows a search for SentryMDU devices using a variety of methods. Since we want to create a “bookmark”, we will perform a “Long click” on the **Object Search** Panel heading bar as shown below.



Long Click

A “Long click” on the Object Search header bar will open an options menu with 5 choices.

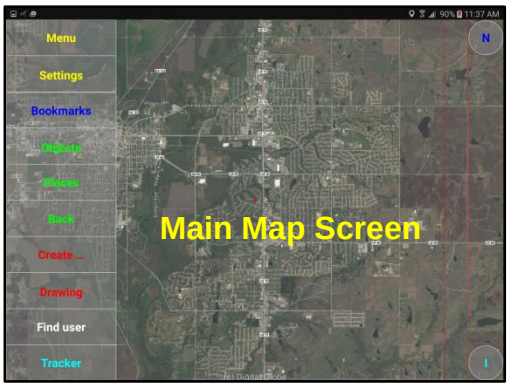
Select the “Copy URL-link for operations” menu option.



By clicking on the “Copy URL-link for operations” menu option, a pop-up **Info Box** will appear. The URL “link” for the **Operations** custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

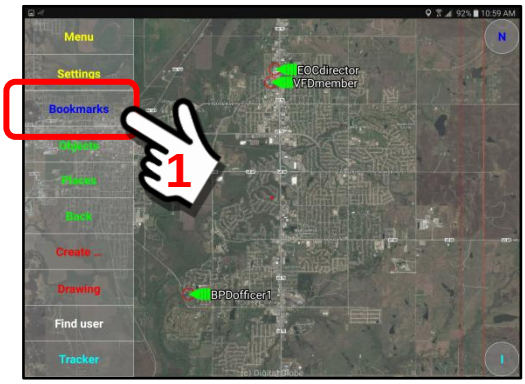
Click on the “OK” Button to save the URL.

Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

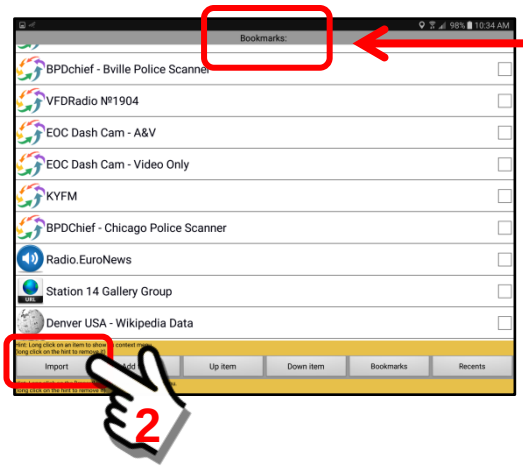


3. ***Create a bookmark for the multi-Operations custom map screen.***
To create the Operations Feature, we must import the URL “link” for the **Operations** custom map panel into the Bookmarks Section of the SentryMDU system.

Starting at the Main Map Screen, click on the Bookmarks Menu Button.

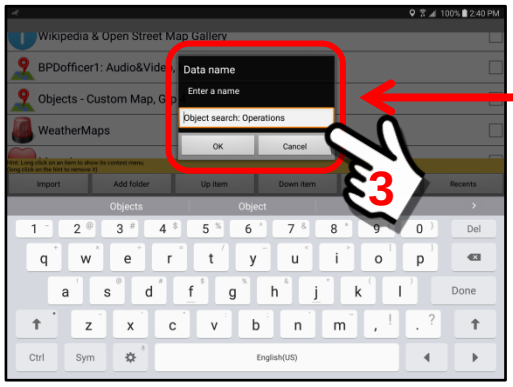


At the Bookmarks Panel, click on the Import Button.



Bookmarks Panel

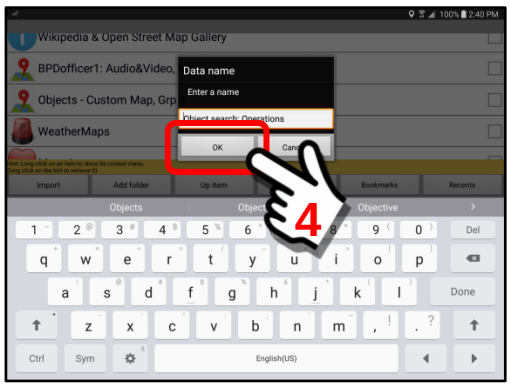
The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the **Operations** custom map panel. A pop-up box will appear to create a name for the Bookmark. The system will default to the name "Object search: Operations".



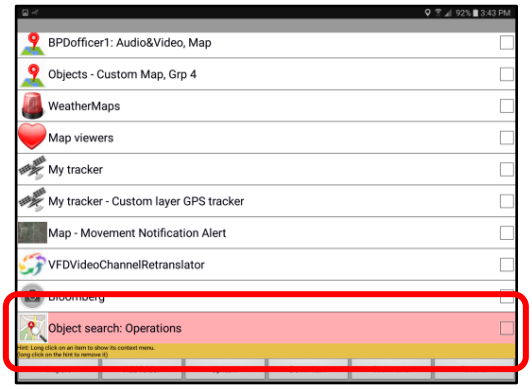
Data Name pop-up box

If you wish to change the data name, click inside the text block to open an onscreen keyboard for editing. In this example, we will leave as the default.

When finished, click the "OK" Button to save the changes.

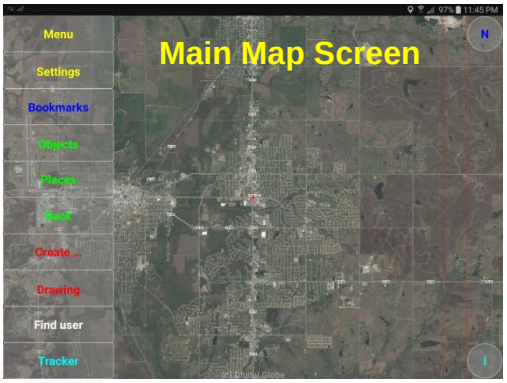


The system will now create a bookmark entry with the new name.



4. ***Clear the Main Map screen of Object Markers and set zoom level.***
Although it is NOT a requirement, it is recommended to clear the Main Map screen of existing Object Markers (those you have "checked" on the My Objects Panel). This is done to unclutter the Map Screen since the multi-Operations Search feature will locate ALL mobile Objects (both active and inactive) within a selected map view geographical area.

In the Map Screen shown below, we have cleared all Object Markers..



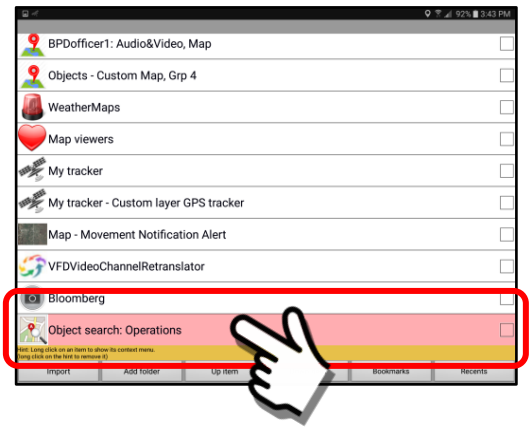
Main Map Screen

You may select whatever "zoom level" you desire. In this example, we are at a City Level.

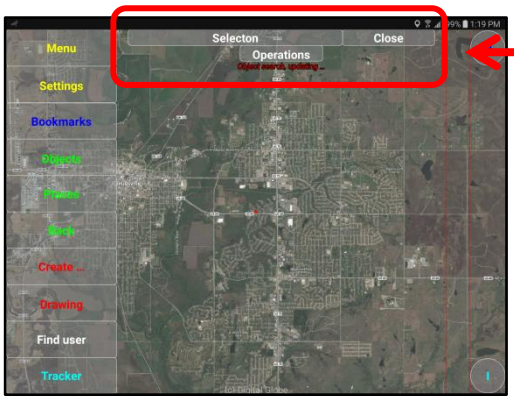
Important Note: The zoom level that you currently have on the Main Map Screen will be the geographical area that will be included in the domain-wide search for mobile objects. You may zoom in to street level or stay at the city level depending on how wide of an area you wish to search in.

5. ***Searching for Mobile Devices within the selected Map Area.***
When launched, the system will perform a “search” for all mobile devices within the Security Domain that show GPS locations within the designated geographical area on the Main Map Screen.

To begin, click on the “*Object search: Operations*” Bookmark we have just created.

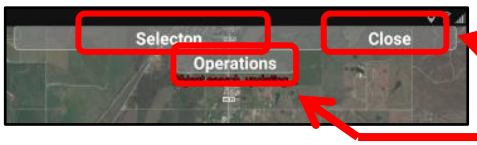


The multi-Operations custom Map Screen will now be created using the zoom level of the current Main Map Screen. The screen will appear as shown below.



Configuration Buttons for the multi-Operation Map Panel

The Configuration Buttons for the multi-Operation Map Panel as shown below.



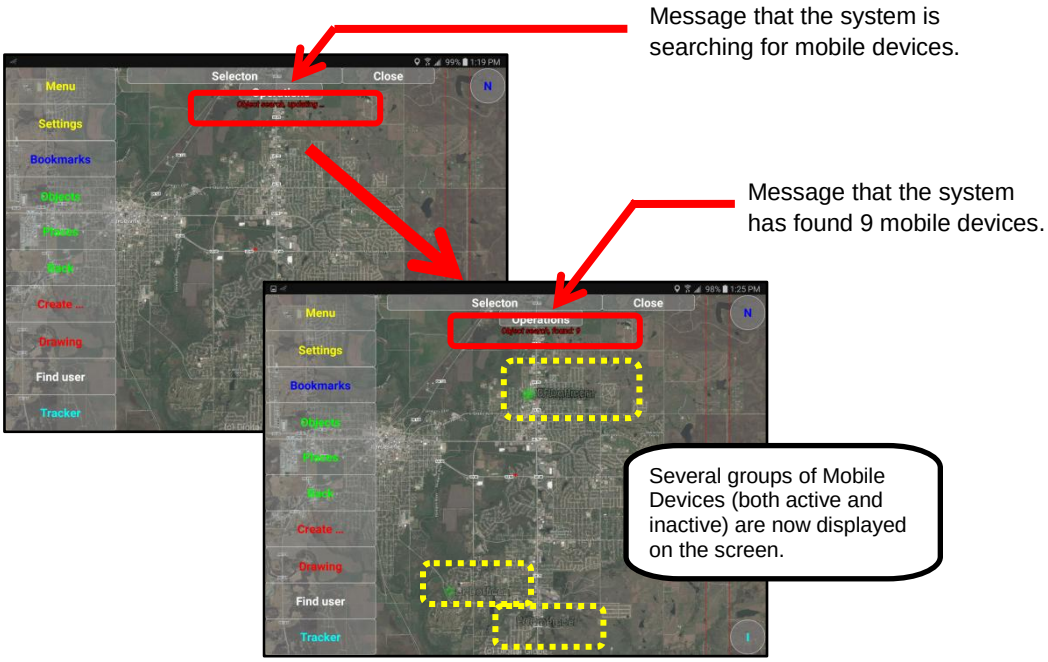
The Selection Button toggles the Drawing Mode on-off

The Close Button closes the custom map panel

The Operations Button opens a pop-up menu of options (messaging and audio-video)

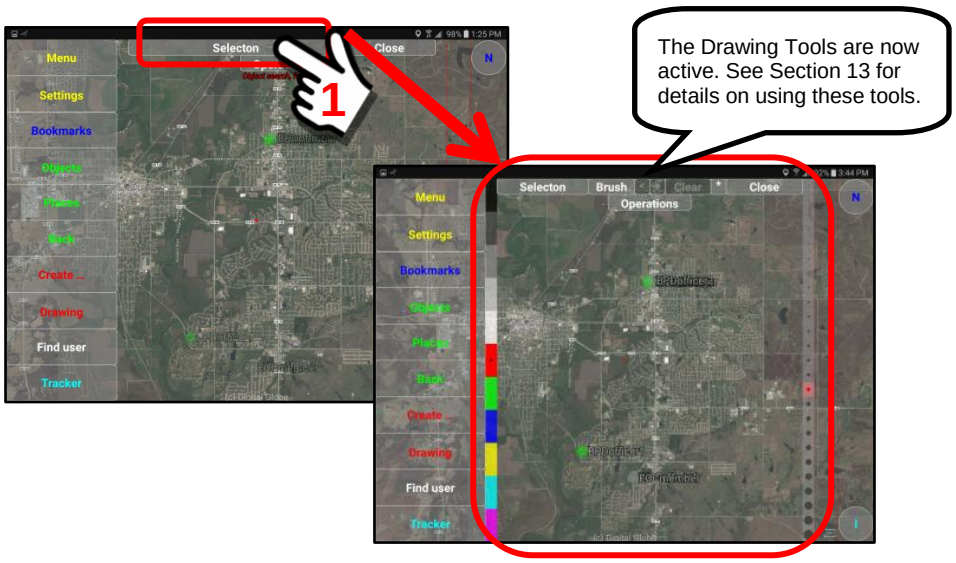
When the "*Object search: Operations*" Bookmark is first opened, the SentryMDU System will start a search for mobile devices within the selected area of the Main Map Screen. Depending on the number of mobile devices in the search area, this process may take from 3 – 15 seconds.

The screen will display a message in red text … "*Object search: updating…*" while the system is looking for mobile devices.



6. ***Selection of remote devices for the multi-Operation map screen.***
To configure the multi-Operations map layer, we must use the SentryMDU Drawing Tools feature to select those remote mobile devices that we are interested in.

To access the Drawing Mode Tools, click on the "Selection" Button. This will toggle the Drawing Mode Tools to "on".

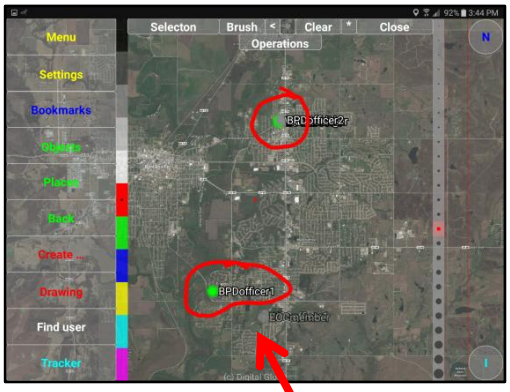


In this example, we will select remote mobile devices “graphically” by tracing a polygon (ie circle, rectangle) around the devices we want and to exclude those devices we do not want to monitor.

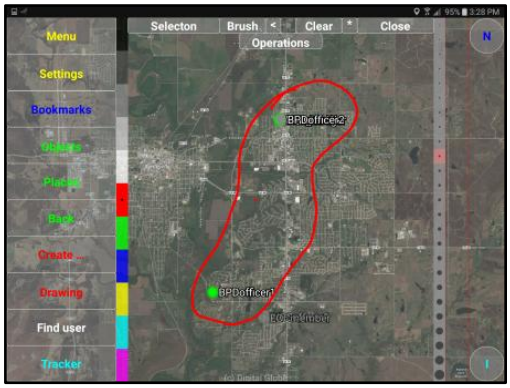
While in Drawing Mode, any touch to the screen will leave a “mark”. You may toggle the drawing mode on-off (via the Selection Button) if you need to reposition the screen or adjust the zoom level.

All selection polygons must be “closed” (no gaps). You may draw multiple polygons or a single continuous shape. Both examples are shown below.

Multiple Polygons



Single Polygon Shape

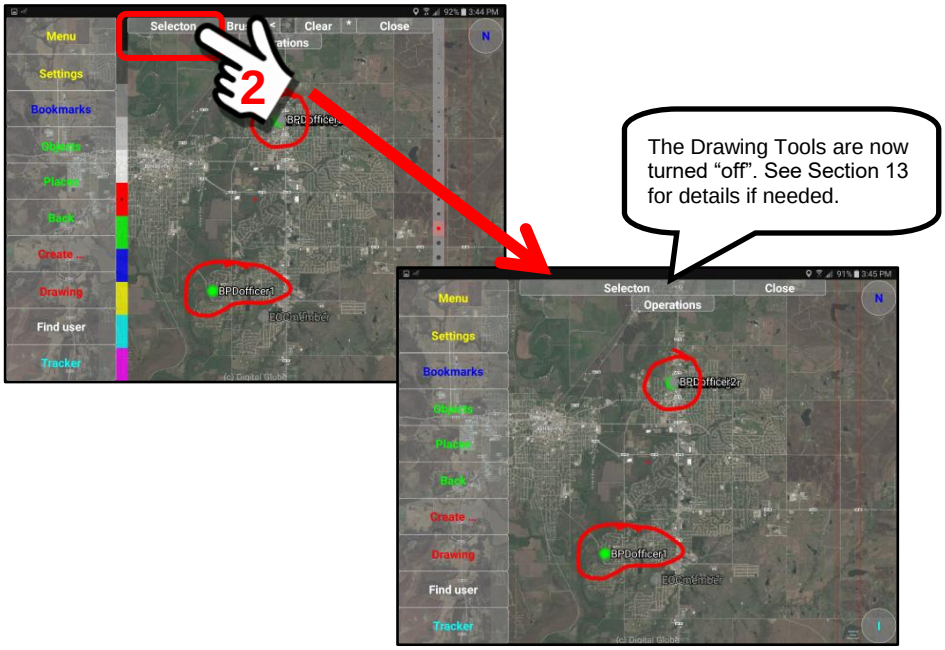


Name of the Remote Device to be monitored

Green = Device is online

Gray = Device is offline

Once the polygon selection process is finished, click the “Selection” Button to turn “off” the Drawing Mode.



7. ***Configuration of the multi-Operation custom map screen.***

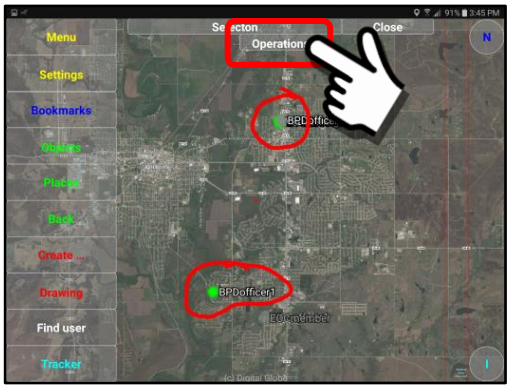
The next step, after selecting the desired groups of mobile devices, is to open the Operations Menu and select an “action” to perform on these remote mobile devices. We are provided with 3 primary options:

a. Send a “text” message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

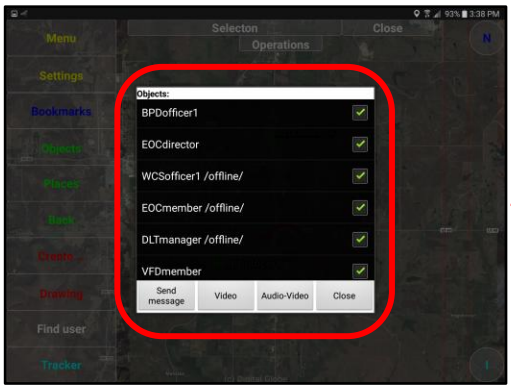
To select an action to perform, click on the ***Operations Button*** located just below the Drawing Tools toolbar. This will open a pop-up box that displays:

(1) the mobile devices that were selected in the Drawing Mode and
(2) a menu of actions that may be performed

Click on the Operations Button ….



A pop-up menu will be displayed. In the example shown, when we selected the remote devices, we inadvertently included some devices that are “offline” at this time. From the list of selected devices below, we may now “uncheck” the offline mobile devices if we do not want to include them in our menu action.



Pop-up Menu

List of mobile devices we selected by drawing the polygon.

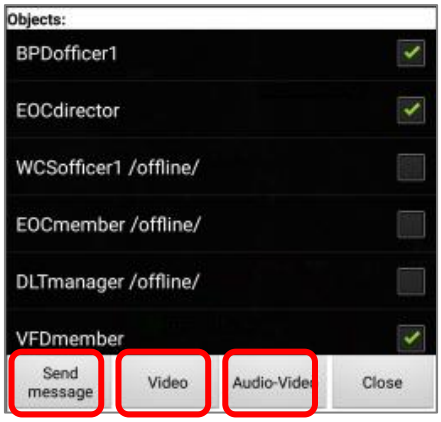
As shown on the image below, of the six available mobile devices shown in the list, we have “unchecked” three (3) of the offline mobile devices. Now, whatever actions we take will be directed toward the remaining three online devices.

Pop-up Menu

We have selected 3 mobile devices to take actions.

Now that we have selected the remote devices upon which we will take actions, we need to decide which of the three available options we want to do. We have the following choices:

a. Send a “text” message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.



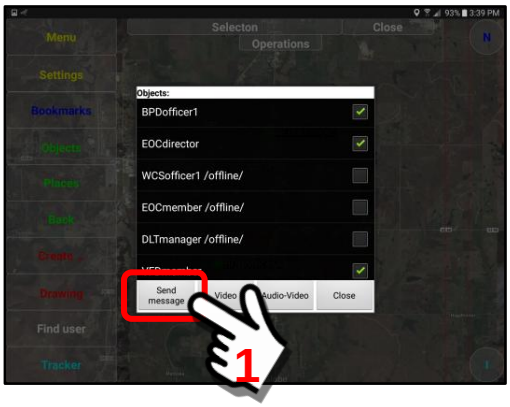
a. **b.** **c.**

The next three sections will cover the 3 menu options.

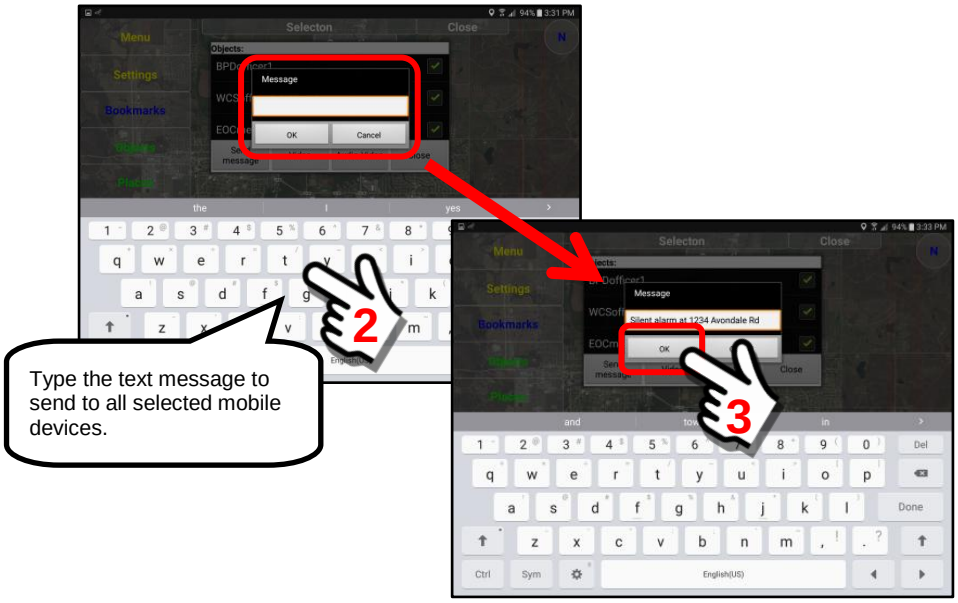
8. ***Send a "text" message to the selected devices.***

The "Send Message" feature will allow you to send a short text message to those remote devices you have selected. You will type ONE message and it will be sent to as many devices as you have selected (1 – 1000's). This is an easy way to send a group of users the same message.

Click on the *Send Message* Button.



A pop-up "Message" Box will appear with an on-screen keyboard. Type a message into the box, then click "OK" when finished.



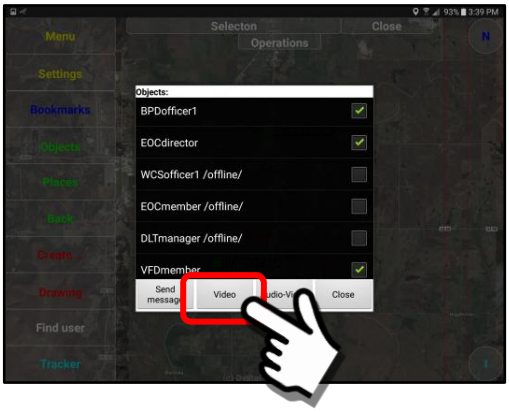
When the "OK" Button is clicked, the text message will be sent via the SentryMDU Messaging System to all designated mobile devices. The receiving devices will sound an "alert" tone and a SentryMDU Messaging "Icon" will appear on the device notification bar. The user may click on the messaging icon and the sent text message will be opened for review. Each user may "respond" to the text message if so desired.

9. ***Monitor a live video feed from the selected devices.***
The “Video Button” option provides a floating window panel with a “set” of live streaming video images from the selected remote mobile devices. This feature will use the Object Observatory panel structure to display the selected video streams. **This option will display video only, no audio.**

The number of simultaneous video streams that may be displayed is only limited by the hardware of the receiving device (CPU, Memory, etc.), the available internet bandwidth and the video parameter settings of the sending devices (framerate, bitrate, camera resolution, etc.).

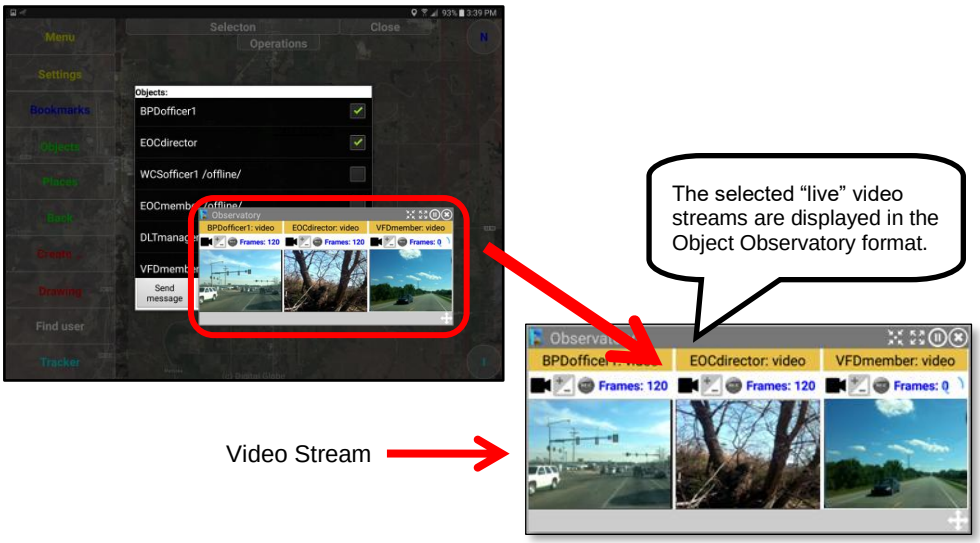
A typical application should expect perhaps 5 simultaneous video streams at standard resolution and framerate.

To activate, click on the “Video Button”.



A floating window panel (in the Object Observatory format) will appear on the screen with the number of live-streaming images that corresponds to the number of monitored remote devices.

See Section 9.8 for additional details on the Object Observatory Panel format and the options available for recording and saving content on-the-fly.



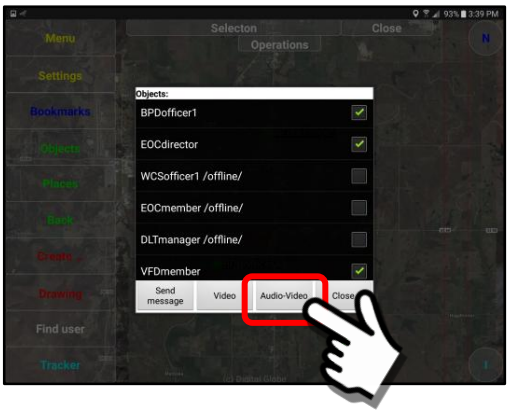
10. ***Monitor a live audio-video feed from the selected devices.***

The “Audio-Video Button” option provides a floating window panel with a “set” of live streaming video images and the corresponding audio from the selected remote mobile devices. This feature will use the Object Observatory panel structure to display the selected video streams. **This option will display video and audio.**

The number of simultaneous audio-video streams that may be displayed is only limited by the hardware of the receiving device (CPU, Memory, etc.), the available internet bandwidth and the video parameter settings of the sending devices (framerate, bitrate, camera resolution, etc.).

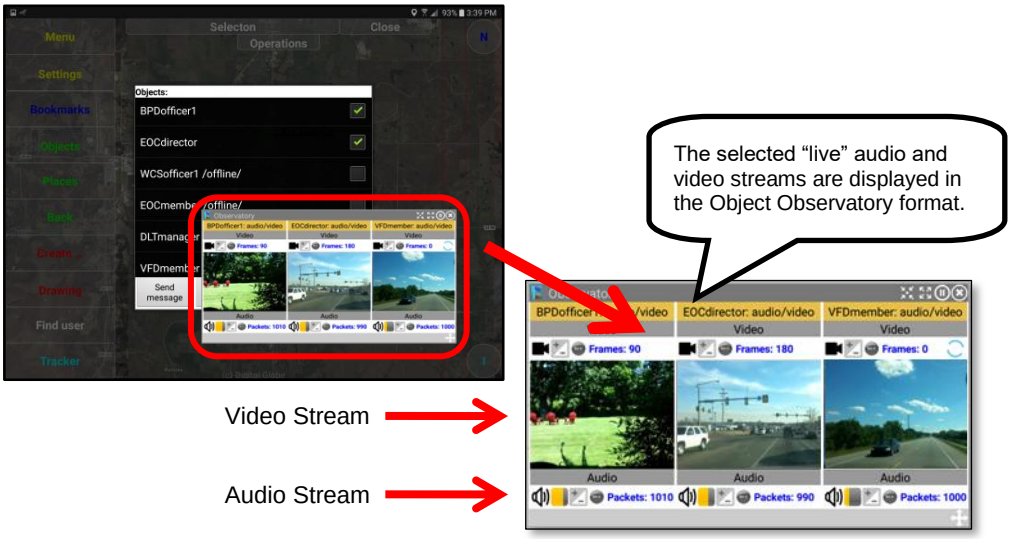
A typical application should expect perhaps 5 simultaneous audio-video streams at standard resolution and framerate.

To activate, click on the “Audio-Video Button”.



A floating window panel (in the Object Observatory format) will appear on the screen with the number of live-streaming images (with audio) that corresponds to the number of monitored remote devices.

See **Section 9.12** for additional details on the Object Observatory Panel format and the options available for recording and saving content on-the-fly.



9.19. Example - display GPS footprint for a single remote device.

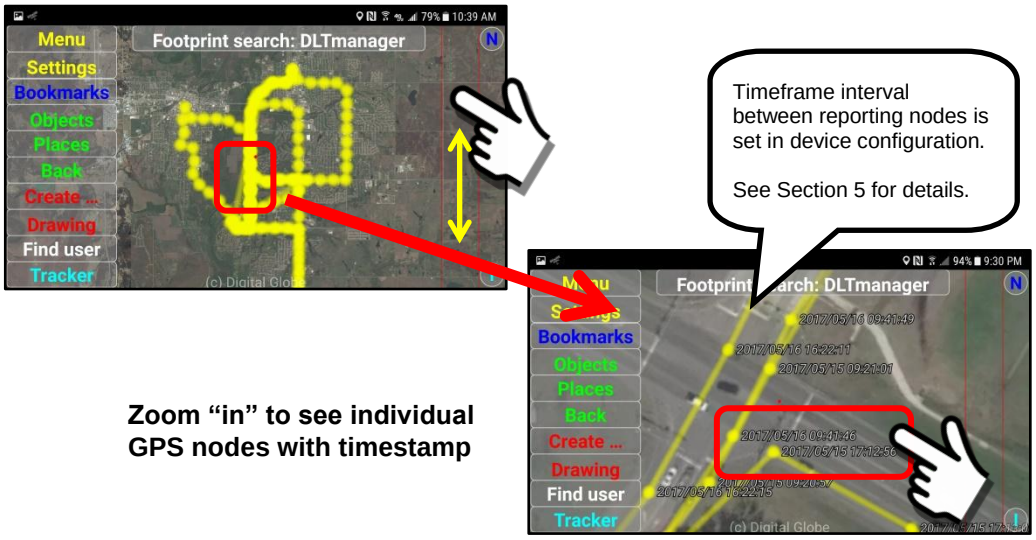
Overview:

The geo-location history feature allows a user to save a SHORTCUT that will create a "custom map panel" that can display the historical GPS tracks of any mobile device in the Security Domain (assuming security credentials allow). This feature will display a GPS footprint (track) for a variety of user selected time periods (ie day, week, month, etc.).

This example will illustrate how to create a Custom Map Bookmark of historical GPS tracks for a single mobile device.

The single device geo-footprint Map Panel:

Shown below is an example of a custom map panel that displays the historical GPS tracks for a single mobile device (DLTmanager) over a period of several days.

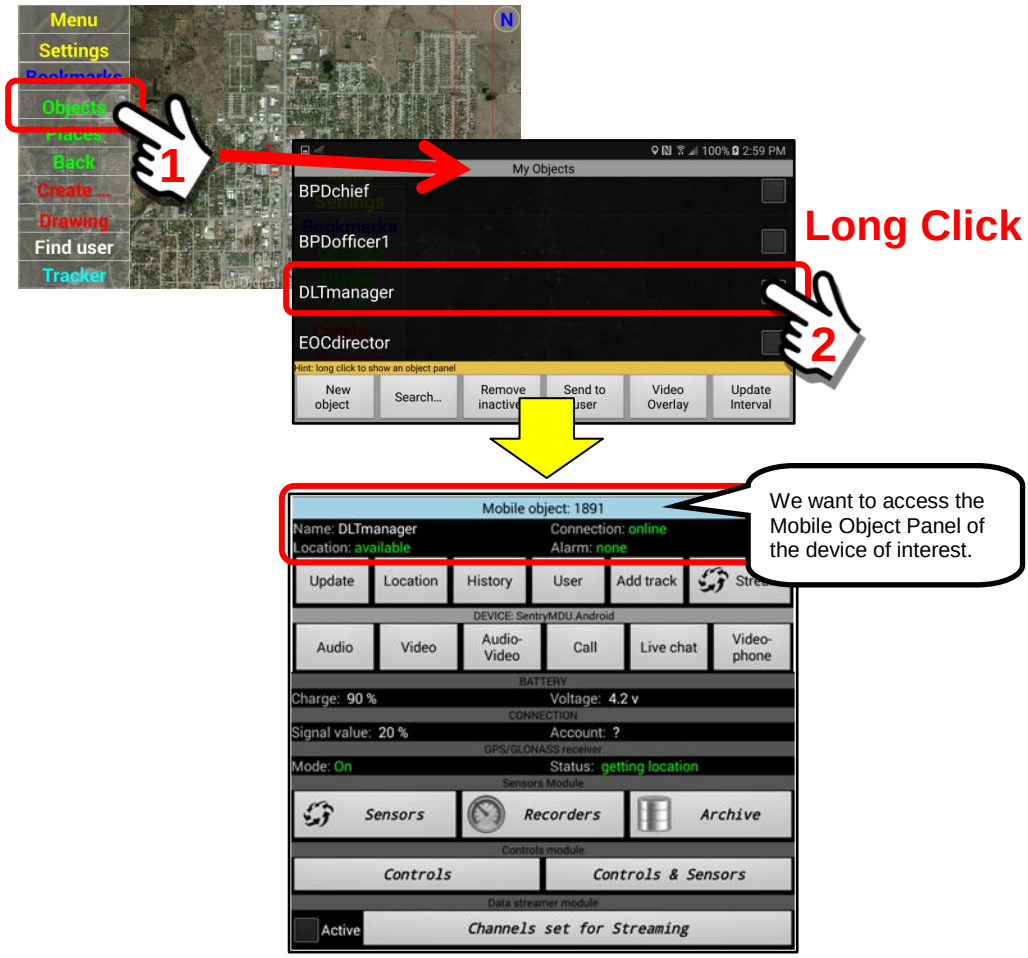


Steps to create a geo-footprint of a Single Mobile Device:

1. ***Preparing to create a geo-footprint of a mobile device.***
   In most cases, if the SentryMDU App has been active on a mobile device, there will be sufficient GPS readings to plot historical tracks. Both the GPS sensor on the device and the Tracker Service within the SentryMDU System must be configured as "active".

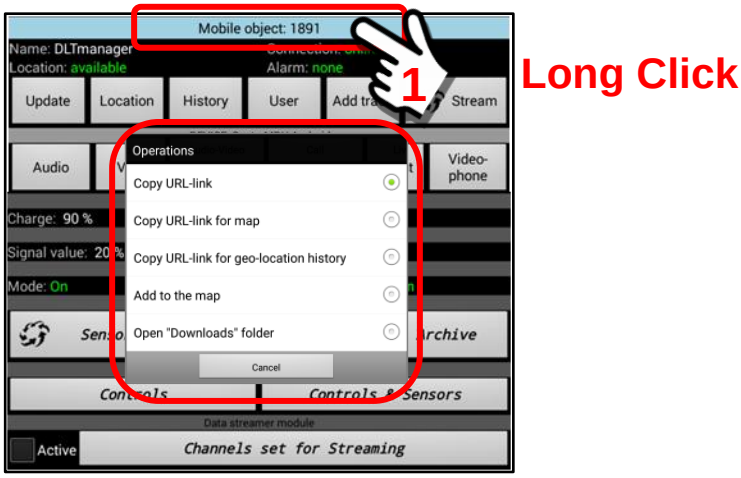
   To begin, navigate to the Mobile Object Panel of the device you are interested in (ie DLTmanager). Since this example is about the GPS tracks of a single mobile device, we will need to go to the Mobile Object Panel for this particular device.

At the Main Map Screen, click on the Objects Button and select the ***DLTmanager*** device.

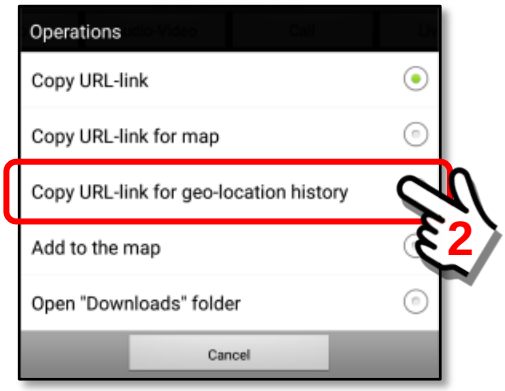


2. ***Configuration of the geo-footprint data for the custom map screen.***
The menu to create a single object geo-footprint custom map layer is located on the Mobile Object Panel of the selected remote device.

Perform a “long click” on the selected users Mobile Object Panel heading to open the options menu. A pop-up box will appear with an Operations Menu.

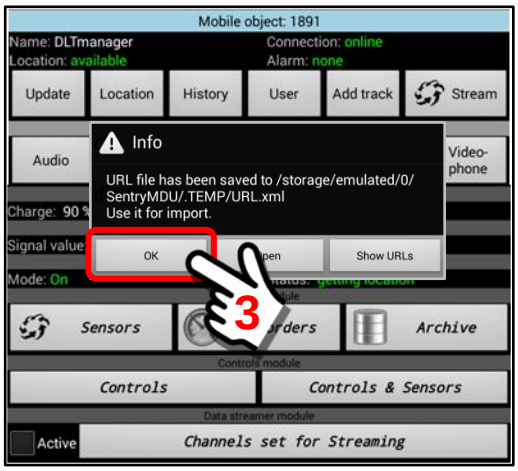


Select the “Copy URL-link for geo-location history” choice from the Operations Menu.



The URL “link” for the remote mobile device will be saved in a temporary file, ready to be imported into the bookmark folder.

Click on the “OK” Button to save the URL.

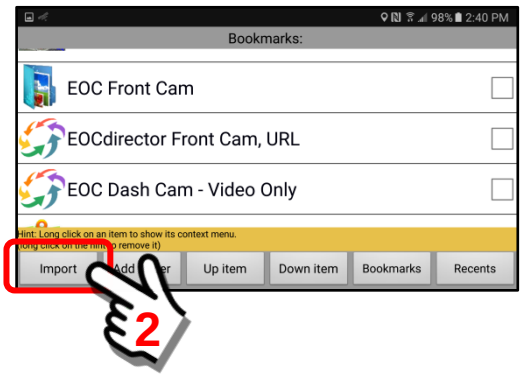


Now that the URL link for the remote device has been saved, return to the Main Map Screen.

3. ***Create the Bookmark entry for a Single Object custom map layer.***
Once the URL link for the remote device has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

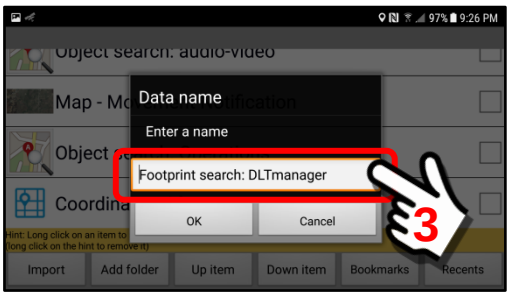
To begin, click on the Bookmarks Button on the Main Map Screen.

At the Bookmarks Panel, click on the Import Button

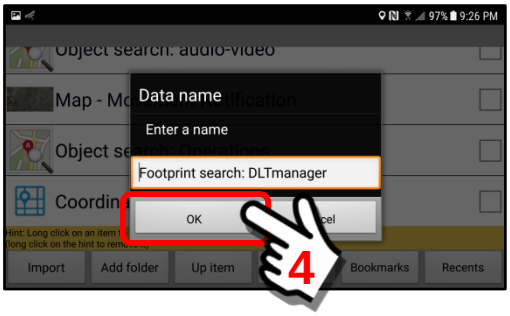


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the ***DLTmanager*** remote device. The system will default to the name "Footprint search: " and append the name of the selected remote device (ie DLTmanager). The result will be "Footprint search: DLTmanager"

In this example, we will keep the default name. If changes are desired, click inside the text block to open an onscreen keyboard for editing.

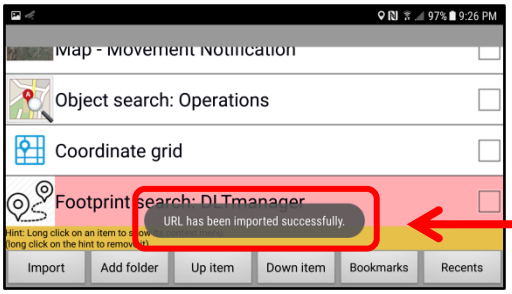


When finished, click the "OK" Button to save the new description.



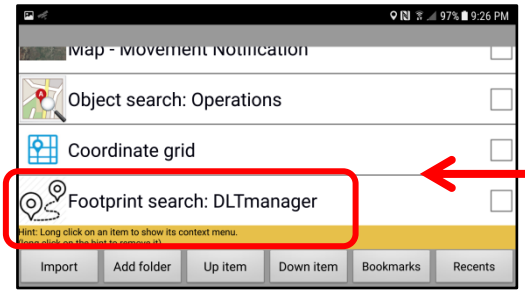
The system will now create a bookmark entry with the new name.

If the bookmark is created successfully, a message will be displayed at the bottom of the screen, as shown below.



Message that bookmark creation was successful.

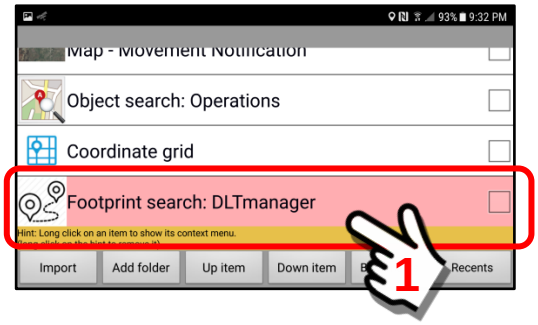
The new bookmark is now on the bookmark listing.



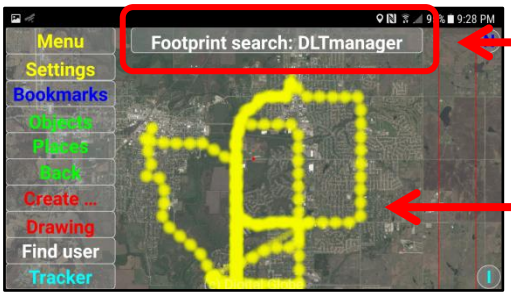
New bookmark

4. ***Launching the geo-location, footprint search custom bookmark.***
To launch the bookmark entry, click on the name. A custom map panel will be displayed showing the GPS track for the specific user (DLTmanager). The initial displayed GPS track will default to a time period of approximately 2 calendar days (depends of time zone and GMT offset).

Click on the "*Footprint search: DLTmanager*" bookmark listing.



It may take a few seconds for the GPS tracks to be retrieved and displayed, but soon you should see the historical tracks from the remote device.



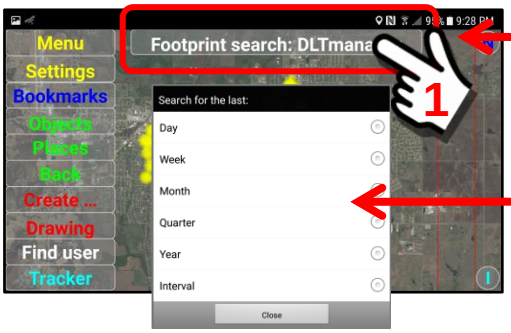
Custom Map Screen for the geo-location historical data for user DLTmanager.

GPS Tracks

5. ***Adjusting the historical time period of the GPS data.***
The initial displayed GPS track will default to a time period of approximately 2 calendar days (depends of time zone and GMT offset).

To adjust the displayed time period of GPS historical data, click on the "Header Title" (Footprint search: DLTmanager). This header title is a "button" that has menu options to set the historical time period for GPS data.

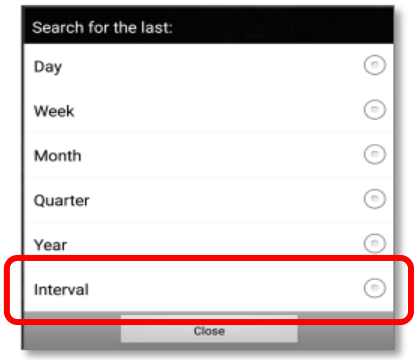
Click on the header button.



Button to open menu options

Menu options to adjust GPS historical data time period.

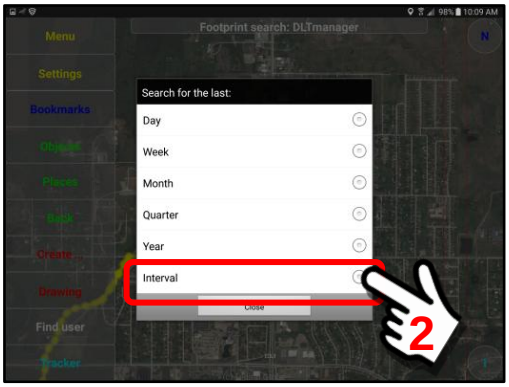
A pop-up screen will be displayed providing data options. These options will display data from the last day, week, month, quarter (3 months) or year. In addition to the standard time intervals the SentryMDU System provides a "user customized" interval choice … called "interval".



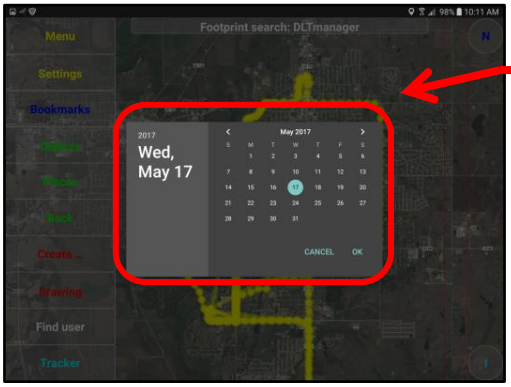
User customizable time period

The “Interval” Menu option allows a user to select custom time periods using a calendar function to pick start and stop dates. The following series of pictures will illustrate the “Interval” Feature as shown on a 10” Tablet.

Click on the ***Interval Button*** to start the process.

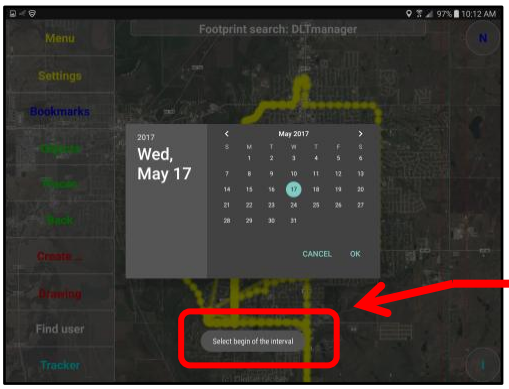


When you first launch the Interval Feature, the system will retrieve a calendar with the current date.



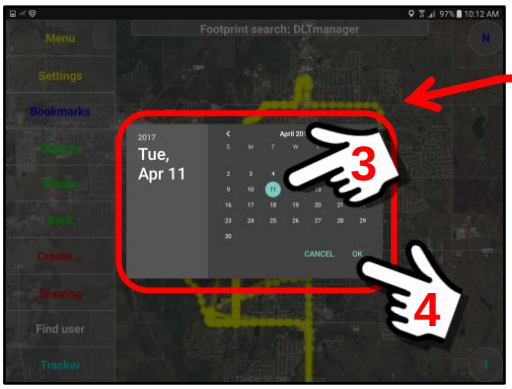
Calendar will display the current “date”.

A brief pop-up message will then appear telling you to select a date for which you want to BEGIN gathering the GPS historical data.



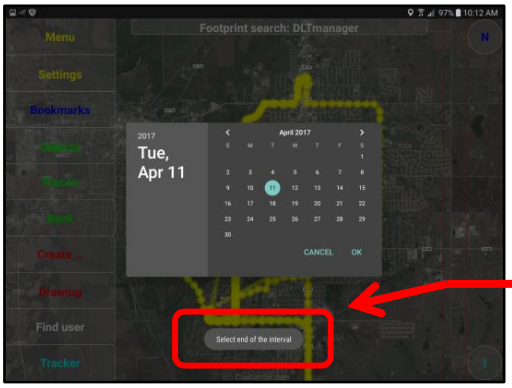
Brief message instructing you to select a beginning date for the GPS data.

Adjust the calendar feature and select a BEGIN date for your GPS data. In this example, we have selected April 11, 2017 as our START date for the GPS historical data.



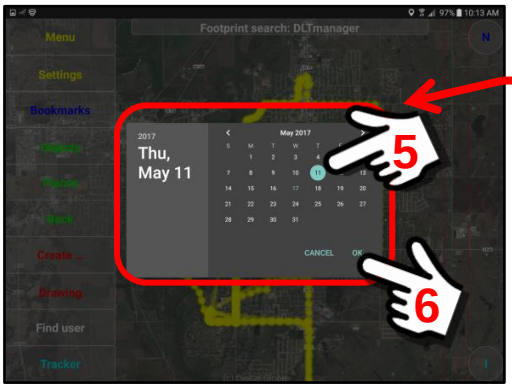
Select the START date

When you have selected the START date of your GPS data, click the “OK” Button to save the choice. You will then see a brief message (3 seconds) that instructs you to now select an END date for the GPS data.



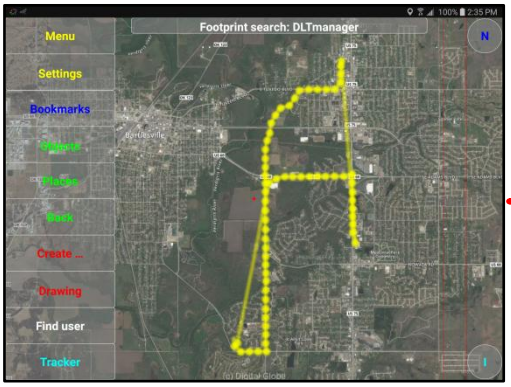
Brief message instructing you to select an END date for the GPS data.

Select the END date for the GPS historical data.
Click the “OK” Button once you have finished selecting the end date. This will save the choices and return you to the Map Screen.



Select the END date

We have now selected both start and end dates for our “custom interval” for GPS data. The Map Screen will refresh and new GPS tracks will be displayed that correspond to the dates you have selected.

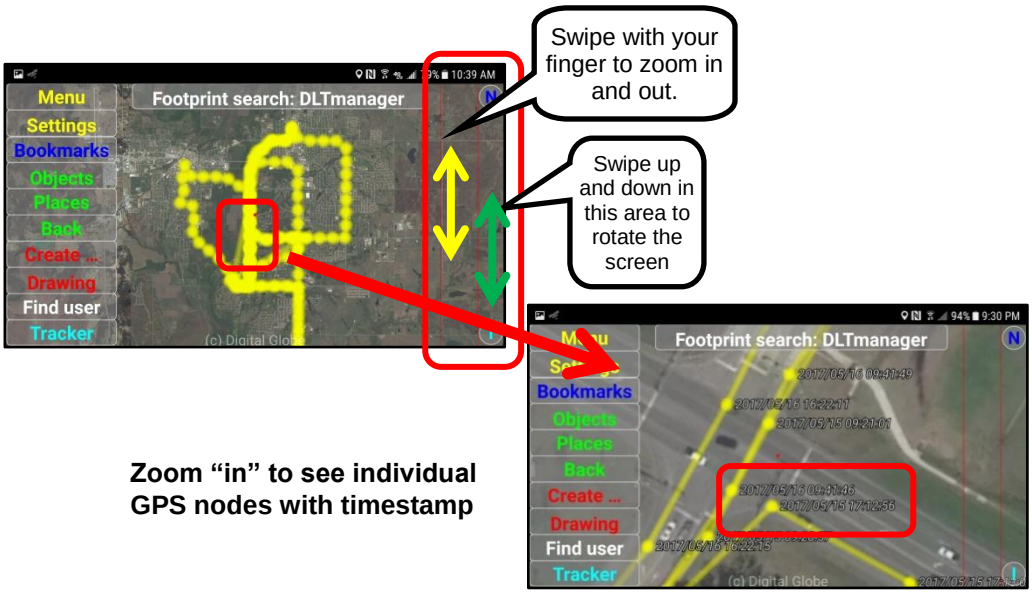


New GPS data from the custom date range we have selected.

April 11 – May 11, 2017

6. ***Access GPS node detail from the track data.***
The zoom level of the Map Screen will affect the level of detail that you will see in the available GPS data. In this example, we have shown GPS data from a “city view” perspective.

To see a higher level of detail, zoom in to a “street level” view to see the individual GPS nodes that were recorded by the system. The following series of images will illustrate this feature.



Zoom “in” to see individual GPS nodes with timestamp

The recorded GPS node detail will reflect the “reporting interval” that was set for the mobile device during initial device configuration. The setting for First Responders is typically about 5-10 seconds … the default is 300 seconds.

9.20. Example – display GPS footprint for multiple devices.

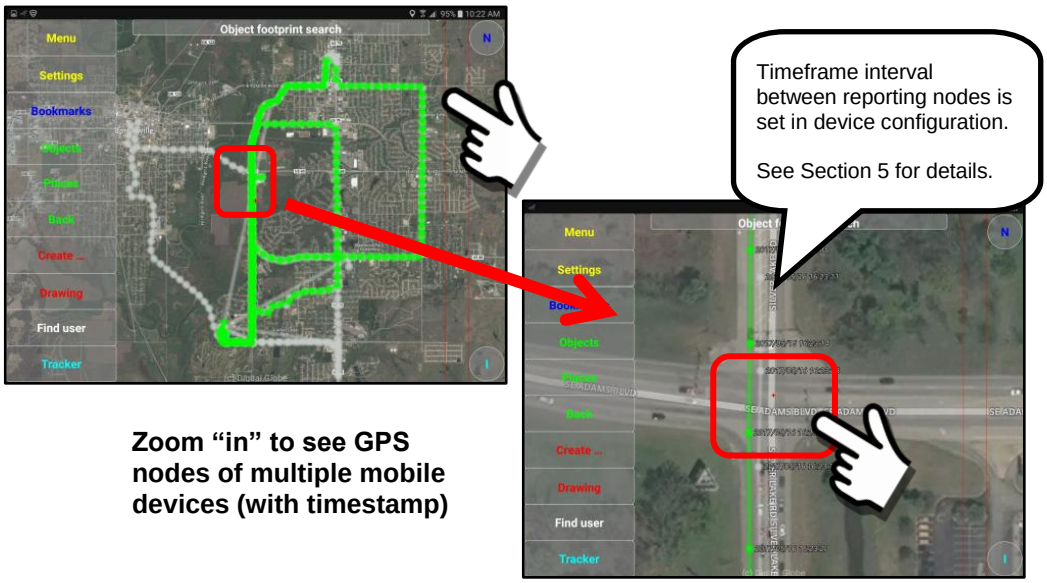
Overview:

This section will implement the geo-location history feature for multiple devices and will allow a user to save a SHORTCUT that will create a "custom map panel" that can display the historical GPS tracks of any mobile device in the Security Domain (assuming security credentials allow). This feature will display a GPS footprint (track) for a variety of user selected time periods (ie day, week, month, etc.).

This example will illustrate how to create a Custom Map Bookmark of historical GPS tracks for multiple mobile devices.

The multiple device geo-footprint Map Panel:

Shown below is an example of a custom map panel that displays the historical GPS tracks for multiple mobile devices over a period of several days.

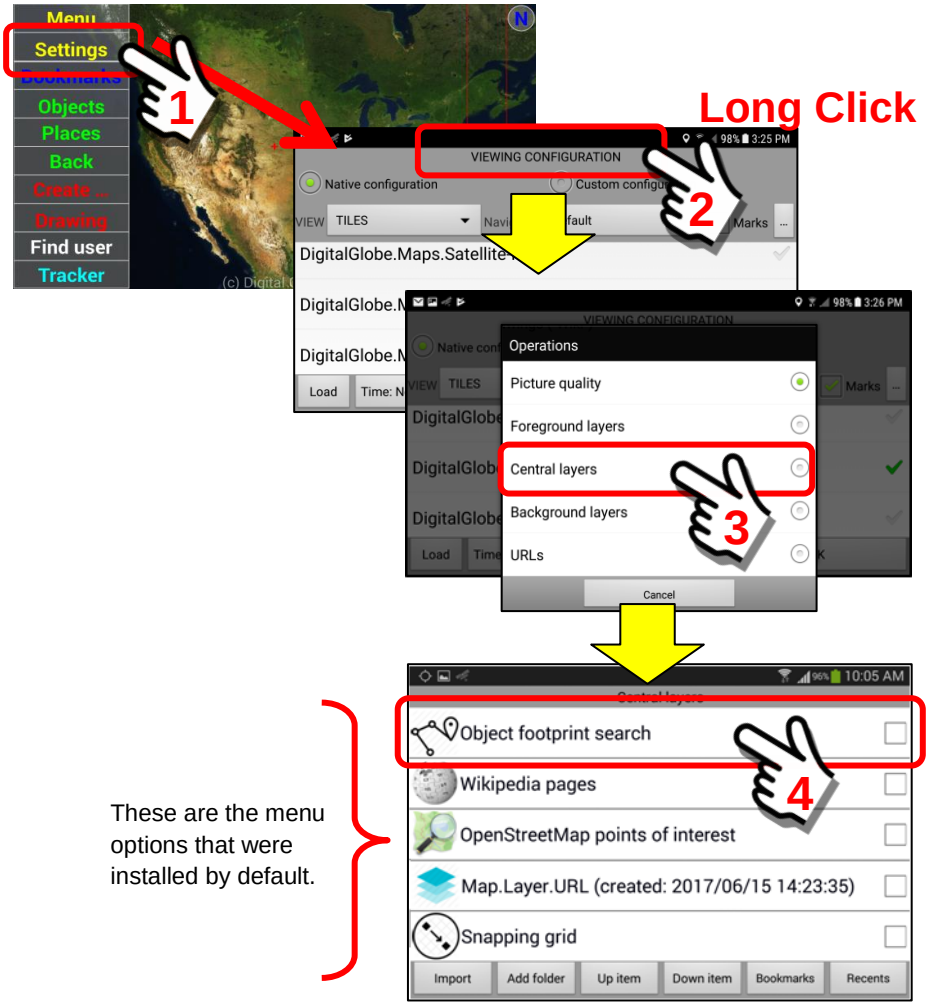


Steps to create multiple geo-footprints of Mobile Devices:

1. ***Preparing to create multiple geo-footprints of mobile devices.***
   In most cases, if the SentryMDU App has been active on a mobile device, there will be sufficient GPS readings to plot historical tracks. Both the GPS sensor on the device and the Tracker Service within the SentryMDU System must be configured as "active".

   Since this example is about the GPS tracks of multiple mobile devices, we will need to locate the "Object footprint search" feature for selecting all mobile devices.

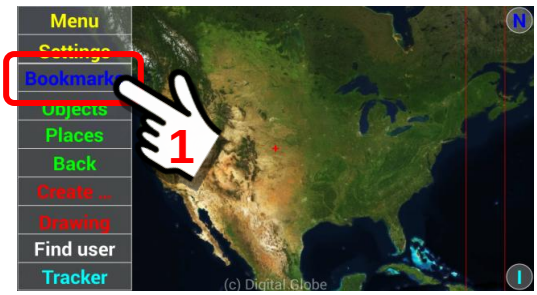
At the Main Map Screen, click on the Settings Button, perform a “long click” on the Viewing Configuration Panel and then navigate through two sets of sub-menus to locate the appropriate “Object footprint search” menu item.



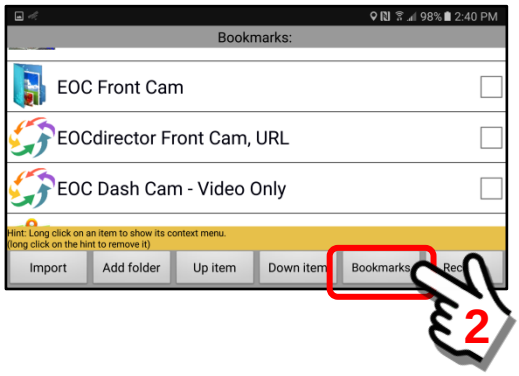
During initial device configuration, five (5) Central Layer URL objects were installed by the SentryMDU System. The “Object footprint search” feature is one of those items.

<u>If needed, you may access a “new” copy by the following method.</u>

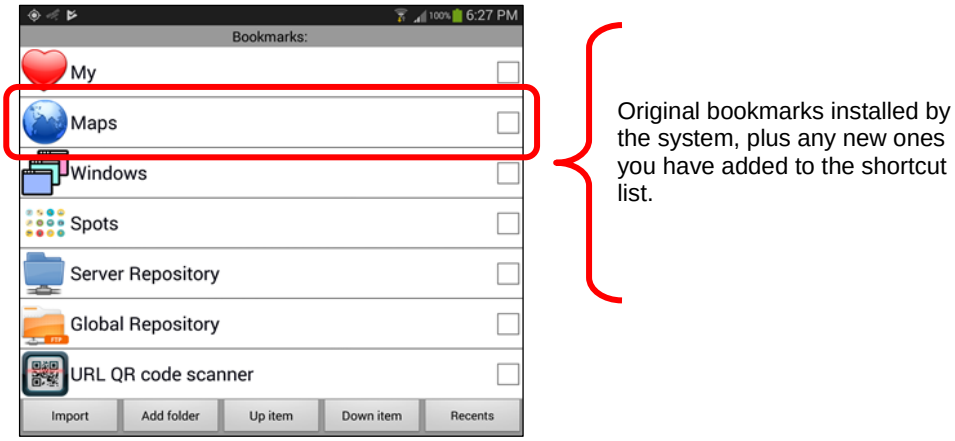
At the Main Map Screen, click on the Bookmarks Button.



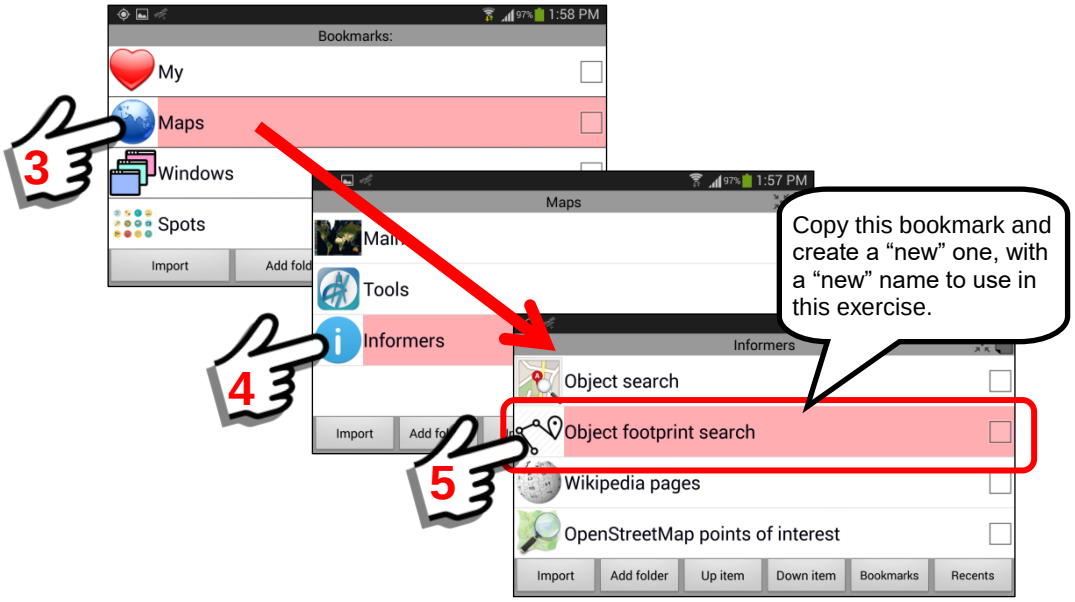
At the Bookmarks Panel, click on the Bookmarks Button. This will open the panel of system installed bookmarks (plus any you have installed since initial configuration.



The SentryMDU System Bookmarks will be displayed.

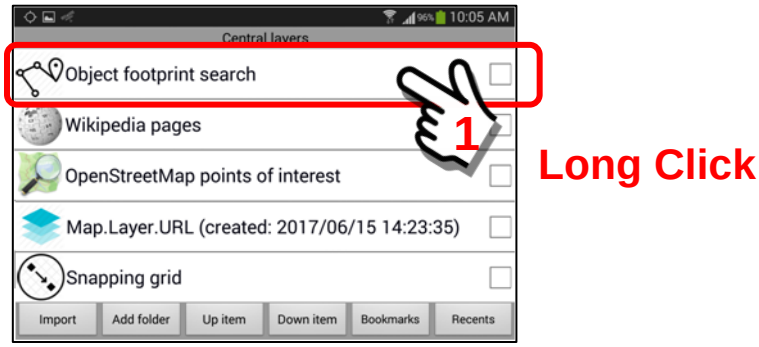


Select the “Maps” menu option since we are looking for the “Object footprint search” feature which is a “map” object. Copy and create a “new” bookmark. See **Section 9.6-7** for details on creating new bookmarks if you need help.

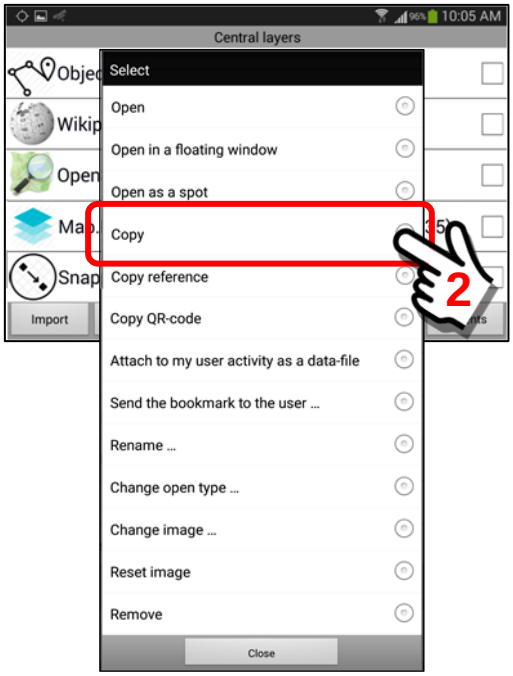


2. ***Configuration of the geo-footprint data for the custom map screen.***
The menu to create a multiple object geo-footprint custom map layer is located on a sub-menu of the Central Layers Panel.

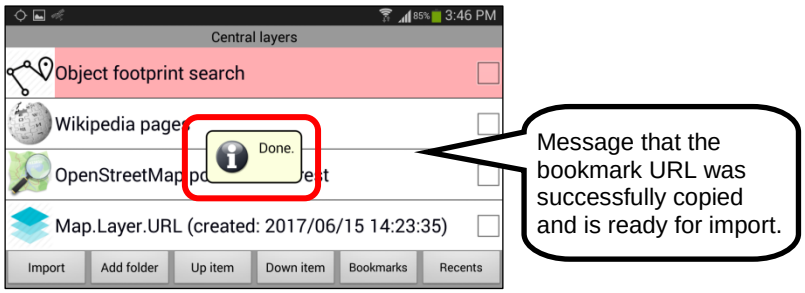
Locate the “Object footprint search” choice from the available options on the Central Layers Menu.



Perform a “Long click” on the “Object footprint search” menu item and select the “Copy” option from the pop-up menu.

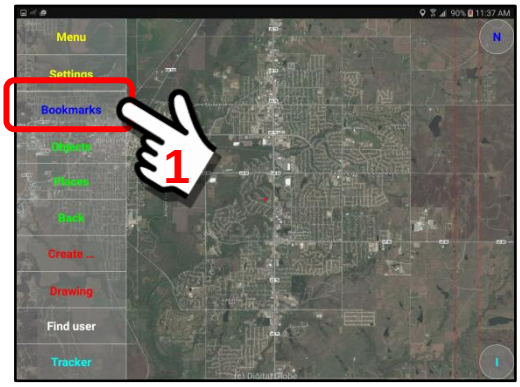


The URL “link” will be saved in a temporary file, ready to be imported into the bookmark folder. Return to the Main Map Screen.

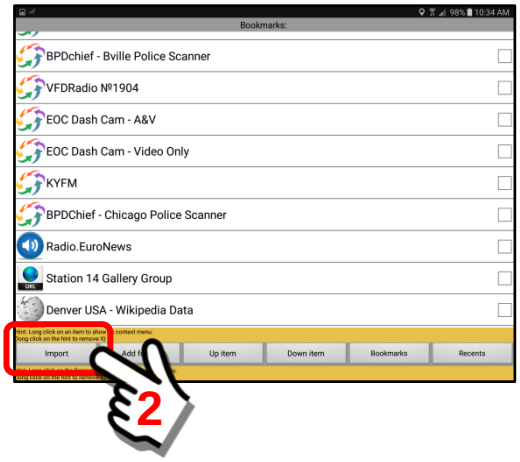


3. ***Create the Bookmark entry for a multiple object geo-history Map.***
Once the URL link for the the “Object footprint search” has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

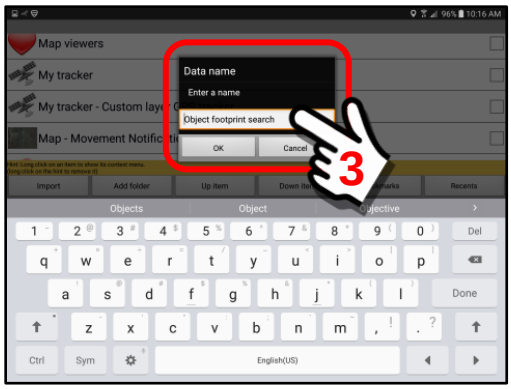


At the Bookmarks Panel, click on the Import Button

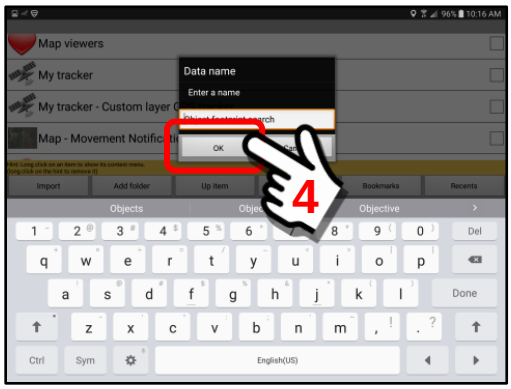


The Import Button will automatically retrieve the URL link that was previously “saved” when we created the URL link. The system will default to the name of the original bookmark name. In this case, “Object footprint search”.

In this example, we will keep the default name. If changes are desired, click inside the text block to open an onscreen keyboard for editing.

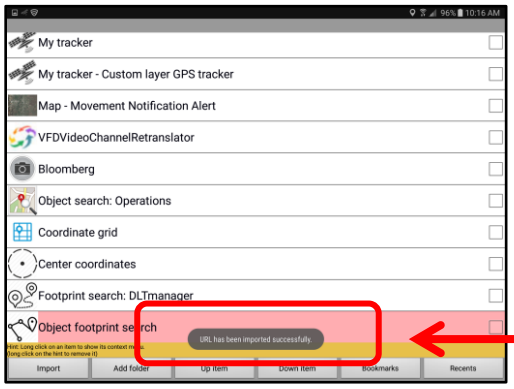


When finished, click the “OK” Button to save the new description.



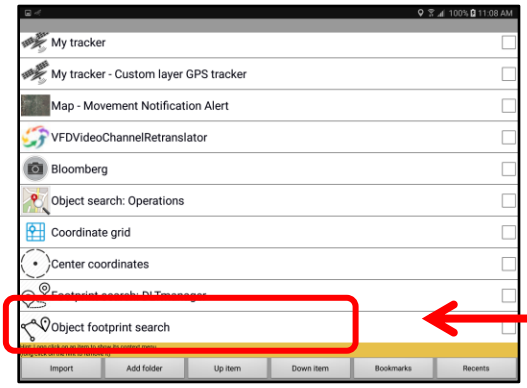
The system will now create a bookmark entry with the new name.

If the bookmark is created successfully, a message will be displayed at the bottom of the screen, as shown below.



Message that bookmark creation was successful.

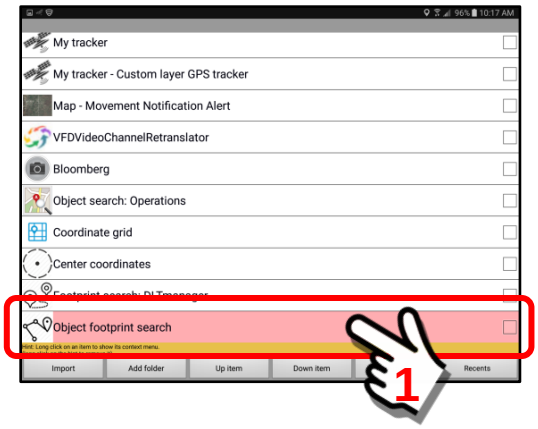
The new bookmark is now on the bookmark listing.



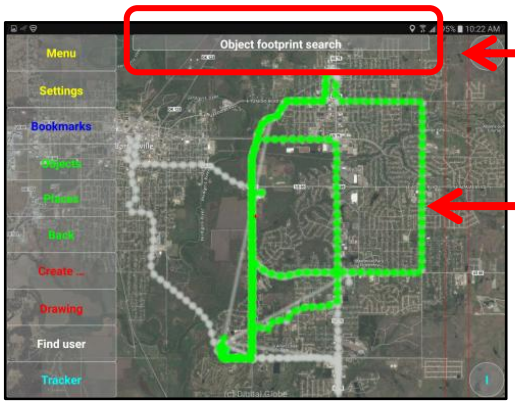
New bookmark

4. ***Launching the geo-location, multiple footprint search bookmark.***
To launch the bookmark entry, click on the name. A custom map panel will be displayed showing the GPS tracks for all users in the viewed map area. The initial displayed GPS tracks will default to a time period of approximately 2 calendar days (depends of time zone and GMT offset).

Click on the "*Object footprint search*" bookmark listing.



It may take a few seconds for the GPS tracks to be retrieved and displayed, but soon you should see the historical tracks from the remote device.



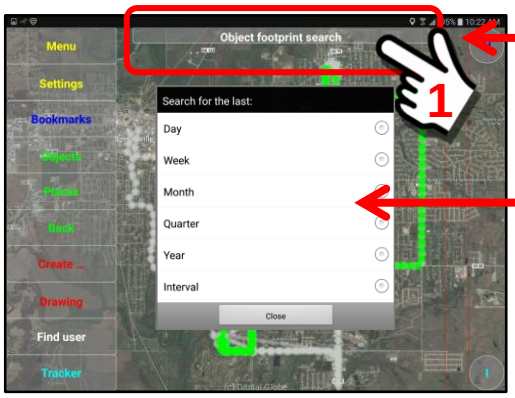
Custom Map Screen for the geo-location historical data for all users.

GPS Tracks

5. ***Adjusting the historical time period of the GPS data.***
The initial displayed GPS track will default to a time period of approximately 2 calendar days (depends of time zone and GMT offset).

To adjust the displayed time period of GPS historical data, click on the "Header Title" (*Object footprint search*). This header title is a "button" that has menu options to set the historical time period for GPS data.

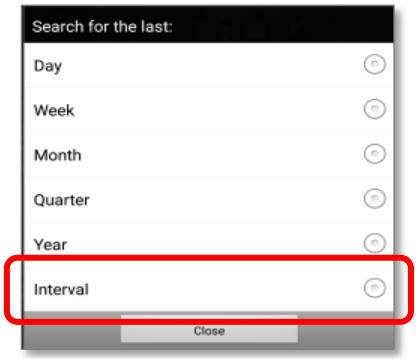
Click on the header button.



Button to open menu options

Menu options to adjust GPS historical data time period.

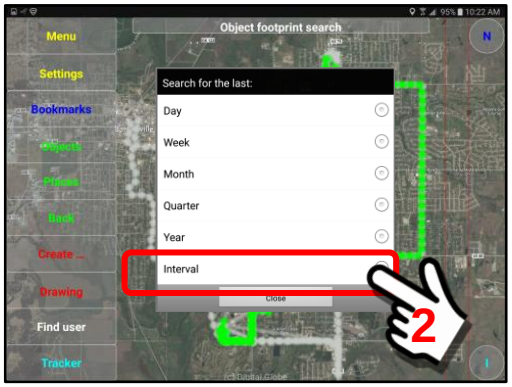
A pop-up screen will be displayed providing data options. These options will display data from the last day, week, month, quarter (3 months) or year. In addition to the standard time intervals the SentryMDU System provides a "user customized" interval choice … called "interval".



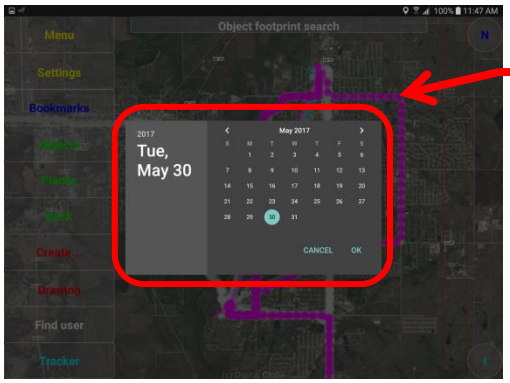
User customizable time period

The "Interval" Menu option allows a user to select custom time periods using a calendar function to pick start and stop dates. The following series of pictures will illustrate the "Interval" Feature as shown on a 10" Tablet.

Click on the ***Interval Button*** to start the process.

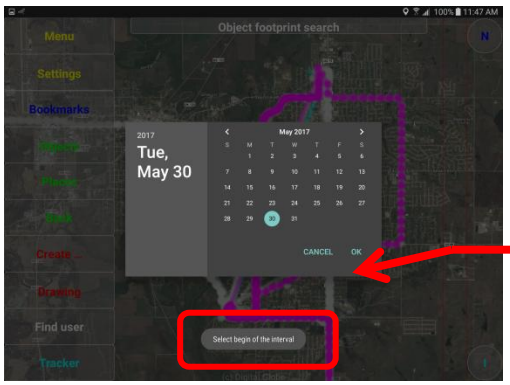


When you first launch the Interval Feature, the system will retrieve a calendar with the current date.



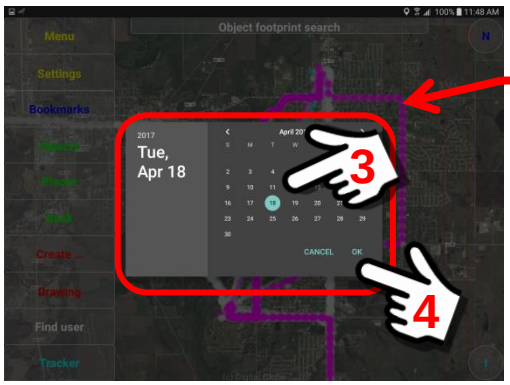
Calendar will display the current “date”.

A brief pop-up message will then appear telling you to select a date for which you want to BEGIN gathering the GPS historical data.



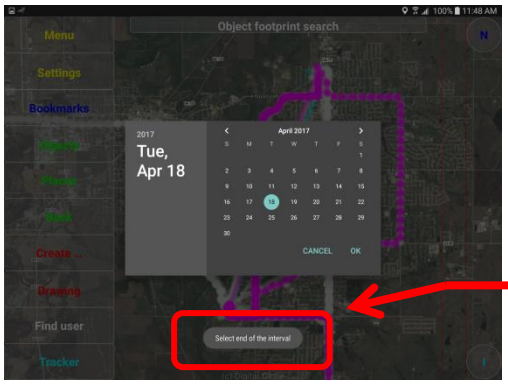
Brief message instructing you to select a beginning date for the GPS data.

Adjust the calendar feature and select a BEGIN date for your GPS data. In this example, we have selected April 18, 2017 as our START date for the GPS historical data.



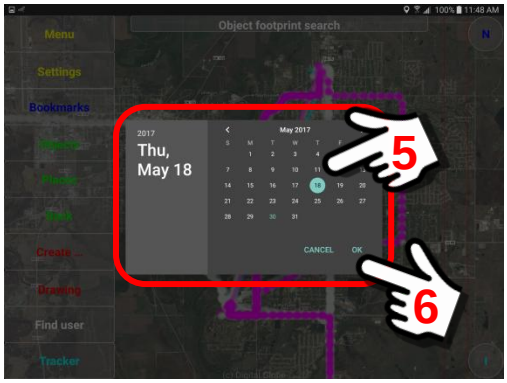
Select the START date

When you have selected the START date of your GPS data, click the “OK” Button to save the choice. You will then see a brief message (3 seconds) that instructs you to now select an END date for the GPS data.

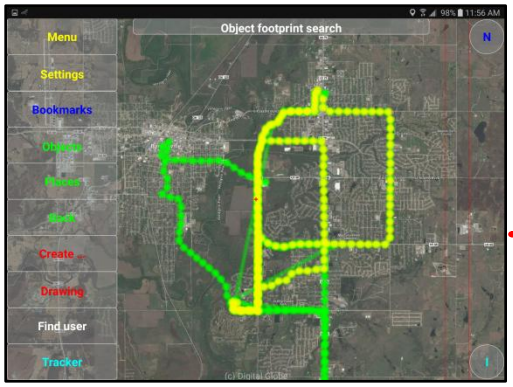


Brief message instructing you to select an END date for the GPS data.

Select the END date for the GPS historical data.
Click the “OK” Button once you have finished selecting the end date. This will save the choices and return you to the Map Screen.



We have now selected both start and end dates for our “custom interval” for GPS data. The Map Screen will refresh and new GPS tracks will be displayed that correspond to the dates you have selected.



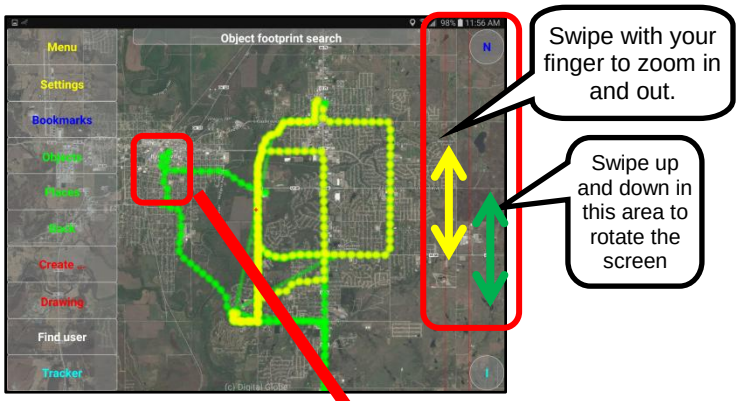
New GPS data from the custom date range we have selected.

April 18 – May 18, 2017

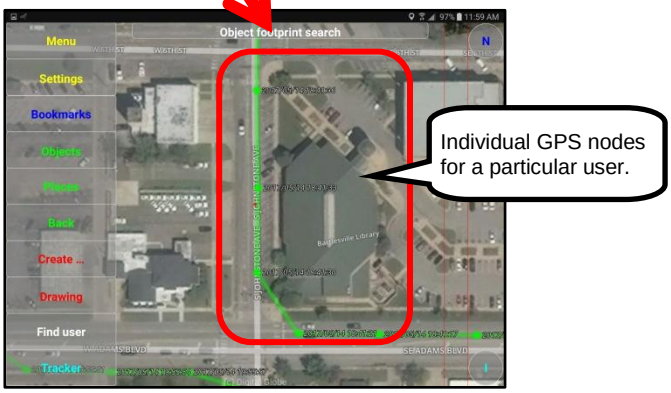
6. ***Access GPS node detail from the track data.***

The zoom level of the Map Screen will affect the level of detail that you will see in the available GPS data. In this example, we have shown GPS data from a “city view” perspective.

To see a higher level of detail, zoom in to a “street level” view to see the individual GPS nodes that were recorded by the system. The following series of images will illustrate this feature.



Zoom “in” to see individual GPS nodes with timestamp



The recorded GPS node detail will reflect the “reporting interval” (3 seconds) that was set for the mobile device during initial device configuration. The setting for First Responders is typically about 5-10 seconds … the default is 300 seconds.

9.21. Example - display Wikipedia Data for a map location

Overview:

The “Wikipedia” feature allows a user to save a SHORTCUT that will create a map panel with a Wikipedia data overlay. The SentryMDU System will pull data from the Wikipedia library based on the site geo-location and overlay these locations on a custom map view.

<u>This feature will pull data that meets the following criteria:</u>

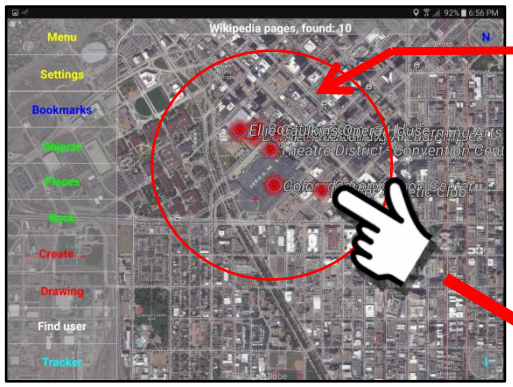
a. Limited to 50 results (zoom in-out can change results)
b. Results that are closest to the user selected map reference point (red + sign)
c. Results that are within a 10km radius of the map reference point
d. User may reposition the screen center to get additional results (still limited to the closest 50 that will be displayed).

In addition, this feature provides for “search” capability where a user can enter a text description of a place/location and the system will search for a match. Each Wikipedia item on the map, when selected, will open a description of the item on the Wikipedia website.

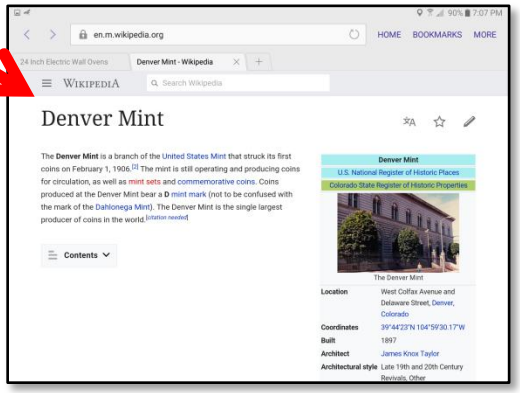
The “Wikipedia” feature is a custom map panel that duplicates the Main Map Screen that is running on the mobile device. Use the “back” button to remove this custom map panel and return to the SentryMDU Main Map Screen.

The Wikipedia custom map panel:

Shown below is an example of the Wikipedia data overlay feature as illustrated on a 10” Tablet screen. This example shows the city of Denver, Colorado, USA.



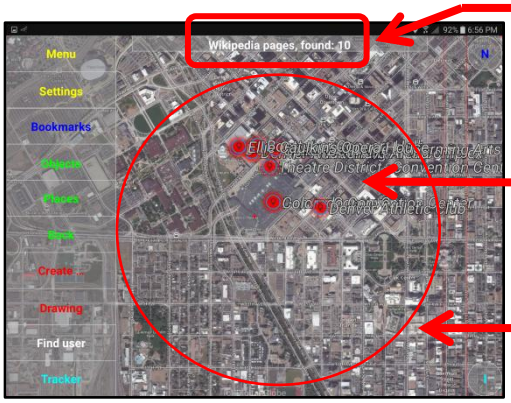
The Wikipedia feature will search for data within a 10km designated search area and display the results on a map screen.



Example of Wikipedia data displayed on the screen of a Tablet Device

Description of the panel buttons and features:

1. ***Features of the "Wikipedia" Custom Map Panel***
   This section will describe the buttons and features available to the User on the "Wikipedia" custom map panel.



Name of the Wikipedia Panel and shows the number of items found in the search area (maximum of 50 items).

GPS location and name of the Wikipedia items found in the search. Zoom in to see items that are closely grouped.

The search area will retrieve data within a 10km radius of the designated map center.

2. ***Preparation for creating the Wikipedia Map Panel***
   To create a new Wikipedia Map Panel, you will first need to position the Main Map screen over the area of interest. The Wikipedia data retrieval will find encyclopedia information (referenced by geo-location) that is within a 10km radius of the map point you select.

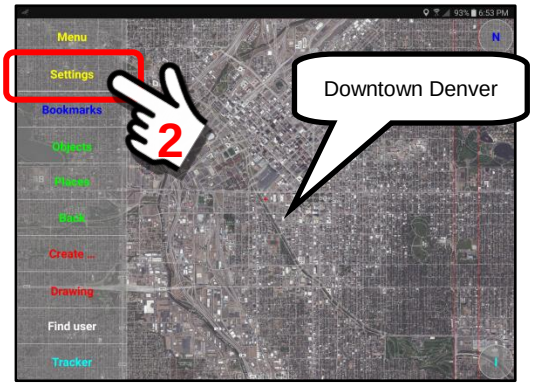
   Select the desired map reference point (red + sign). In this example, we will search for Wikipedia information for the downtown area of the city of Denver, Colorado, USA.

   Zoom in and locate the city of Denver, Colorado, USA.

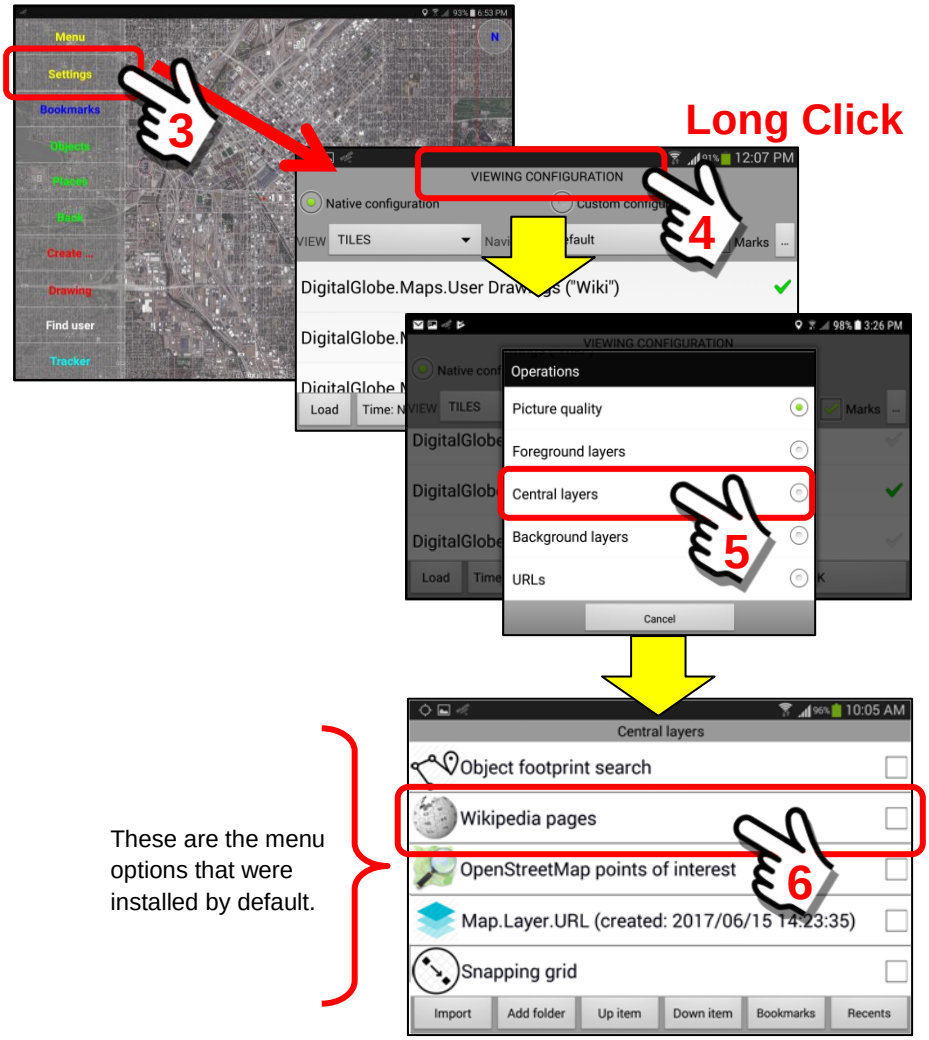
3. *Select the Wikipedia search option from the Settings Menu*

The Wikipedia search option is available on the Settings Menu panel. Once the Main Map Screen is centered over the desired map point, then navigate to the Settings Menu Panel.

Click on the Settings Button menu option.



At the Main Map Screen, click on the Settings Button, perform a "long click" on the Viewing Configuration Panel and then navigate through two sets of sub-menus to locate the appropriate "Wikipedia pages" menu item.

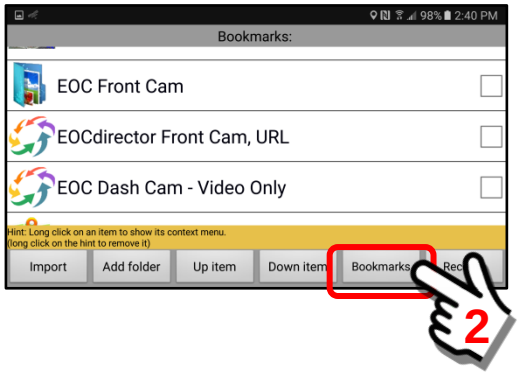


During initial device configuration, five (5) Central Layer URL objects were installed by the SentryMDU System. The "Wikipedia pages" feature is one of those items.

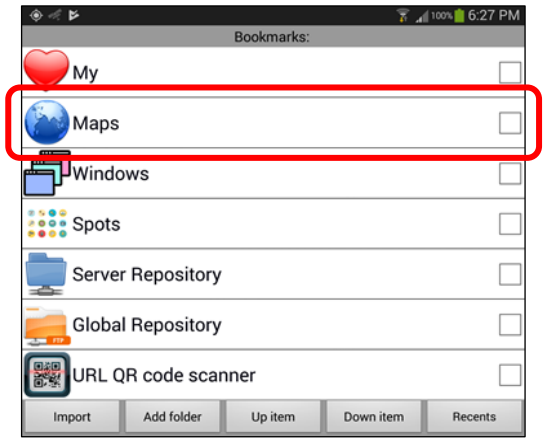
<u>If needed, you may access a "new" copy by the following method.</u>

At the Main Map Screen, click on the Bookmarks Button.

At the Bookmarks Panel, click on the Bookmarks Button. This will open the panel of system installed bookmarks (plus any you have installed since initial configuration.

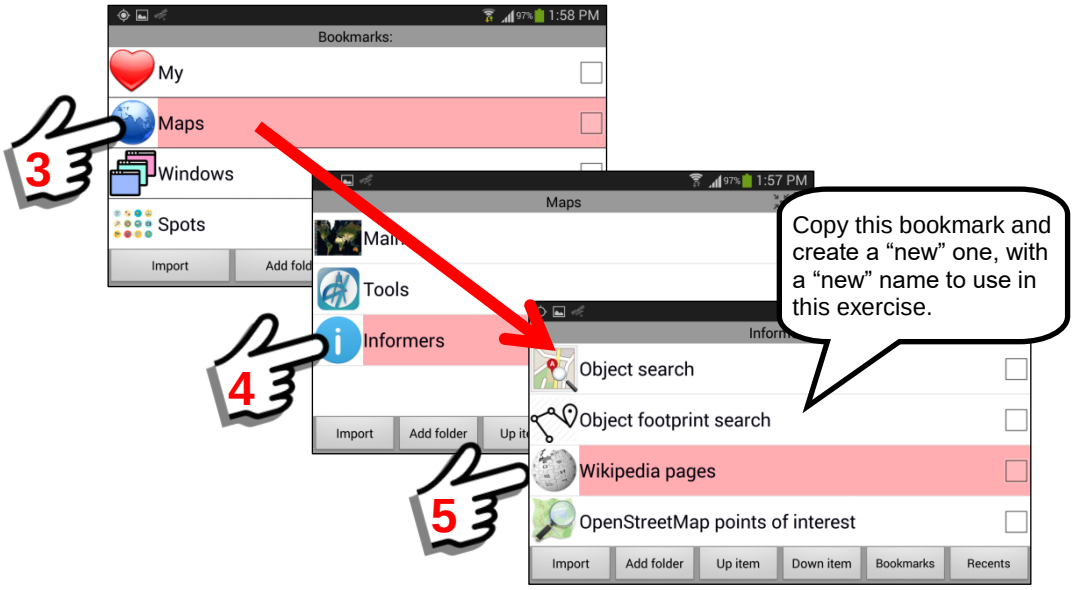


The SentryMDU System Bookmarks will be displayed.



Original bookmarks installed by the system, plus any new ones you have added to the shortcut list.

Select the “Maps” menu option since we are looking for the “Wikipedia pages” feature which is a “map” object. Copy and create a “new” bookmark. See **Section 9.6-7** for details on creating new bookmarks if you need help.

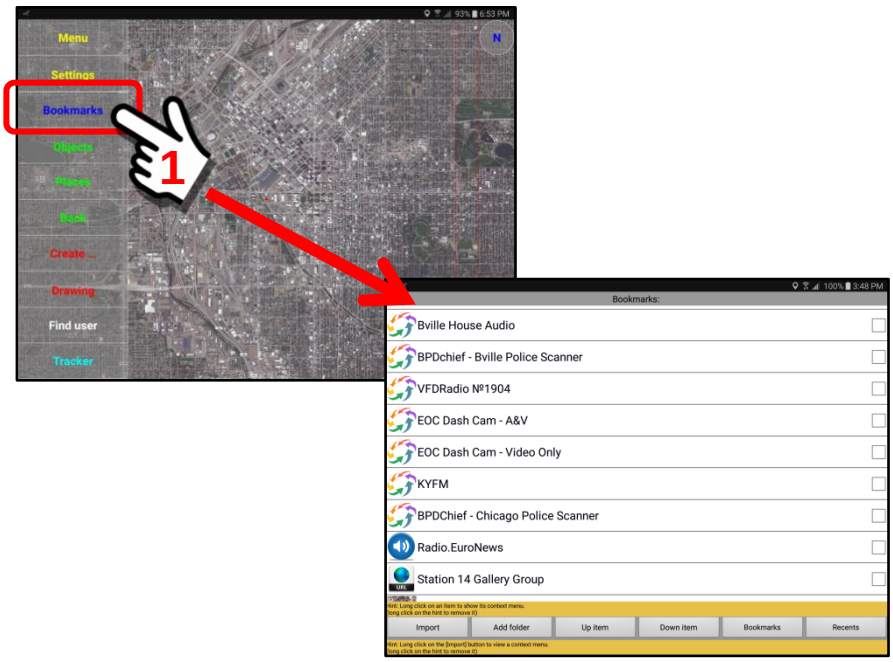


Use the “back” button on the mobile device to return to the Main Menu Screen.

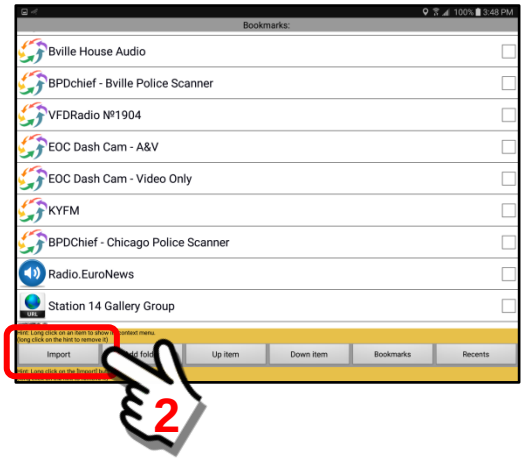
4. ***Import the Wikipedia URL selection into the Bookmark Panel***

In this example, we have created a Wikipedia link that will provide data for the downtown area of Denver, Colorado, USA. We will now “import” this URL link and save it as a Bookmark that will enable us to easily retrieve the data with a single “click”.

Select the Bookmarks menu item from the Main Screen.

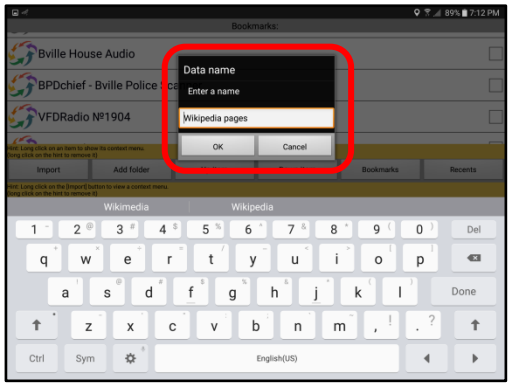


At the Bookmarks Panel, click on the “Import” Button.

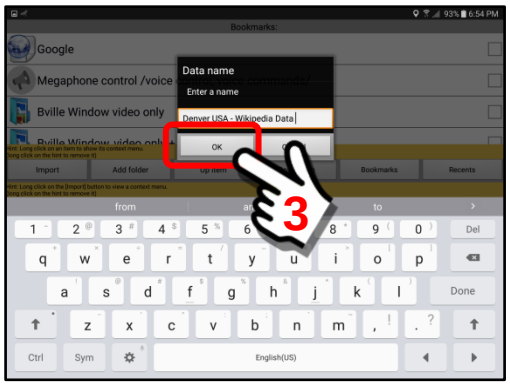


We will be installing a “new” bookmark into the existing bookmarks for this device.

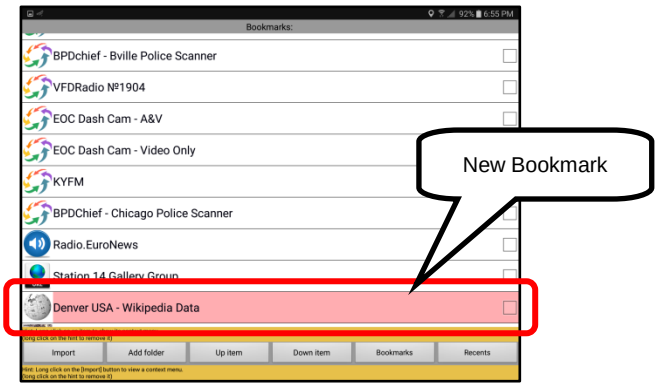
When a Wikipedia URL (that was stored in a temporary file folder) is imported as a bookmark, the “name” will default to “Wikipedia pages”. We recommend that a more descriptive name be used for the bookmark. In this example, we will edit the name to be “***Denver USA – Wikipedia Data***”.



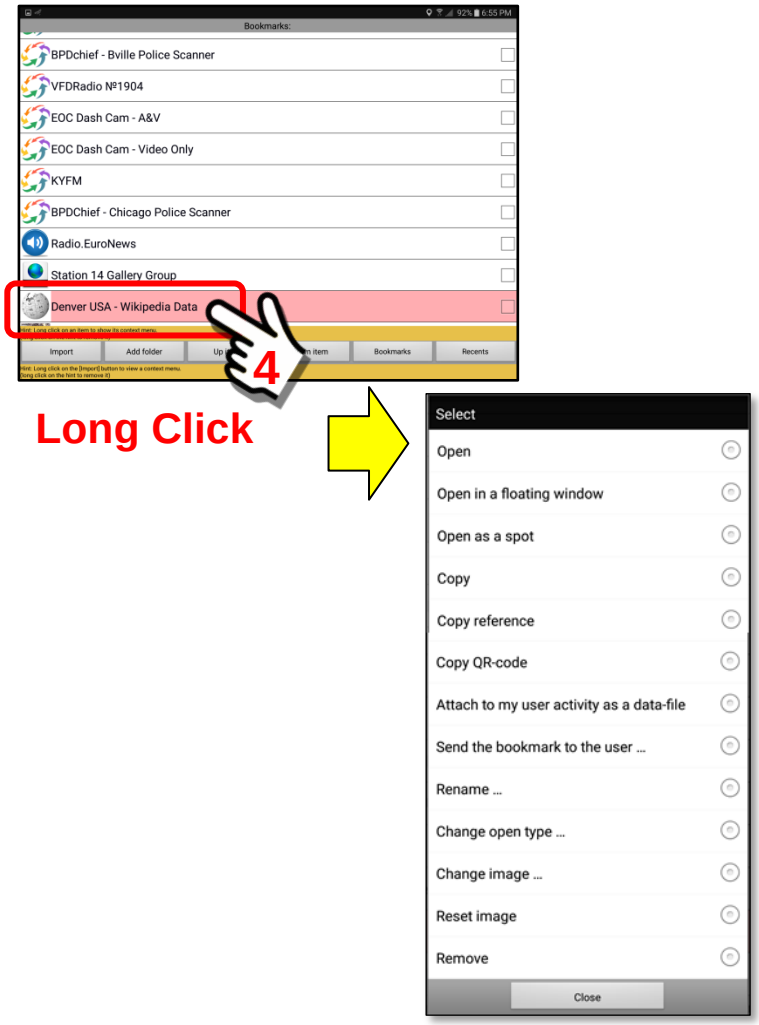
Edit the name to change the text.
When finished, click the “OK” Button to save the changes.



The “new” Wikipedia bookmark has now been created. In this example, the ***Denver USA – Wikipedia Data*** bookmark is now shown on our Bookmarks List.



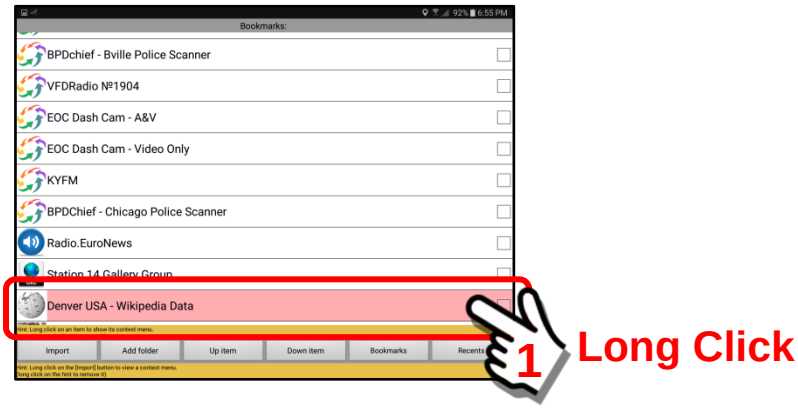
Once the bookmark has been created, additional menu options are available by opening the Context Menu for the bookmark.



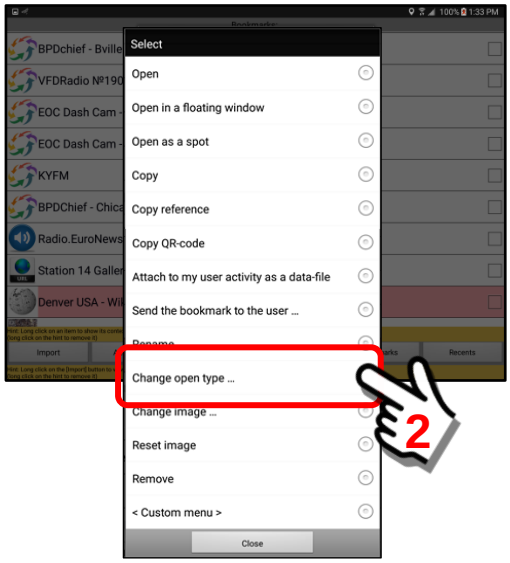
5. ***Configuring the Wikipedia Feature to open as a floating window***

We have now created a Wikipedia bookmark. To make this bookmark open as a “Floating Window” perform the following actions.

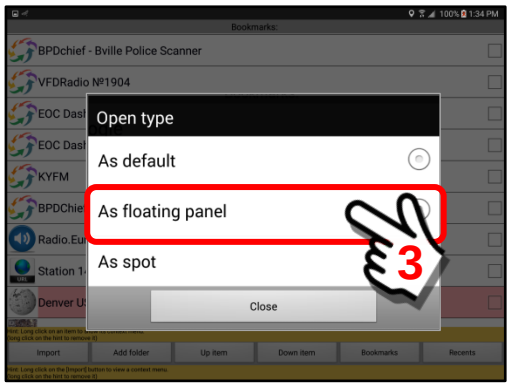
Perform a “Long click” on the ***Denver USA – Wikipedia Data*** folder to open the Context Menu for this folder again.



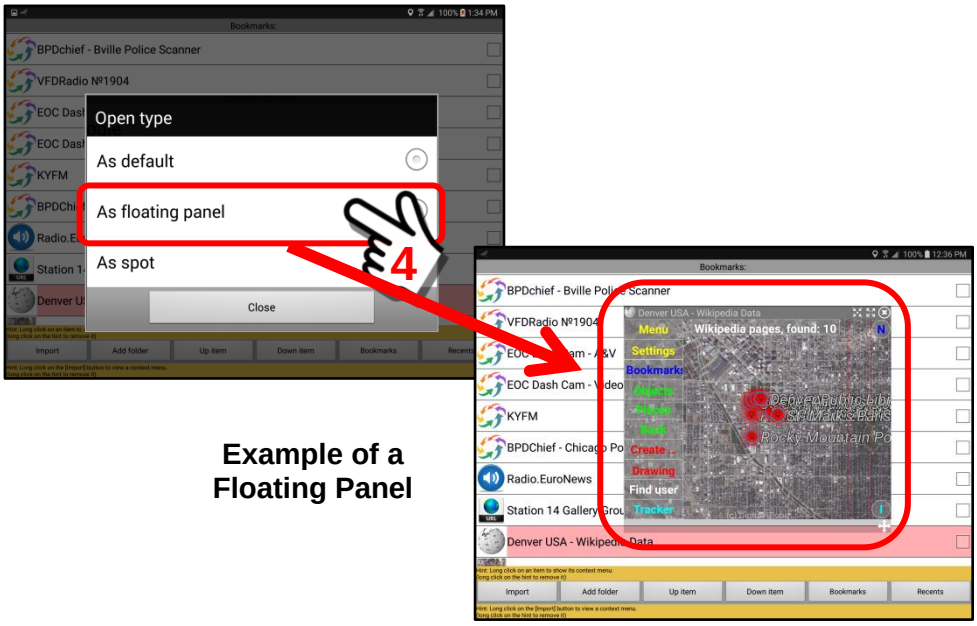
Select the “Change open type …” option from the menu list.



Selecting the “As floating panel” option will set the Wikipedia Data to be displayed in a floating window.



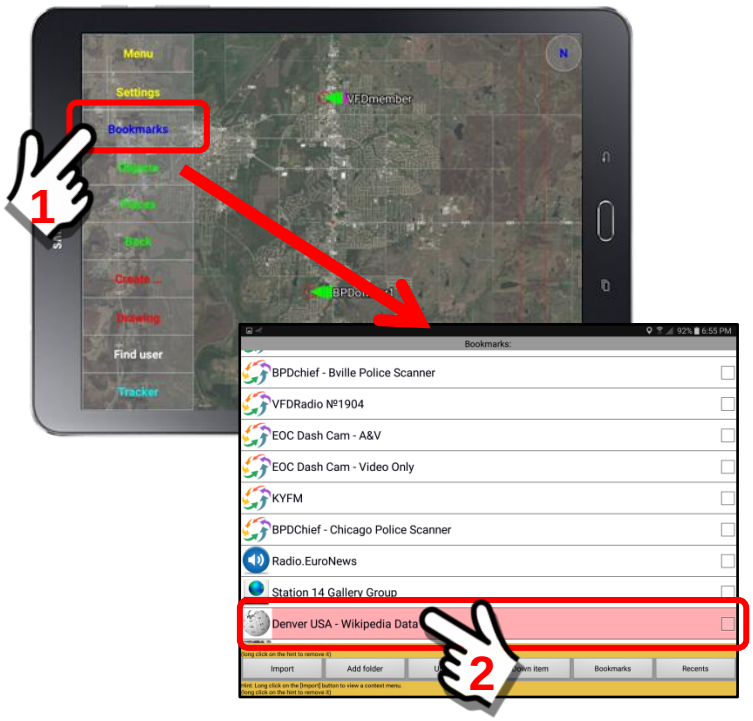
Select the “As floating panel” from the pop-up box. This will now cause the Wikipedia bookmark to open as a floating panel each time you click on the ***Denver USA – Wikipedia Data*** folder.



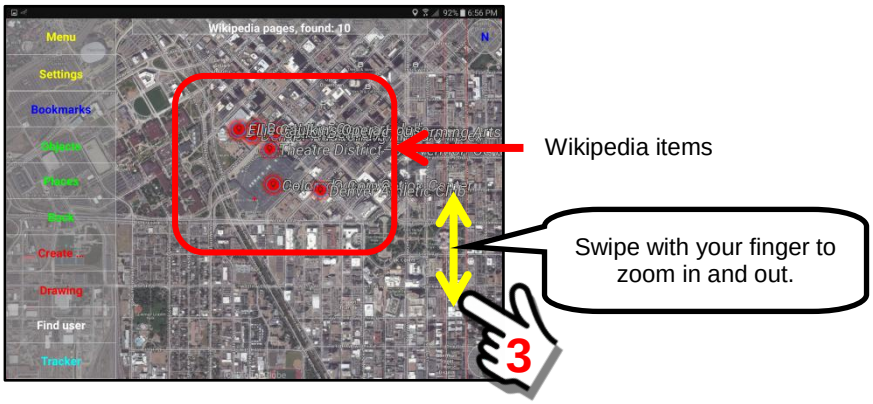
Example of a Floating Panel

6. ***Using the Wikipedia Data on a mobile device.***
Once the Wikipedia Bookmark is created, it is simply one more bookmark on the list. In this example, we will illustrate the functions of the Wikipedia Map overlay as shown on a 10” Tablet.

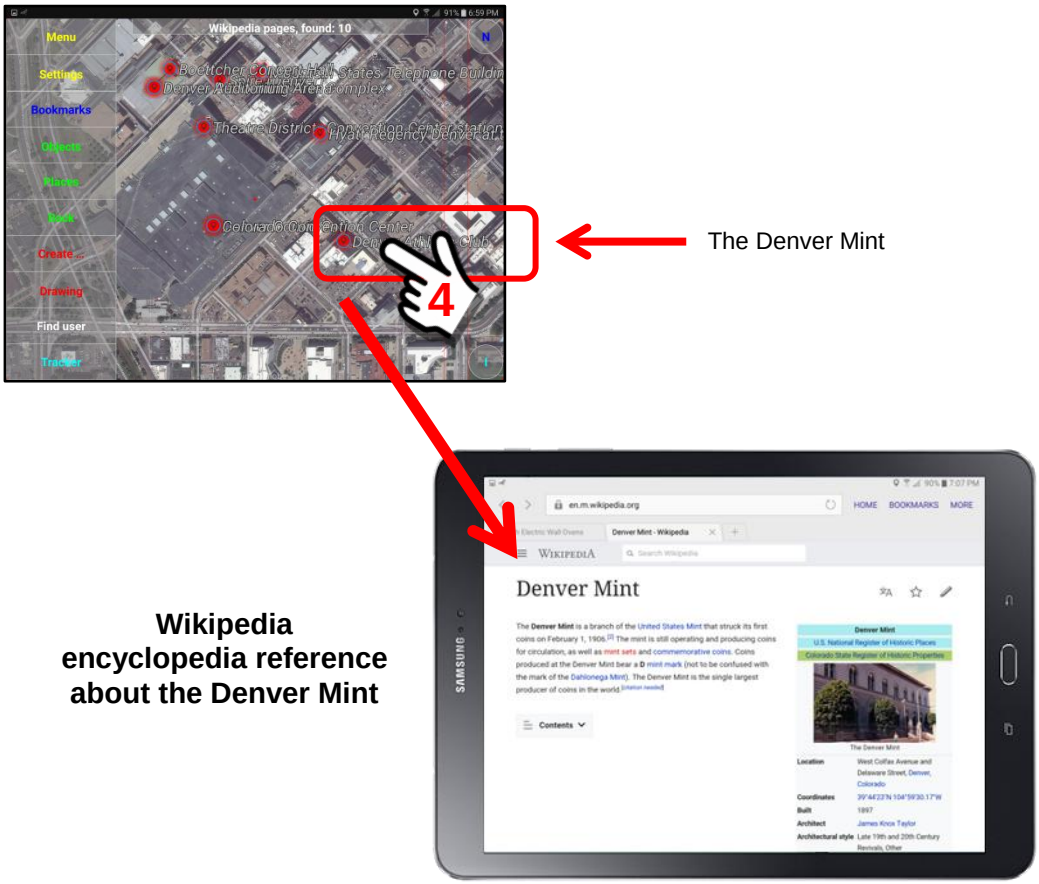
Click on the Bookmark Menu item.



In this example (using Denver, USA) we are opening the default view (full screen) and we see a group of Wikipedia encyclopedia data points on the map.



Zoom “in” for a closer view and then click on any text description of a data point and this will open the corresponding reference document on the Wikipedia website.



Wikipedia encyclopedia reference about the Denver Mint

9.22. Example – Map overlay for measuring distances

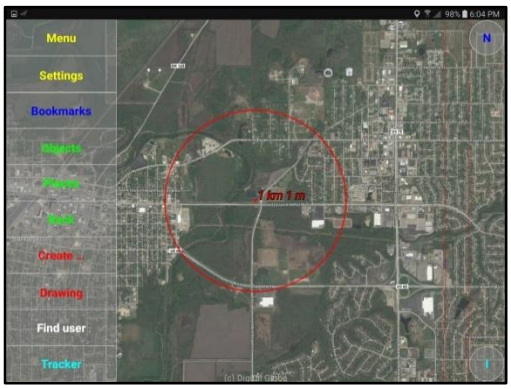
Overview:

A custom bookmark may be created that allows a user to save a SHORTCUT that will display distance measurements in a geographical area. A user selects a map “point” and the system will display distances (in km/m) from the selected point.

This example will illustrate the Tools Panel and the **Distance Meter** feature.

The Custom Map Screen panel for distance measurement:

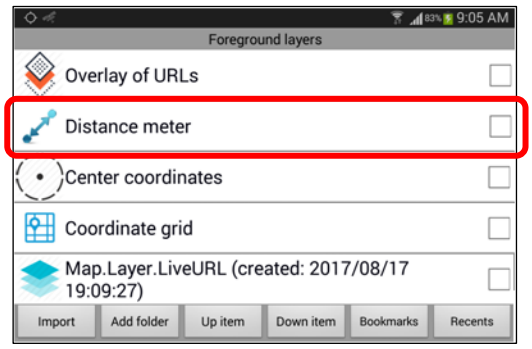
Shown below is an example of the **Distance Meter** custom map screen panel with a measurement shown for a selected area.



Example of a custom map screen showing a distance overlay of a selected map location (city).

Description of the menu buttons and features:

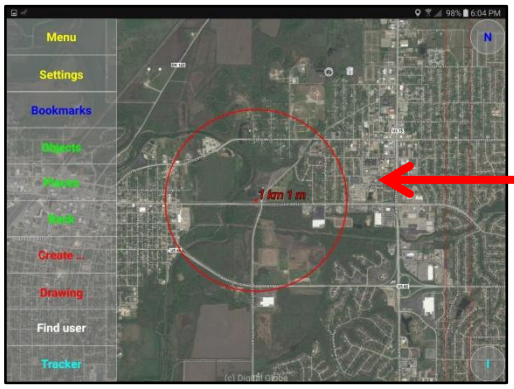
1. ***Review of menu choices for the Custom Map Panel***
   This section will describe the distance map function. This function is located on the Foreground Layers Panel.



<u>Distance meter</u>

Provides a distance measurement from a designated map point. Simply place the red plus sign (+) at a location on the map and zoom the screen

in-out. The distance from the map center to any point on the circle will be displayed.

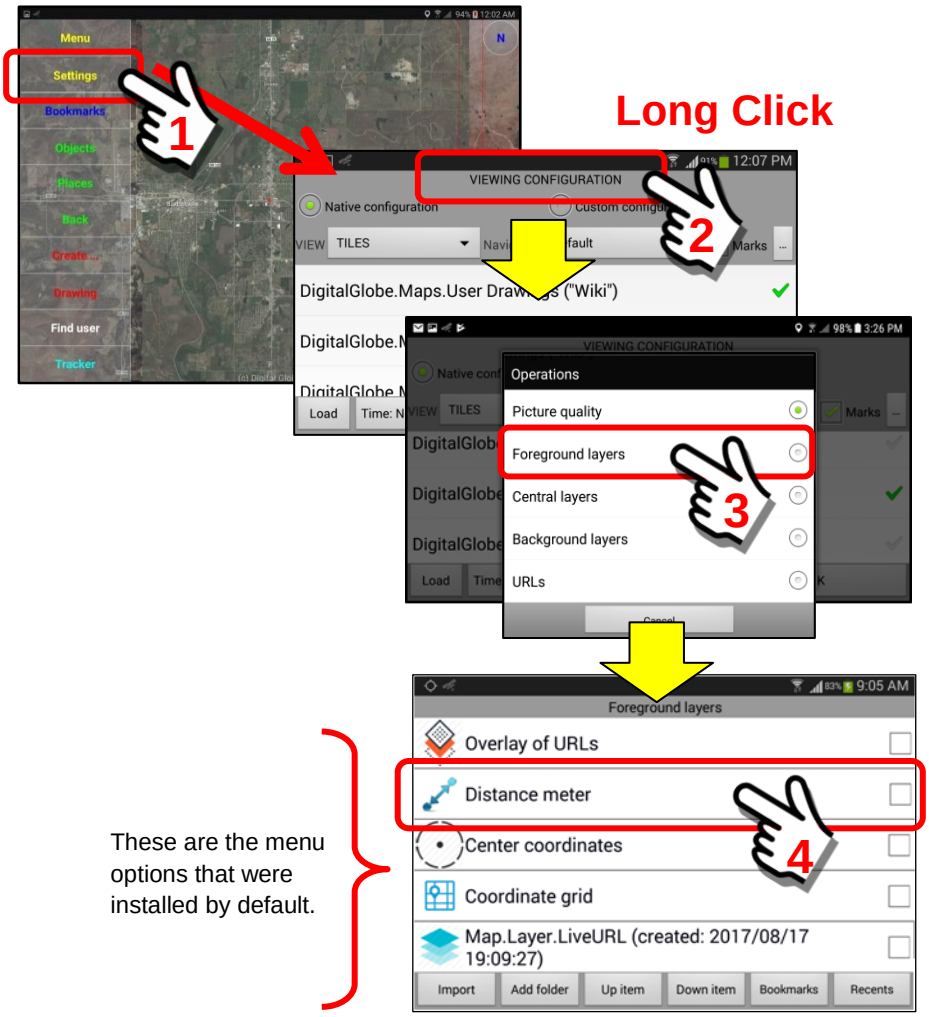


Distance = 1Km, 1m from center point to red circle.

2. ***Configuration of the Distance map screen.***

This section will use the "*Distance meter*" menu option to create a custom map panel that will display distance attributes for a selected map location.

At the Main Map Screen, click on the Settings Button, perform a "long click" on the Viewing Configuration Panel and then navigate through two sets of sub-menus to locate the appropriate "Distance meter" menu item.

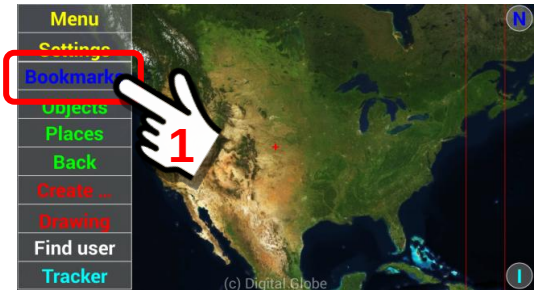


These are the menu options that were installed by default.

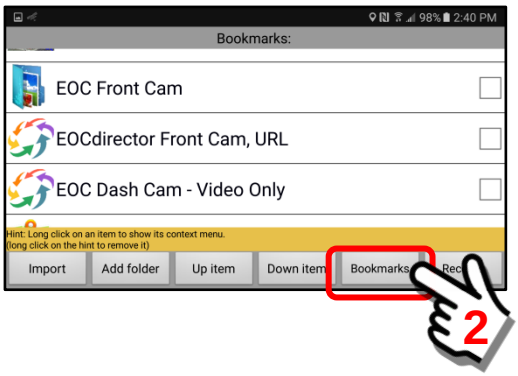
During initial device configuration, five (5) Foreground Layer URL objects were installed by the SentryMDU System. The "Distance meter" feature is one of those items.

<u>If needed, you may access a "new" copy by the following method.</u>

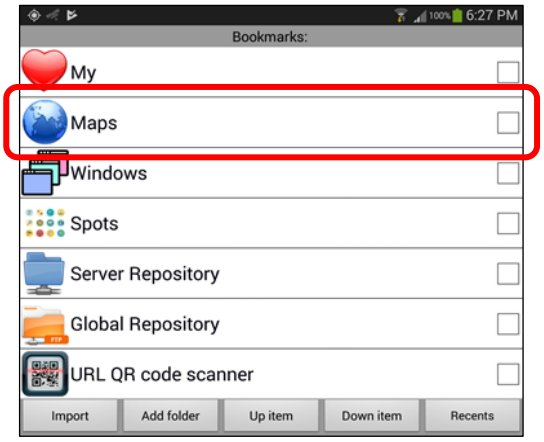
At the Main Map Screen, click on the Bookmarks Button.



At the Bookmarks Panel, click on the Bookmarks Button. This will open the panel of system installed bookmarks (plus any you have installed since initial configuration.

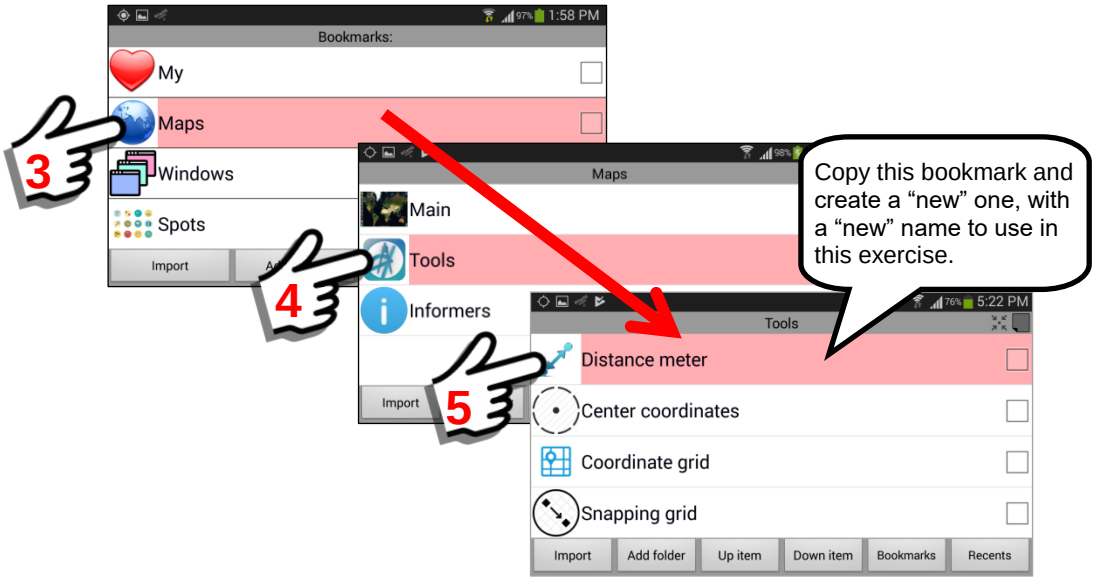


The SentryMDU System Bookmarks will be displayed.



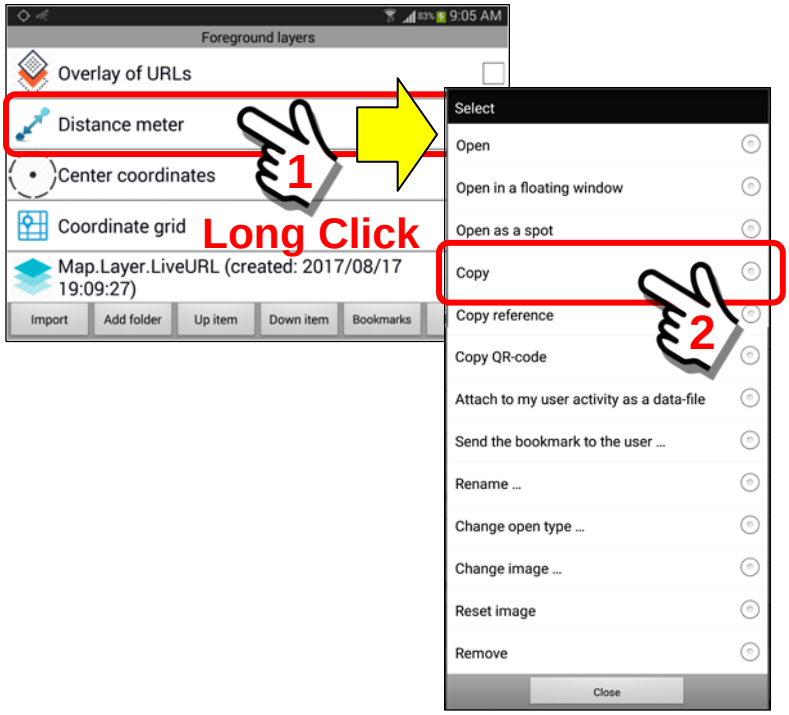
Original bookmarks installed by the system, plus any new ones you have added to the shortcut list.

Select the “Maps” menu option since we are looking for the “Distance meter” feature which is a “map” object. Copy and create a “new” bookmark.
See **Section 9.6-7** for details on creating new bookmarks if you need help.

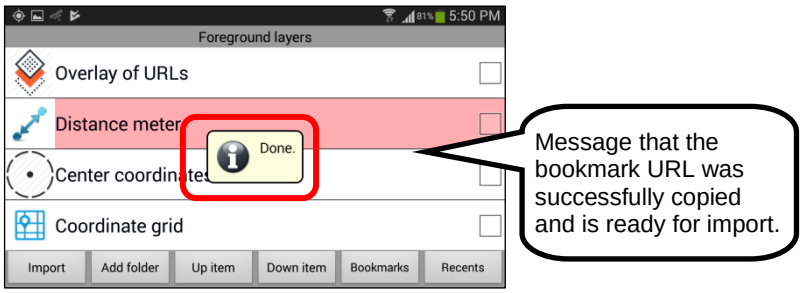


3. ***Transfer the “Distance meter” feature to the Bookmark Panel.***
The “Distance Meter” URL for a custom map layer is located on a sub-menu of the Foreground Layers Panel. We will now “copy” the URL bookmark so we can import it into the regular Bookmarks Panel.

Locate the “Distance meter” choice from the available options on the Foreground Layers Menu. Perform a “Long click” on the “Distance meter” menu item and select the “Copy” option from the pop-up menu.

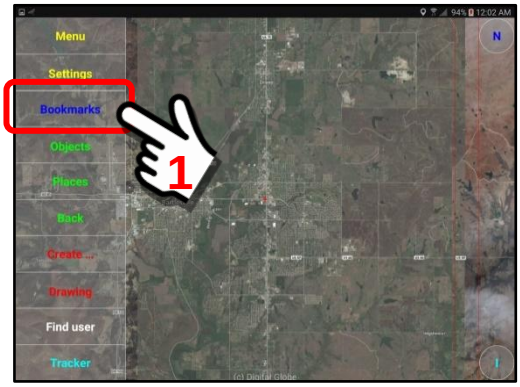


The URL “link” for the “Distance meter” bookmark will be saved in a temporary file, ready to be imported into the bookmark folder. Return to the Main Map Screen.

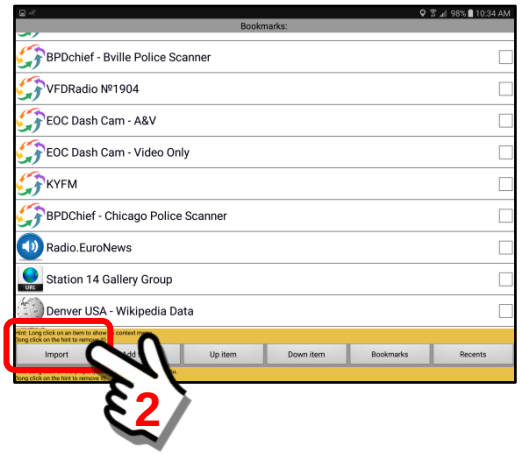


3. ***Create the Bookmark entry for the Distance custom map layer.***
Once the URL link for the custom map panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.



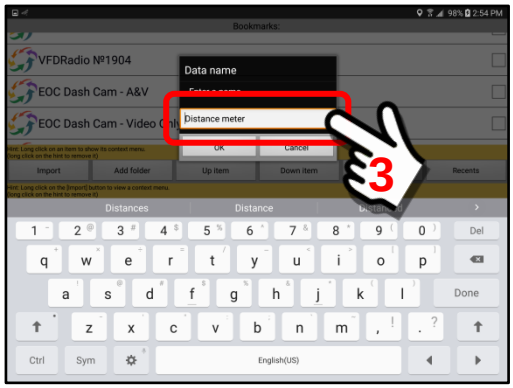
At the Bookmarks Panel, click on the Import Button



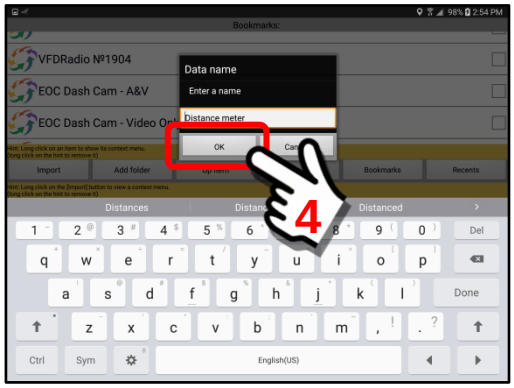
The Import Button will automatically retrieve the URL link that was previously “saved” when we created the URL link for the **Distance meter** map panel.

The system will default to the name “Distance meter”. We recommend editing the text and putting a description that fits your task scenario.

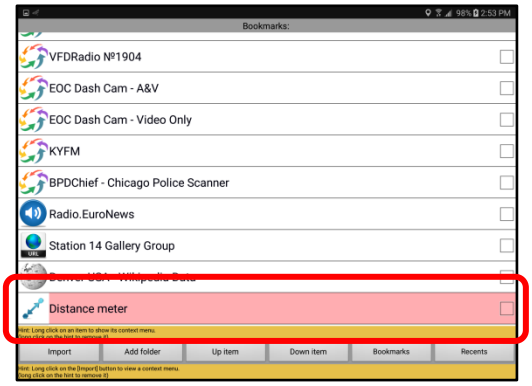
Click inside the text block to open an onscreen keyboard for editing.



For the purpose of this example, we will leave the description as “Distance meter”. When finished, click the “OK” Button to save the changes.

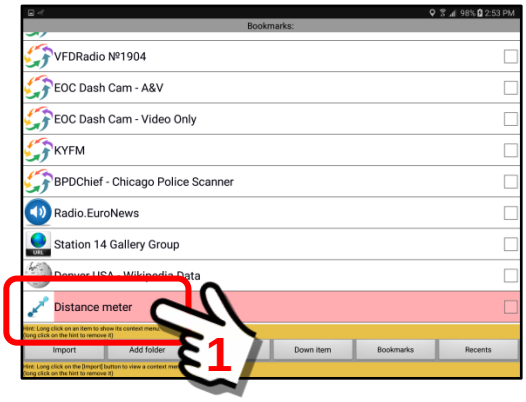


The system will now create a bookmark entry with the new name.

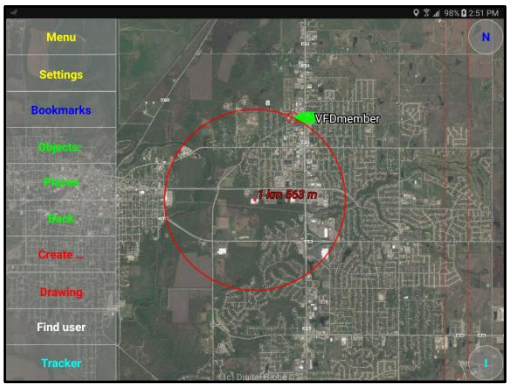


4. *Launching the "Distance meter" custom bookmark*

To launch the bookmark entry, click on the name. A custom map panel will open, displaying the map center with a measurement circle. This custom map layer will "overlay" any existing map objects on the screen (ie User Object Markers).



In this example we want to measure the distance between a User and a specific building location.

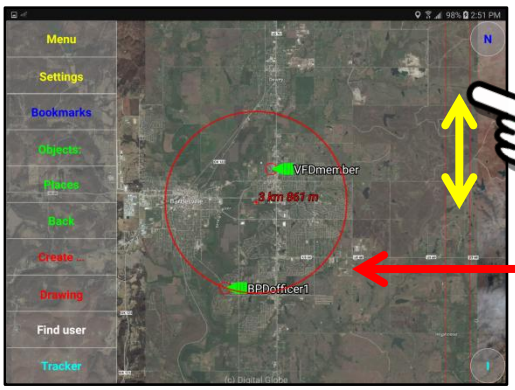


In this example, we have centered the map (red + sign) over a building next to the road. Using the zoom feature we expand the red circle until it intersects with User = VFDmember device.

We can see that the VFDmember is 1km-563 meters from the selected building location.

As the screen is zoomed in-out, the distance from the map center to points on the circle will be displayed on the map screen.

In the following image, the circle has been expanded to intersect with another User = BPDofficer1 which shows to be 3km, 861 meters.



Circle is expanded

9.23. Example – Map overlay for a GPS Coordinates Grid

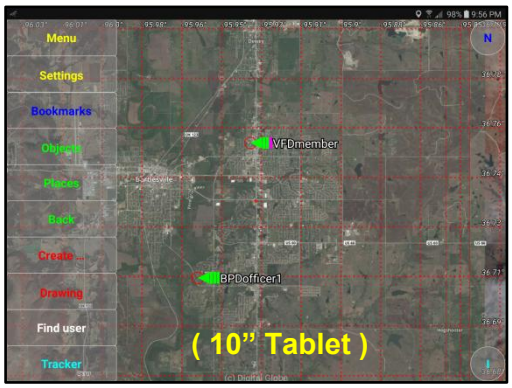
Overview:

A custom bookmark may be created that allows a user to save a SHORTCUT that will display a GPS Coordinate Grid overlay on the Main Map Screen. The Main Map Screen will be divided a grid of GPS latitude and longitude coordinate lines.

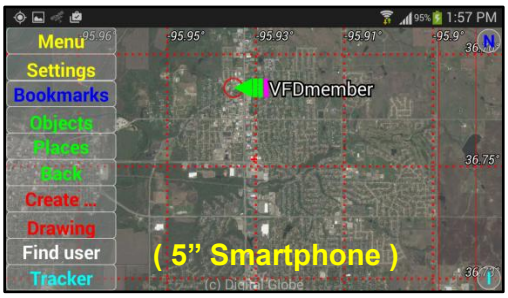
This example will illustrate the **GPS Coordinates Grid** feature.

The Custom Map Screen panel for GPS Coordinates Grid:

Shown below is an example of the **GPS Coordinates Grid** panel with the grid blocks overlayed on the city of Bartlesville, OK, USA.



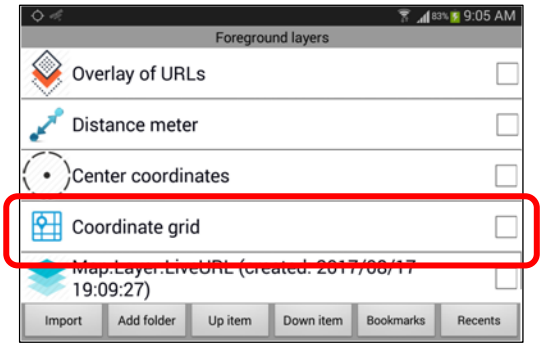
Example of a GPS Coordinates Grid overlay on 10" Tablet.



Example of a GPS Coordinates Grid overlay on 5" Smartphone.

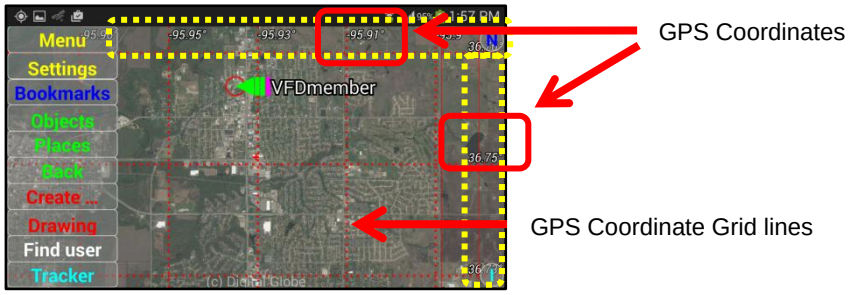
Description of the menu buttons and features:

1. ***Review of menu choices for the Custom Map Panel***
   This section will describe the GPS coordinates grid function. This function is located on the Foreground Layers Panel.



Coordinate grid

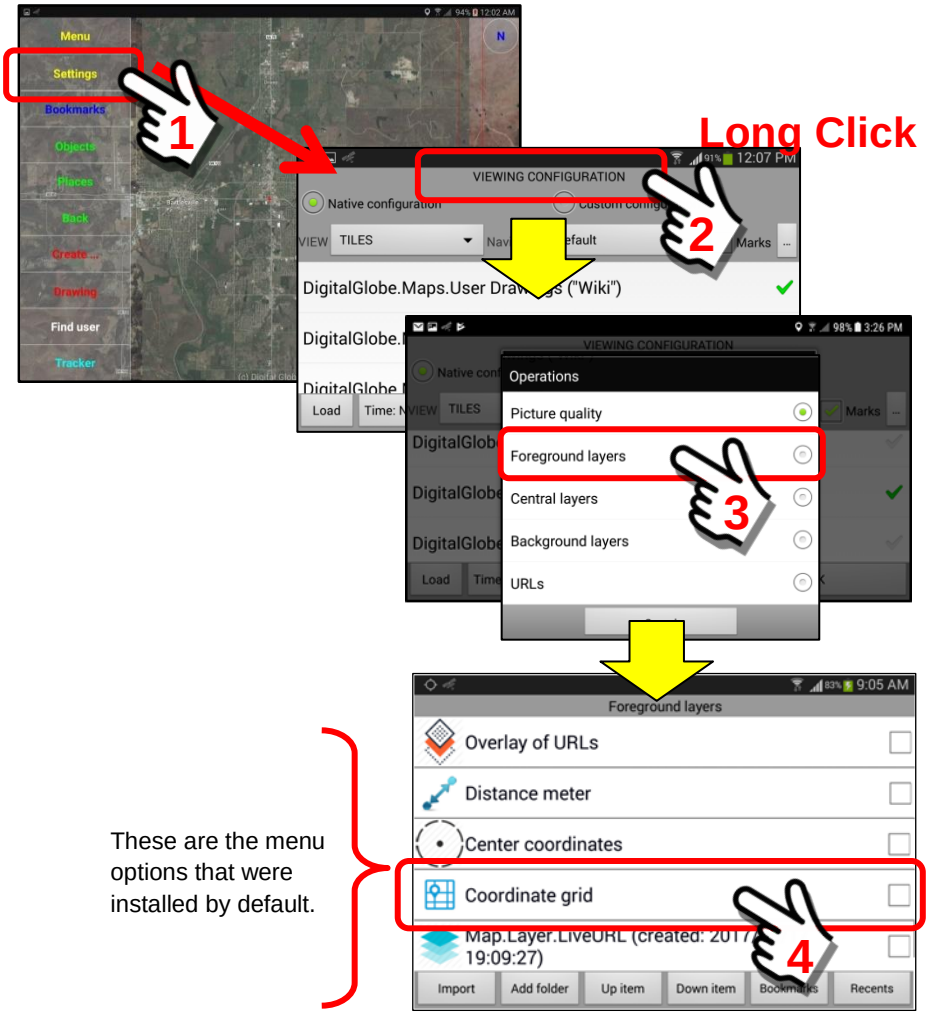
Provides a grid-based overlay showing the GPS coordinates for any selected region on the map.



2. ***Configuration of the GPS Coordinates Grid screen.***

This section will use the "*Coordinate grid*" menu option to create a custom map panel that will display a GPS coordinate grid for any selected map location.

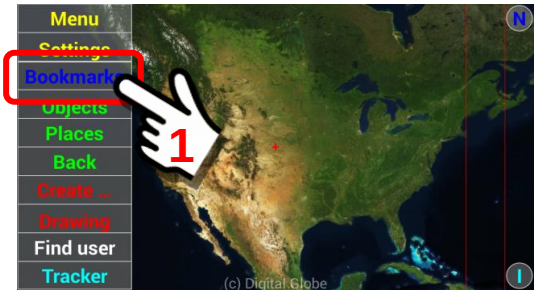
At the Main Map Screen, click on the Settings Button, perform a "long click" on the Viewing Configuration Panel and then navigate through two sets of sub-menus to locate the appropriate "Coordinate grid" menu item.



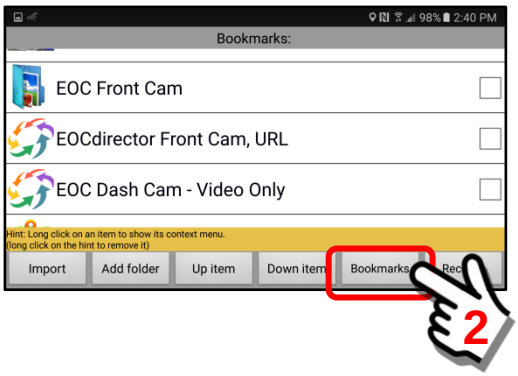
During initial device configuration, five (5) Foreground Layer URL objects were installed by the SentryMDU System. The “Coordinate grid” feature is one of those items.

<u>If needed, you may access a “new” copy by the following method.</u>

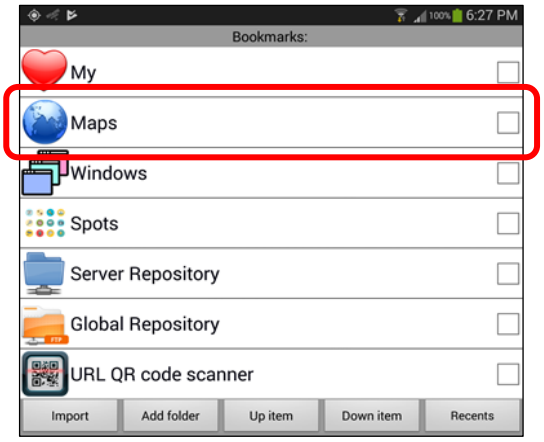
At the Main Map Screen, click on the Bookmarks Button.



At the Bookmarks Panel, click on the Bookmarks Button. This will open the panel of system installed bookmarks (plus any you have installed since initial configuration.

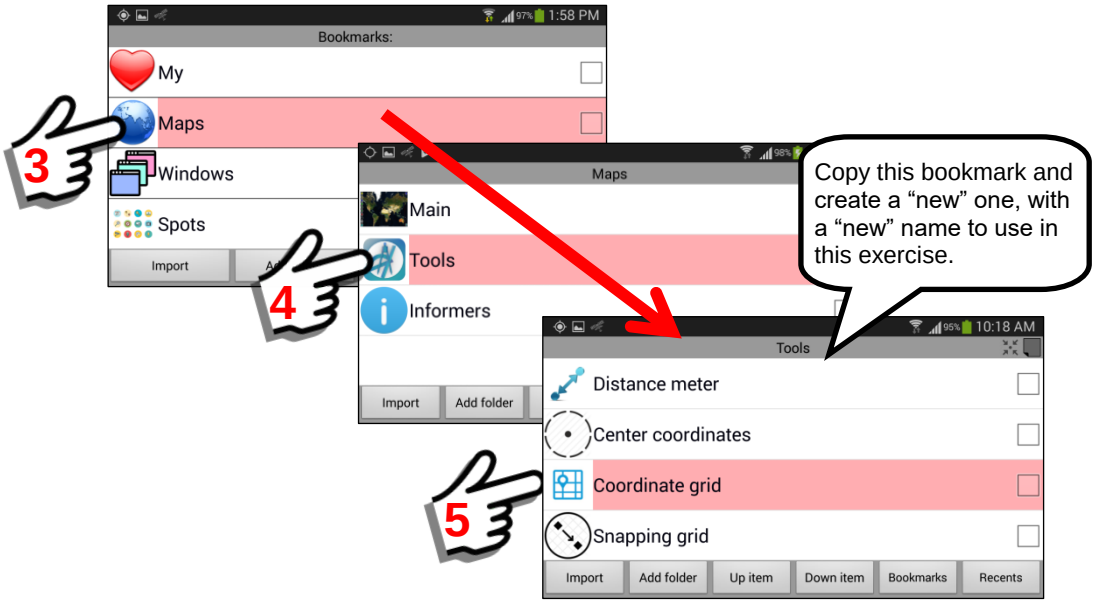


The SentryMDU System Bookmarks will be displayed.



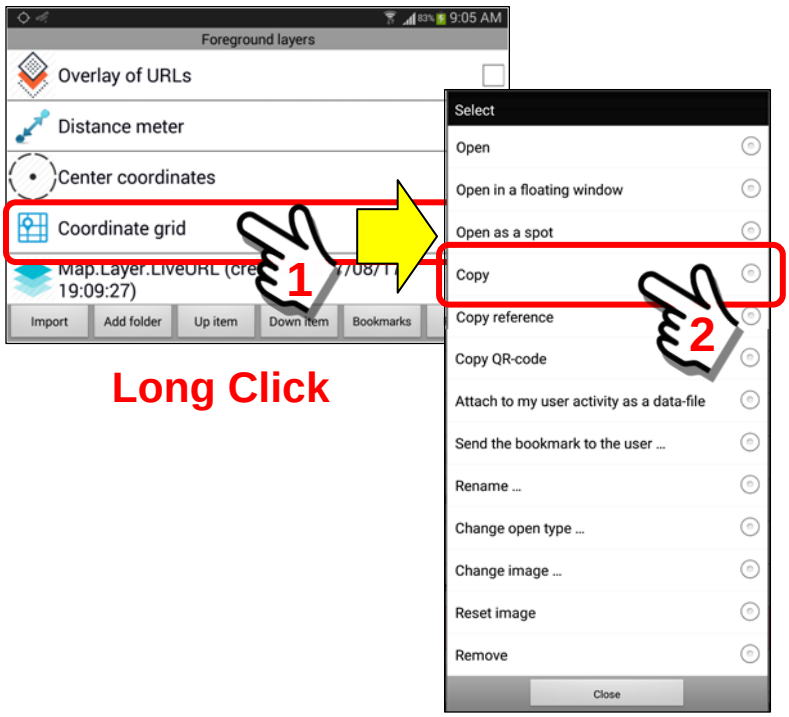
Original bookmarks installed by the system, plus any new ones you have added to the shortcut list.

Select the “Maps” menu option since we are looking for the “Coordinate grid” feature which is a “map” object. Copy and create a “new” bookmark.
See **Section 9.6-7** for details on creating new bookmarks if you need help.

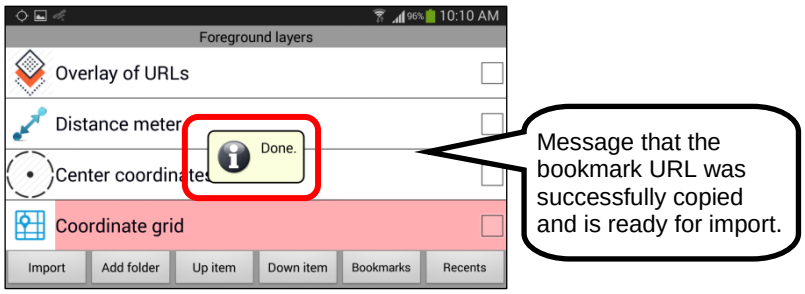


3. ***Transfer the “Coordinate grid” feature to the Bookmark Panel.***
The “Coordinate grid” URL for a custom map layer is located on a sub-menu of the Foreground Layers Panel. We will now “copy” the URL bookmark so we can import it into the regular Bookmarks Panel.

Locate the “Coordinate grid” choice from the available options on the Foreground Layers Menu. Perform a “Long click” on the “Coordinate grid” menu item and select the “Copy” option from the pop-up menu.

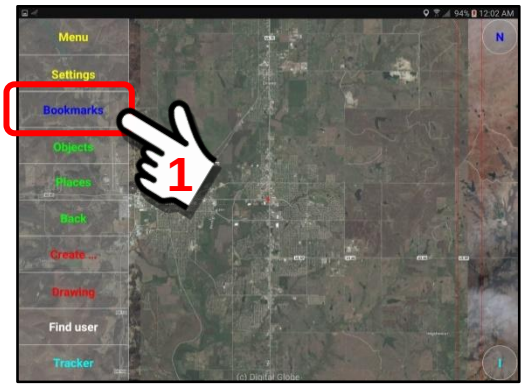


The URL “link” for the “Coordinate grid” bookmark will be saved in a temporary file, ready to be imported into the bookmark folder. Return to the Main Map Screen.

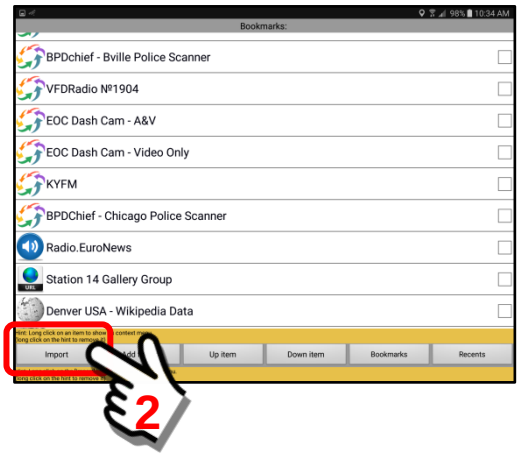


4. ***Create the Bookmark entry for the GPS Grid map layer.***
Once the URL link for the custom map panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

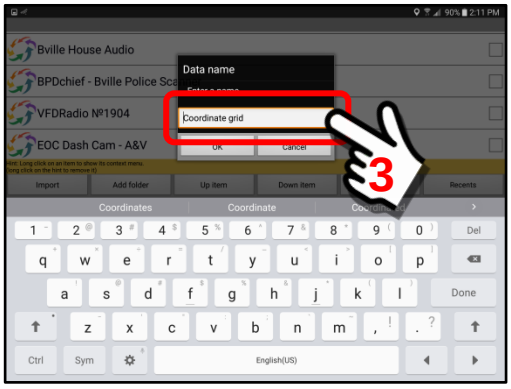


At the Bookmarks Panel, click on the Import Button

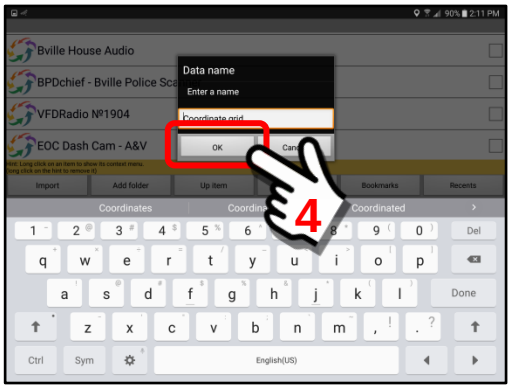


The Import Button will automatically retrieve the URL link that was previously “saved” when we created the URL link for the **GPS Coordiantes Grid** map panel. The system will default to the name “Coordinate grid”. We recommend editing the text and putting a description that fits your task scenario.

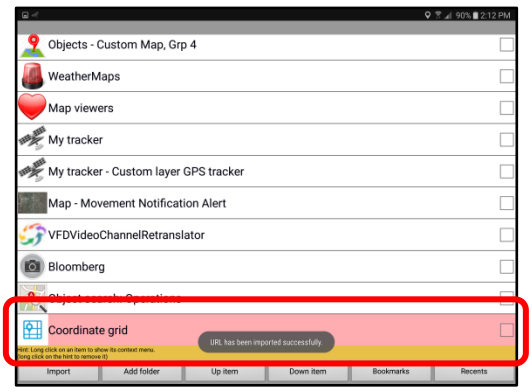
Click inside the text block to open an onscreen keyboard for editing.



For the purpose of this example, we will leave the description as “Coordinate grid”. When finished, click the “OK” Button to save the changes.

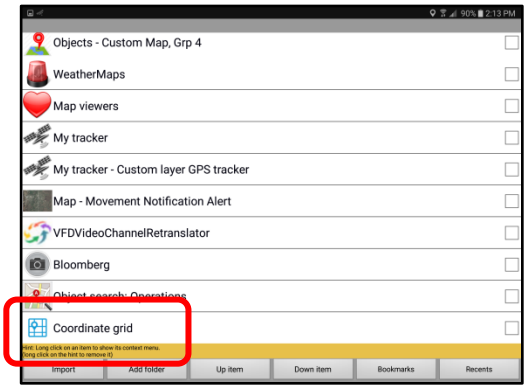


The system will now create a bookmark entry with the new name.

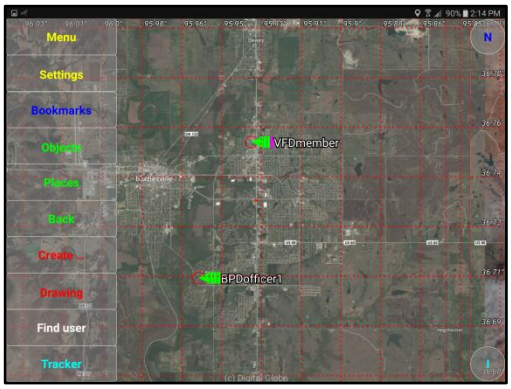


5. ***Launching the "GPS Coordinates Grid" custom bookmark***

To launch the bookmark entry, click on the name. A custom map panel will open, displaying a GPS coordinates grid pattern. This custom map layer will "overlay" any existing map objects on the screen (ie User Object Markers).



In this example we want to view the GPS latitude and longitude grid lines for the area around a selected geographical area.



In this example, we have centered the map (red + sign) over a highway running thru the city. The GPS grid lines are the RED dotted lines that make up the grid overlay.

As the screen is zoomed in-out, the GPS grid lines will expand and contract on the same scale as the imagery.

9.24. Example – Map overlay to display a GPS Point Location

Overview:

A custom bookmark may be created that allows a user to save a SHORTCUT that will display a GPS point location overlay on the Main Map Screen. A user selects a “point” location on the map and the system will display the GPS coordinates for that point.

This example will illustrate the **GPS Point Location** feature.

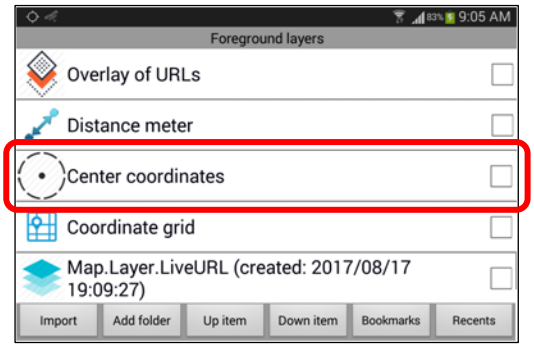
The Custom Map Screen panel for a GPS Point Location:

Shown below is an example of the **GPS Point Location** screen panel with a location shown for a point on the map.

Example of a GPS point location along a trail through the woods.

Description of the menu buttons and features:

1. ***Review of menu choices for the Custom Map Panel***
   This section will describe the GPS Point Location feature. This function is located on the Foreground Layers Panel.



<u>Center coordinates</u>

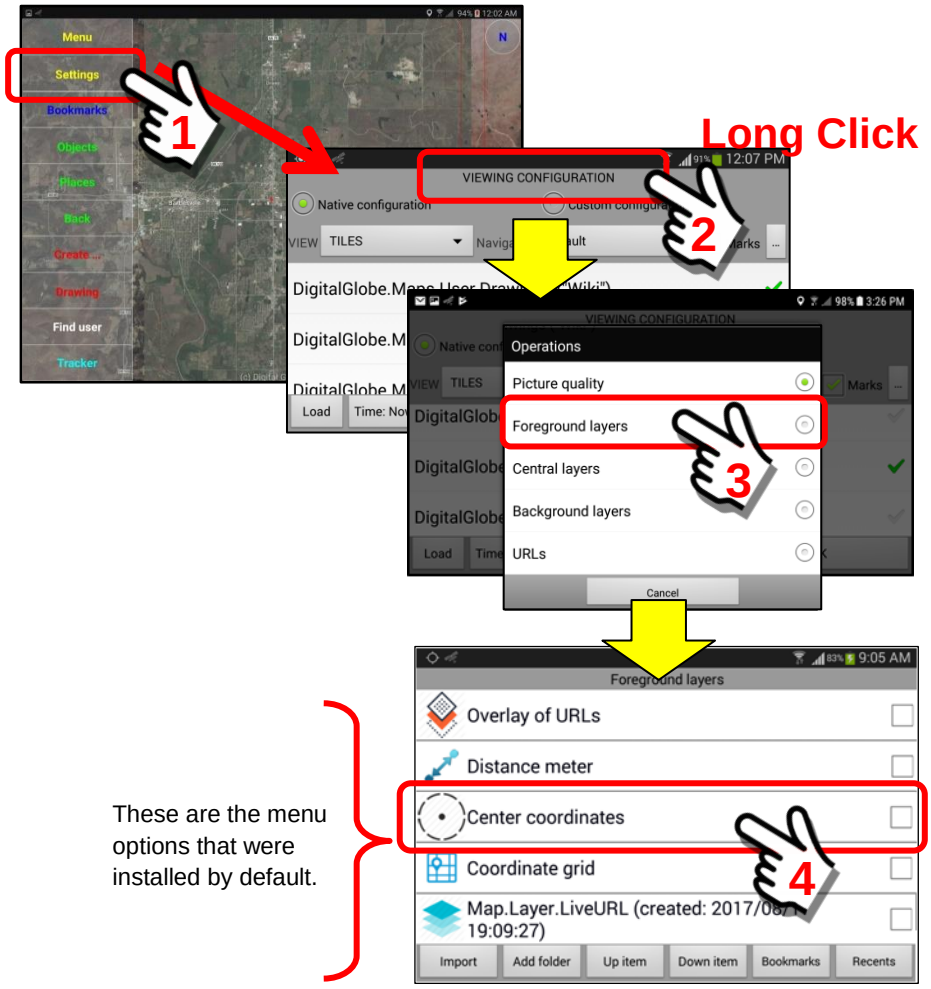
Provides a GPS coordinate for a designated map point. The red plus sign (+) will be placed at the CENTER of the map screen. The user may move

the screen around to other locations and the GPS coordinates of that "new" location will be displayed.

GPS Coordinates of the point location

2. ***Configuration of the GPS coordinate map screen.***
This section will use the "*Center coordinates*" menu option to create a custom map panel that will display the GPS coordinates for a selected map location.

At the Main Map Screen, click on the Settings Button, perform a "long click" on the Viewing Configuration Panel and then navigate through two sets of sub-menus to locate the appropriate "Center coordinates" menu item.

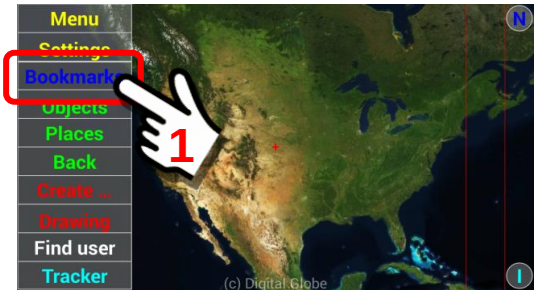


These are the menu options that were installed by default.

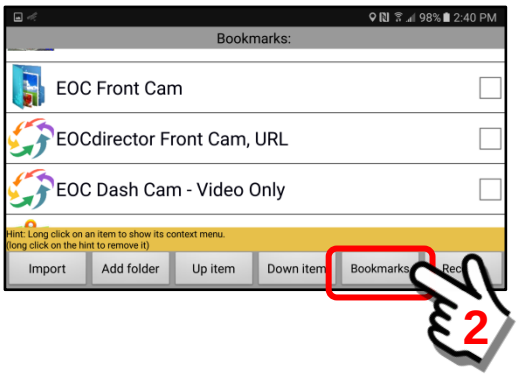
During initial device configuration, five (5) Foreground Layer URL objects were installed by the SentryMDU System. The “Center coordinates” feature is one of those items.

<u>If needed, you may access a “new” copy by the following method.</u>

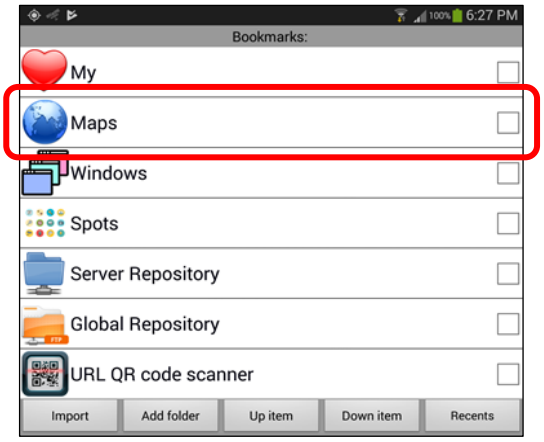
At the Main Map Screen, click on the Bookmarks Button.



At the Bookmarks Panel, click on the Bookmarks Button. This will open the panel of system installed bookmarks (plus any you have installed since initial configuration.

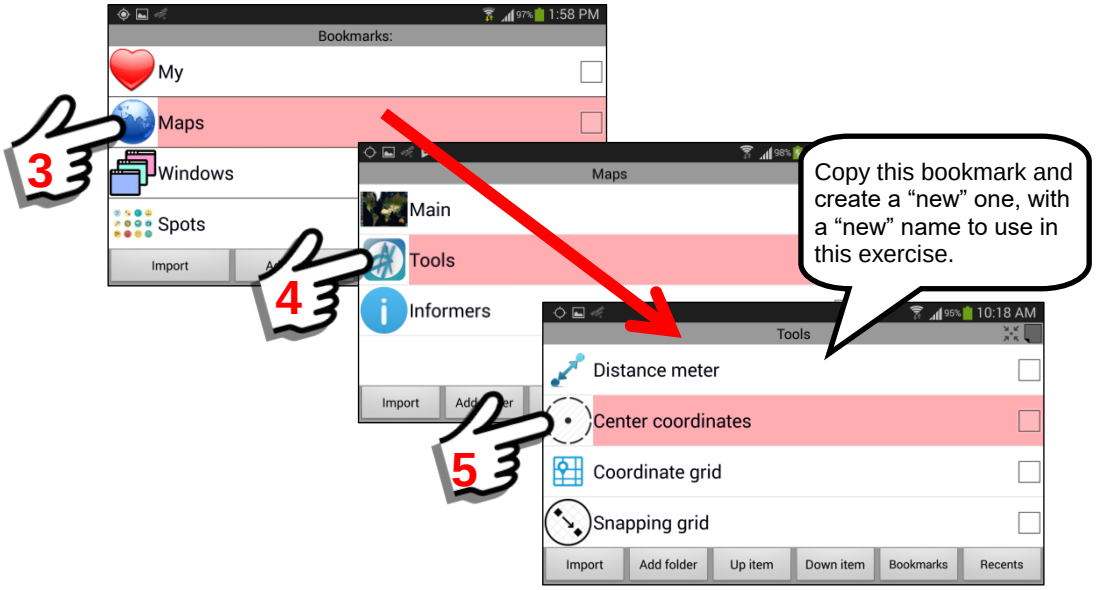


The SentryMDU System Bookmarks will be displayed.



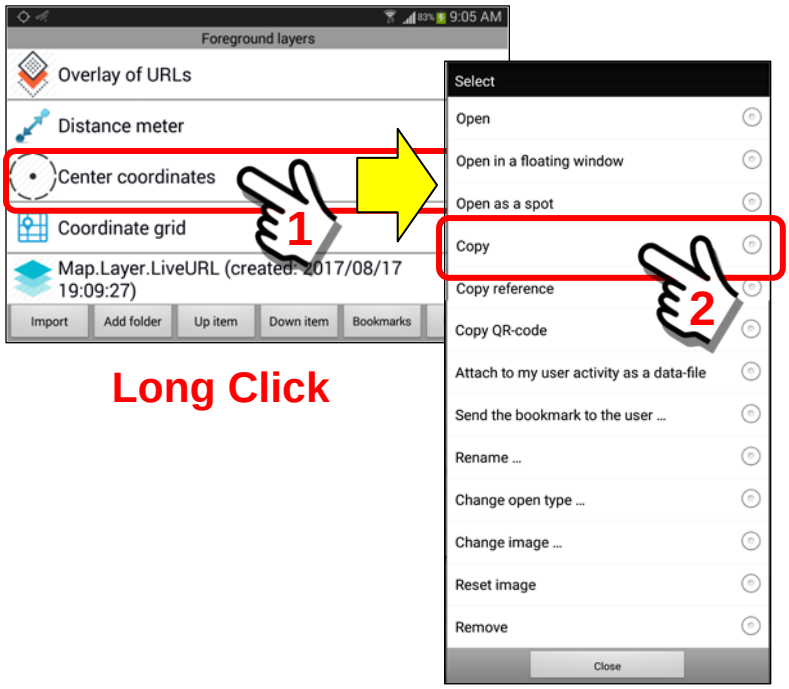
Original bookmarks installed by the system, plus any new ones you have added to the shortcut list.

Select the “Maps” menu option since we are looking for the “Center coordinates” feature which is a “map” object. Copy and create a “new” bookmark. See **Section 9.6-7** for details on creating new bookmarks if you need help.

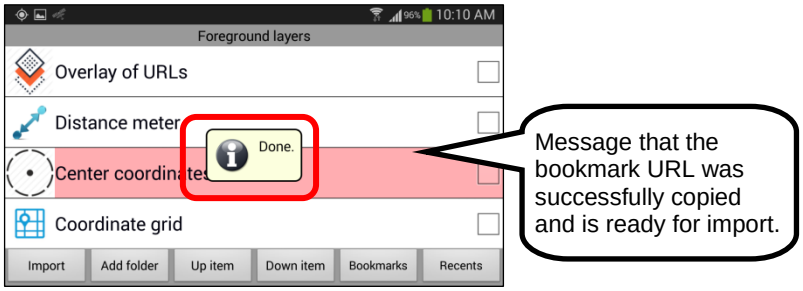


3. ***Transfer the “Coordinate grid” feature to the Bookmark Panel.***
The “Center coordinates” URL for a custom map layer is located on a sub-menu of the Foreground Layers Panel. We will now “copy” the URL bookmark so we can import it into the regular Bookmarks Panel.

Locate the “Center coordinates” choice from the available options on the Foreground Layers Menu. Perform a “Long click” on the “Center coordinates” menu item and select the “Copy” option from the pop-up menu.

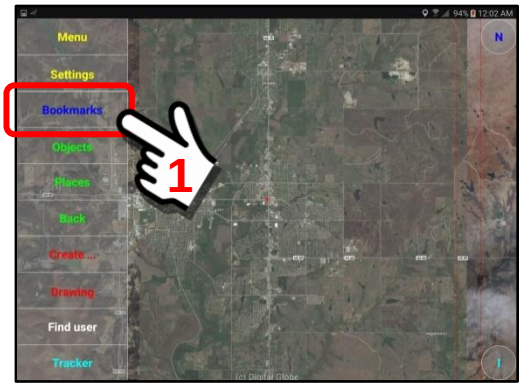


The URL “link” for the “Center coordinates” bookmark will be saved in a temporary file, ready to be imported into the bookmark folder. Return to the Main Map Screen.

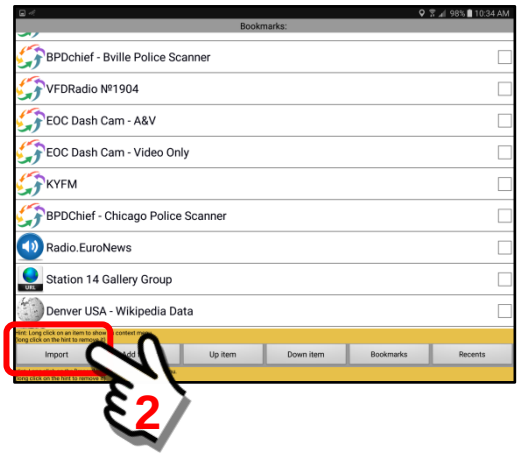


4. ***Create the Bookmark entry for the GPS center coordinates map layer.***
Once the URL link for the custom map panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

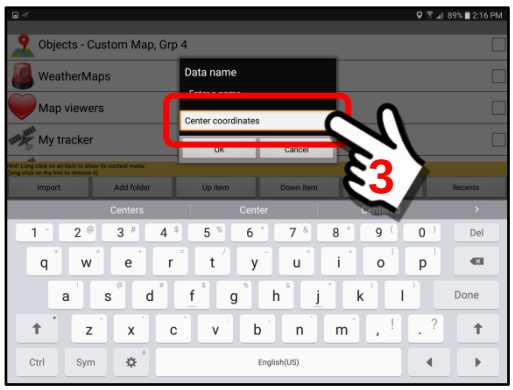


At the Bookmarks Panel, click on the Import Button

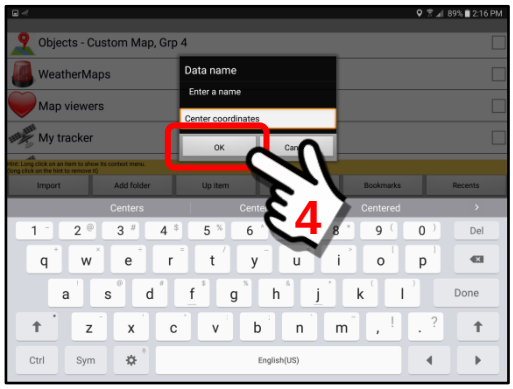


The Import Button will automatically retrieve the URL link that was previously “saved” when we created the URL link for the **GPS center coordinate** map panel. The system will default to the name “Center coordinates”. We recommend editing the text and putting a description that fits your task scenario.

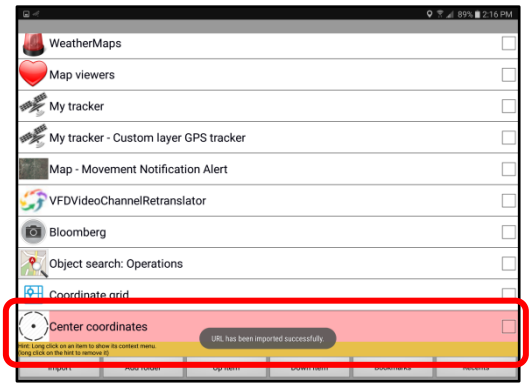
Click inside the text block to open an onscreen keyboard for editing.



For the purpose of this example, we will leave the description as “Center coordinates”. When finished, click the “OK” Button to save the changes.

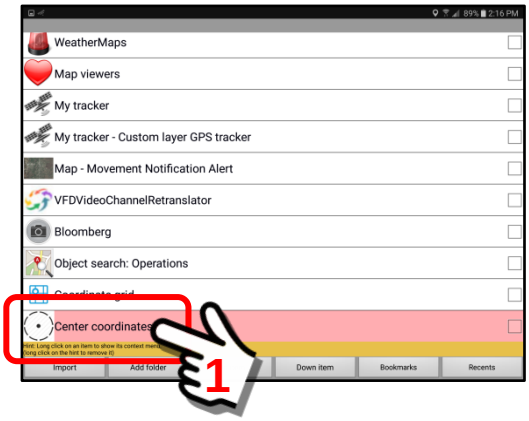


The system will now create a bookmark entry with the new name.

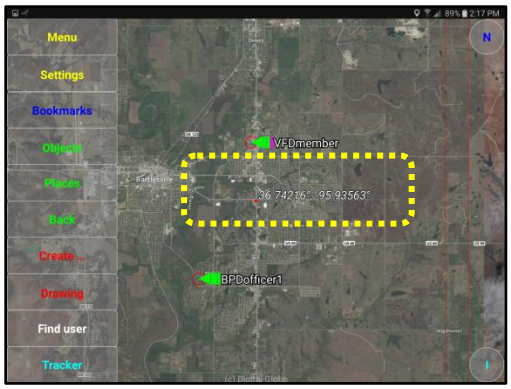


5. ***Launching the "GPS Center Coordinates" custom bookmark***

To launch the bookmark entry, click on the name. A custom map panel will open, displaying the GPS coordinates of the map center. This custom map layer will "overlay" any existing map objects on the screen (ie User Object Markers).



In this example we want to locate the GPS coordinates of a specific location along a trail thru the woods.



In this example, we will locate the GPS coordinates of a location along a trail thru the woods.

As the screen is moved or zoomed in-out, the change in GPS coordinates will be displayed on the map screen.

In the following image, the red plus sign (+) has been centered over a trail thru the woods..

GPS Coordinates

9.25. Example - display USA temperature and weather map data

Overview:

A custom bookmark may be created that allows a user to save a SHORTCUT that will display temperature and weather map data for a geographical area. This data is currently available for locations in the USA as this data is pulled from a US Government website. Additional locations will become available as data is made available.

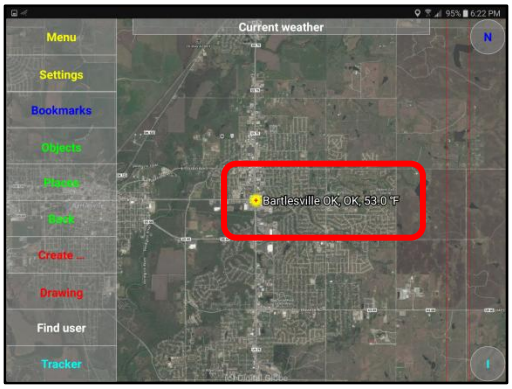
<u>This section has 2 available data components</u>

a. **Current Weather**: Map showing the temperature of specific cities and towns.
b. **Weather Map**: Map showing a color gradient temperature profile over a large area.

This example will illustrate the **Current Weather** feature that will create and display the temperature reading for a specific town or city. The same steps should be followed for the **Weather Map** option.

The Custom Map Screen panel:

Shown below is an example of the **Current Weather** custom map screen panel with the temperature shown for a selected city.



Example of a custom map screen showing the current temperature of a selected map location (city).

Same data from the map zoomed in.

Description of the menu buttons and features:

1. Review of menu choices for the Custom Map Panel

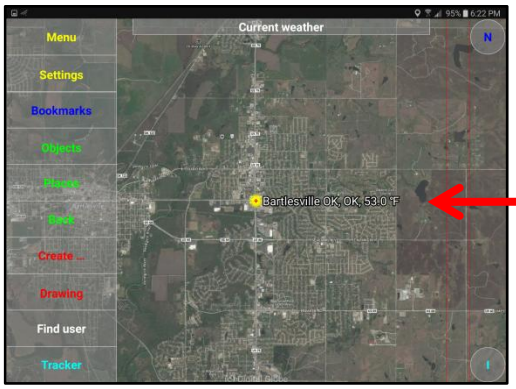
This section will describe the 2 menu choices that are available for the current weather and weather map functions.

Pop-up Operations Menu will open

These 2 options create custom map panels as discussed below.

<u>Copy URL-link for current weather</u>

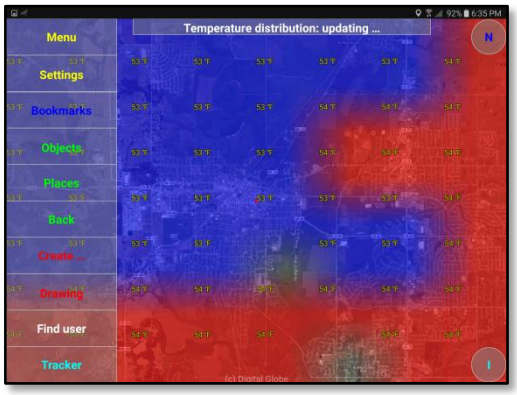
Provides a temperature reading (current weather) as received for the designated location from the USA Governent website.



Current temperature in the City.

Copy URL-link for weather map

Provides a current temperature profile for any selected region on the map from weather data pulled from US Government servers.



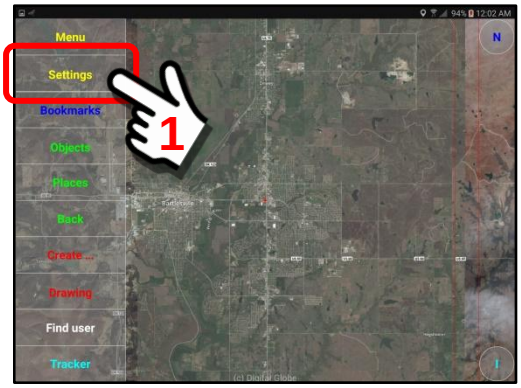
Example of temperature profile around the city of Bartlesville, OK, USA

Zoom in-out to see other areas of the region.

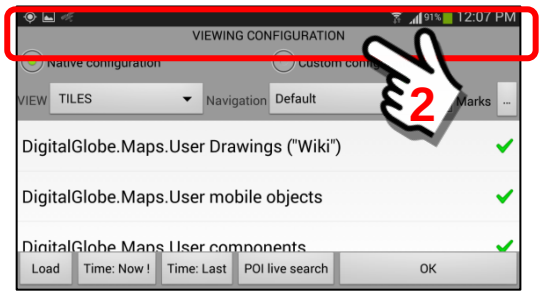
2. ***Configuration of the Current Weather map screen.***

This section will use the "*Copy URL-link for current weather*" menu option to create a custom map panel that will display the temperature for a selected map location. The data is pulled from a US Government website based on the geo-location of the selected map location.

Starting at the Main Map Screen, click on the Settings Menu Button.

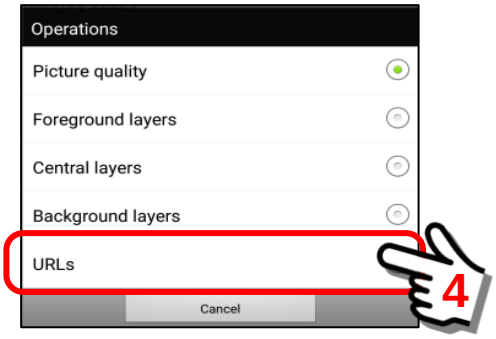


We will be using the "Viewing Configuration" Panel to access the necessary menus.

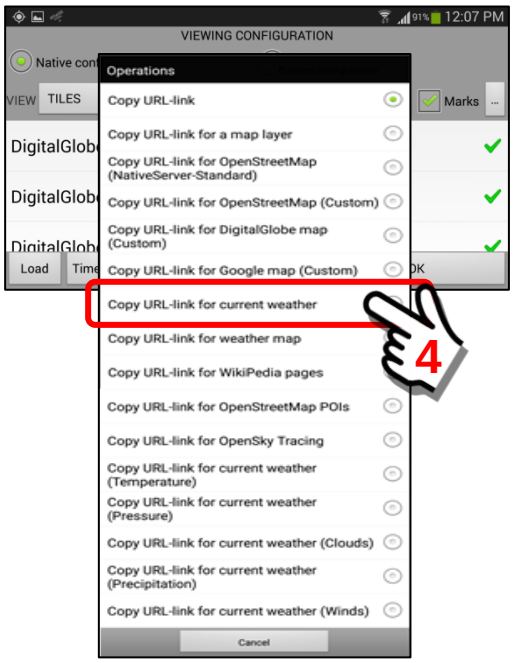


At the Viewing Configuration Panel, perform a “long click” on the panel heading to open the Operations menu.

Select the **URLs** menu option

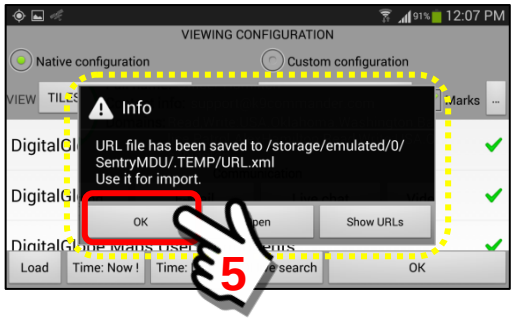


At the **Operations Menu**, select the “Copy URL-link for current weather” choice.

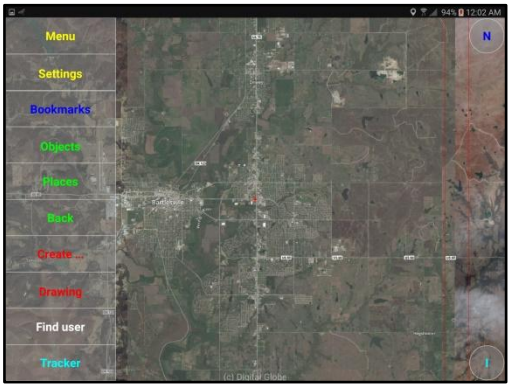


A pop-up Info Box will appear. The URL “link” for the current weather map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

Click on the “OK” Button to save the URL.

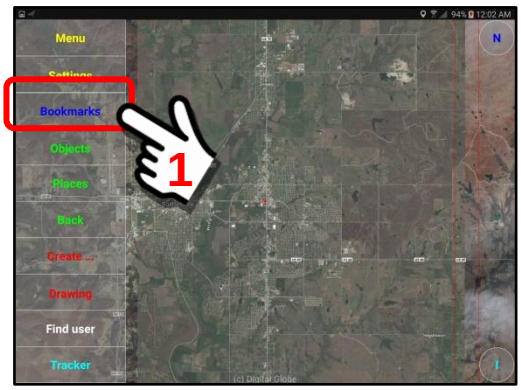


Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

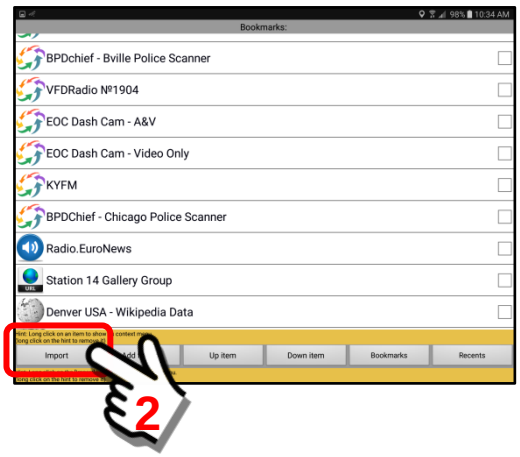


3. ***Create the Bookmark entry for the Current Weather custom map layer.*** Once the URL link for the custom map panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

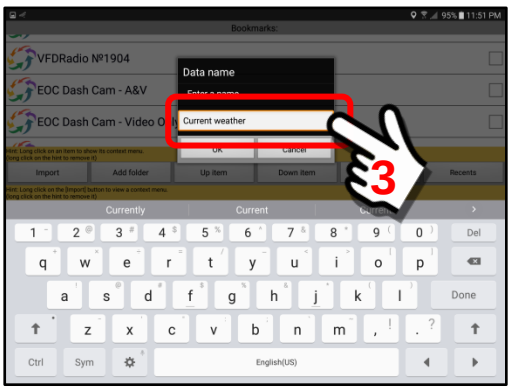


At the Bookmarks Panel, click on the Import Button

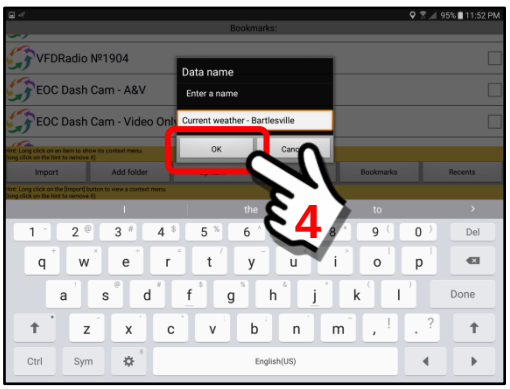


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the **Current Weather** map panel. The system will default to the name "Current weather". We recommend editing the text and putting a better description as shown below.

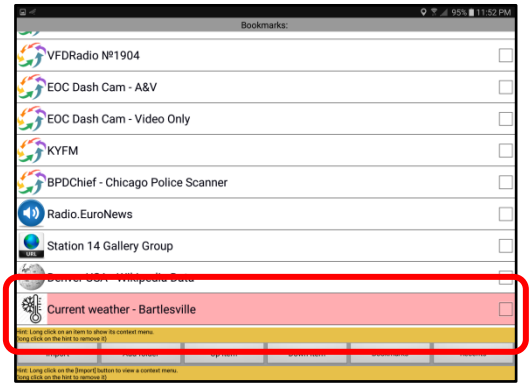
Click inside the text block to open an onscreen keyboard for editing.



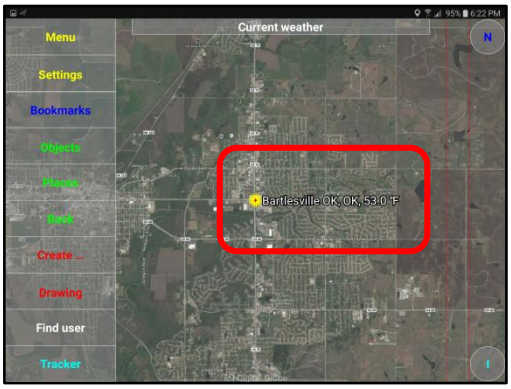
Edit the text to make a better description. When finished, click the "OK" Button to save the changes.



The system will now create a bookmark entry with the new name.

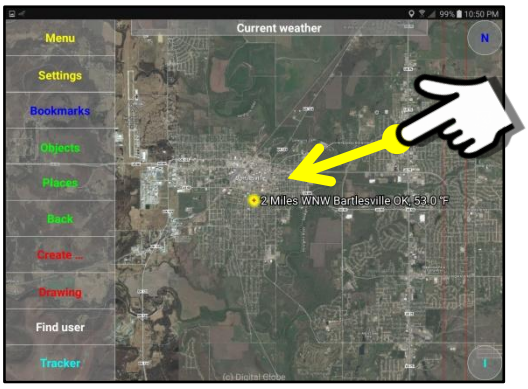


4. ***Launching the Current Weather custom bookmark.***
To launch the bookmark entry, click on the name. A custom map panel will open, displaying the city with the associated current weather reading on the screen.



Current weather reading for the selected location

As the screen is moved, the temperature of the “new” location will be displayed on the map screen.



Move map point to a new location.

9.26. Example - Geo-Fence Notification Alert using a Floating Window Bookmark

Overview:

A custom bookmark may be created that allows a user to save a SHORTCUT that will display a boundary polygon around one (or many) user objects that will notify the user when a remote device crosses (in or out) of a designated boundary region. You will receive an "Alert" Notification on your mobile device that a boundary has been crossed by the remote user. You may click on the Notification Bar and a floating Map Panel will open displaying the user location marker together with a "timestamp" which shows WHEN the polygon boundary was crossed.

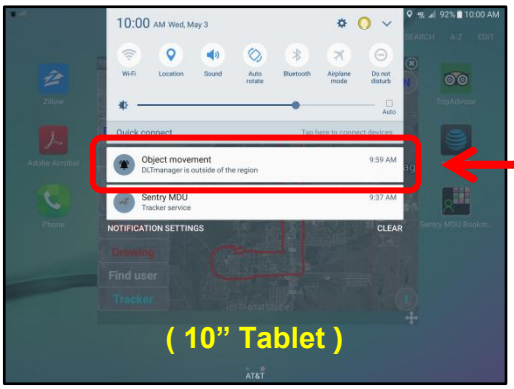
This example will illustrate the steps necessary to set up the **Movement Notification Alert** feature to monitor the movements of a remote device.

> **Important Note: This feature does not provide notification on the remote device that another user is monitoring their movement.**

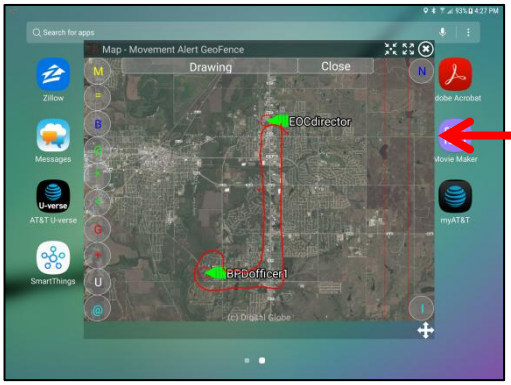
> **Important Note: You must be in the same or higher security domain level in order to monitor the movement of other remote devices.**

The Movement Notification Alert panels:

Shown below is an example of the **Movement Notification Alert** panel and the custom map screen panel with the polygon boundary regions displayed.



Example of a "Movement Notification Alert" message displayed on a mobile device.



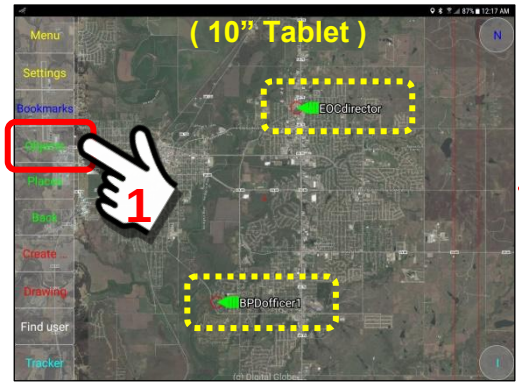
Example of a polygon boundary region as set up to monitor the movements of a remote device.

If the remote device crosses the boundary, a "Movement Notification Alert" will be produced.

Description of the panel buttons and features:

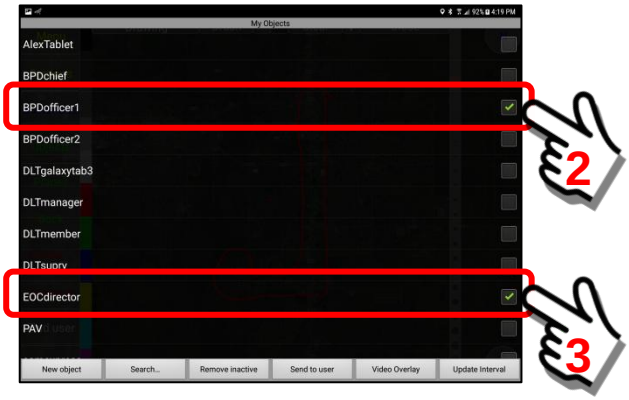
1. ***Prepare a new Movement Notification Panel.***
   The first step is to de-activate all mobile objects. Later in the process you will ACTIVATE just those mobile objects you want to monitor for movement relative to the geo-fence.

   At the Main Map Screen, click on the Objects Menu Button.

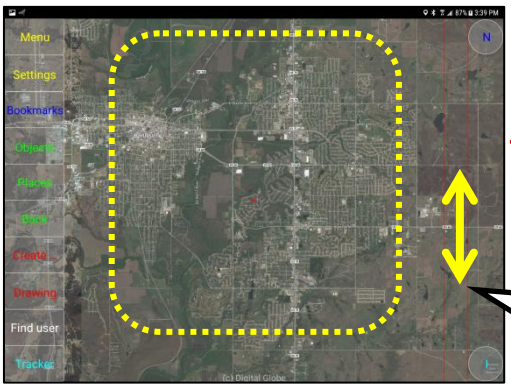


We will de-activate the mobile objects on the screen.

   De-select all active mobile objects on the Mobile Objects Panel.



2. ***Adjust the Main Map Screen to the desired Geo-Fence Region.***
   The next step is to adjust the Main Map Screen to the geographical area that you want covered by the Geo-Fence region that you will draw.

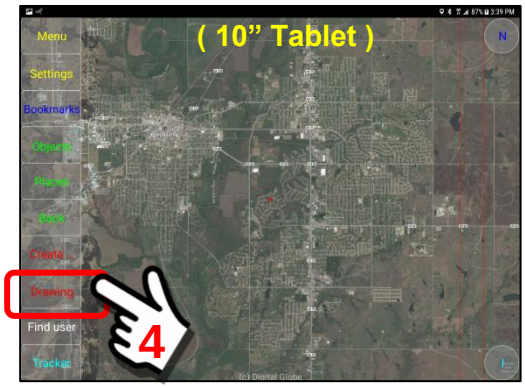


The map view is zoomed in-out to the area you want covered.

Swipe with your finger to zoom in and out.

3. ***Open the Drawing Panel and design the Geo-Fence Region.***
Open the Drawing Panel and draw the geo-fence region as desired. See **Section 13** if you need help on using the Drawing tools.

To access the Drawing tools, perform a “short click” on the Drawing Button.

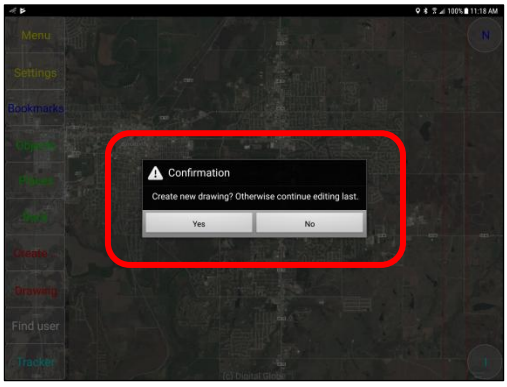


Short Click

The Drawing Panel may open in two different “modes”.

(1) An option to “re-use” a previous drawing you have made.
(2) A “new” blank canvas upon which to draw.

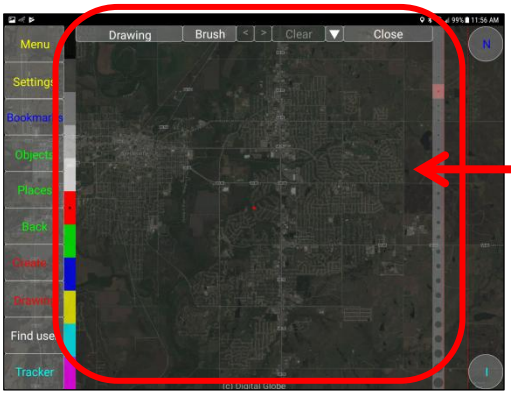
<u>Option to re-use a previous drawing</u>
If during a recent drawing “session”, you had made a drawing … the system will save that drawing and make it available.



The system will ask if you want to re-use the previous drawing you were working with.

Click Yes or No.

.<u>Screen View of a blank drawing canvas</u>

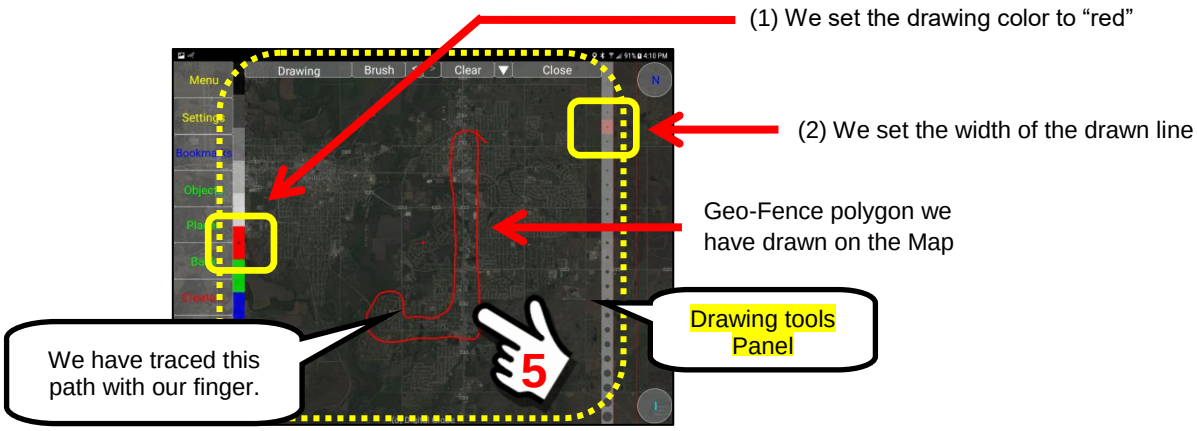


The new “blank” drawing canvas

The **Drawing Tools Panel** will open and provide the ability to “draw” on the screen canvas. Using your finger as a stylus, trace a polygon on the screen. Trace a region on the map that you want to use as a geo-fence. You may change color and line thickness to highlight the desired area. See **Section 13** if you need a refresher on the Drawing Tools.

> **Important Note: When you draw a geo-fence region it MUST be a “closed” polygon. It cannot have open gaps.**

In this example, we will NOT use a previous drawing and we will draw a “red” polygon that encompasses a specific set of roads.



By drawing this “route” around a specific set of roads, we have created a geo-fence that has several options:

(a) Someone “inside” the fence will trigger an Alert if they venture “outside” the fence (cross the fence border).
(b) Someone “outside” the fence, will trigger an Alert if they venture “inside” the fence (cross the fence border).

4. *Save the Geo-Fence Region and create a bookmark URL.*

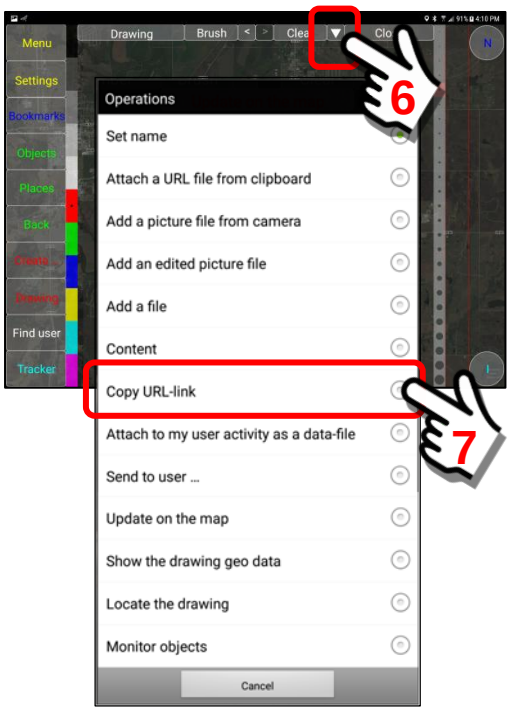
This step will save the geo-fence region as a bookmark so we may recall it at a later time. Optionally, in a later step, we will also change the panel to a Floating Window so we may keep it active, but hide it on the Notification Bar of our mobile device.

To save the Geo-Fence Region drawing, we will use the menu options available in the Drawing Tools.

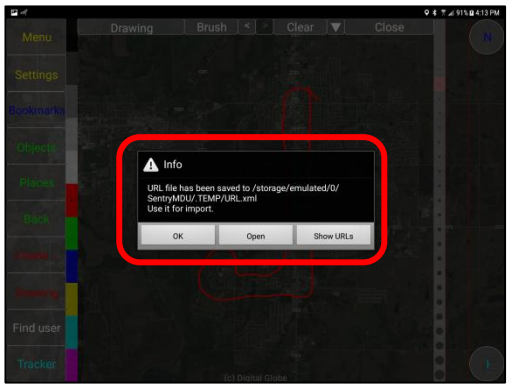
Drawing Tools Menu Bar

Operations Menu Options Button

To access the available menu options, click on the “Operations” Button. The Operations pop-up menu will appear. Scroll down until you find the “*Copy URL-link*” menu option.



Select the “*Copy URL-link*” menu option from the available choices. The geo-fence map drawing URL will be saved in a temporary folder, ready for import as a bookmark.

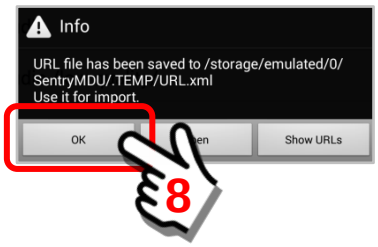


<u>Copy URL-link</u>

The “Copy URL-link” menu option will make a copy of the URL for the Map Screen Panel and store it on the Sentry MDU “clipboard” (.TEMP file folder). This URL link will then be “imported” as a bookmark.

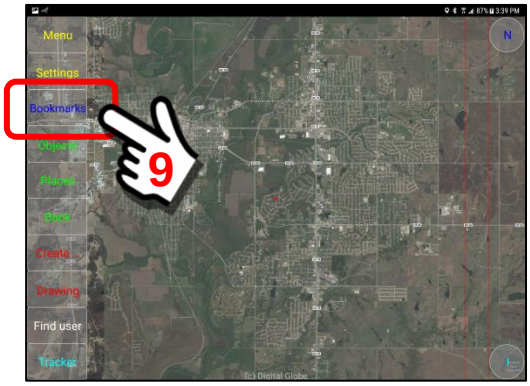
A pop-up Info Box will appear. The URL “link” for the Map View panel will be saved in a temporary file, ready to be imported into the bookmark folder.

Click on the “OK” Button to save the URL.

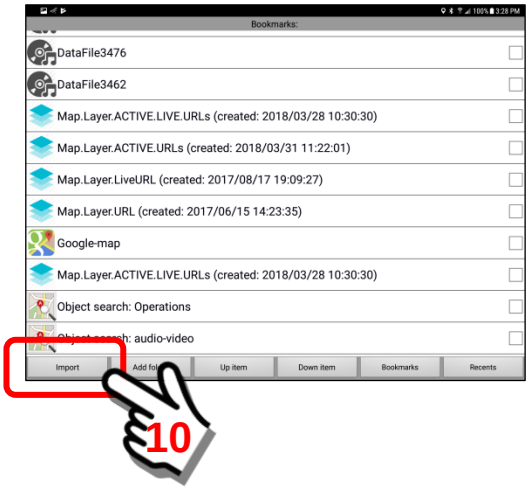


5. ***Insert the new Geo-Fence Map Panel into the Bookmarks Repository.***
This section will use the “*Copy URL-link*” menu option to create a bookmark that will be configured to display a region boundary to detect whether other remote devices move in-out of the geo-fence regions.

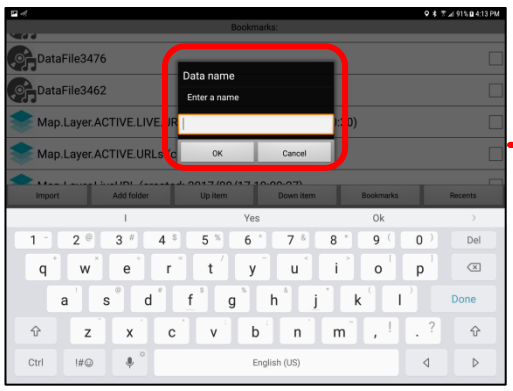
Starting at the Main Map Screen, click on the Bookmarks Menu Button.



At the Bookmarks Panel, click on the “Import” Button.

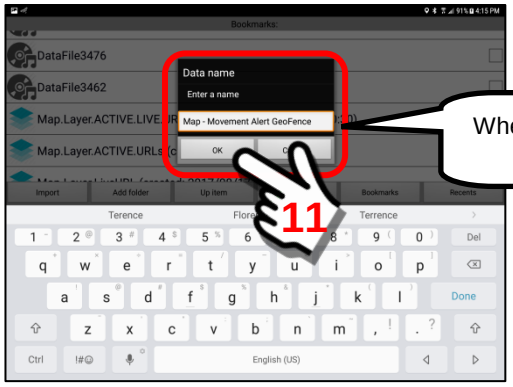


When the Import Button is selected, the system will open an “on-screen keyboard” and prompt for a NAME for the new geo-fence bookmark. Since this geo-fence “Movement Notification Alert” bookmark is using a custom map drawing, the text block will be empty. We will enter a name in the text entry box.



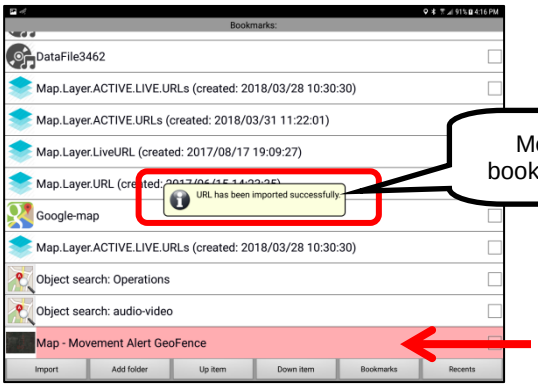
The system will provide a pop-up data entry box for a NAME for the custom map.

In this example, we enter the text “Map – Movement Alert GeoFence”.



When finished, click the OK Button.

When the new bookmark is created, it will be installed at the bottom of the bookmarks listing and you will see a message on the panel.



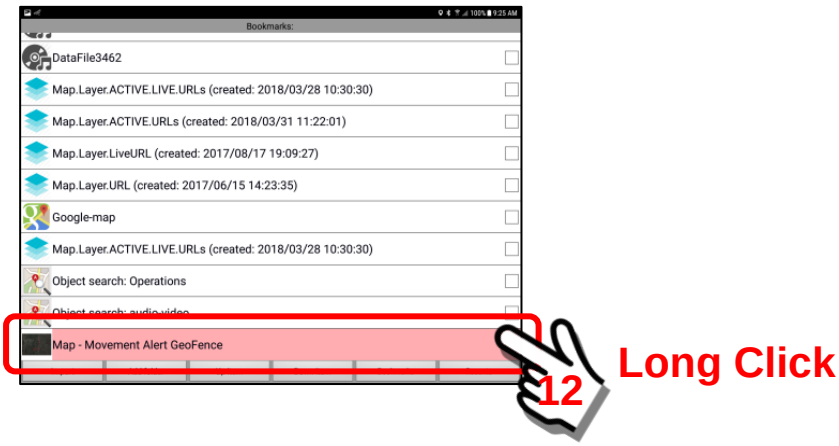
Message that the bookmark was created

The new bookmark is installed at the bottom of the bookmark listings

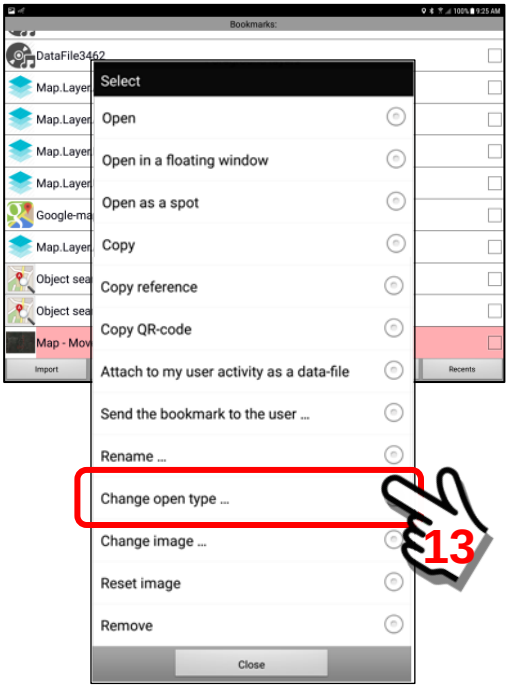
6. ***Set this new GeoFence Panel to "Open" as a floating window panel.***
In this example, we want to monitor the movement of remote devices using a "Floating Window Panel" with a custom map screen. In this step we will enable the floating window panel feature (required for GeoFence Alert).

> **Important Note: Use of a floating window is REQUIRED since it will be minimized to the notification Bar, but still running in the background to monitor the remote devices.**

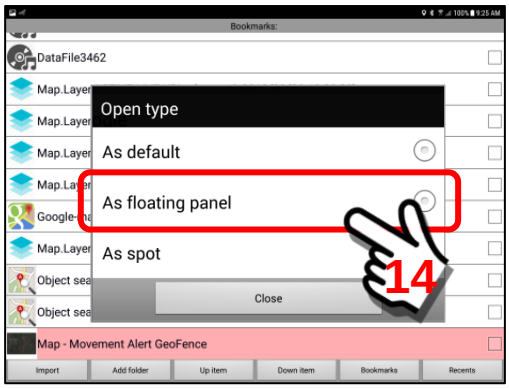
Starting at the Bookmarks Panel, perform a "Long Click" on the bookmark we have just created (Map – Movement Alert GeoFence).



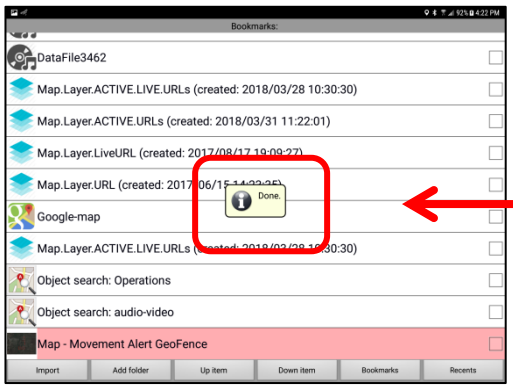
A pop-up "Select" options menu will appear.
Select the "Change open type …" menu item.



Select the “As floating panel” option. This will make the custom “Map – Movement Alert GeoFence” monitoring panel a floating panel, which will enable us to minimize the panel or float it on top of other screens of the device.

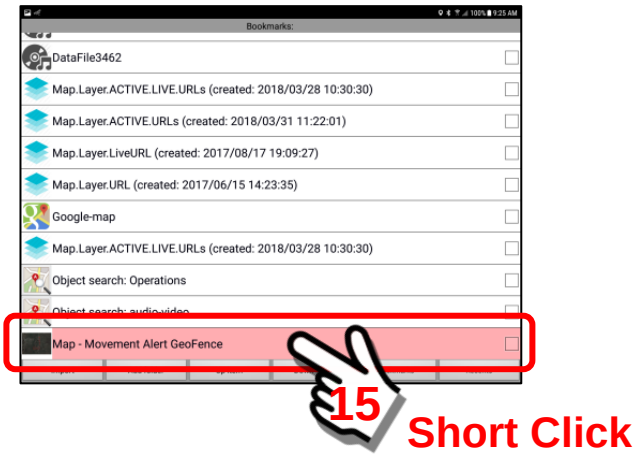


When the screen has finished setup as a “floating panel” you will see a “Done” message appear at the middle of the screen.

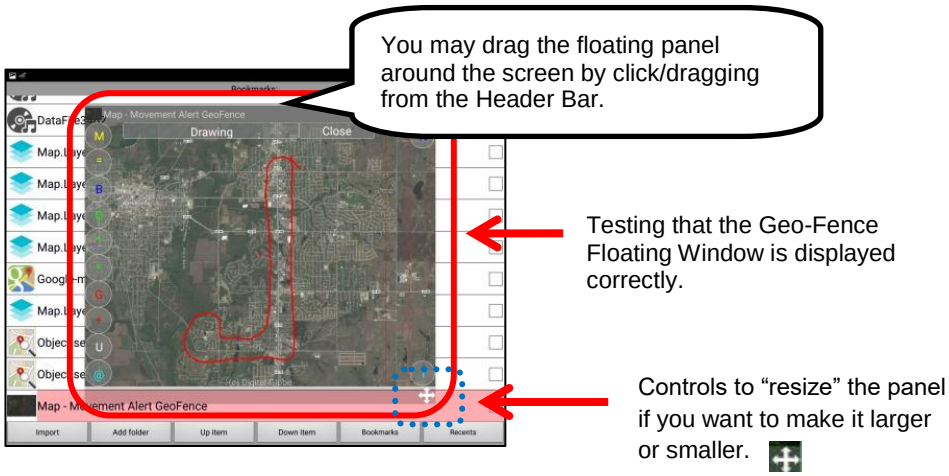


The “Done” message indicates that the “Floating Panel” option was created successfully.

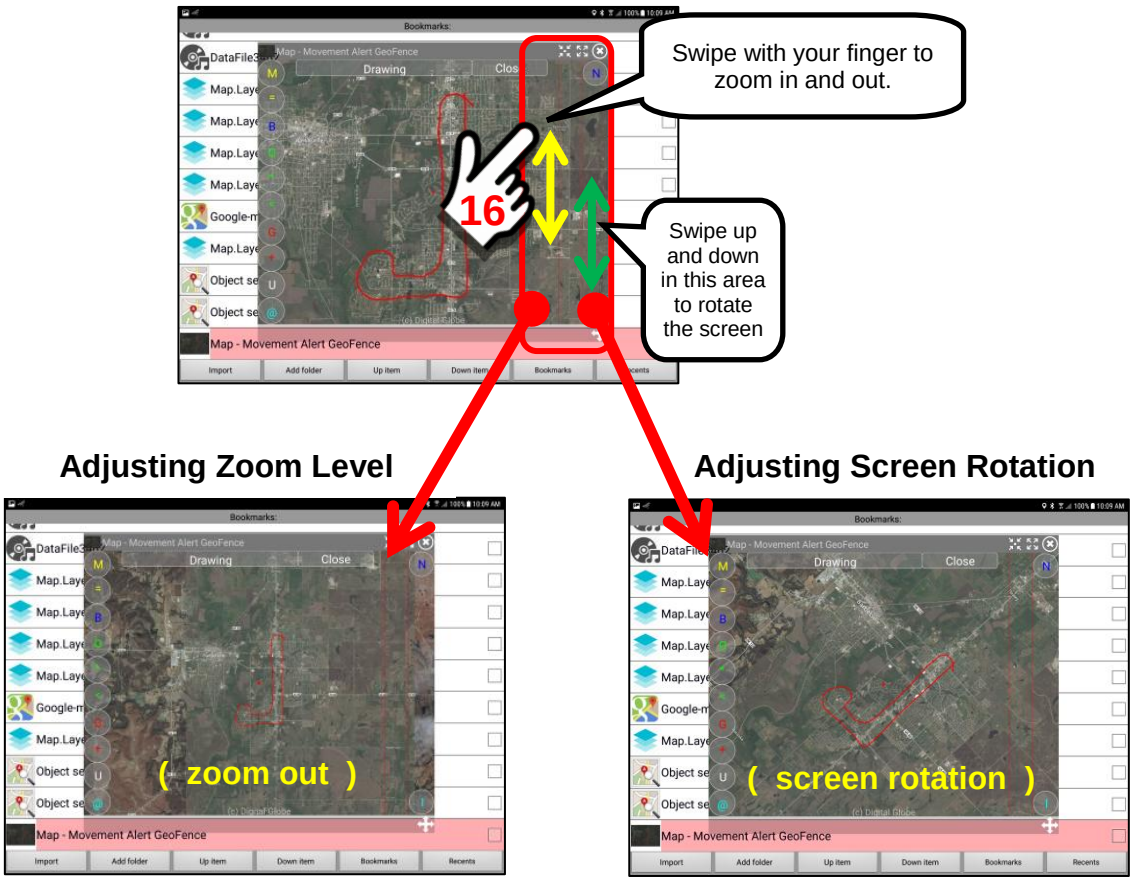
7. ***Test that the Movement Alert GeoFence Panel will open.***
To test the “Movement Alert GeoFence” as a floating window, click on the bookmark item.



A floating window will be launched with the geo-fence region showing.



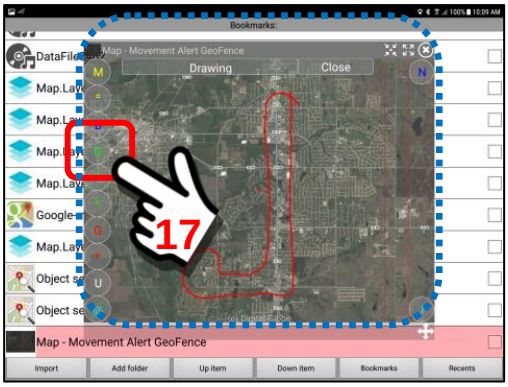
8. ***Adjust the zoom level of the geo-fence boundary region.***
At this point in the setup process, before we display the remote users that we want to monitor, you have the option to adjust the "zoom level" of the floating panel screen, as follows:



9. ***Select the Objects to be monitored for a Movement Notification Alert if they cross the geo-fence boundary.***

Once the geo-fence region has been created, it will be necessary to select the remote mobile devices that are to be monitored. This example will use a Drawing Set we have named "Drawing" to indicate a geo-fence boundary.

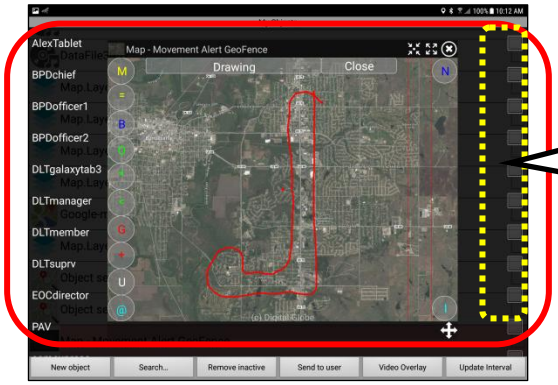
Starting at the floating window panel, click on the Objects Menu Button.



We want to monitor user OBJECTS for this specific geo-fence task.

Therefore, we select them from the floating window panel object menu.

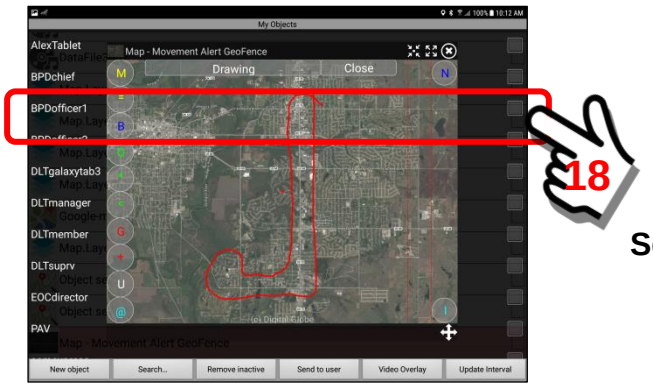
When we click on the "Objects" Button, the list of available user devices are displayed behind the floating window (remember that the floating window will ALWAYS be in front of other windows).



We will select the desired users from the available list.

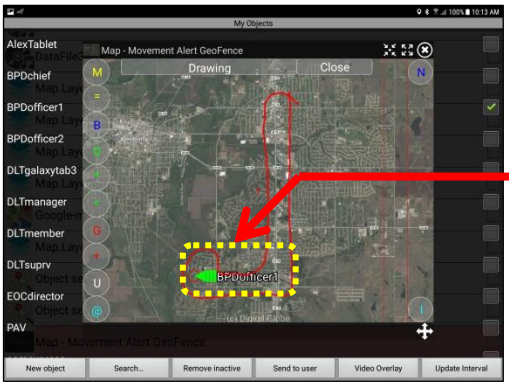
In this example, we will select two (2) remote devices that we want to monitor as to whether or not they cross a geo-fence boundary.

The first user object will be the ***BPDofficer1*** device. Put a "checkmark" in the checkbox adjacent to the name.



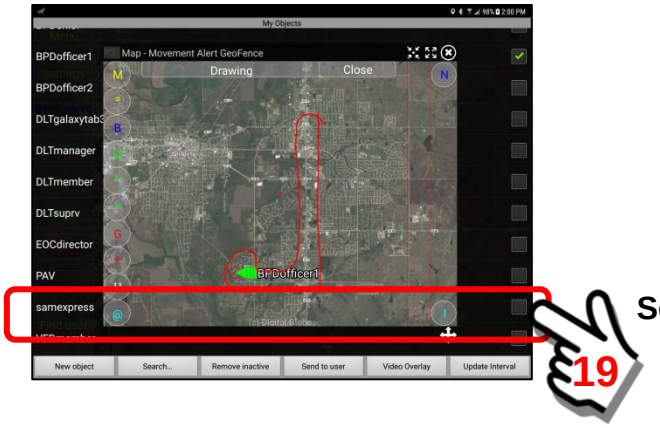
Select BPDofficer1

Once, we have selected the desired user (ie BPDofficer1 device), the system will retrieve the current location (last know GPS coordinates) of the selected user. In this example, the BPDofficer1 user is located WITHIN the geo-fence boundary we have created.



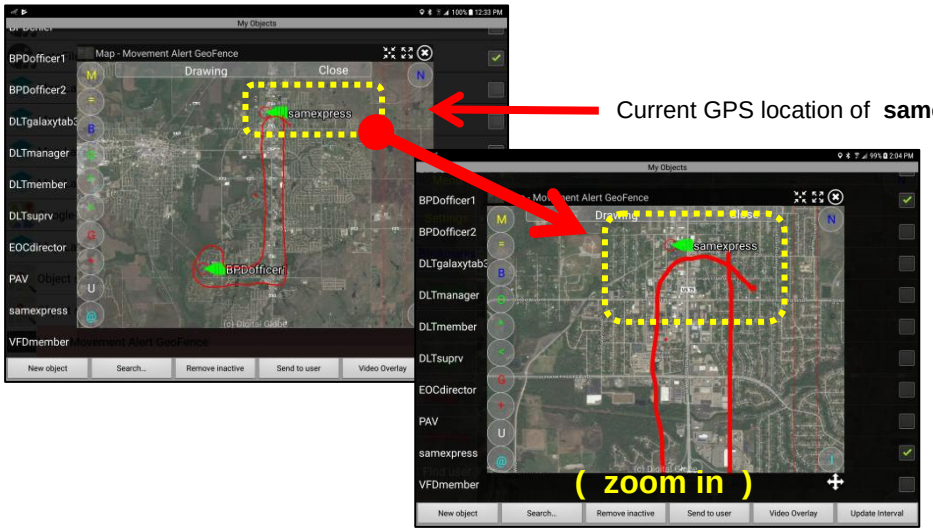
Current GPS location of **BPDofficer1**

We will now select a second remote mobile device. In this example, we will select the ***samexpress*** device. Click on the "checkbox" to select this device.



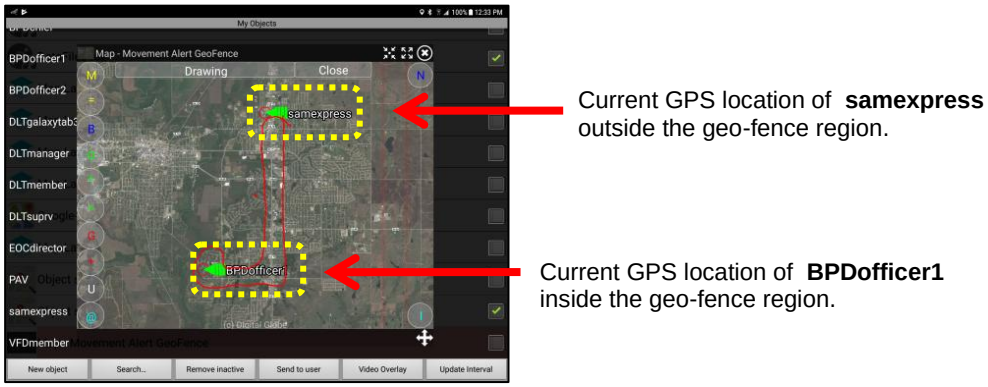
Select samexpress

The second mobile device is now shown on the floating window Map Screen. Notice that it is "outside" on the geo-fence region.



Current GPS location of **samexpress**

We now have the two (2) remote devices that we want to monitor displayed on the floating window panel. Note that one is “inside” the geo-fence and one is “outside” the geo-fence region.

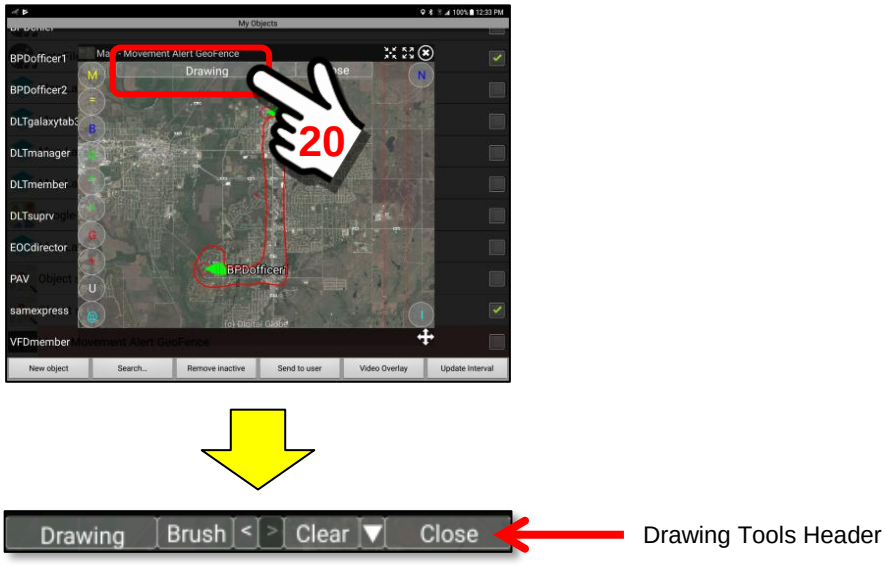


10. ***Activate “monitoring” of the geo-fence boundary.***

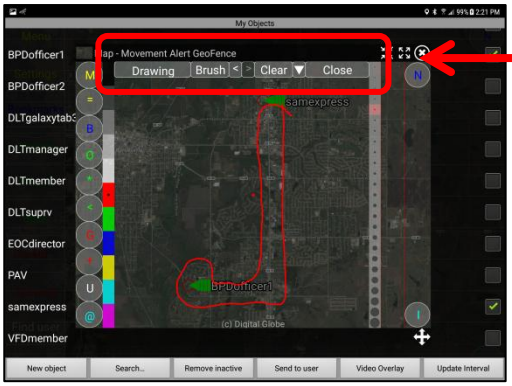
This section will show how to “activate” the geo-fence monitoring of the selected remote devices.

> **Important Note: The ability to use a geo-fence and receive alert notifications will ONLY WORK with floating window panels. This is because floating windows may be “minimized” and placed on the notification bar (which is a requirement for this feature).**

Starting at the Floating Window panel, click on the Header Title (Drawing Name). This will activate the Drawing Tools header block. In this picture the “Drawing” Header Title is shown displayed.

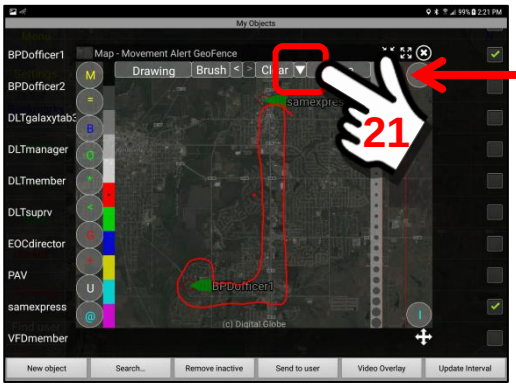


You have clicked on the NAME of the geo-fence region button (ie “Drawing” is the default if you have not changed it) and the Drawing Tools header will toggle “on”.



This Drawing Tools header will give us access to the menu that will activate the monitoring feature.

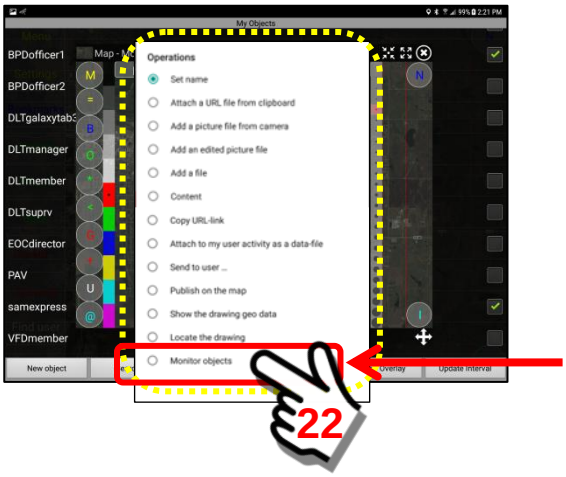
To access the Options Menu for the Floating Panel, click on the Operations Button (▽) on the Drawing Tools Header.



Click on the Operations Button to open a menu of options.

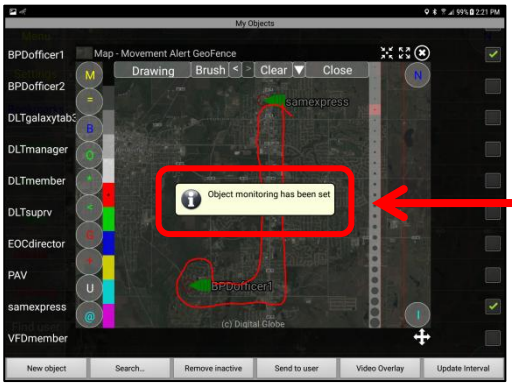
A group of Menu Options will appear as a pop-up box. This set of options is only available for the Floating Window (note that it has a different “theme” than the standard menu format).

Scroll down and locate the “Monitor objects” Button at the bottom of the list.



Click on the “Monitor objects” Button to activate the Movement Notification Alert feature.

If the activation is successful, you will see a brief message displayed in the center of the screen.



Message that the monitoring feature has been activated.

Monitoring is NOW ACTIVATED for the selected user devices. If either user crosses a geo-fence boundary (in or out) you will receive a notification alert on your mobile device.

<u>Mobile device moving OUTSIDE the geo-fence region</u>

outside

<u>Mobile device moving INSIDE the geo-fence region</u>

inside

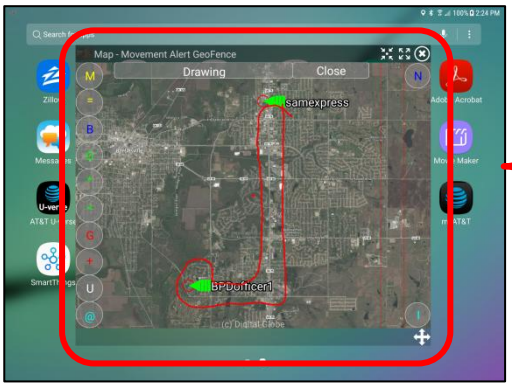
Programming Note: Depending on the GPS settings of the monitored device, and the update interval that has been set, you may get a notification alert as soon as you "activate" the movement monitoring feature. If so, simply clear that initial notification.

Important Note: Depending on the update interval that has been selected for the GPS settings of the monitored device (ie 10 sec or 5 minutes or ??) the notification data could be several seconds/minutes old. For those jobs/tasks where timely notification is important the GPS settings should be adjusted accordingly. See Section 5.4, items 18 and 19 for details.

11. Collapse the Map Viewer Panel to the Notification Bar (hide it).

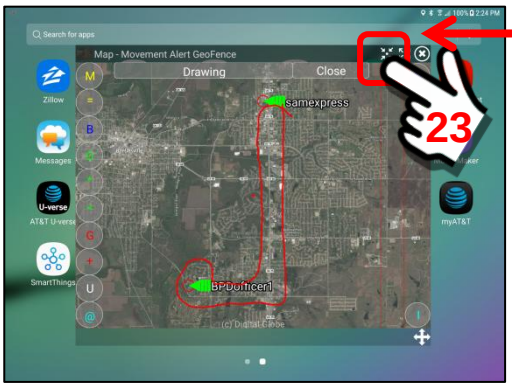
Once the *Movement Notification Alert* feature has been activated, you may choose to “hide” the floating window panel (move it out of the way) while you do other things with the mobile device. This section will illustrate how to collapse the floating window panel to the Notification Bar on the mobile device.

In this example, we will assume you have a SentryMDU floating window as an “overlay” on the mobile device App panel.



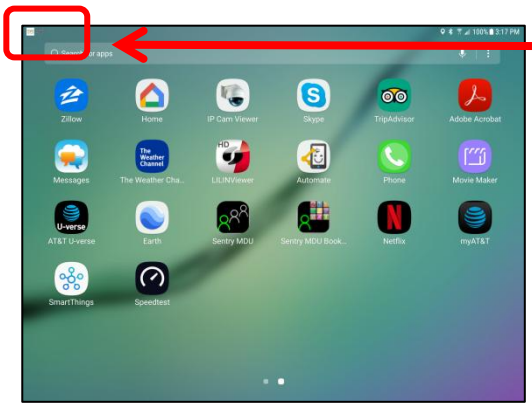
Movement monitoring panel as a floating window.

To “hide” (minimize) the floating panel to the Notification Bar, click on the “collapse” button located on the upper-right side of the floating panel.



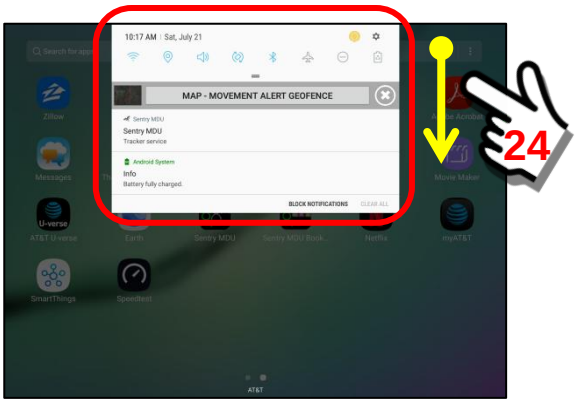
Click on the Collapse Button to put the floating panel on the Notification Bar.

When collapsed to the Notification Bar, the floating window panel is now “hidden” from view.



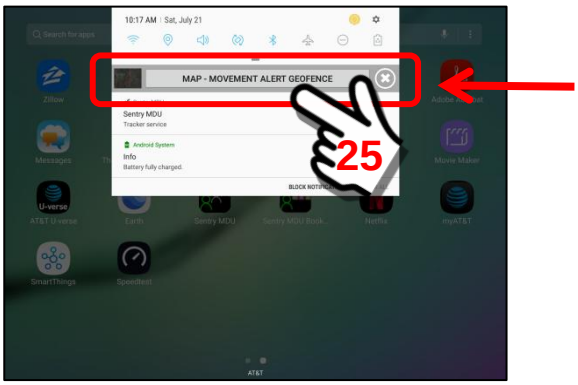
The floating panel is on the Notification Bar.

When a floating window is collapsed to the Notification Bar, a “swipe” down from the top of the mobile device screen will reveal a Movement Notification Alert Button on the dropdown panel.



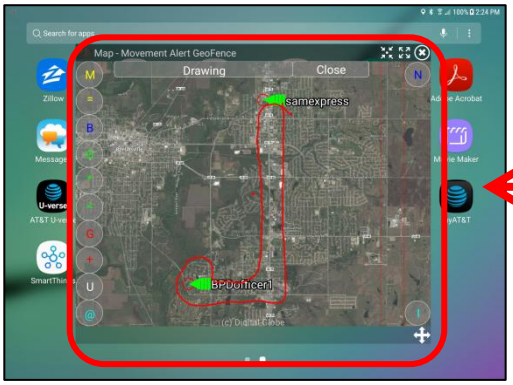
Swipe down to see listings on the Notification Panel

To “restore” the floating window, click on the “Map – Movement Alert GeoFence” Button.



Click on the button to restore the floating window.

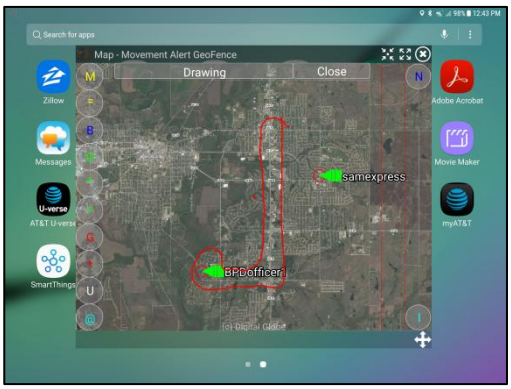
The *Movement Alert GeoFence* panel is restored as a floating window on the mobile device.



The floating window is now restored.

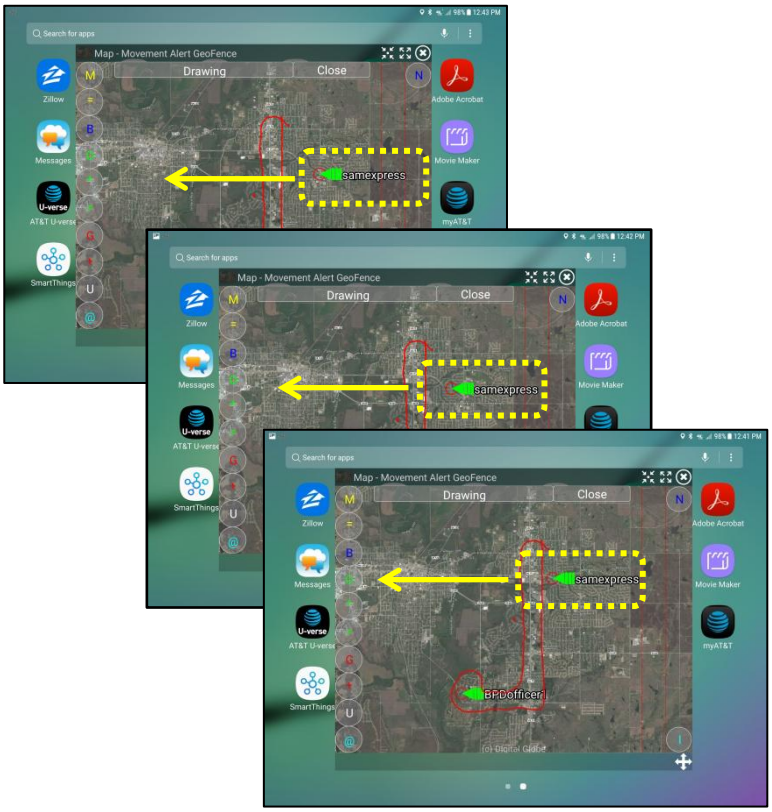
12. ***When a geo-fence boundary region has been crossed by a monitored device, a notification alert will sound.***

This section will describe what happens when a monitored device crosses a geo-fence boundary region. In this example, we have drawn a region that follows a path along a roadway. The monitored user (Sam Express) is currently OUTSIDE the designated geo-fence. If the user enters the geo-fence area, a Movement Notification Alert will be issued by the SentryMDU System.

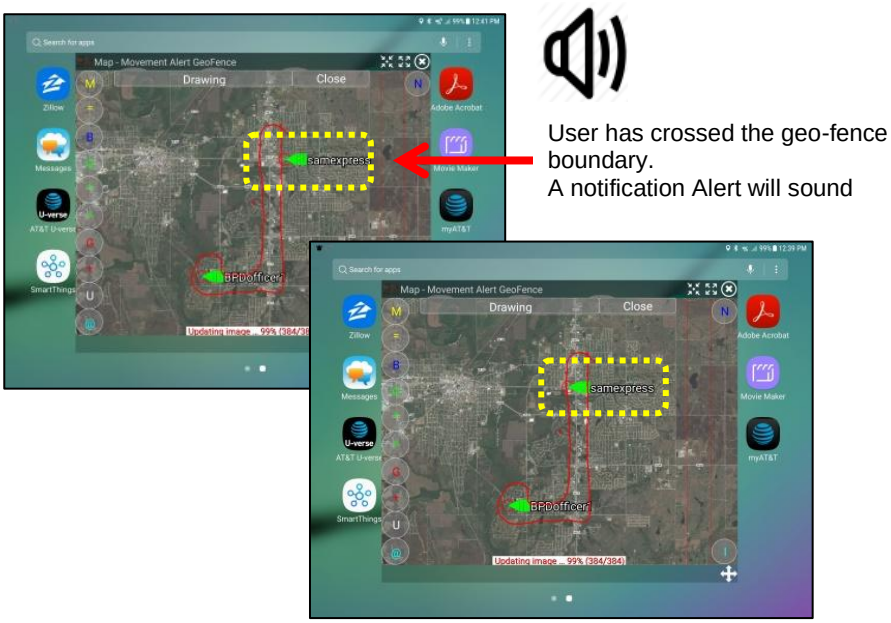


This is the geo-fence region that follows a path along a road.

In the next three images, the monitored user (samexpress) is travelling along an eastbound road (going from right to left). The movement is being monitored.

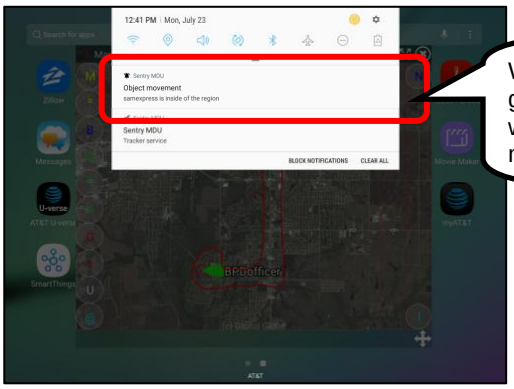


In the next two images, the user (samexpress) has entered the boundary from the East and has crossed in to the geo-fence region. An alert will be issued.



User has crossed the geo-fence boundary.
A notification Alert will sound

Once the user (samexpress) has crossed into the geo-fence boundary, the system will trigger a ***Movement Notification Alert*** message for this user. The mobile device with emit a “beep” tone (depends on settings of the phone) and a message will appear on the Notification Bar.



When a user crosses the geo-fence region, the system will trigger a notification alert message.

Since the user crossed from OUTSIDE the geo-fence region to INSIDE the region, the message says “samexpress is inside of the region”.

Notification Message

Click to open Map Viewer Panel and location of User

13. ***Click on the Movement Notification Alert panel to open the Map Viewer.*** When the system triggers a Movement Notification Alert, clicking on the alert message will open the Map Viewer panel. The panel will be “timestamped” in red text providing the date/time that the geo-fence region boundary was crossed.

> **Important Note: Depending on the update interval that has been selected for the GPS settings of the monitored device (ie 10 sec or 5 minutes or ??) the notification data could be several seconds/minutes old. For those jobs/tasks where timely notification is important the GPS settings should be adjusted accordingly. See Section 5.4, items 18 and 19 for details.**

The sample below shows what a Map Viewer panel will look like when a user re-enters a geo-fence boundary upon triggering a notification.

Timestamp and location of the User when they crossed the geo-fence boundary.

User that crossed the geo-fence boundary. The Map will be centered over that user location.

9.27. Example – Add a QR Code Scanner to Bookmarks

Overview:

This feature of the Bookmarks Section allows a user to save a SHORTCUT that will create a “QR Code Scanner Panel” that will become a QR Code Reader.

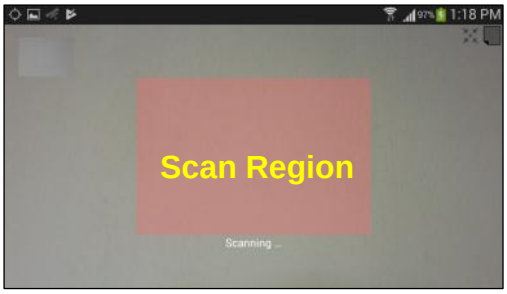
QR Codes are used within industry, education, marketing and a hundred other places. The advantage is that they are easily “read” by smartphones. The SentryMDU System will allow a user to create QR codes for specific custom map layers and URLs. These can then be sent to other users. Only those within the same Security Domain (with authorized credentials) will be able to access the URL link embedded within the QR Code.

This example will illustrate how to create a QR Code Scanner Bookmark that will display the QR Code Scanner on the mobile device. We will then “read” a QR Code that will launch a live streaming video panel of a remote mobile device.

The QR Code Scanner panel:

Shown below is an example of a QR Code and QR Code Scanner panel. The panels may also be configured as “floating windows” so they can be moved, resized or minimized to the Notification Bar.

Example of a QR Code that has an embedded URL link to launch a streaming video panel from a remote mobile device.

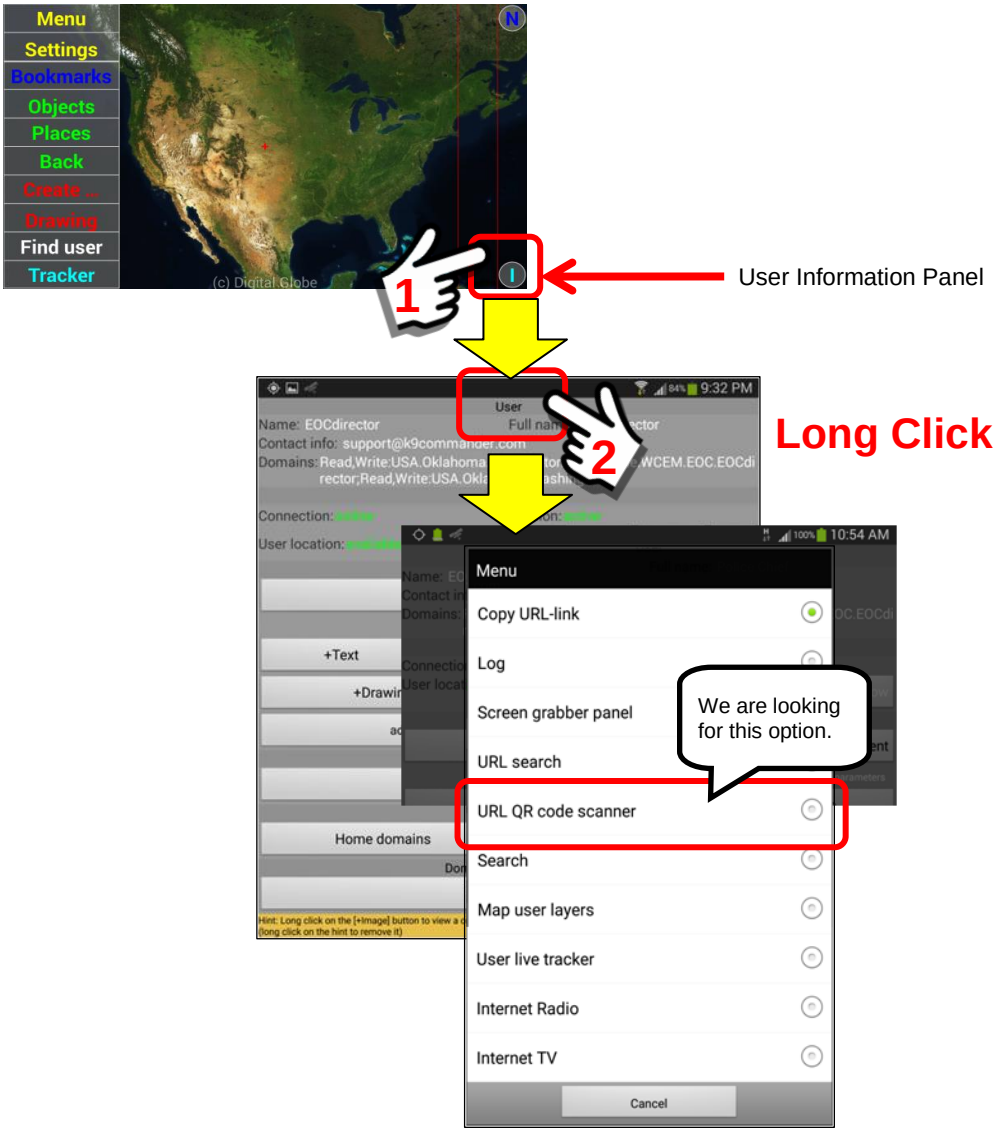


QR Code Scanner Panel

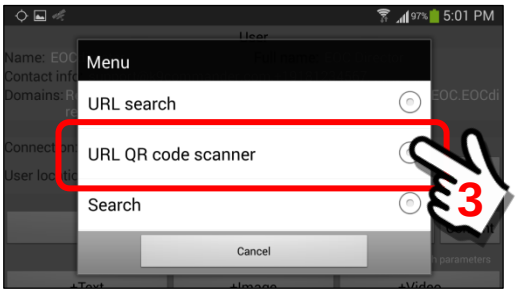
When a QR Code is scanned it will open a video panel

Description of the panel buttons and features:

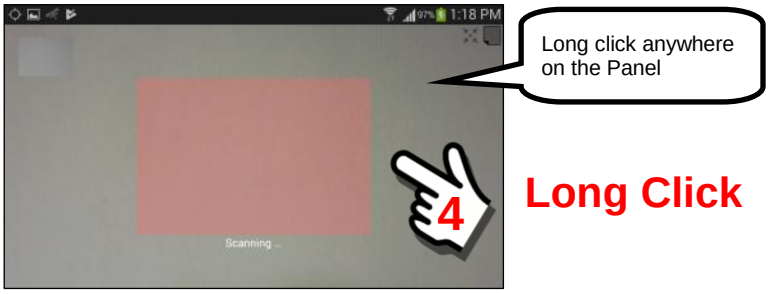
1. ***Locate the menu for the QR Code Scanner URL***
   The QR Code URL is located on a submenu of the User Information Panel.



2. ***Select the QR Code Scanner menu item***
   Click on the "URL QR code scanner" menu option to launch the QR Code Scanner Panel.

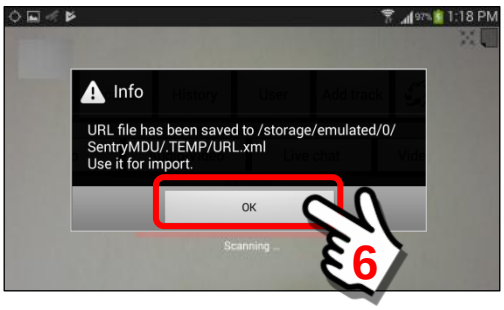


3. ***Perform a "Long click" to create a URL link.***
The QR Code Scanner panel opens. We will NOT scan a code, instead we will perform a "long click" on the screen panel. This will open a pop-up box with the URL link menu. See **Section 16.1** for details on the QR Code Scanner feature.



"Click" on the "Copy URL-link" menu item.

The "Copy URL-link" choice has now been saved in a temporary file (.TEMP) and is ready for import into the Bookmarks section.



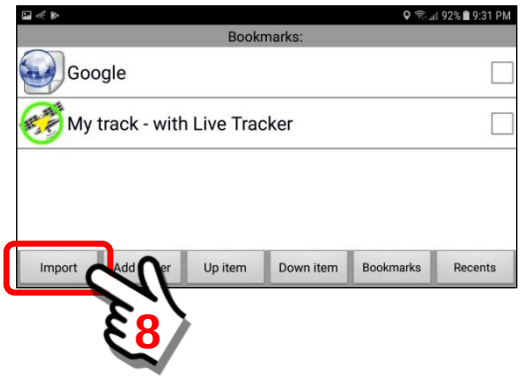
Click the "OK" Button to continue.

Now that the URL link for the remote device has been saved, return to the Main Map Screen.

4. ***Create the Bookmark entry for the QR Code Scanner.***
Once the URL link for the remote device has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

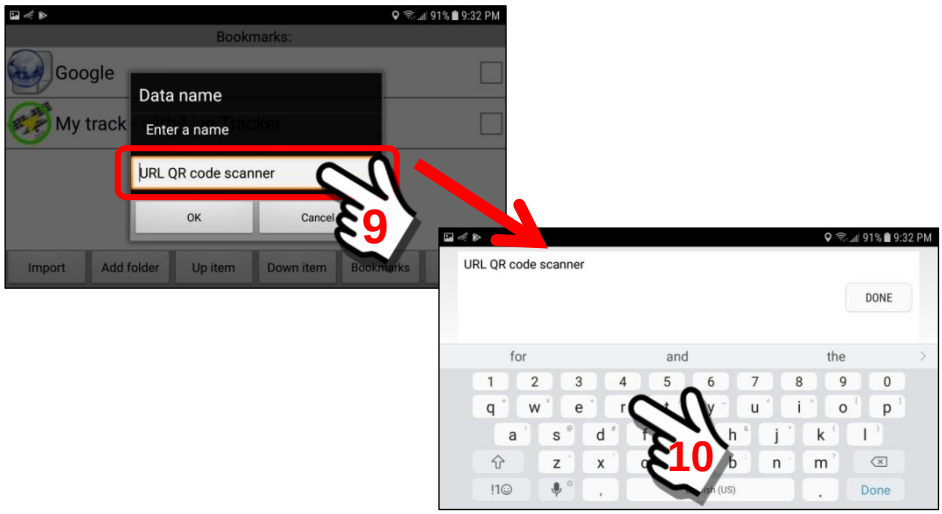
To begin, click on the Bookmarks Button on the Main Map Screen.

At the Bookmarks Panel, click on the Import Button

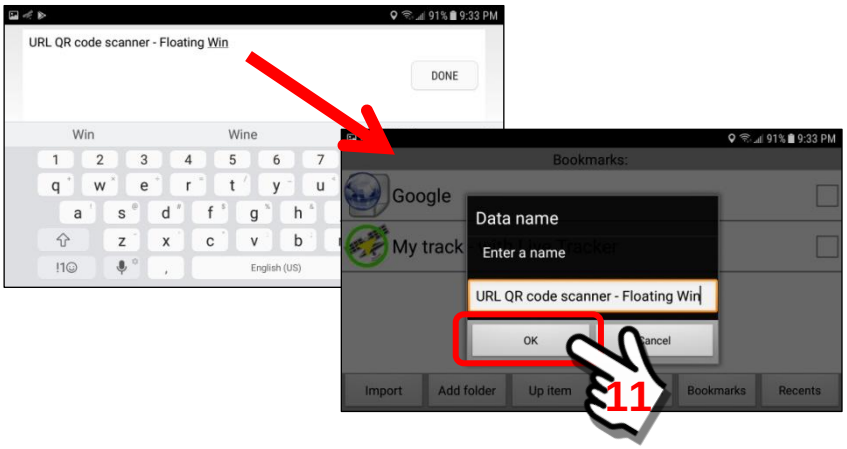


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the ***QR Code Scanner***. The system will default to the name of the QR Code Scanner. We recommend editing the text and putting a better description as shown below.

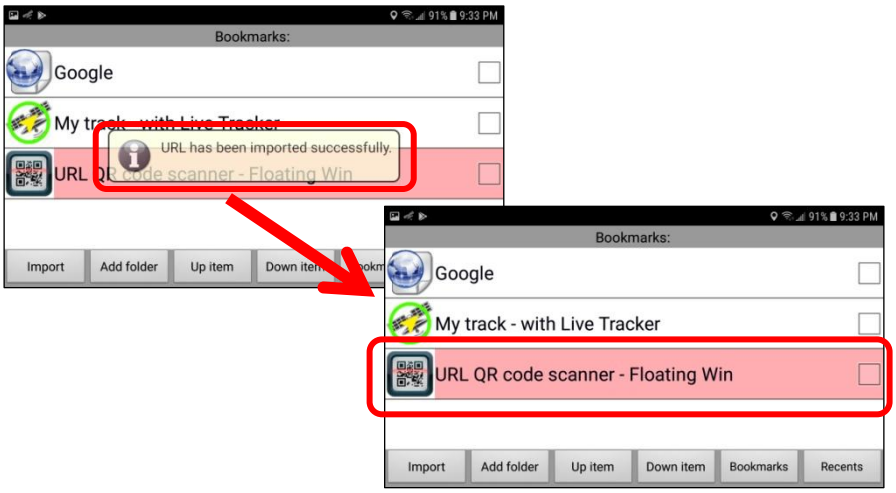
Click inside the text block to open an onscreen keyboard for editing.



When finished, click the “OK” Button to save the new description.



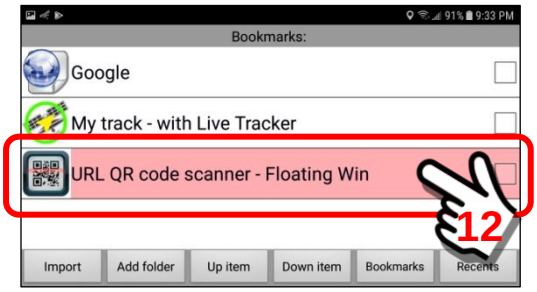
The system will now create a bookmark entry with the new name.



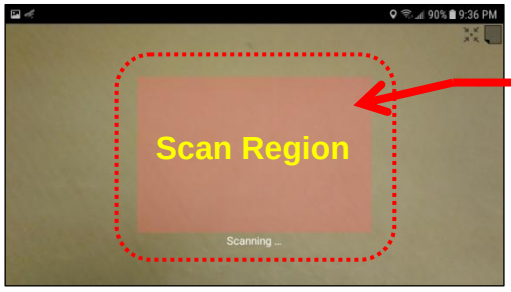
5. ***Launching the QR Code Scanner bookmark***

To launch the bookmark entry, click on the name.

A QR Code Scanner panel should appear. You now have a “readily available” QR Code Scanner on your mobile device.

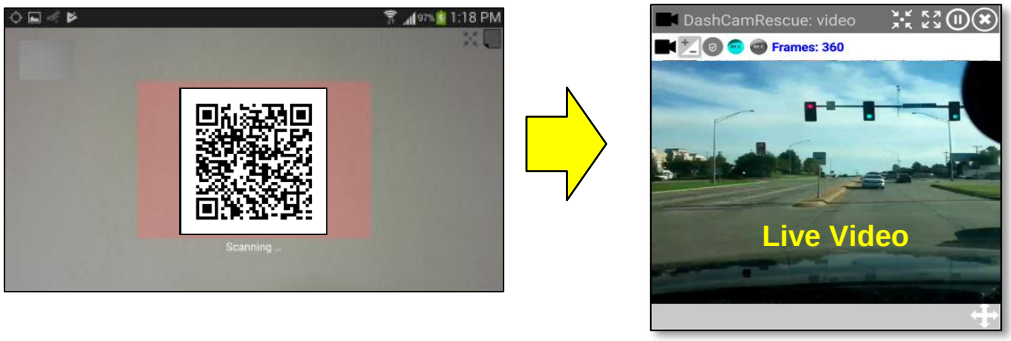


The QR Code Scanner Panel is now available to scan objects. The system uses the camera on the mobile device to scan for QR Codes. You will be viewing through the camera lense. Place the “red box” over the QR-code, hold the phone still until the scanner has locked on to the image. It will acquire the scan “automatically” (no buttons to push).



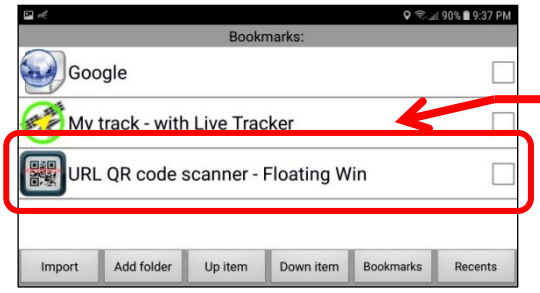
Scanner region is the “red” box. System will automatically focus and lock onto the object.

When a QR Code is scanned it will open a video panel



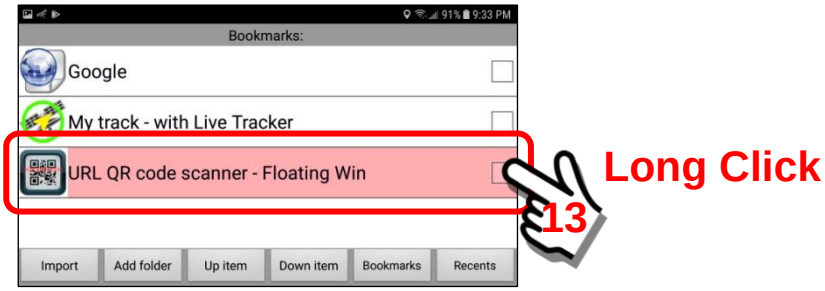
6. ***Making the QR Code Scanner bookmark a floating window panel.***
It may be desireable to have the QR Code Scanner as a floating window panel. This way, you could minimize the panel to the Notification Bar on the mobile device, and it will be readily available. This section will describe how to make the existing panel a floating window panel.

Start at the Bookmarks Panel. Locate the QR Code Scanner bookmark.

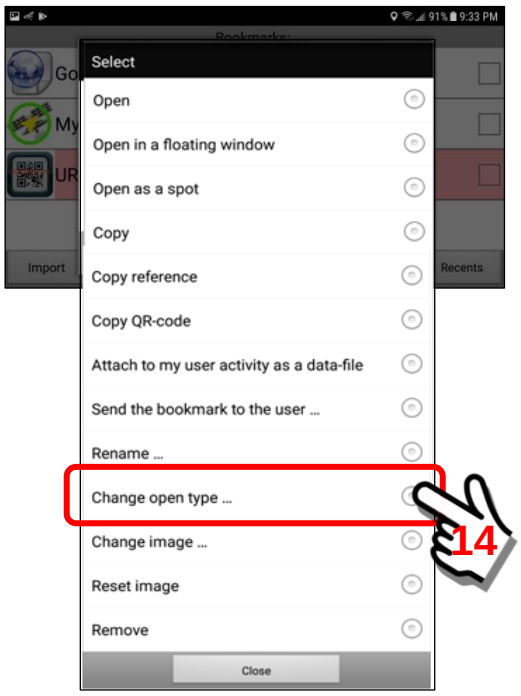


We want to make this item to OPEN as a Floating Window when we click on it.

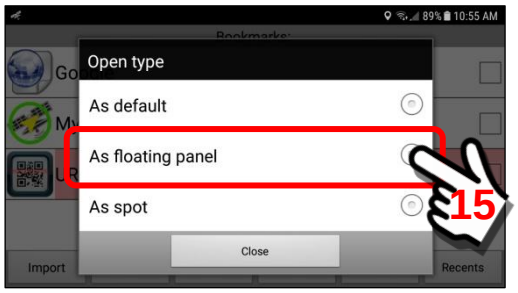
Perform a “Long click” on the bookmark item to open the options menu.



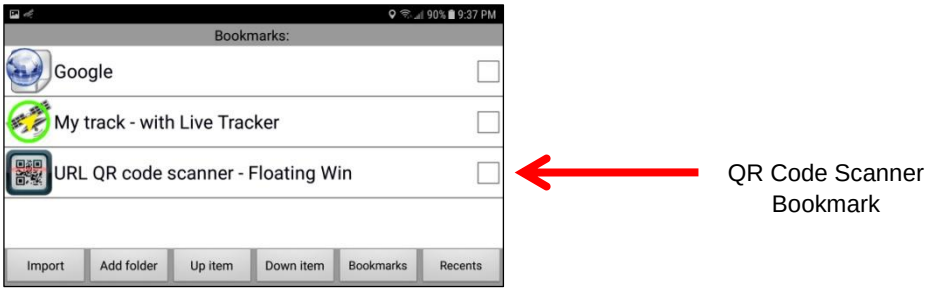
Scroll down the Options Menu and select the option that says to “Change open type”. We want to change the bookmark from opening as a full size “panel” to opening as a floating window.



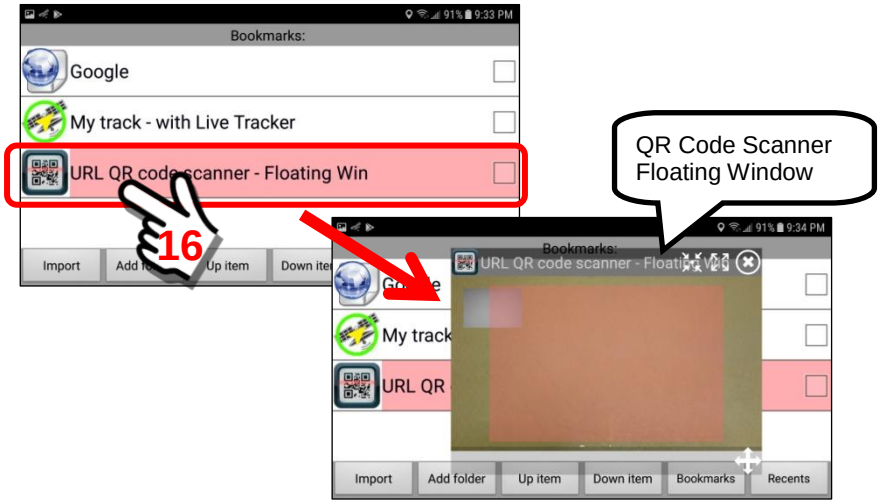
Clicking on the “Change open type” menu option opens a pop-up menu that has three (3) choices. We will select “As floating panel”.



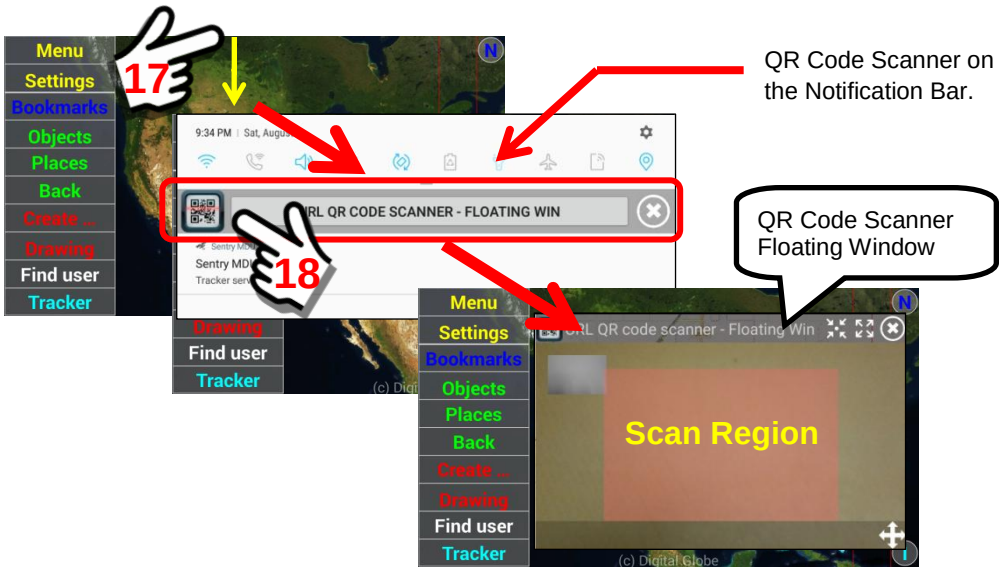
The bookmark is now configured to open as a floating window.



To test the new floating window "mode" we will open the bookmark. Click on the bookmark. The QR Code Scanner now opens as a floating window.



If the floating window is minimized to the Notification Bar, it may be accessed by "swiping" down with your finger to expose the "URL QR Code Scanner" Button. Click to re-open the floating window.



9.28. Example – Save a QR Code URL as a new Bookmark

Overview:

This feature of the Bookmarks Section allows a user to use the "QR Code Scanner Panel" to read a URL and then save that URL as a new bookmark.

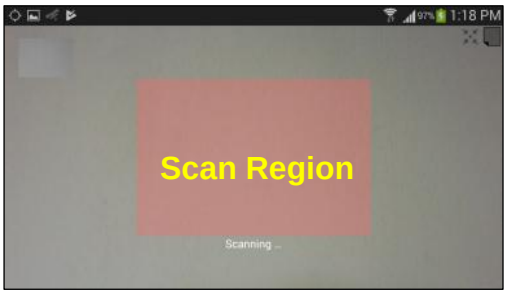
QR Codes are used within industry, education, marketing and a hundred other places. The advantage is that they are easily "read" by smartphones. The SentryMDU System will allow a user to create QR codes for specific custom map layers and URLs. These can then be sent to other users. Only those within the same Security Domain (with authorized credentials) will be able to access the URL link embedded within the QR Code.

This example will illustrate how to create a new bookmark by reading a QR Code on the mobile device.

The QR Code Scanner panel:

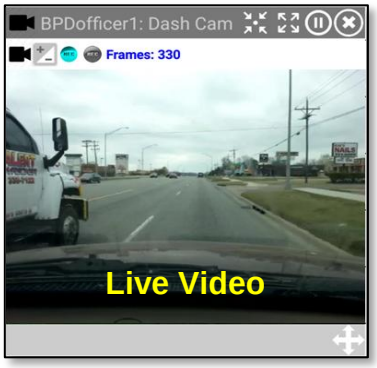
Shown below is an example of a QR Code and QR Code Scanner panel. The panels may also be configured as "floating windows" so they can be moved, resized or minimized to the Notification Bar.

Example of a QR Code that has an embedded URL link to launch a streaming video panel from a remote mobile device.



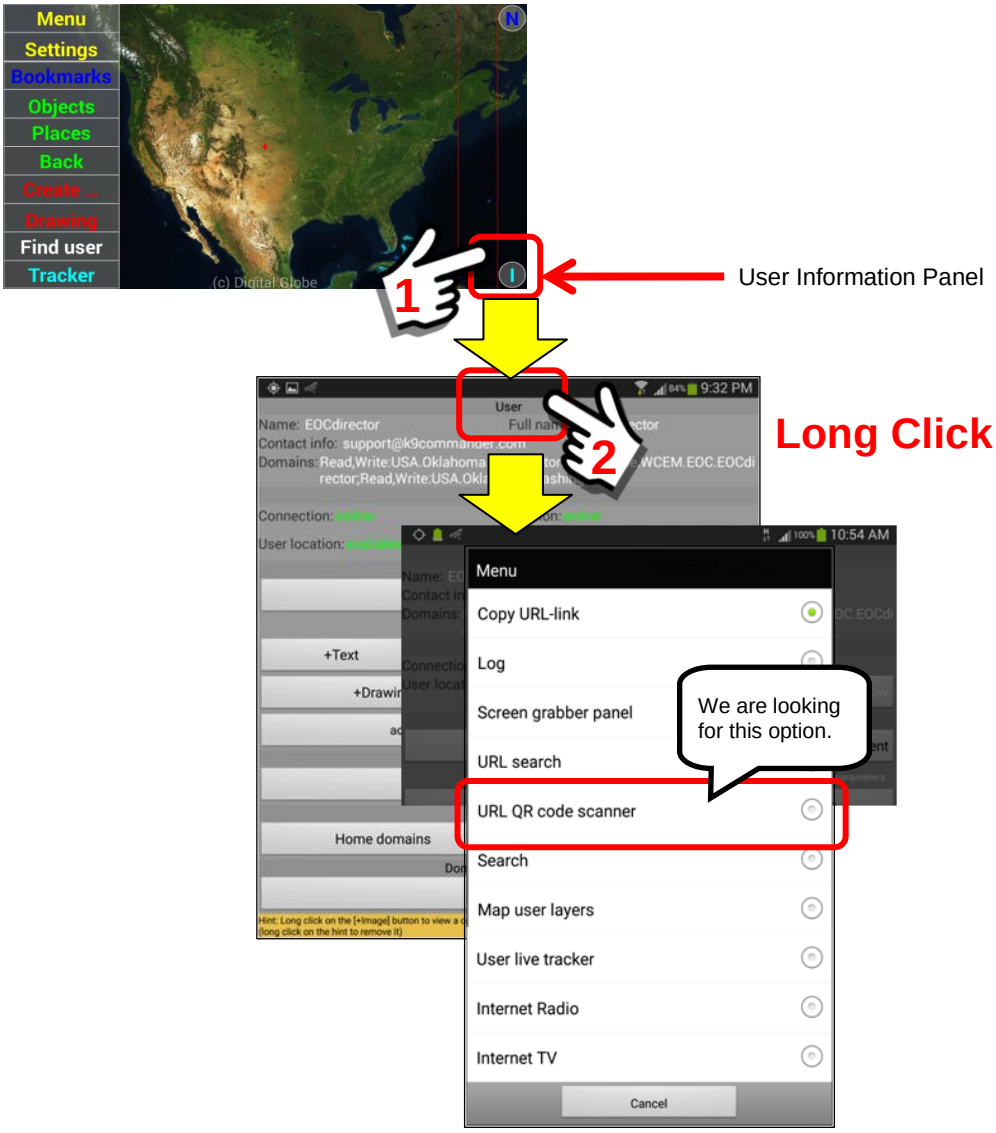
QR Code Scanner Panel

When a QR Code is scanned it will open a video panel

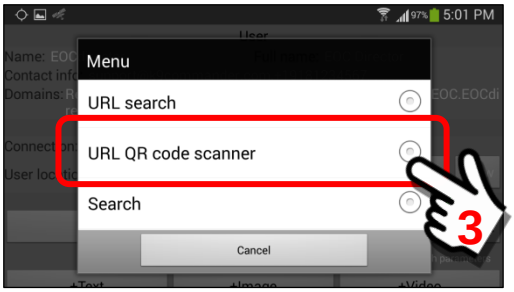


Description of the panel buttons and features:

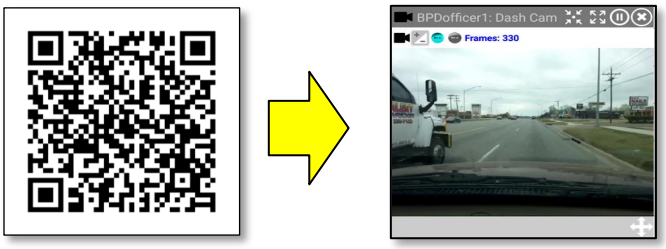
1. ***Locate the menu for the QR Code Scanner URL***
   The QR Code URL is located on a submenu of the User Information Panel.



2. ***Select the QR Code Scanner menu item***
   Click on the "URL QR code scanner" menu option to launch the QR Code Scanner Panel. For this exercise, we will assume user EOCdirector will select a QR Code for a streaming video panel of user BPDofficer1.

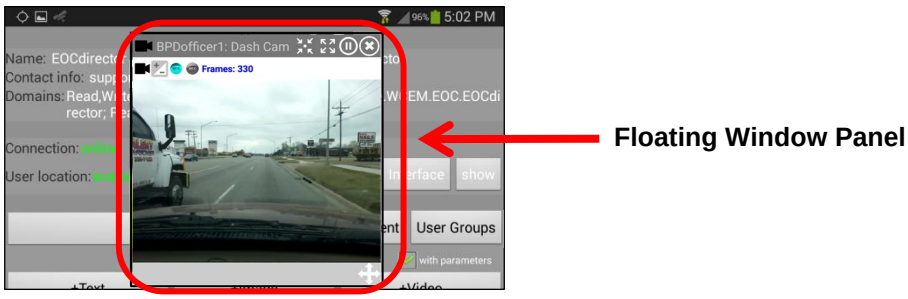


3. ***Scan the QR Code to access the embedded content.***
We will scan a QR Code for a user created bookmark URL and it will launch a floating window. For example, the following QR Code is for a URL that will display a live streaming video (BPDofficer1: video).



The QR Code Scanner panel will open. You will be viewing through the camera lense. Place the “red box” over the QR-code, hold the phone still until the scanner has locked on to the image.

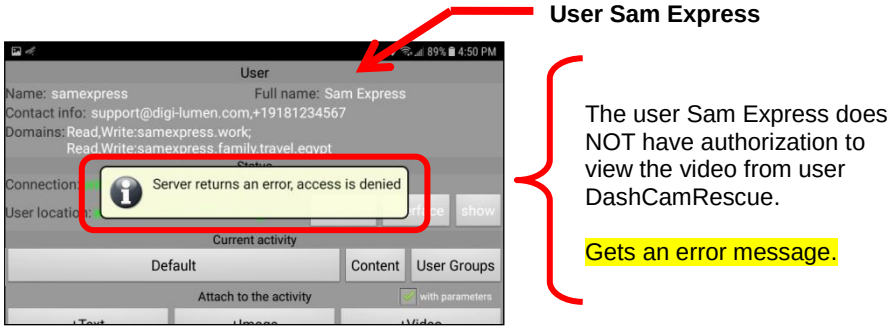
The QR code will launch a streaming video floating window panel on the EOCdirector’s mobile device, as shown below.



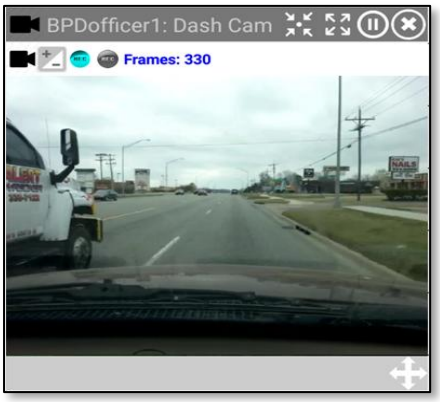
The floating window panel may now be “resized”, moved on the display canvas or minimized to the notification bar.

Important Note:
EOCdirector was able to access the BPDofficer1 streaming video because BOTH were in the SAME security domain AND the EOCdirector mobile device had security credentials to view the video.

If a User does NOT have adequate security credentials when they scan the QR Code, they will receive an error message as shown below.

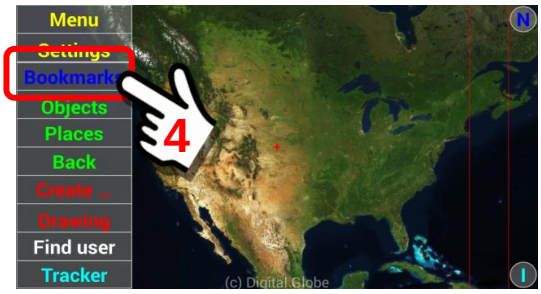


4. ***Review the streaming video that was launched from the QR Code URL.***
Reading the QR Code with the scanner has launched the video from the mobile device of user BPDofficer1. In this example, it is launched as a floating window. You may use all floating window tools to resize, move and minimize the floating window.

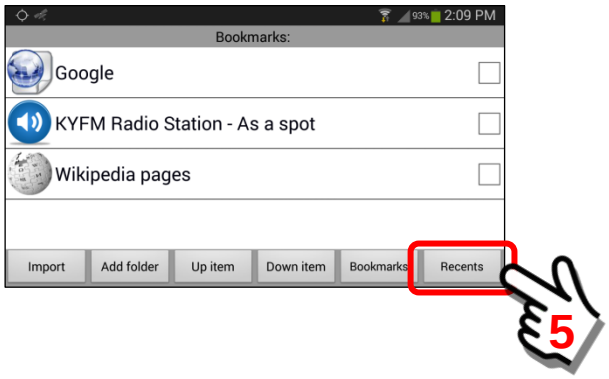


5. ***The QR Code URL is stored as a temporary bookmark.***
When the SentryMDU App opens a QR Code URL and displays the video panel, it also “makes a record” of the URL and installs a temporary bookmark for the URL in the “Recents” Bookmarks Folder.

To access the **Recents Bookmark** folder, begin by clicking on the Bookmarks Button on the Main Map Screen.

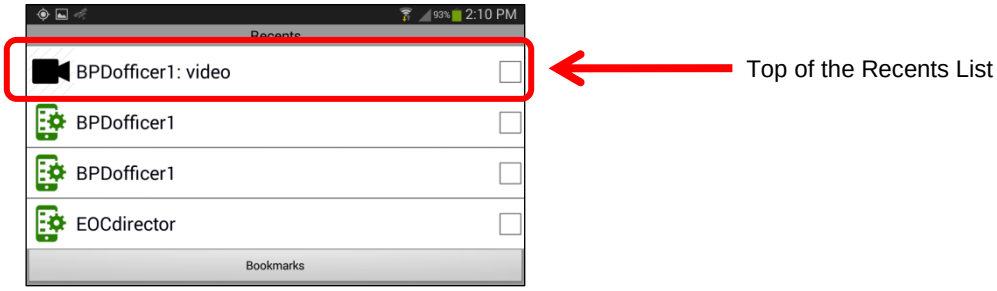


At the Bookmarks Panel, click on the Recents Button.



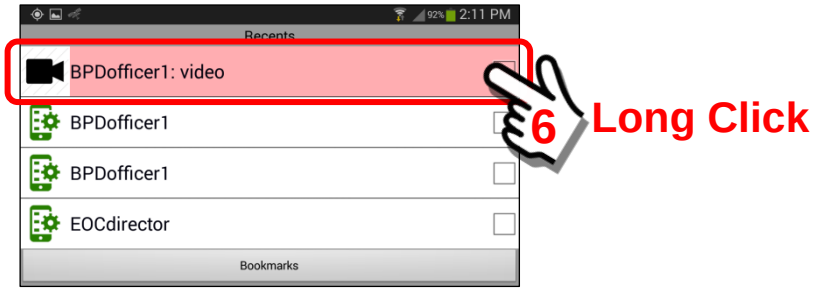
The Recents Button will retrieve 25 of the most recent URLs and other user contacts for this mobile device. In our example, since we have recently clicked on a QR Code and retrieved the streaming video, the MOST recent URL link on the list will be the **BPDofficer1** video (launched from the URL link for the ***QR Code Scanner***).

As you can see, the **BPDofficer1: video** is at the TOP of the Recents List.

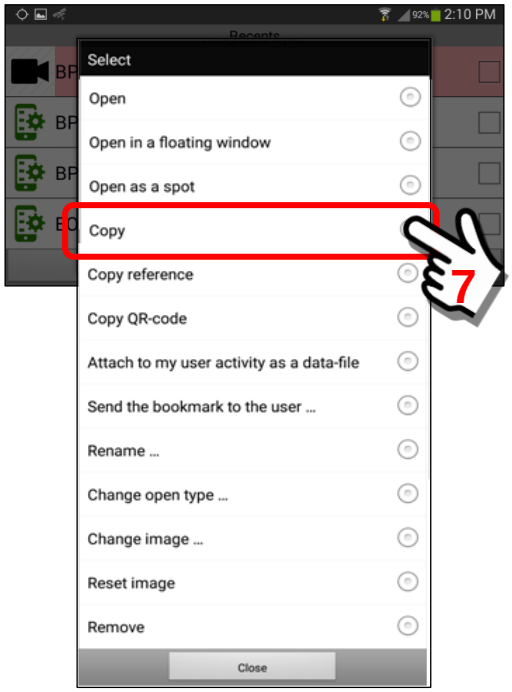


The objective is to SAVE this temporary bookmark by copying it from the Recents Folder and installing it in the general Bookmarks Folder.

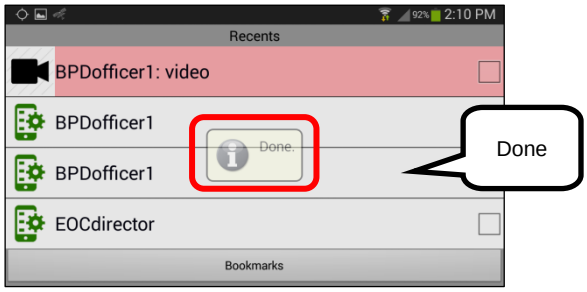
Perform a “Long click” on the bookmark name (BPDofficer1: video).



A “Long click” on the bookmark name will open a pop-up menu of 13 options. Scroll down and locate the “Copy” Menu option (4th option).



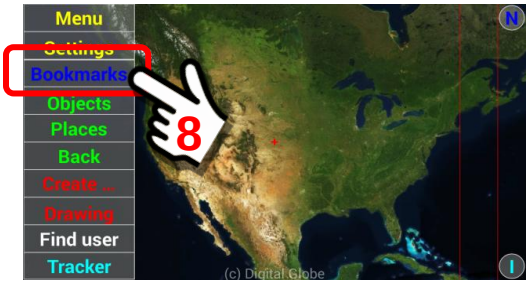
The system will now store the **BPDofficer1** temporary bookmark. You will see a message indicating that the operation was completed (Done).



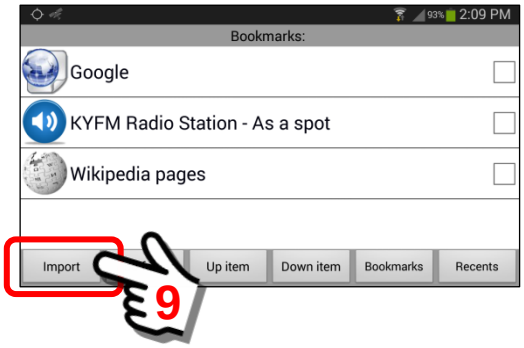
We have now made a “copy” of the URL that was embedded in the QR Code that we scanned previously. The next step will be to import this URL into the general Bookmarks Folder.

Click on the “Back” Button to return to the Main Map Screen.

6. ***Import the temporary bookmark into the Bookmarks Folder.***
The next step in this example is to import the temporary bookmark into the general Bookmarks Folder.



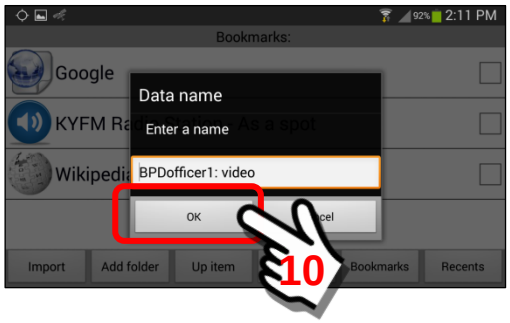
Click the Import Button on the Bookmarks Panel.



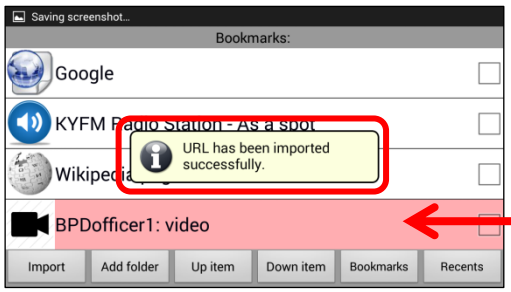
Bookmarks Panel

When the Import Button is clicked, a pop-up panel will appear with the name of the temporary bookmark (BPDofficer1: video). You may edit this name if desired.

When finished, click “OK” to install this bookmark URL.



The URL retrieved from the QR Code scan is now installed into your Bookmarks Folder.



Bookmark installed from QR Code Scanner URL

9.29. Example – Create live streaming Police Scanner Bookmark

Overview:

This feature of the Bookmarks Section allows a user to use the "Audio /Internet Radio Retranslator" feature to read an internet radio URL and then save that URL as a new bookmark. There are many free and paid sources on the internet to receive internet radio streaming data. In addition, many Police Departments and Emergency Service Organizations in western countries provide live-streaming (mp3 format) of their radio traffic to promote departmental transparency for the Public.

This example will illustrate how to duplicate an existing Sensor Profile and use it to create another profile that will read an mp3 data stream directly from a Police Department broadcast server.

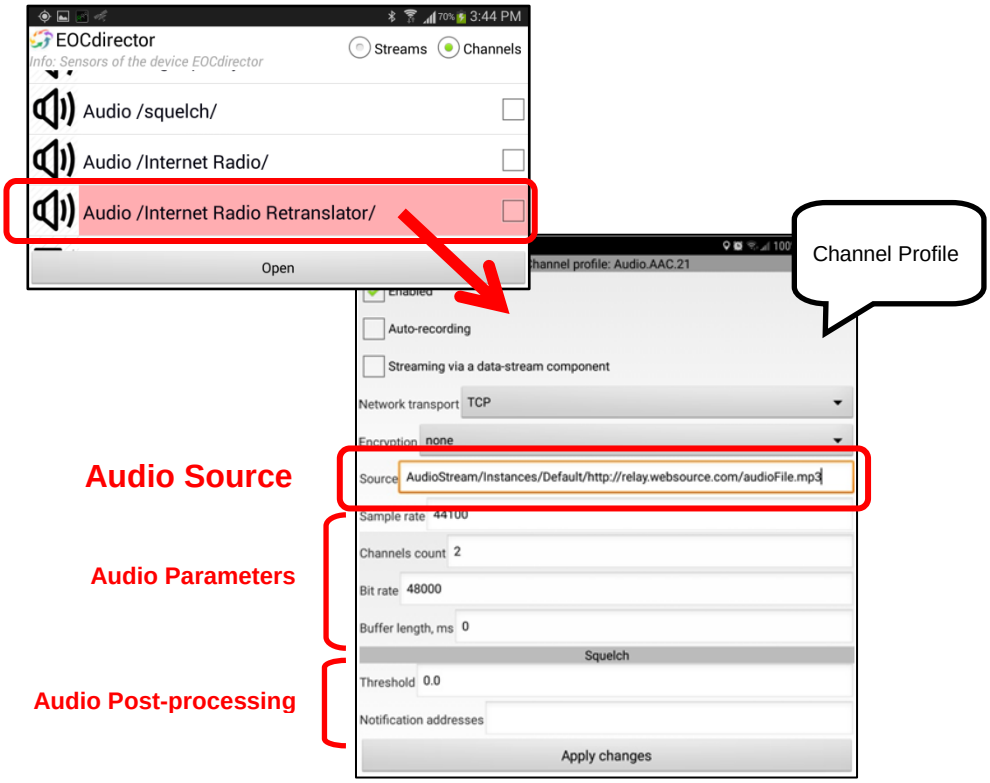
http://uplink.policeDept.com/radio1234.mp3

The "Audio /Internet Radio Retranslator/" Sensor Channel:

Shown below is an example of the "Audio /Internet Radio Retranslator/" sensor profile panel. This sensor panel will be modified to accept the URL from the Police Department website.

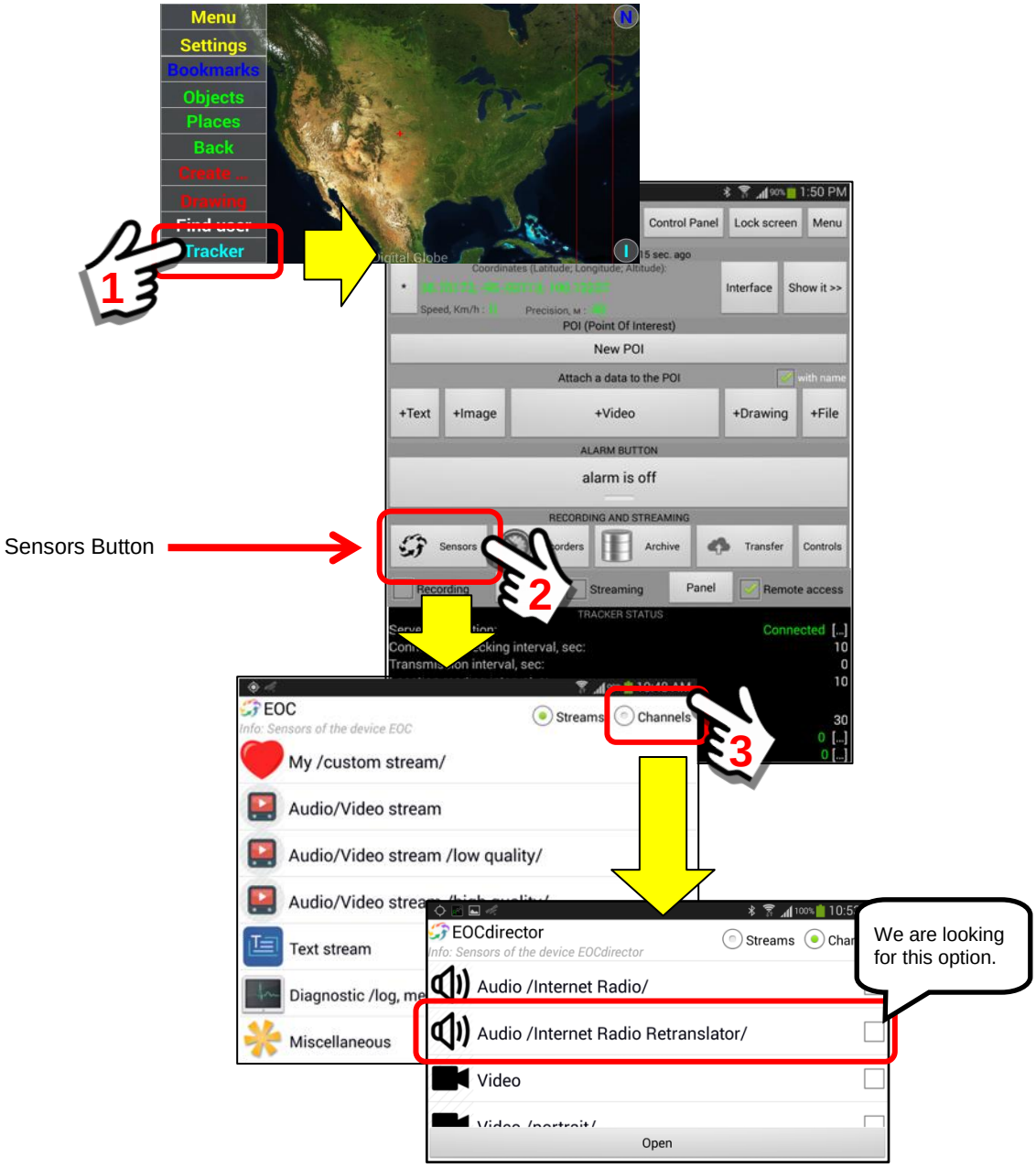
This is a pre-configured "internet radio retranslator" audio channel that can be used to play audio files directly from an internet broadcast (ie Police Dept website).

This audio channel reads a data feed from an internet broadcast and uses that as an audio "source". The audio file (usually an mp3), is streamed from the broadcaster to the mobile device and used as the "source". It will continue playing until stopped. This audio channel profile provides a 2-channel (stereo) level of audio fidelity.

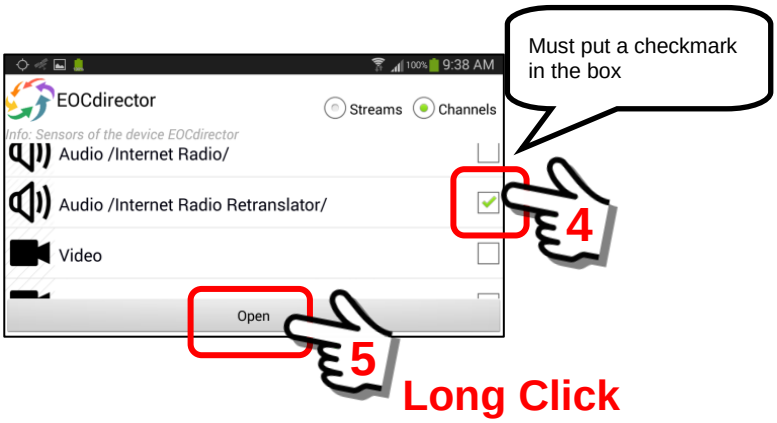


Steps to configure device as a Police Radio Scanner:

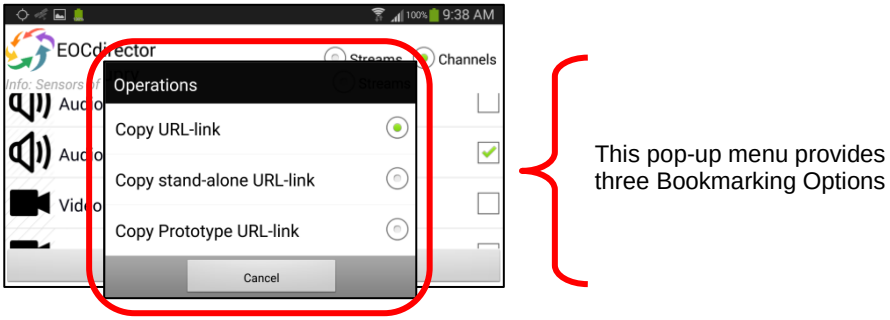
1. ***Locate the profile for the "Audio /Internet Radio Retranslator/"*** **channel**
   The "Audio /Internet Radio Retranslator/" sensor profile is located on a sub-menu of the Sensors Listing.



2. ***Select the "Audio /Internet Radio Retranslator/"* channel**
Put a "checkmark" in the checkbox of the "Audio /Internet Radio Retranslator/" menu option. Perform a "Long click" on the Open Button.



3. ***Review the Operations menu options.***
To create a "new" sensor profile for our Police Scanner channel, we want to edit the pre-configured Sensor Channel and put the "new" internet address for the Police Department Website that is broadcasting the radio traffic mp3 live stream.



This will open a pop-up box of 3 menu items.

<u>Bookmark Options</u>

(1) Copy URL-link
The "Copy URL-link" menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU "clipboard" (.TEMP file folder). This URL link may then be "imported" as a bookmark. For this bookmark to "work" (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(2) Copy stand-alone URL-link
The "Copy stand-alone URL-link" menu option creates a stream URL that is "independent" (stand-alone) from the local tracker sensors.

Sensor channel profiles have a “Source” field in the Channel Profile configuration panel. In most cases this field is “blank”, which means the “source” is the local device sensors (the default). However, this source field may contain outside URL links (such as a Radio or TV channel). If the “Source” field contains outside links, then this stream URL does NOT require that the Tracker Panel on the local device is enabled (running). The channel is “independent” (stand-alone) and may be started even when the Tracker Panel on the originating device is disabled. This option will make a copy of the selected Sensor URL and store it on the Sentry MDU “clipboard” (.TEMP file folder). It may then be imported as a bookmark and sent to other users.

A typical application would be a bookmark of a live-streaming internet TV Channel where the “source” is on the internet and NOT the local device.

(3) Copy Prototype URL-link

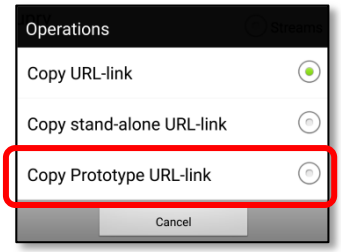
The “Copy Prototype URL-link” menu option will make a copy of an EXISTING sensor channel (ie audio, video, GPS, etc.) and allow a User to use an existing channel as a “prototype” to create a NEW Custom Channel.

The Sensors Button (on the Tracker Panel or Mobile Object Panel) will provide a pre-configured list of built-in channels (audio, video, GPS, etc.). However, the SentryMDU System allows a User to freely construct his own custom channels. These new channels will be stored in the “My /Custom stream/” Folder and channel summary list.

To create a new custom channel, the user needs a “prototype” to use as a basis for the channel profile configuration. The “Copy Prototype URL-link” menu option is used to select the desired prototype.

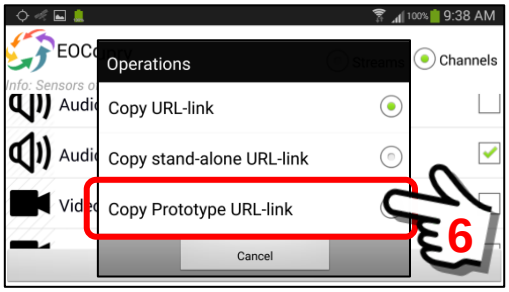
For example, a user wants to create a “new” Audio Channel with specific “custom” configuration settings. To do that, he would select an existing audio channel with the most similar profile settings, creates a “Prototype URL-link” and use that URL as a starting point for the new configuration. When the URL-link is “opened” it can be edited to the new requirements and saved as a “new” Custom URL.

We will be selecting Option #3 … **Copy Prototype URL-link**



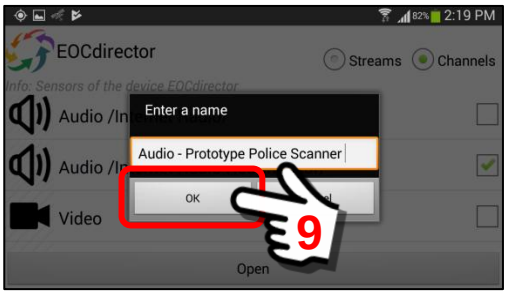
4. ***Create a "new" Custom URL from the "*Copy Prototype URL-link"*.**
In this section, we will create a "prototype" of the Audio Channel URL-link and install it into the "My /custom stream/" Folder.

Click on the "**Copy Prototype URL-link**" menu option.



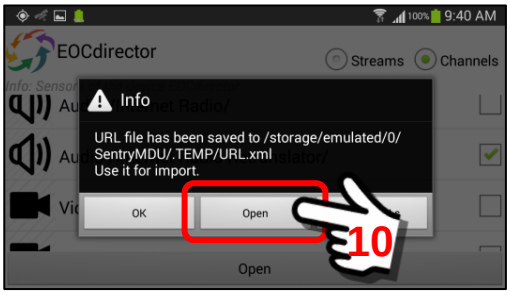
To begin, the system will ask for a "name" for a new prototype audio channel folder. This folder may be used to hold multiple Police Scanner channels. For this exercise, we will NOT be creating a prototype folder, so even though we are creating the name … we will not be using it later on.

After entering a NAME for the new prototype channel folder, click.on the "OK" Button when you are ready to proceed.



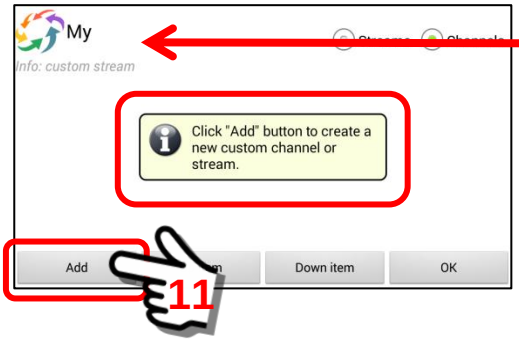
When you click the “OK” Button, a confirmation screen will appear. This is the same type of pop-up panel that you see for other bookmarks. However, in this case, we need to OPEN the prototype folder in order to link the selected sensor profile to this folder as a “new” custom stream. We will install this profile into the “My /custom stream/” Folder.

Click the “Open” Button.



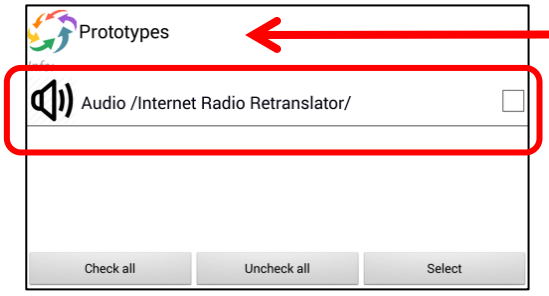
Clicking the “Open” Button starts the process of installing the prototype audio profile into the “My /custom stream/” Folder where it can be edited for the Police Scanner website URL.

Notice the message to click the “Add” Button.



My /custom stream/ Panel

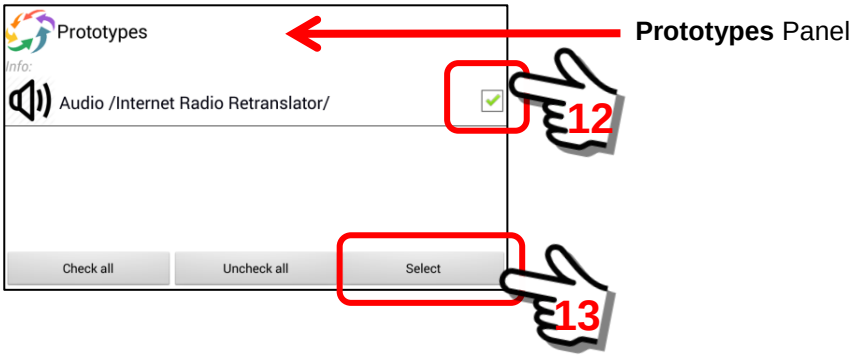
When the “Add” Button is clicked, the “Audio /Internet Radio Retranslator/” profile is installed in the Prototypes Folder.



Prototypes Panel

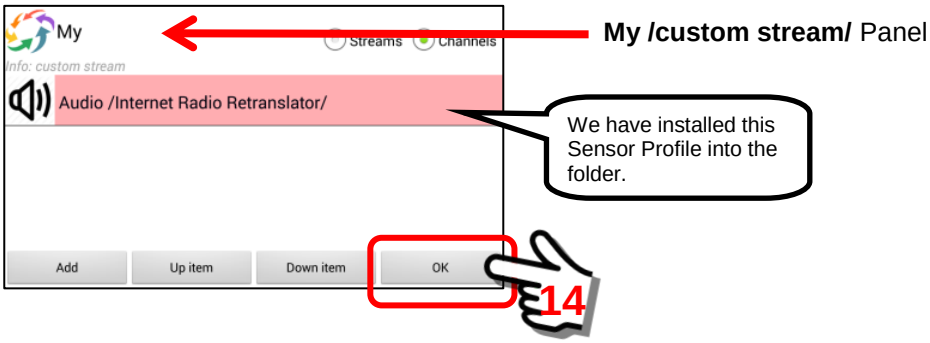
If you have created other prototypes for Sensors you may have several prototypes in the Prototypes Folder. In this example, we only have “one” (1).

Put a “checkmark” in the checkbox and click the **Select Button** to select this prototype for use.

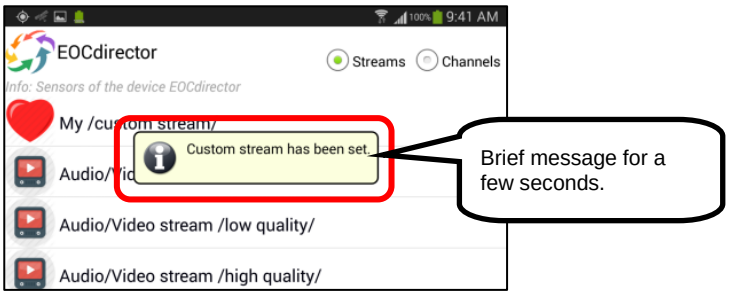


The “Audio /Internet Radio Retranslator/” profile is now installed in the “My /custom stream/” Folder where it can be edited.

Note that the entry is highlighted since it was just added.
Click the “OK” Button to accept the install of the highlighted choice.



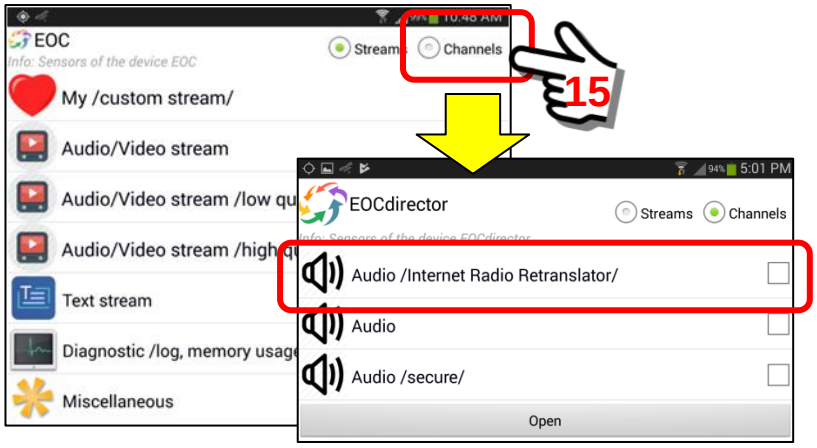
You will be taken the the Main Sensors Panel screen. A message will flash for about 3 seconds indicating that a “Custom stream has been set” for the device.



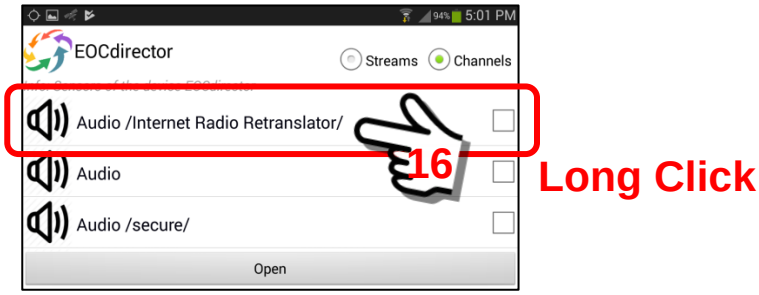
Now that we have “duplicated” the sensor profile we will need to edit it to use the Police Department Website that broadcasts the mp3 data for monitoring police frequencies.

The duplicated profile has now been installed as a “new” entry at the top of the list of available sensors.

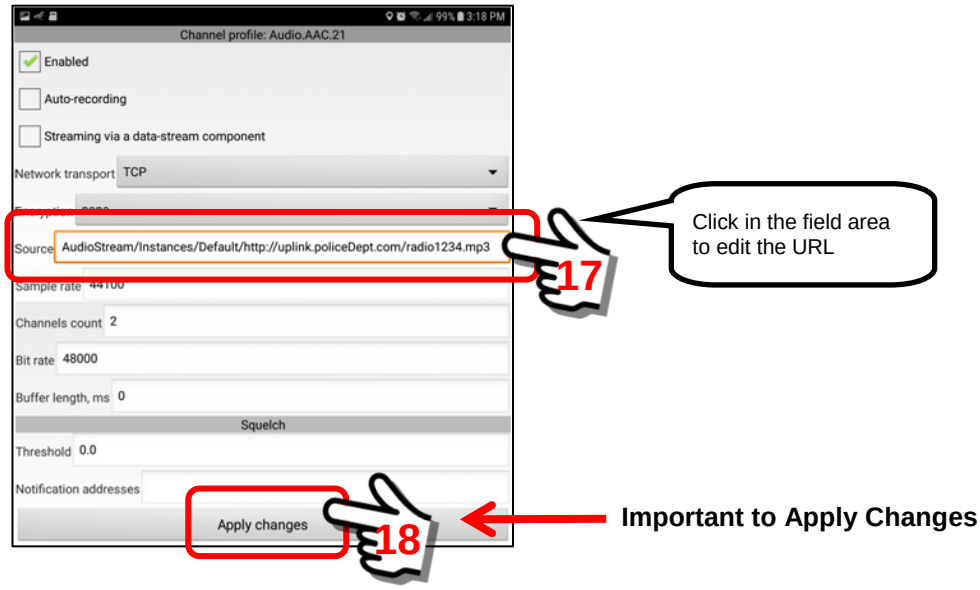
In this example, the “Audio /Internet Radio Retranslator/” profile is now installed as shown.



To “edit” this new audio profile and put the Police Department URL for broadcast receiving, perform a “Long click” on the profile name.



The Channel Profile Panel will be displayed. You may edit and set the parameters as you desire. In this example, we will adjust the “Source” data field to match our Police Department URL.

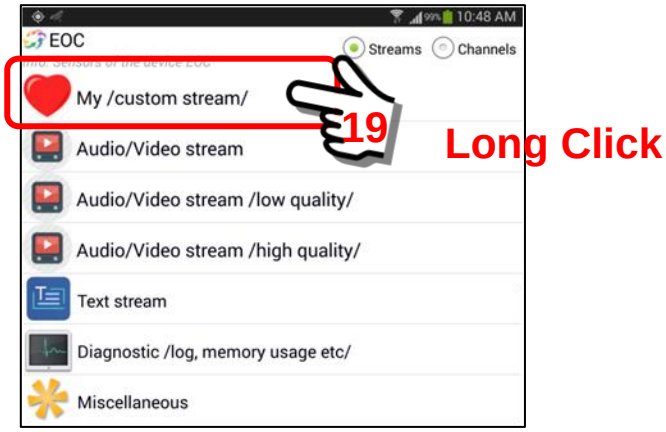


5. ***Change the "name" of the new Channel Profile.***
The "new" channel profile is now set with the Police Department scanner URL. However, this new channel profile still has the same name as another channel profile in the list.

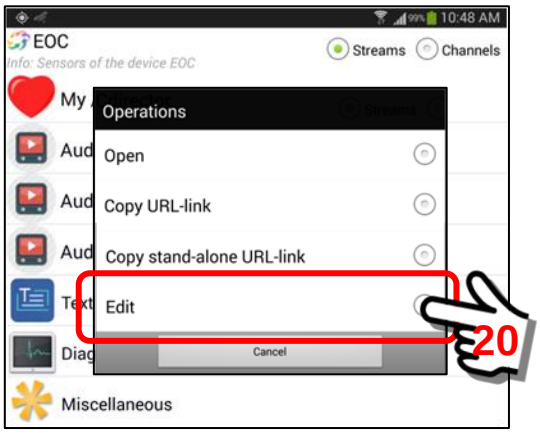
It is a good idea to change the name of this new channel profile to better describe the new function. We will change the name to:

Audio /Internet Radio Retranslator – Police/

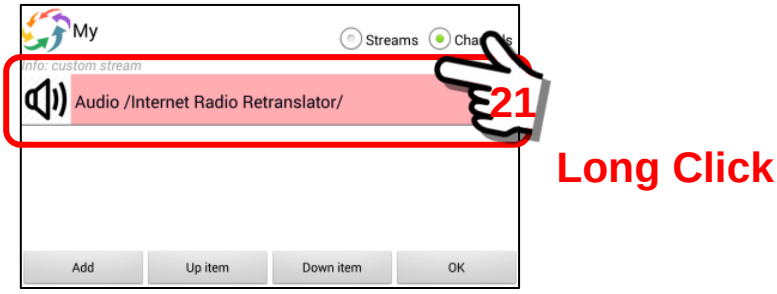
Perform a "Long click" on the "**My /custom stream/"** menu item.



A pop-up Operations Panel will appear. Select the "Edit" Option.

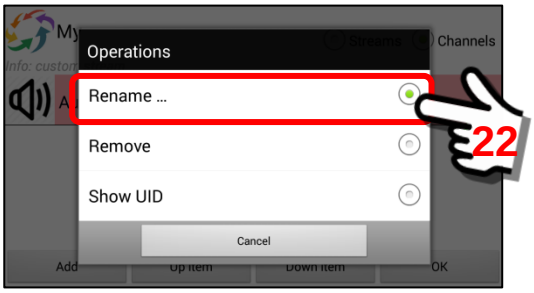


The "**My /custom stream/"** Panel will open.



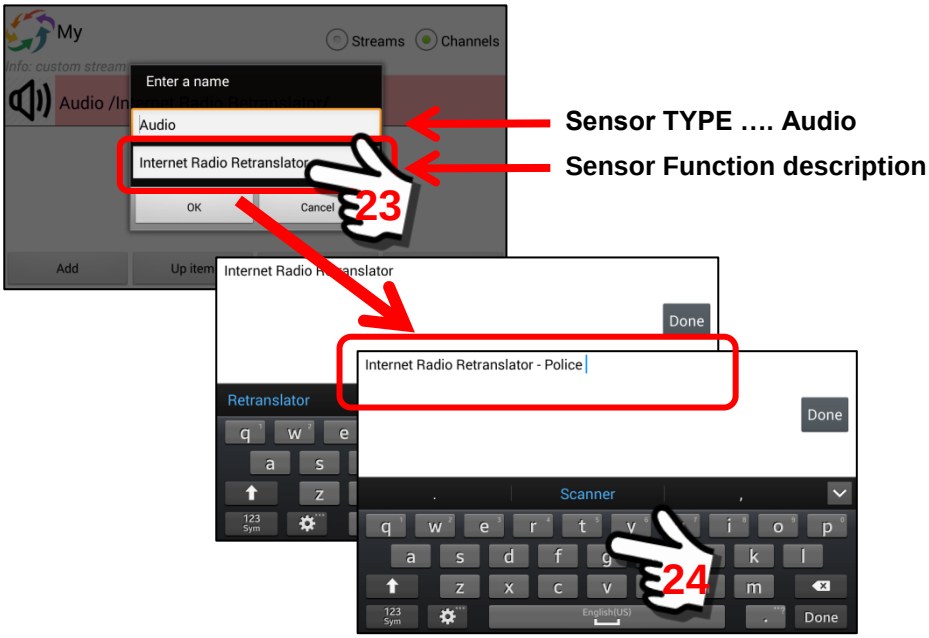
Perform a “Long click” on the Profile Name and a pop-up Operations box will open with 3 menu choices. To “rename” the sensor profile, we will select the “Rename” Option.

Click on “Rename”.



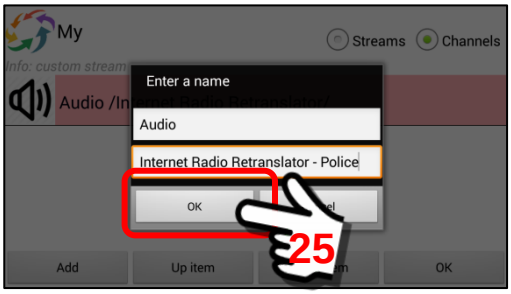
The Operations Panel will be replaced by the “Enter a name” pop-up panel. This panel will have two data fields that may be edited. In this example, we will select the second data field to modify.

Click on the “Internet Radio Retranslator” data block to edit.

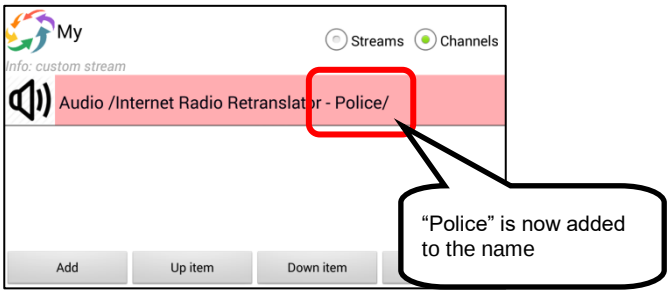


When finished editing, the panel should be as follows:

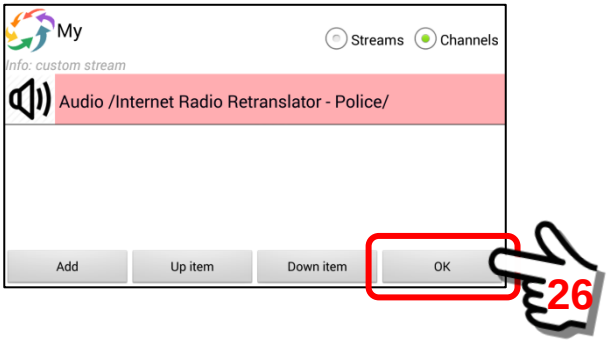
To SAVE the changes, click the “OK” Button.



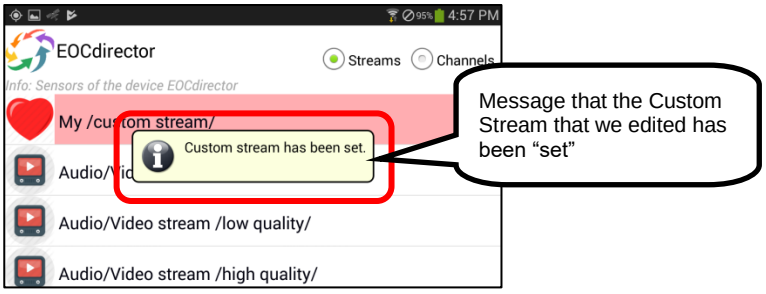
The “**My /custom stream/”** Panel will now display the custom stream panel with the NEW name.



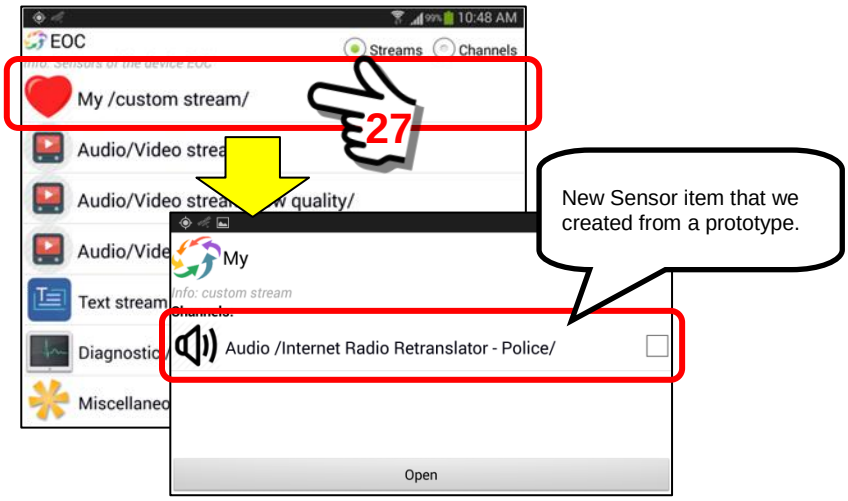
To save these “new” changes to the “**My /custom stream/”** Folder, click the “OK” Button at the bottom of the screen panel.



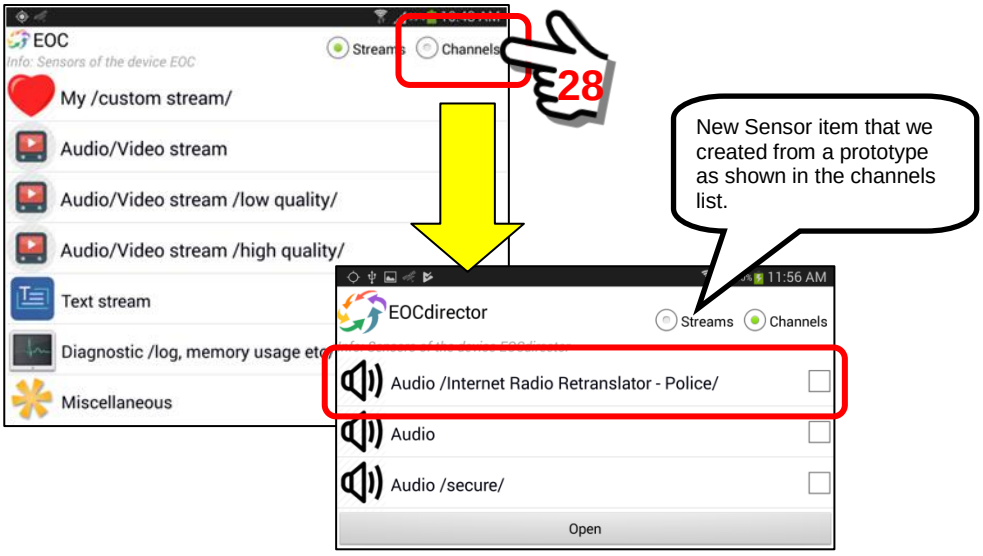
The screen will refresh and return to the Sensors Listing Panel.



To review the name, open “**My /custom stream/”** menu folder.



The item is also listed on the Channels Listing for all sensor channels. New entries are typically put at the top of the list, as shown below.



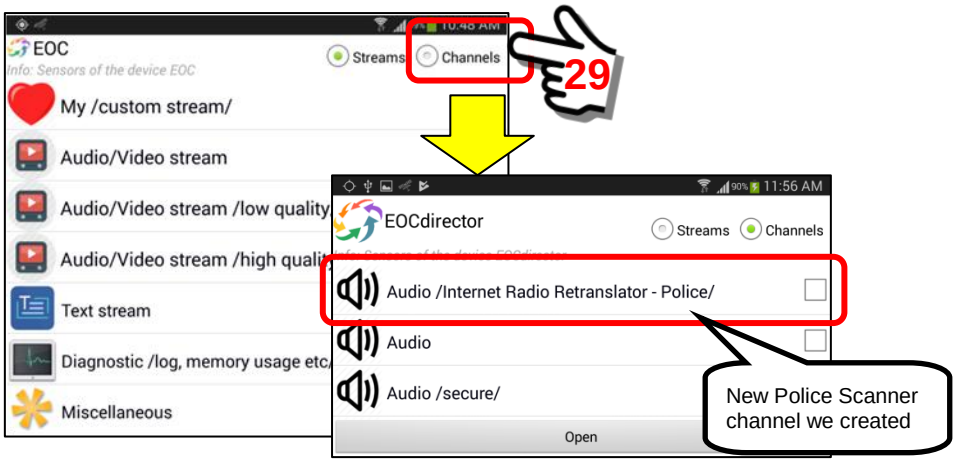
6. ***Import the Police Scanner sensor channel into the Bookmarks Folder.***
The final step in this example is to use the prototype Police Scanner URL to construct a "new" bookmark that can be imported into the Bookmark Folder. After the above steps, you should be at the Sensor Panel.

At the beginning of this exercise we created a prototype folder name.

"Audio – Prototype Police Scanner"

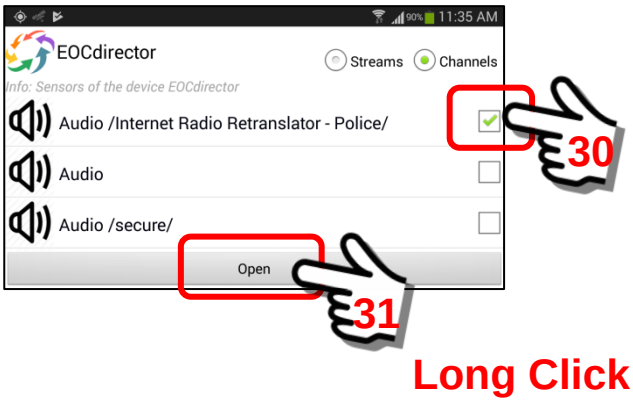
This name is still stored in the .TEMP folder ready for import as a bookmark. However, for this exercise, we are NOT going to use this feature, but will reference it later in this section.

Click on the "Channels" button on the Sensor Panel.This will open the list of available Sensor Channels. Notice that the "new" channel we created with the prototype feature is at the top of the list.



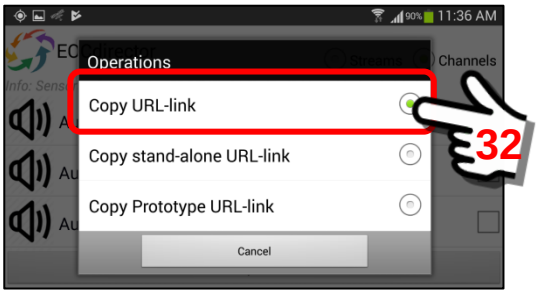
To create our Police Scanner Bookmark, we will select this new channel and copy the URL for a bookmark.

Put a "checkmark" in the checkbox, then "Long click" on the Open Button.



This will open a pop-up Operations panel that will allow us to save the URL for this sensor channel.

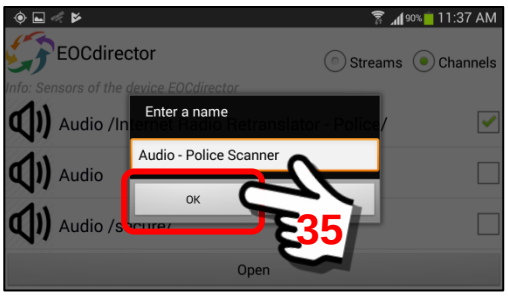
On the Operations Panel, select the “Copy URL-link” option from the list. This will store the URL for this sensor channel in a .TEMP folder that may be used to import this URL into a bookmark.



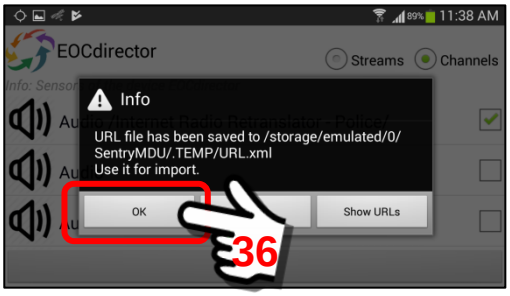
Enter a name for this “new” bookmark. The data field defaults to the sensor type (ie Audio). We recommend a more descriptive name. In this example, we will enter “Audio – Police Scanner”.

Click inside the data field to begin editing.

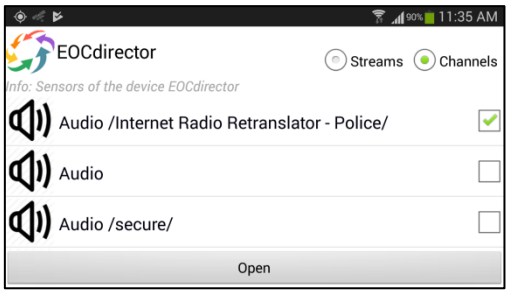
When finished, click the “OK” Button to continue.



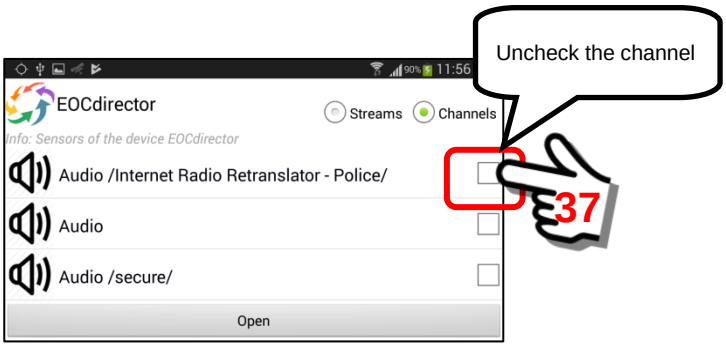
As the screen refreshes, the **Info Panel** is displayed (for saving a bookmark). Click the “OK” Button to save the URL file as a bookmark.



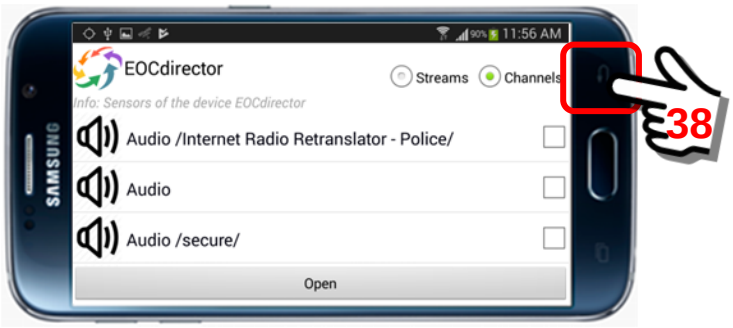
When you click the ”OK” Button, the system will refresh and return to the Sensor Listing panel.



You may now “uncheck” the “**Audio /Internet Radio Retranslator – Police/**” sensor channel. We are done with it.



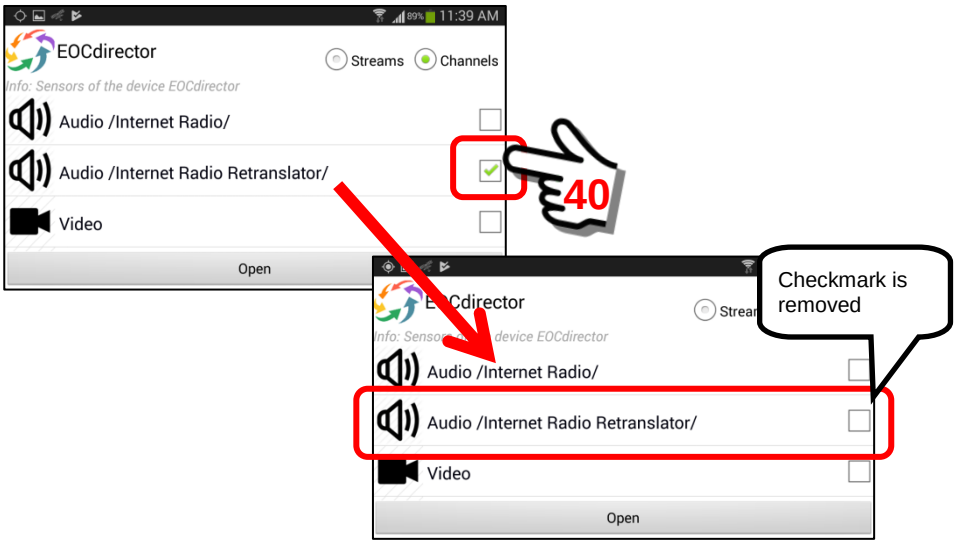
Click on the “Back” Button on the phone.



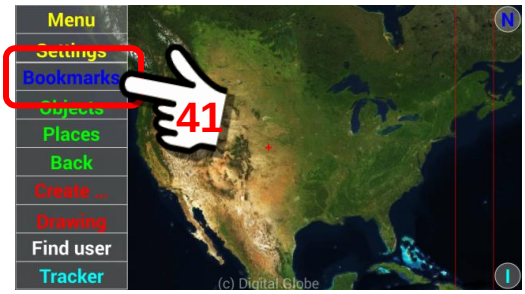
When you click on the “Back” Button, the screen will return to a previous Info Panel. Since, for this exercise, we do NOT need to save the prototype folder name, we may cancel this panel. Remember the “name” we created at the beginning of this exercise? … this was it.

Click the “Back” button AGAIN to cancel this panel.

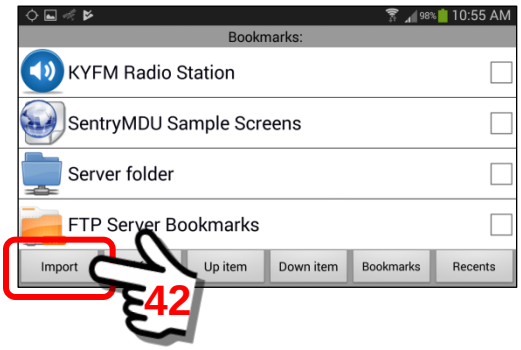
You will be returned to the Sensor Panel listing. We can “uncheck” the original Sensor Profile that we used as the prototype. We are done with it.



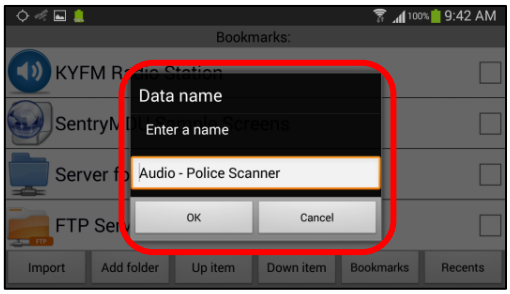
Use the “Back” Button on the device to return to the Main Map Screen. Click to open the Bookmarks Section.



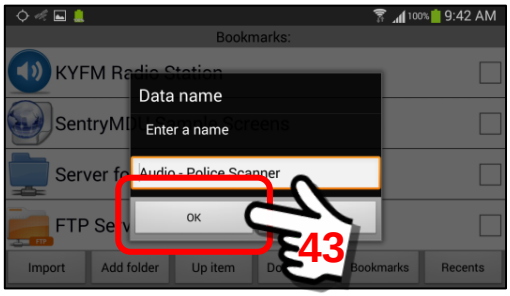
We will “import” the bookmark that was “saved” into the Bookmarks Folder.



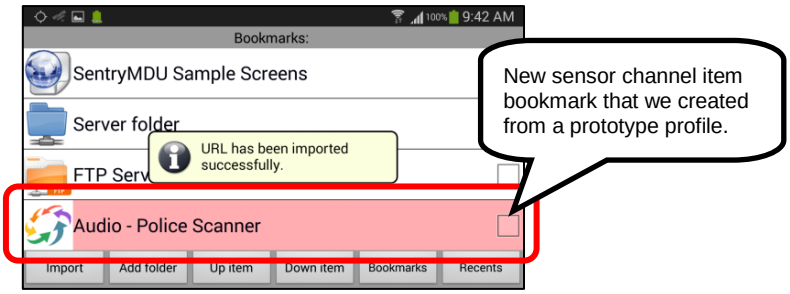
By clicking the **Import Button**, we will retrieve the bookmark name that we saved earlier in the exercise … “**Audio – Police Scanner**”. At this point you may edit and make changes to the name if you desire.



When finished, click the “OK” Button to install the bookmark.

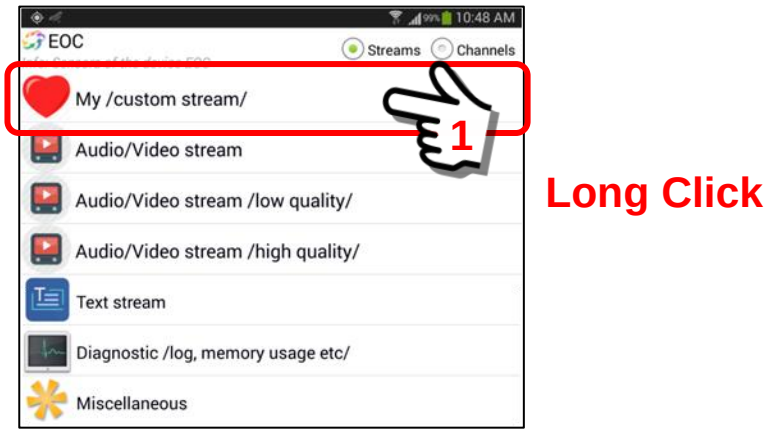


The **“Audio – Police Scanner”** bookmark is now installed and ready to use.



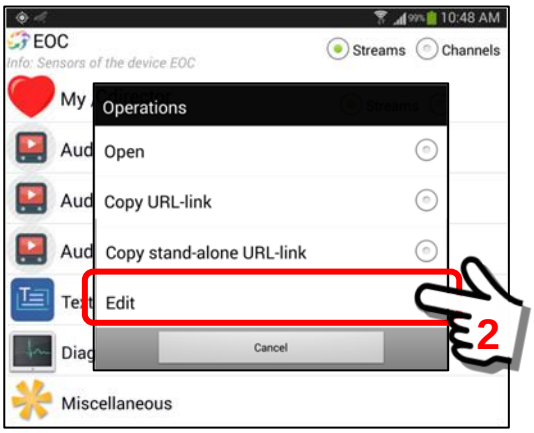
7. ***How to REMOVE a Custom Stream.***

To remove a custom stream from the "**My /custom stream/"** folder, do the following. Open the Sensors Panel and perform a "Long click" on the "**My /custom stream/"** menu item.

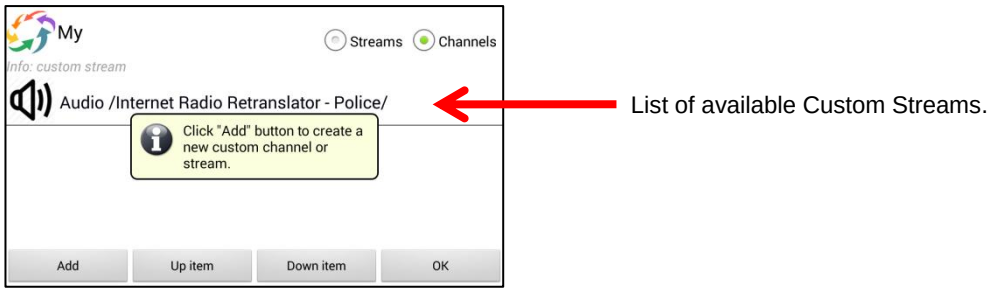


The objective is to "edit" the "**My /custom stream/"** folder and remove the entry that we do not want.

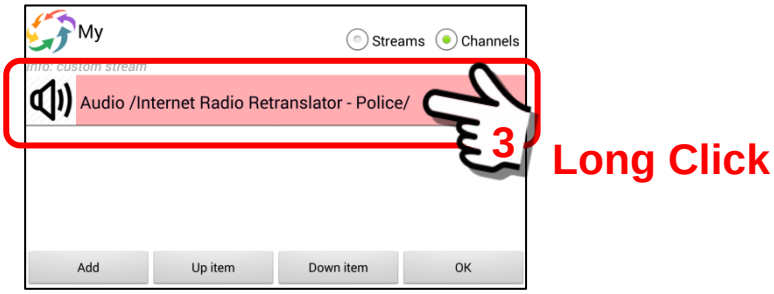
Click on the "Edit" option from the Operations pop-up menu.



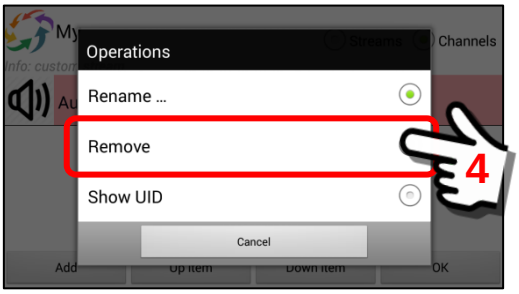
The "**My /custom stream/"** folder will open to display the available list of Custom Streams.



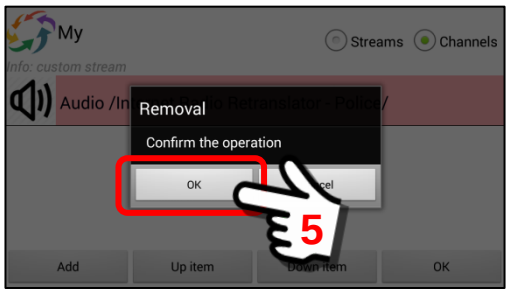
Perform a “Long click” on the custom stream you wish to remove.



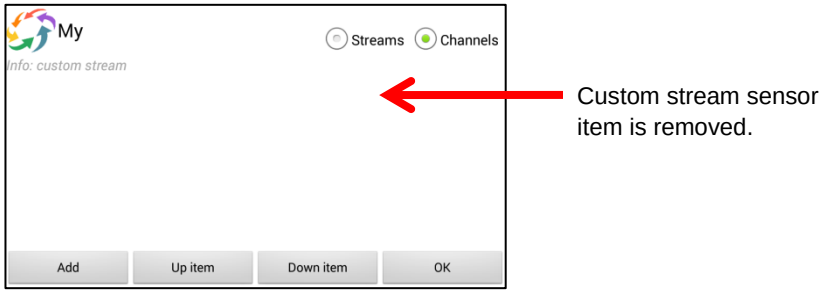
A pop-up Operations menu will appear with an option to remove the custom stream. Select the “Remove” Button.



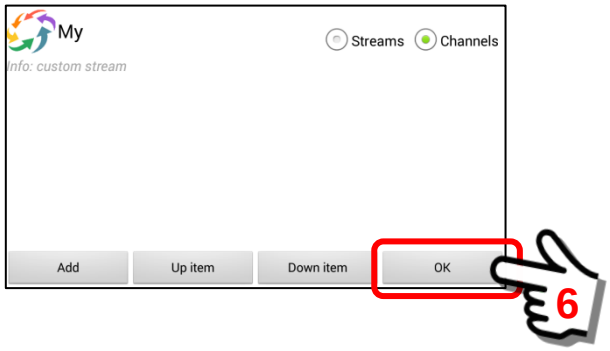
When the “Remove Button” is clicked a pop-up Removal Box will appear asking for confirmation. Click the “OK” Button.



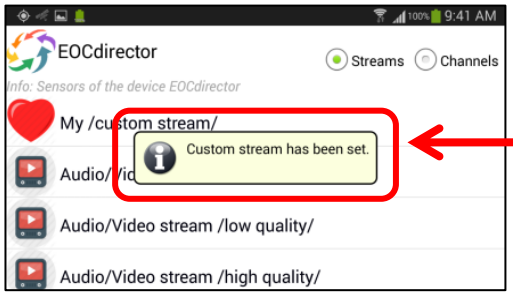
The screen will refresh and display the “**My /custom stream/”** folder with the selected item removed.



Click the “OK” Button on the “**My /custom stream/”** panel to finalize the change and update the listing (this removes the items from the Sensor Listing).



The screen will refresh and display the Sensor Panel.
A brief message will flash for a few seconds “Custom stream has been set” (in this case = removed).



When this message displays, the removal is now complete

9.30. Example – My Tracker combines GPS track with audio

Overview:

The "**My Tracker**" feature provides a GPS marker on the map screen for YOUR mobile device. Using the pre-configured "My track" Menu item it will display the current GPS track and location of your mobile device. The "My Tracker" feature may be used in locations where cellular communication does NOT exist and/or when the SentryMDU device is in "offline" mode. The track will start from the time you activate the "My track" menu selection.

This example will illustrate how to further enhance the **My Tracker** feature to include an "Audio Ping" notification option that will "beep" as you maintain course ... with the beeps becoming more rapid, with a higher "tone" the closer you get to a pre-defined location. This will be like a Metal Detector where the beeps get louder and higher pitch the closer you are to the treasure.

The My Tracker Icon:

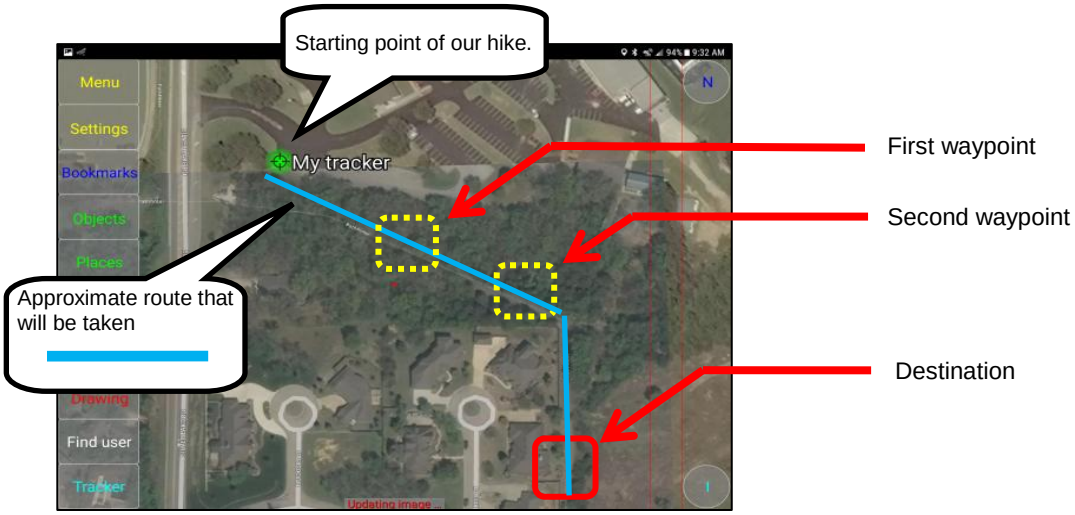
In a new install of the Sentry MDU System, seven (7) default bookmark shortcuts are created. The My Tracker menu option is a pre-configured option in a sub-menu.

How the “My Tracker” feature is used:

The “My Tracker” feature may be used to navigate to a “GPS location” on a map using “audio” sounds to determine if you are “on course”. This may be done even if the device does not have cellular communication.

> **Important Note: If cellular communication is NOT expected to be available, the User should “cache” a map region where you will be travelling. After arriving at the area, switch the SentryMDU device to “offline” mode. The offline mode can be enabled from the Main Menu or by closing the current map, turning off the internet on the smartphone and then opening the map again. See Section 13.4.6 for cache details.**

Let us assume you are deep in a forest, there are no obvious trails and you want to find your way to a particular “spot”. In the picture below, there are trails, but let’s pretend there are none.



Hiking through unfamiliar terrain may present many challenges. With a GPS enabled device, waypoints may be created and followed “visually” by looking at the satellite display, recognizing landmarks and following a particular heading.

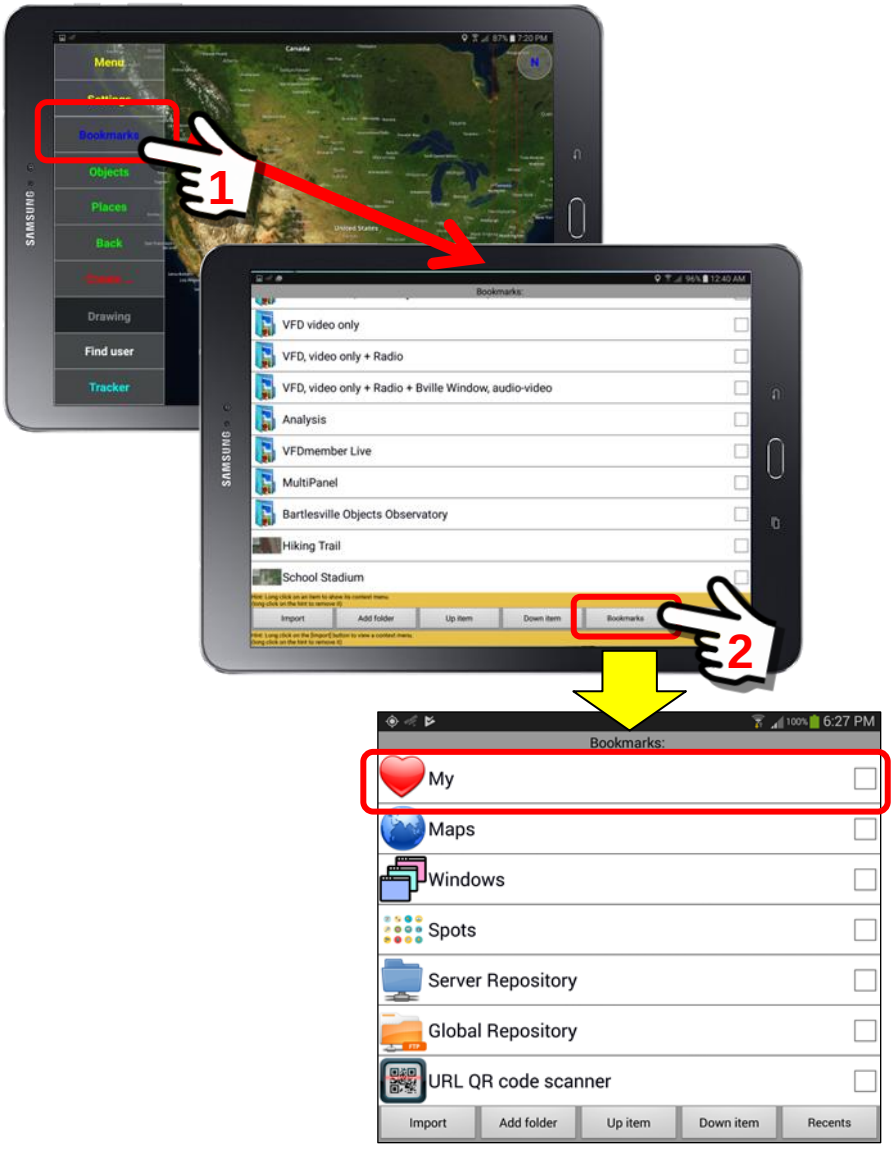
For the SentryMDU App we have developed one additional method … similar to the audio feedback provided by a “Metal Detector”. When set to the **My Tracker** mode, the mobile device will now emit a “beeping” sound that will change in pitch and tempo as you move toward or away from a designated waypoint. We call this … **Audio Navigation**. In this manner, you do NOT have to continually look at your device screen, you simply listen for the tone changes. This section will illustrate this concept.

Steps to implement GPS audio notification:

1. ***Layout of the bookmark shortcuts folder.***
   The Bookmark Shortcuts Folder contains 7 pre-defined groups of “default” bookmarks that were loaded when the App was installed. As a user, you may add/delete items to this shortcuts list and copy to other bookmark folders.

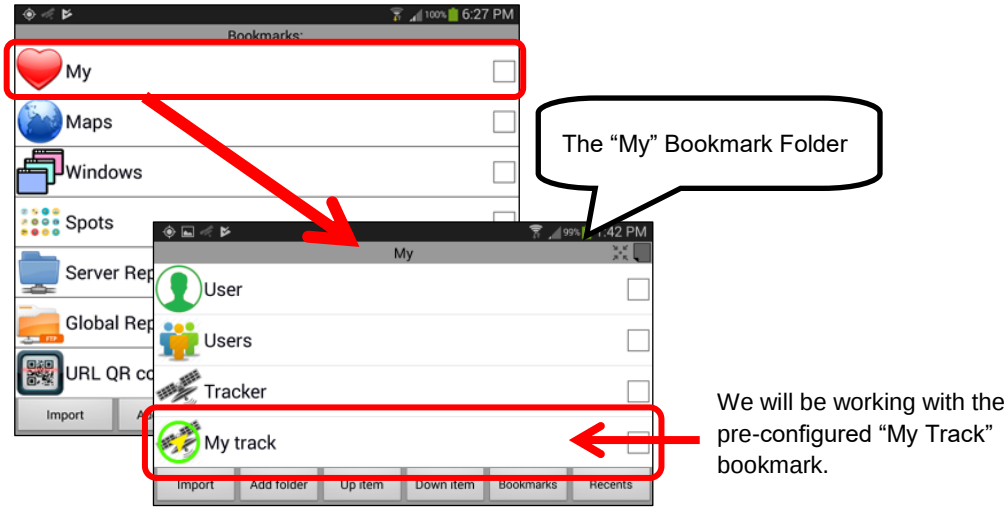
   The default panel has the following entries:
   (1) My
   (2) Maps
   (3) Windows
   (4) Spots
   (5) Server Repository
   (6) Global Repository
   (7) URL QR-code scanner

   In this example, we will be working with the “My” Bookmarks Folder.



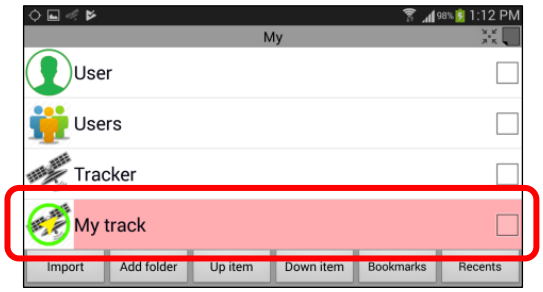
2. ***The "My" bookmark folder.***

The "My" Bookmark folder contains shortcut access to the User Information Panel, other users installed on the mobile device and Tracker Information.



<u>My track</u>

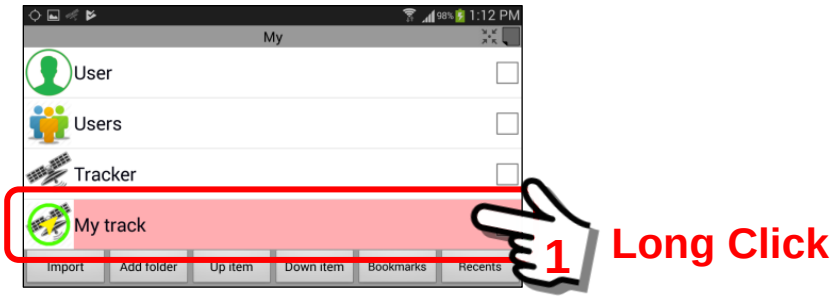
The "My track" Menu item will display the current GPS track and location of your mobile device. The track will start from the time you activate the "My track" menu selection.



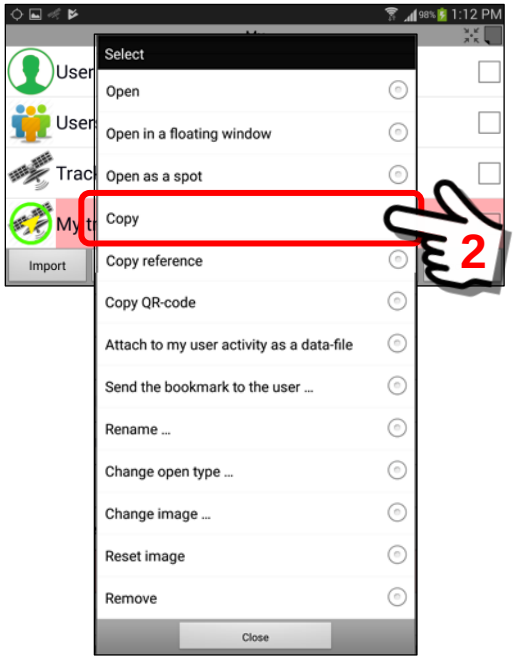
3. ***Transfer the "My Track" bookmark to a Foreground Layer.***

The My Track Bookmark is one of the default pre-configured system bookmarks that comes with the initial installation of the App. Instead of using a default bookmark directly, it is often a good idea to make a "copy" of these system bookmarks, perhaps rename them, and put them in one of the Custom Layer Folders (ie Foreground, Central). We will do that here.

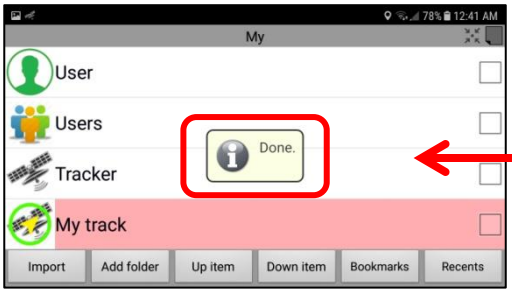
Perform a "long click" on the My Track bookmark item.



A pop-up menu will appear. Select the “Copy” option to copy the My Track URL to a .TEMP folder for import into a Foreground Layer.

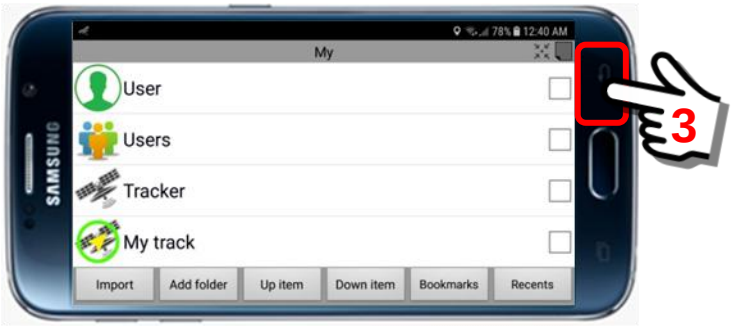


As the copy operation is complete, the My Track URL will be stored in a .TEMP folder for import.

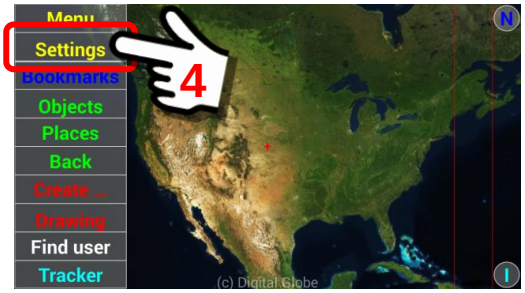


The “Done” message indicates that the “My Track” default bookmark has been saved in a .TEMP folder

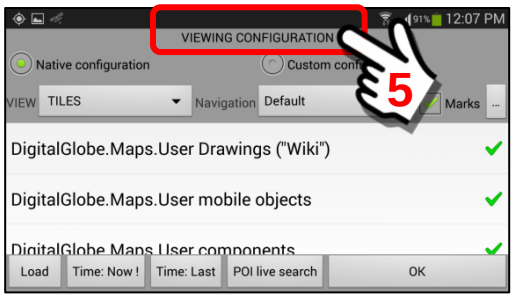
Return to the Main Map Screen and select the Settings Menu item. Click the “back” button on the phone several times.



At the Main Map Screen, select the Settings Panel.

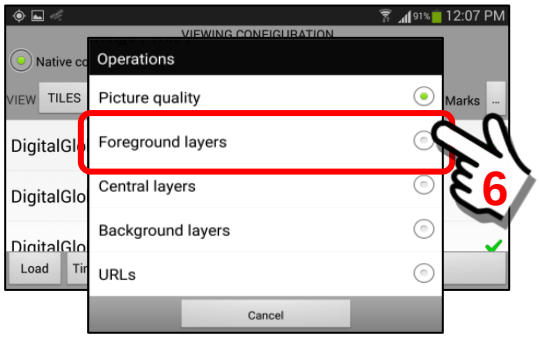


Now that we have saved the “My Track” map URL we will need to import it into the Foreground file storage repository. Click the “Settings” Button on the device to access the ***Viewing Configuration*** Panel.

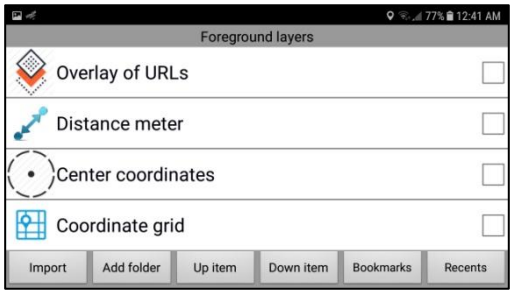


Long Click

Click on the ***Viewing Configuration*** header and select “Foreground layers” from the Operations menu options.



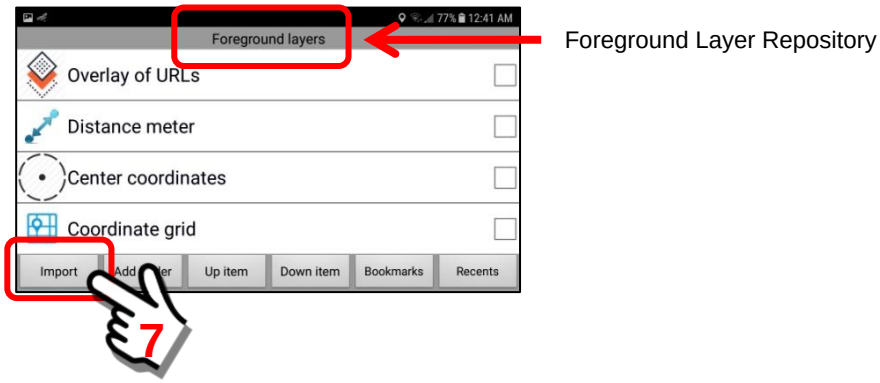
The Foreground layers panel will open. In this example, we are showing the Foreground Layers folder with the 4 initial default entries as shown below.



This is where we will install the “My Track” bookmark that we want to use as a Foreground Layer.

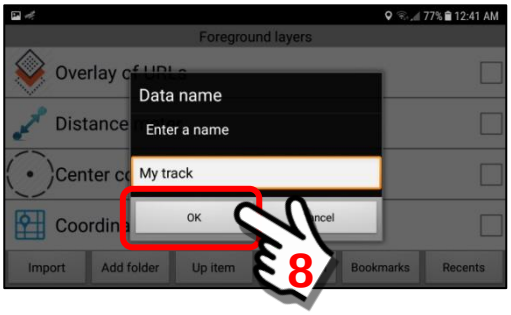
Since we have saved the URL “link” for the **My Tracker** feature in a temporary file, we are now ready to “import” this URL link into our Foreground Layer Repository as shown below.

Click on the Import Button.

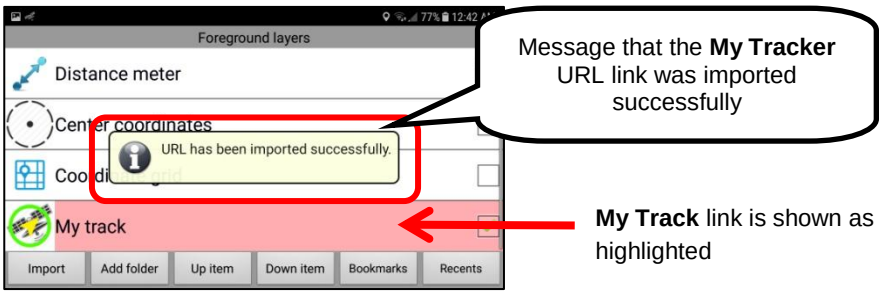


Clicking on the Import Button will open a pop-up box that allows a User to enter a “Data name” for the particular Foreground Layer. Since we had originally copied a URL link for the **My Tacker** feature, the system will use a default name of “My track”. You may change this name by clicking in the text entry block and editing the text. For this example, we will leave as is.

When finished, click “OK” to save the Foreground Layer link.



Once the URL link has been installed into the Foreground Repository, you will receive a message that the import was successful.

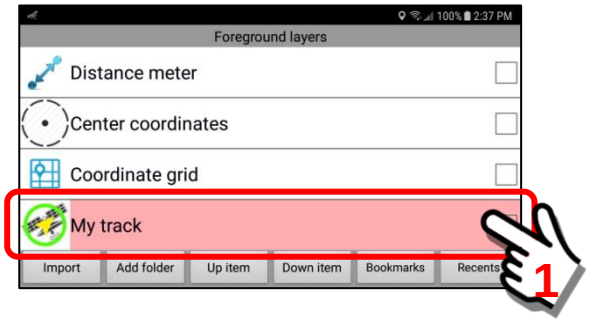


We have now completed the “import” of the “My Tracker” bookmark from the default repository to the Foreground Layers Folder.

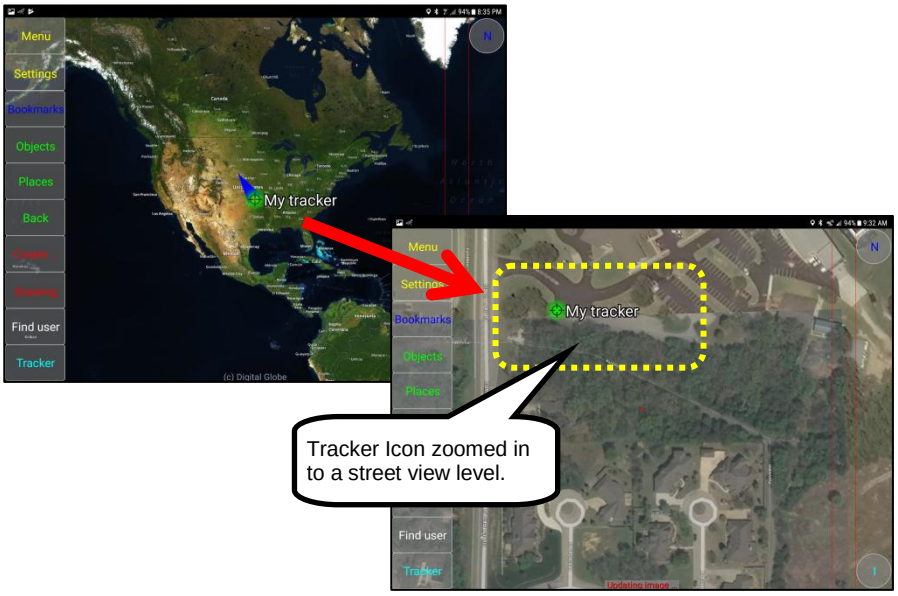
4. ***Launch the "My Track" bookmark.***

The first step is to launch the My Track Bookmark and display the "My Tracker" Icon on the Map Screen. Navigate to the Foreground Layers folder.

Click on the My Track bookmark item.

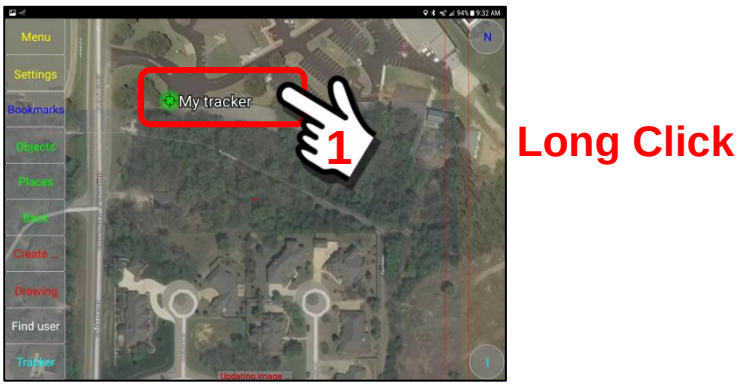


The first time you use the My Tracker feature, the base map view may start as a continent view as shown below. Zoom down to the view level appropriate for your situation.

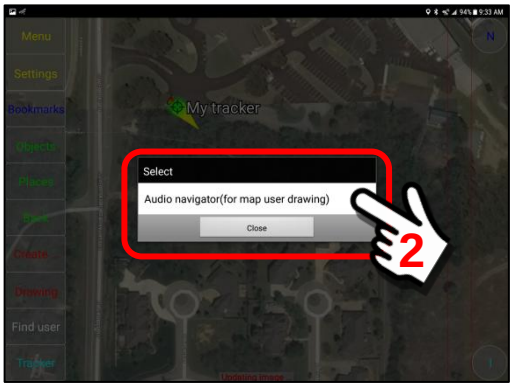


5. ***Enable the "Audio Navigation" option.***

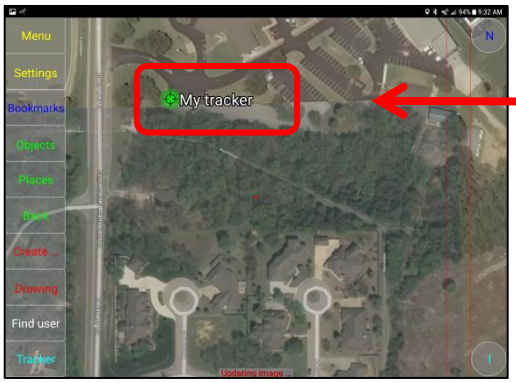
To turn on the **Audio Navigation** feature, perform a "Long click" on the My Tracker object name..



A pop-up “Select” Menu will open, click on the **Audio Navigation** button.



As the Audio Navigation is “enabled” you will begin to hear short “beeps” from the mobile device. This indicates that the feature is activated.

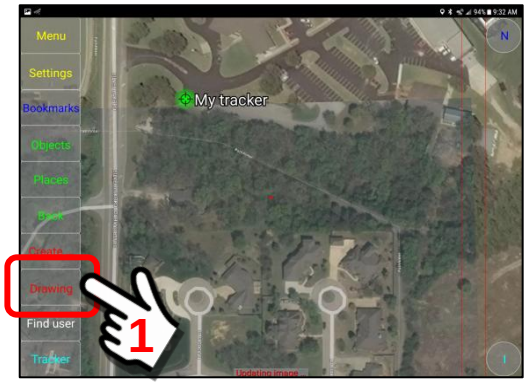


When activated, you will begin to hear “beeping” at 2 second intervals.

6. ***Activate the Drawing Mode and create waypoints.***
The next step is to create the waypoint(s) or destination for our route through the forest. You may have any number of waypoints … but you must have at least “one” point as a destination.

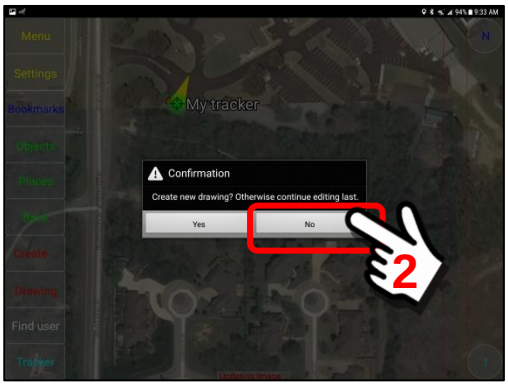
We create waypoints by activating the Drawing Mode from within the My Tracker Map Screen.

Click on the Drawing Button.



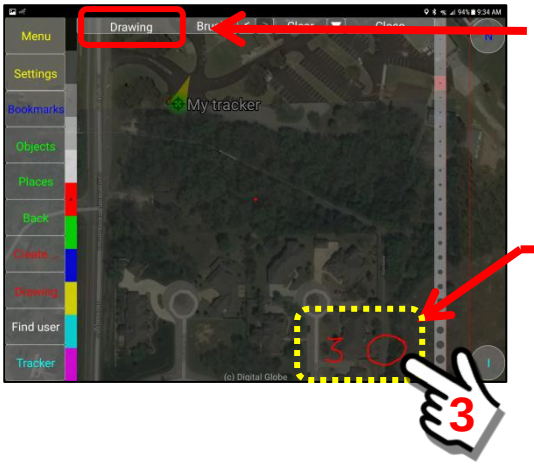
The Drawing Mode will open with access to all of the normal drawing tools and menus. If you need a refresher, see **Section 13**. When the Drawing Mode is first opened it will ask if you want to “Continue with the previous drawing?”. In this example, we will be starting a “new” drawing, so we will check the “No” option.

Click “No” on the Confirmation pop-up box.



We will use the Drawing Mode to create circles, dots or some type of “closed” polygon region. The GPS coordinates of this waypoint will be the “area” contained within this closed polygon. If you have multiple waypoints they should be created starting at the destination and working backwards towards the start.

In this example, we have 3 waypoints (with #3 being the destination).
In the drawing mode, draw a circle for Item #3 using your finger as a stylist.



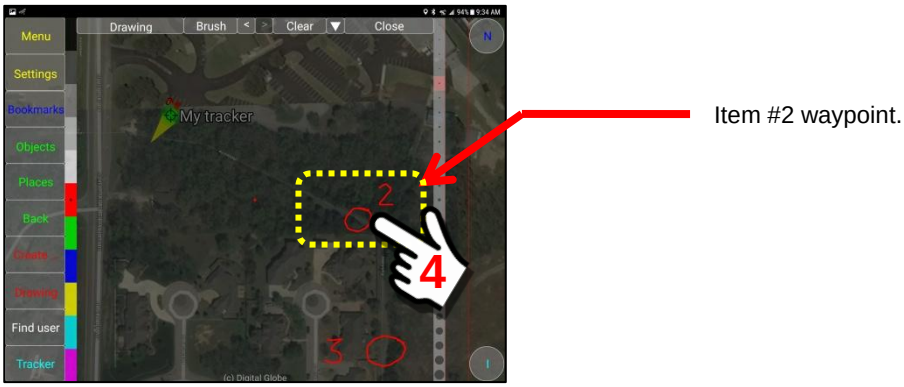
Note: We are in Drawing Mode

Item #3 waypoint.
Destination

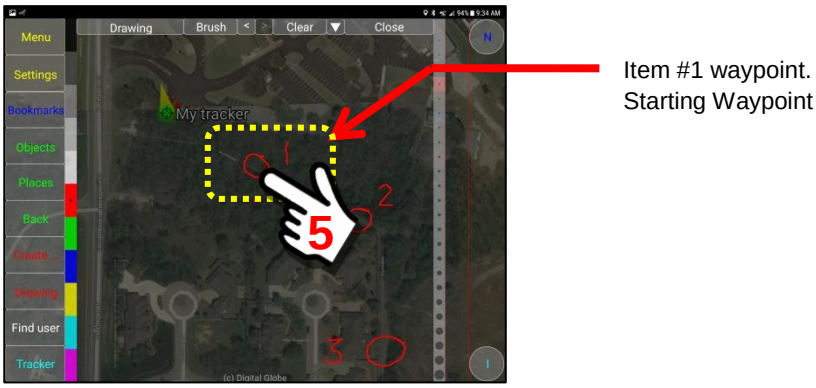
We start at the #3 Waypoint because when we are travelling our route we start with 3 waypoints (1, 2, 3). The Audio Navigation feature will “lock” onto the closest waypoint (Item #1) and the beep tone/tempo will be relative to this first waypoint. When we reach waypoint #1, we will need to remove Item #1 from the drawing model so the system will now look toward the next closest waypoint … which would be Item #2 … and so on. In the Drawing Mode, the

drawing tools remember the entries in “order” they were made, so the last in, is the first out. This is why we begin our drawing of waypoints starting at the end (so it will be the last waypoint encountered).

Next, draw the Item #2 Waypoint.



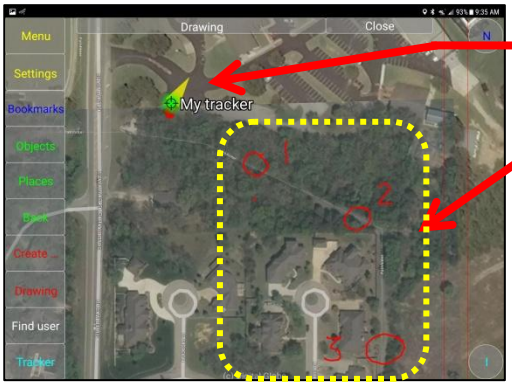
Next, draw the Item #1 Waypoint (the starting waypoint)



We have now created the three (3) waypoint for our example. To exit the Drawing Mode and return to the Map Display Mode, click on the Drawing Button at the top left of the title block.

To exit the Drawing Mode and return to the Map Mode.

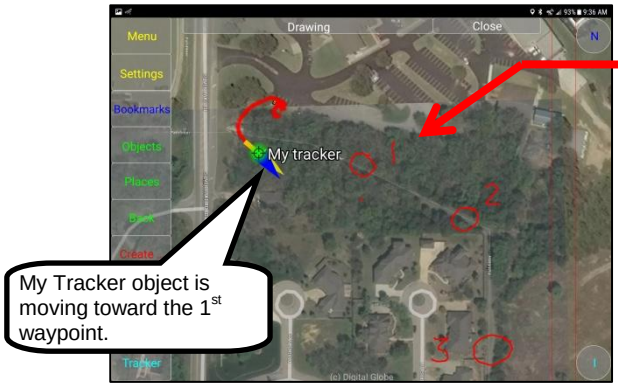
When we exit the Drawing Mode and return to the Map Mode, the Audio Navigation feature is now “active” and should be producing “beeping” sounds every few seconds.



User GPS location via My Tracker feature

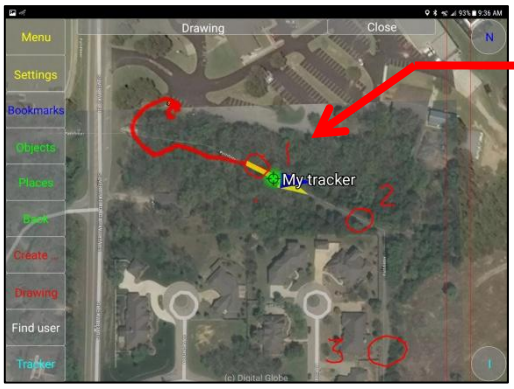
All 3 Waypoints

7. ***Begin travelling toward waypoints on route to destination.***
The User may now begin travelling toward the waypoints. The sound tone and tempo should change as you maintain a more direct line toward the waypoint in the same way a Metal Detector frequency and pulse change as you get closer to buried treasure.



The First Waypoint

When the User reaches the first waypoint, the tone is high-pitch and the tempo is continuous. We will now remove Waypoint #1 so that we may progress towards Waypoint #2.

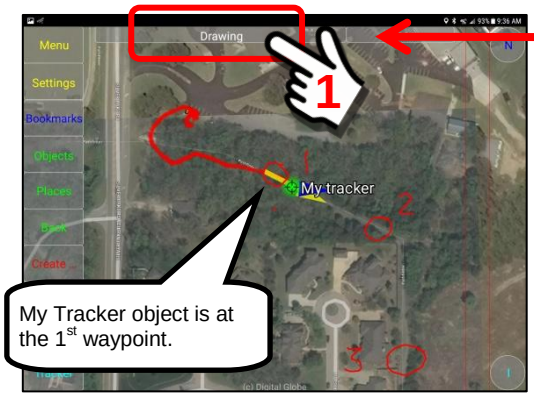


User has reached the 1st Waypoint

8. ***Remove progress waypoints on route to destination.***

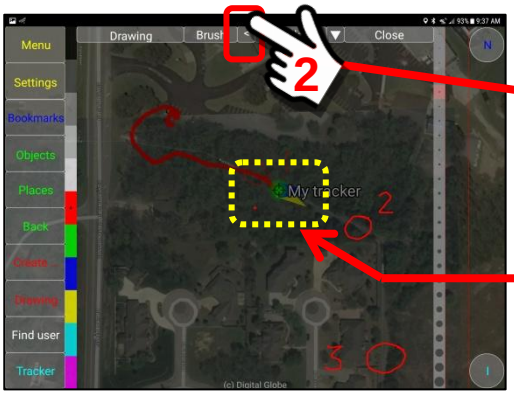
To remove the 1st Waypoint, we will re-enable the Drawing Mode and remove Item #1 Waypoint.

Click on the Drawing Button.



Click to enable Drawing Mode

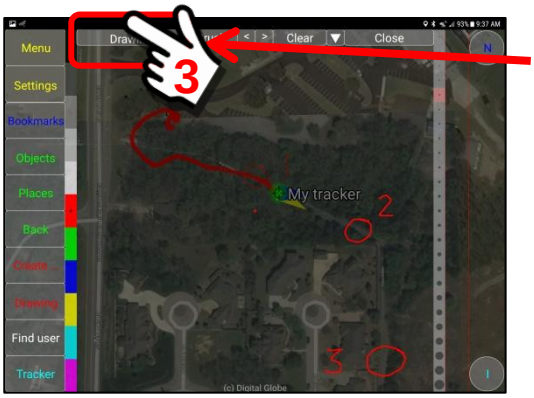
We have re-enbled the Drawing Mode.
Click on the "Undo" (<) Button to erase (undo/remove) the 1st Waypoint drawing lines. Depending on how you made the drawing you may need to "tap" on the Undo (<) Button several times to completely remove the Item #1 Waypoint.



Click to Undo (<) several times to erase the waypoint

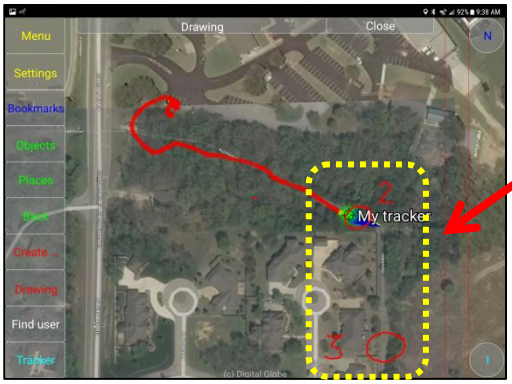
Item #1 Waypoint is removed

Once you finshed removing the Item #1 Waypoint, return to the Map Mode and continue your journey through the forest.



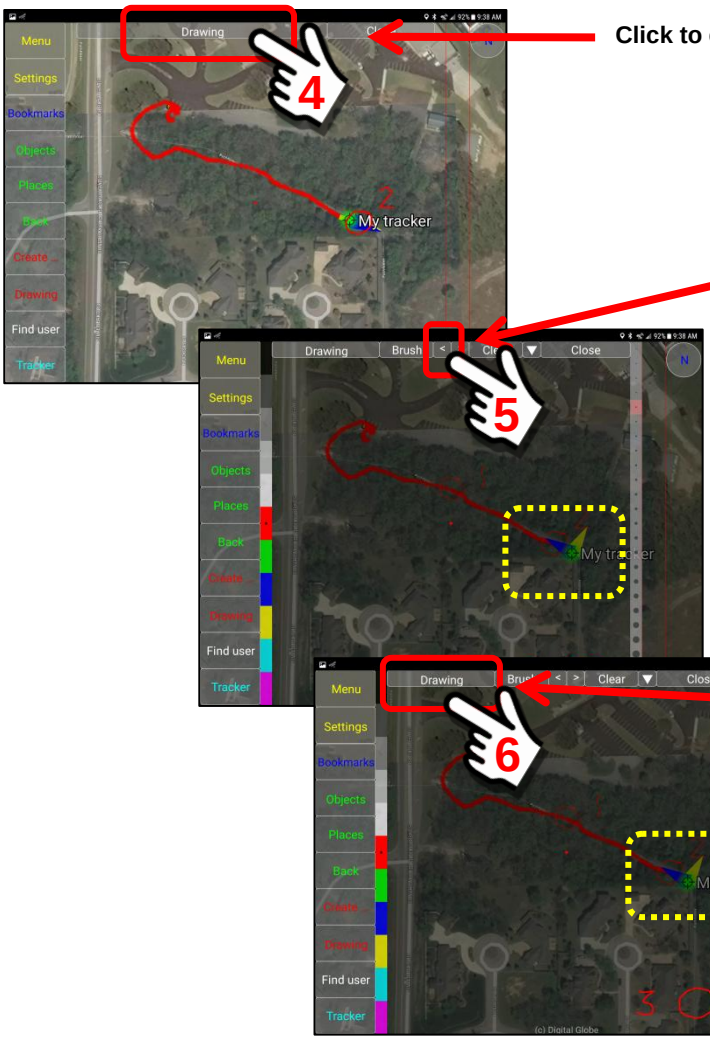
Click the Drawing Button to return to the Map Mode, the Item #1 Waypoint is now removed.

We now continue the hike in the forest and approach Waypoint #2.



Remaining 2 Waypoints

As we reach, Waypoint #2, we perform the same operation to remove Waypoint #2.



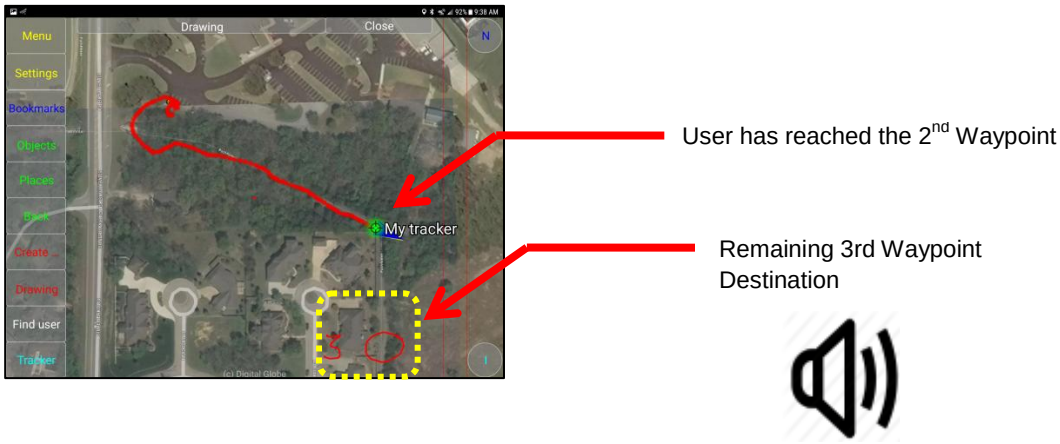
Click to enable Drawing Mode

Click to Undo (<) several times to erase the #2 Waypoint

Click the Drawing Button to return to the Map Mode

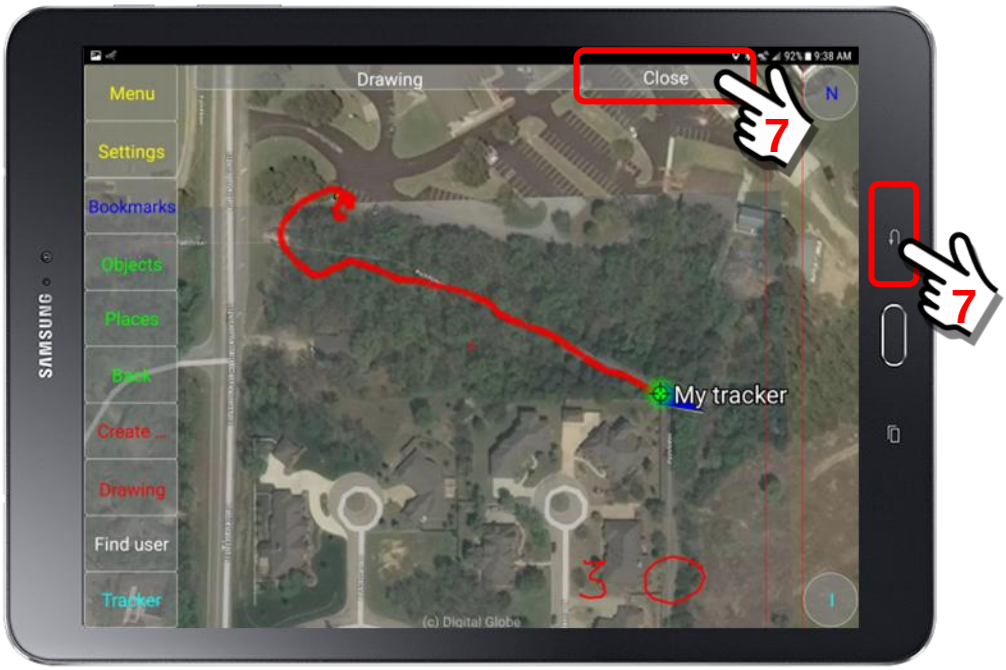
Item #2 Waypoint is removed

At this point in the example, the #2 Waypoint has been removed and we are receiving the audio navigation tones/tempo as we move toward Waypoint #3.



After completing your hike through the forest, you may “close” the My Tracker feature.

To close, click the “Close” Button … or use the “Back” Button on the phone to return to the bookmarks menu or Main Map Screen.



9.31. Example – Access remote IP Cameras, NVRs / DVRs

Overview:

This feature of the Bookmarks Section allows a user to configure remote IP Cameras, and NVR / DVR surveillance camera systems to be accessible from the SentryMDU App. We will then save that URL as a new bookmark. This feature can provide general users access to the surveillance cameras in their homes and Law Enforcement access to camera systems in public buildings, schools and recreation areas.

This example will illustrate how to duplicate an existing Sensor Profile and use it to create another profile that will read the data stream directly from a remote IP Camera or NVR/DVR surveillance system. In this exercise we will activate a **Foscam R2C** IP Camera (~ $50 USD) so we can access it from the SentryMDU App.

Important Note: Your camera or NVR/DVR system MUST be accessible via a Public IP Address and must support the Real Time Streaming Protocol (RTSP). If your device(s) is on a "Private Network" (ie 192.168.1.1) it will still work if you use Port Forwarding or Dynamic DNS to reach the internet.

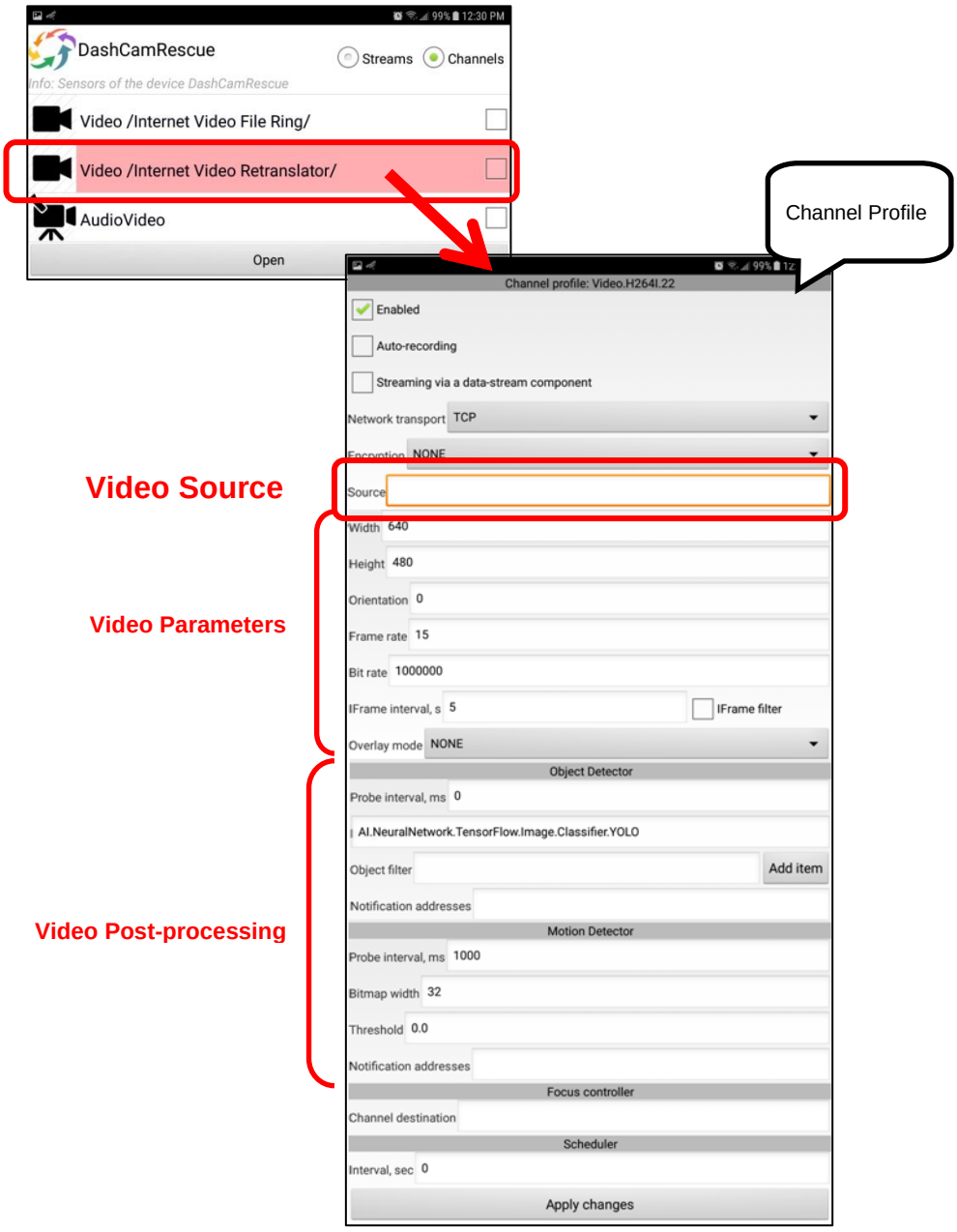
rtsp://<username>:<password>@118.54.227.10:88/videoMain

The “Video /Internet Video Retranslator/” Sensor Channel:

Shown below is an example of the “Video /Internet Video Retranslator/” sensor profile panel. This sensor panel will be modified to accept the URL from the remote video IP Camera or NVR.

This is a pre-configured “internet video retranslator” video channel that can be used to play video files directly from an internet “live stream” by the Foscam IP Camera.

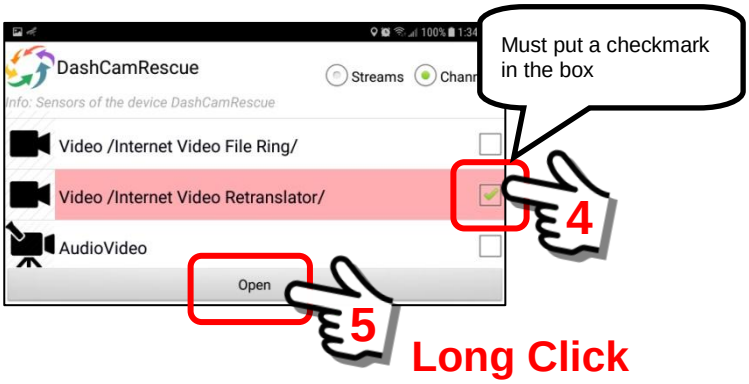
This video channel reads a data feed from an internet broadcast (in our case an IP Camera) and uses that as a video “source”. It will continue streaming the video until stopped.



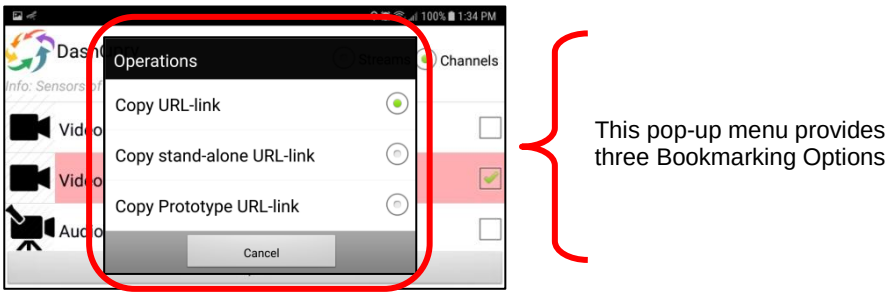
Steps to configure device as an IP Camera Video Player:

1. ***Locate the profile for the "Video /Internet Video Retranslator/"*** **channel**
   The "Video /Internet Video Retranslator/" sensor profile is located on a sub-menu of the Sensors Listing.

2. ***Select the "Video /Internet Video Retranslator/"* channel**
Put a "checkmark" in the checkbox of the "Video /Internet Video Retranslator/" menu option. Perform a "Long click" on the Open Button.



3. ***Review the Operations menu options.***
To create a "new" sensor profile for our IP Video Camera channel, we want to edit the pre-configured Sensor Channel and put in a "new" internet address for the IP Camera that is broadcasting the live video stream.



This will open a pop-up box of 3 menu items.

<u>Bookmark Options</u>

(1) Copy URL-link
The "Copy URL-link" menu option creates a stream URL for the local tracker sensors. The Tracker Panel on the local device MUST be enabled (default). This option will make a copy of the current Sensor URL and store it on the SentryMDU "clipboard" (.TEMP file folder). This URL link may then be "imported" as a bookmark. For this bookmark to "work" (on the local device or if the bookmark is copied to another device) the Tracker Panel (on the original device) must be enabled when a user opens the URL.

(2) Copy stand-alone URL-link
The "Copy stand-alone URL-link" menu option creates a stream URL that is "independent" (stand-alone) from the local tracker sensors. Sensor channel profiles have a "Source" field in the Channel Profile

configuration panel. In most cases this field is “blank”, which means the “source” is the local device sensors (the default). However, this source field may contain outside URL links (such as an IP Camera, Radio or TV channel). If the “Source” field contains outside links, then this stream URL does NOT require that the Tracker Panel on the local device is enabled (running). The channel is “independent” (stand-alone) and may be started even when the Tracker Panel on the originating device is disabled. This option will make a copy of the selected Sensor URL and store it on the Sentry MDU “clipboard” (.TEMP file folder). It may then be imported as a bookmark and sent to other users.

A typical application would be a bookmark of a live-streaming IP Camera where the “source” is on the internet and NOT the local device.

(3) Copy Prototype URL-link

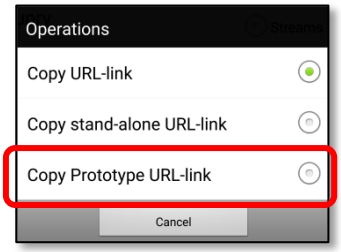
The “Copy Prototype URL-link” menu option will make a copy of an EXISTING sensor channel (ie audio, video, GPS, etc.) and allow a User to use an existing channel as a “prototype” to create a NEW Custom Channel.

The Sensors Button (on the Tracker Panel or Mobile Object Panel) will provide a pre-configured list of built-in channels (audio, video, GPS, etc.). However, the SentryMDU System allows a User to freely construct his own custom channels. These new channels will be stored in the “My /Custom stream/” Folder and channel summary list.

To create a new custom channel, the user needs a “prototype” to use as a basis for the channel profile configuration. The “Copy Prototype URL-link” menu option is used to select the desired prototype.

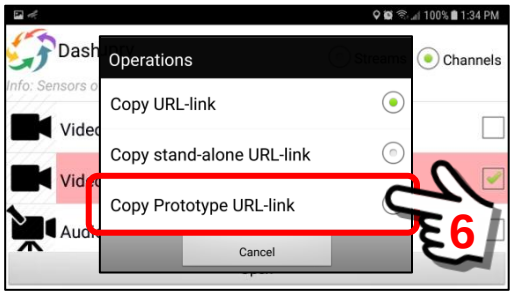
For example, a user wants to create a “new” Video Channel with specific “custom” configuration settings. To do that, he would select an existing video channel with the most similar profile settings, creates a “Prototype URL-link” and use that URL as a starting point for the new configuration. When the URL-link is “opened” it can be edited to the new requirements and saved as a “new” Custom URL.

We will be selecting Option #3 … **Copy Prototype URL-link**

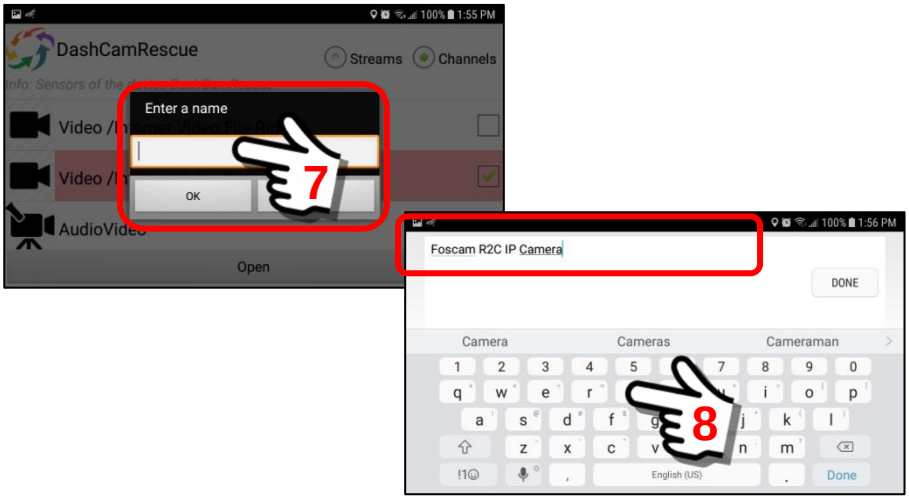


4. ***Create a "new" Custom URL from the "*Copy Prototype URL-link"*.**
In this section, we will create a "prototype" of the Video Channel URL-link and install it into the "My /custom stream/" Folder.

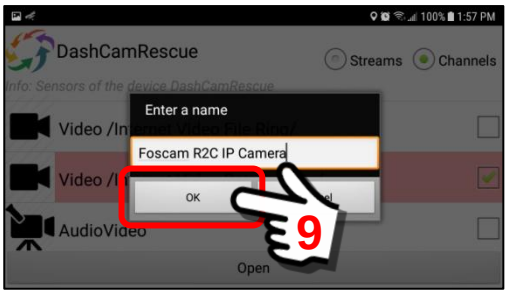
Click on the "**Copy Prototype URL-link**" menu option.



To begin, the system will ask for a "name" for a new prototype video channel folder. This folder may be used to hold multiple IP Camera channels. For this exercise, we will NOT be creating a prototype folder, so even though we are creating the name … we will not be using it later on.

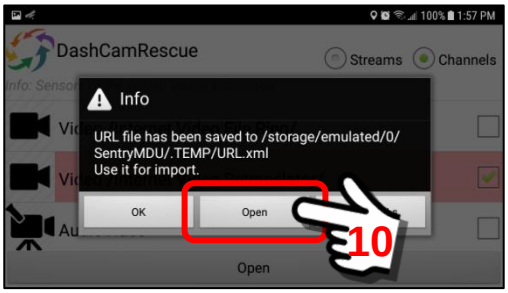


After entering a NAME for the new prototype channel folder, click.on the "OK" Button when you are ready to proceed.



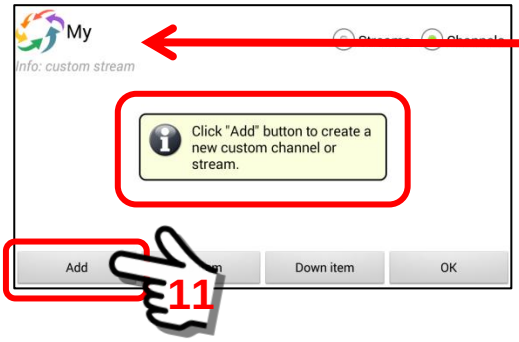
When you click the “OK” Button, a confirmation screen will appear. This is the same type of pop-up panel that you see for other bookmarks. However, in this case, we need to OPEN the prototype folder in order to link the selected sensor profile to this folder as a “new” custom stream. We will install this profile into the “My /custom stream/” Folder.

Click the “Open” Button.



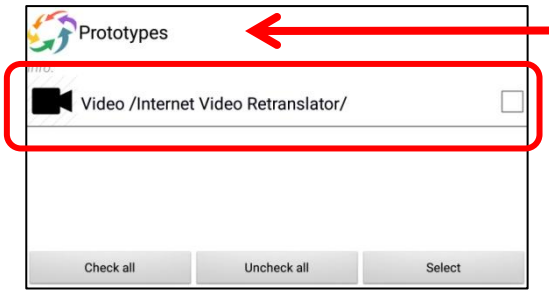
Clicking the “Open” Button starts the process of installing the prototype video profile into the “My /custom stream/” Folder where it can be edited for the Foscam IP Camera URL.

Notice the message to click the “Add” Button.



My /custom stream/ Panel

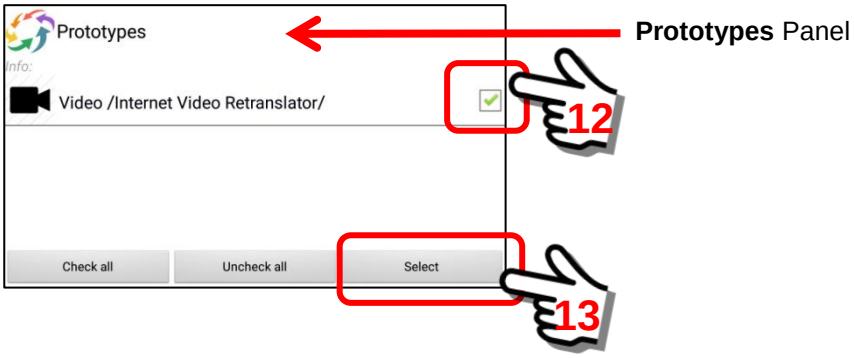
When the “Add” Button is clicked, the “Video /Internet Video Retranslator/” profile is installed in the Prototypes Folder.



Prototypes Panel

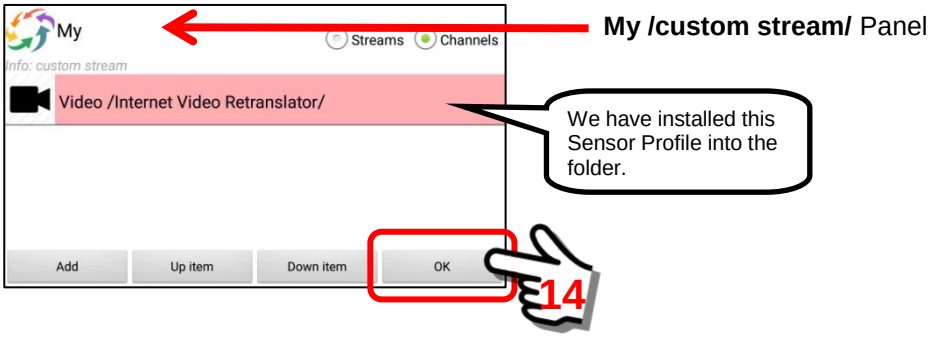
If you have created other prototypes for Sensors you may have several prototypes in the Prototypes Folder. In this example, we only have “one” (1).

Put a “checkmark” in the checkbox and click the **Select Button** to select this prototype for use.

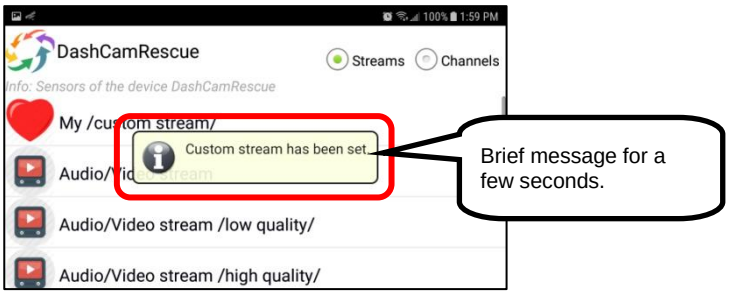


The “Video /Internet Video Retranslator/” profile is now installed in the “My /custom stream/” Folder where it can be edited.

Note that the entry is highlighted since it was just added.
Click the “OK” Button to accept the install of the highlighted choice.



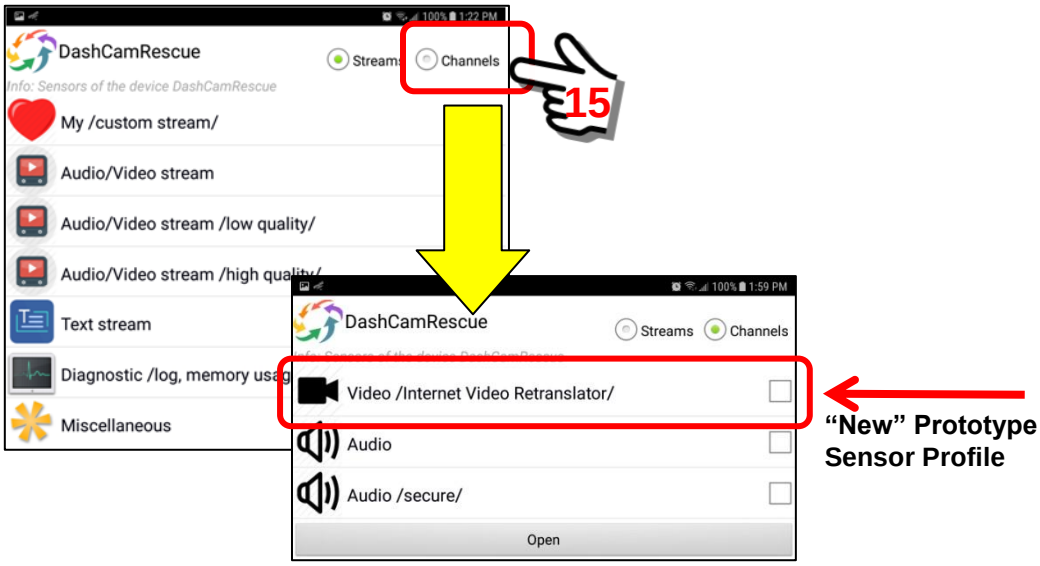
You will be taken to the Main Sensors Panel screen. A message will flash for about 3 seconds indicating that a “Custom stream has been set” for the device.



Now that we have “duplicated” the sensor profile we will need to edit it to use the Foscam IP Camera as a “source” for our video live stream.

The duplicated profile has now been installed as a “new” entry at the top of the list of available sensors.

In this example, the “Video /Internet Video Retranslator/” profile is now installed as shown. Our next step will be to “edit” this prototype sensor profile and configure the “source” for the Foscam IP Camera.



5. ***Finding the “source” URL to use with our Foscam IP Camera***

There are many sources on the internet that will describe both the “format” required and the URL that will be required for your particular brand of IP Camera to be accessed via the internet. You should start with the manufacturers User Guide that is provided with your brand of IP Camera.

<u>The URL should look something similar to the following:</u>

rtsp://<u><username></u>:<u><password></u>@<u>118.54.227.10</u>:<u>88</u>/<u>videoMain</u>

(1) (2) (3) (4) (5)

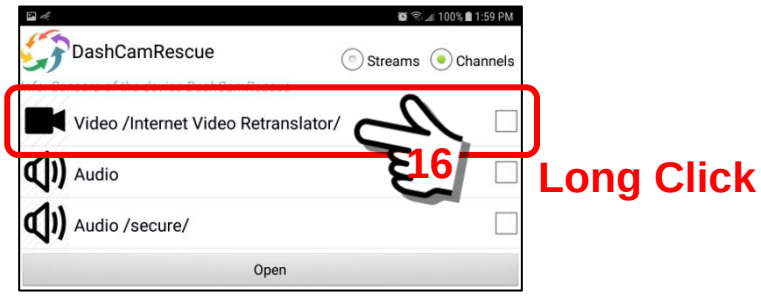
Typically, you will need 5 pieces of information.

(1) **Username** (to access your camera or NVR)
(2) **Password** (to access your camera or NVR)
(3) **Public IP Address** (usually the Public IP of your Router)
(4) **Port** (for RSTP protocol this is often port=554 by default)
(5) **Manufacturer specific filename** to access data stream

If your camera(s) are operating behind a Router/Firewall (most likely they are), you will need to change the configuration of your router to allow outside access to the camera behind your router. This may include Network Address Translation (NAT) and/or Port Forwarding. Most modern routers support these features. That configuration is beyond the scope of this document. There are many sources on the internet that provide step-by-step instructions on how to set up your router/firewall for outside access to IP Cameras.

6. ***Installing the "new" source URL for our Foscam IP Camera***

To "edit" this new audio profile and put the Foscam IP Camera URL for live stream video, perform a "Long click" on the profile name.



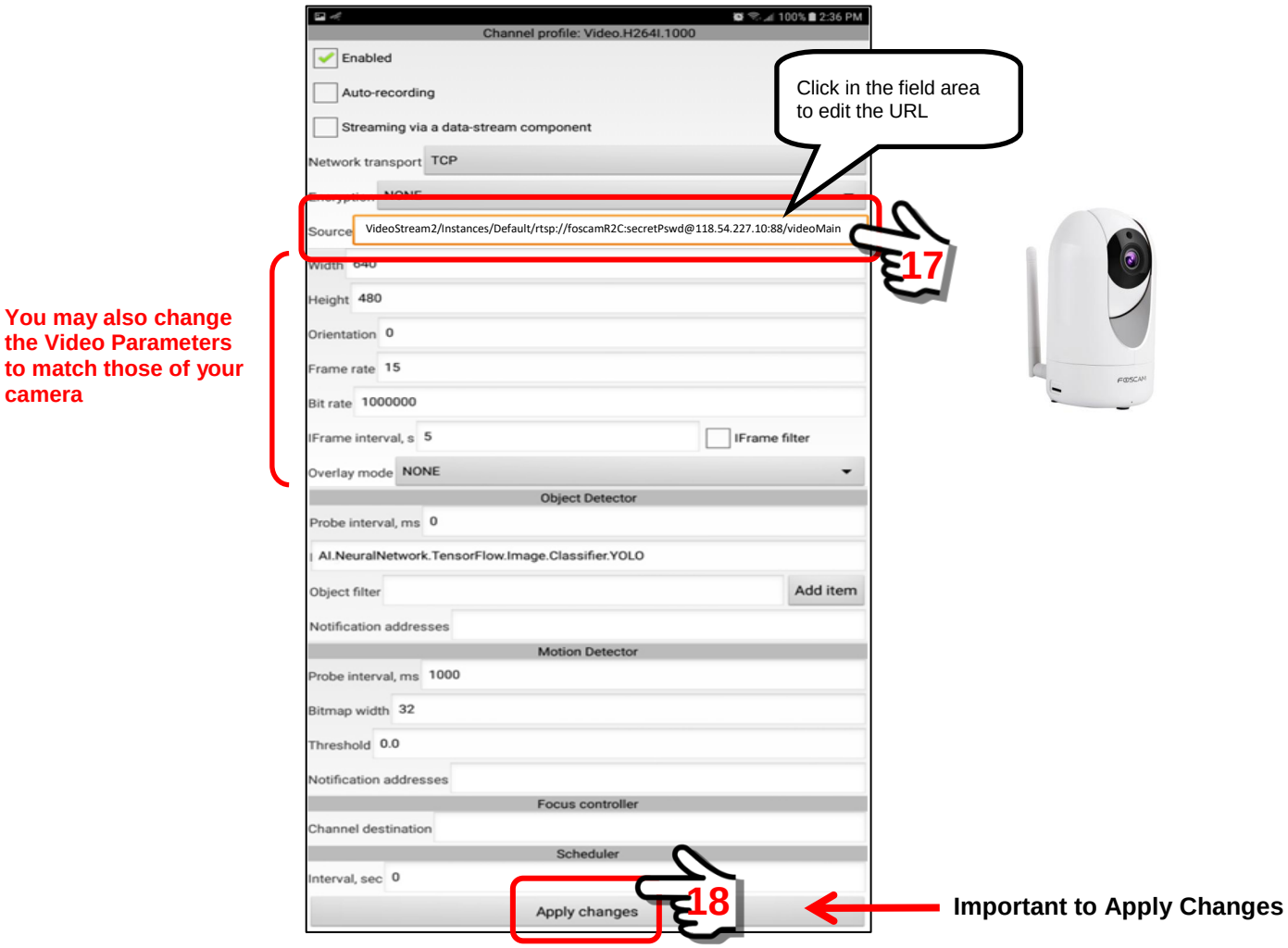
The Channel Profile Panel will be displayed. You may edit and set the parameters as you desire. In this example, we will set the "Source" data field to include our Foscam IP Camera URL.

<u>The "new" Source has two parts:</u>

(1) **VideoStream2/Instances/Default/** … this tells the App to use an alternate Source

(2) **The RTSP formatted string** of the IP Camera

VideoStream2/Instances/Default/rtsp://foscamR2C:secretPswd@118.54.227.10:88/videoMain

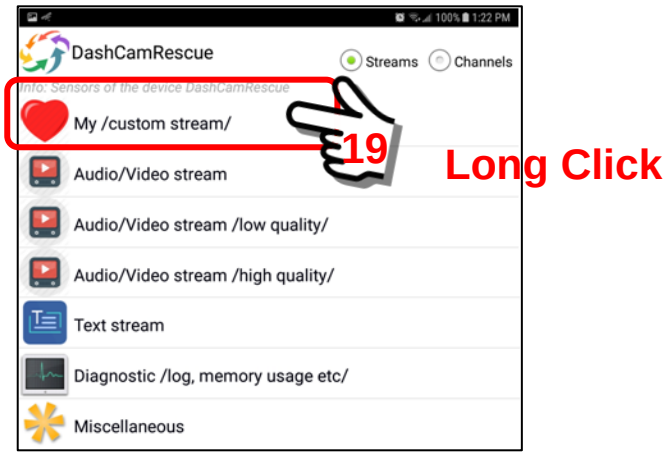


7. ***Change the "name" of the new Channel Profile.***
The "new" channel profile is now set with the Foscam IP Camera URL. However, this new channel profile still has the same name as another channel profile in the list.

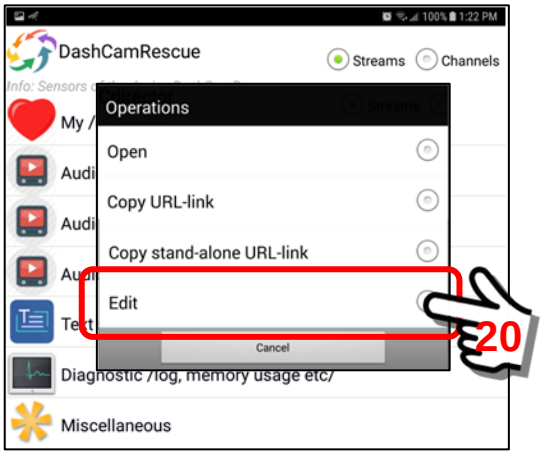
It is a good idea to change the name of this new channel profile to better describe the new function. We will change the name to:

Video /Internet Video Retranslator – Foscam Office Cam

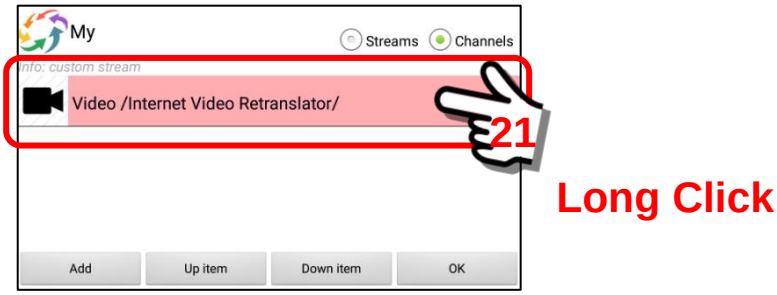
Perform a "Long click" on the "**My /custom stream/"** menu item.



A pop-up Operations Panel will appear. Select the "Edit" Option.

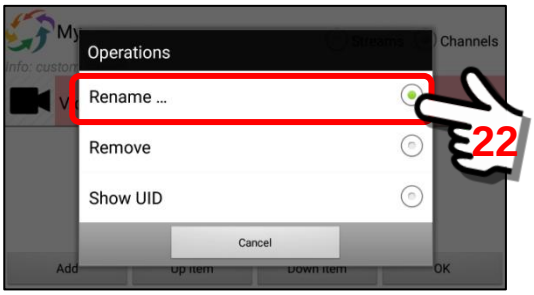


The "**My /custom stream/"** Panel will open.



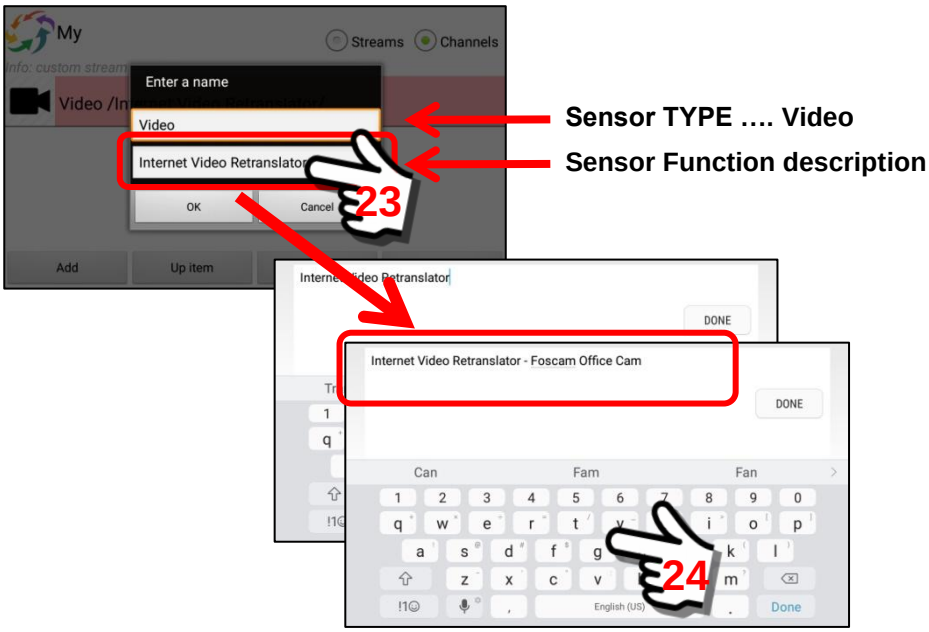
Perform a “Long click” on the Profile Name and a pop-up Operations box will open with 3 menu choices. To “rename” the sensor profile, we will select the “Rename” Option.

Click on “Rename”.

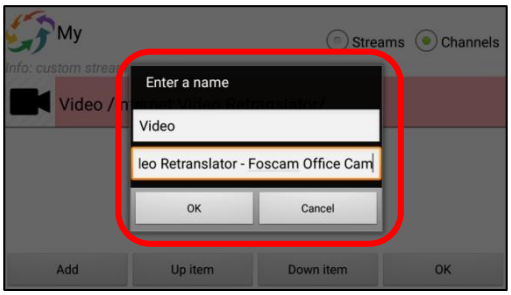


The Operations Panel will be replaced by the “Enter a name” pop-up panel. This panel will have two data fields that may be edited. In this example, we will select the second data field to modify.

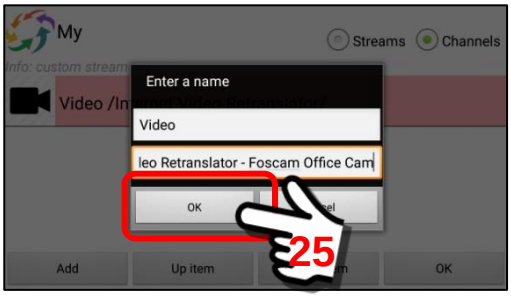
Click on the “Internet Video Retranslator” data block to edit.



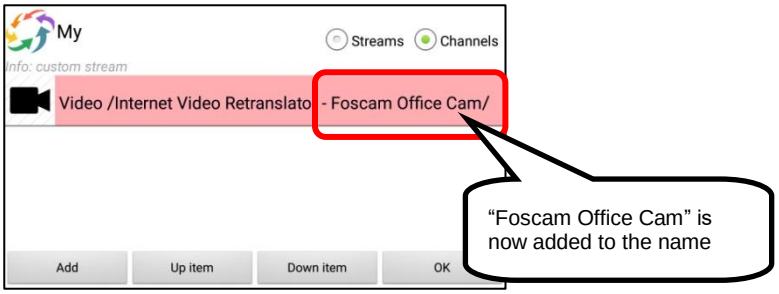
When finished editing, the panel should be as follows:



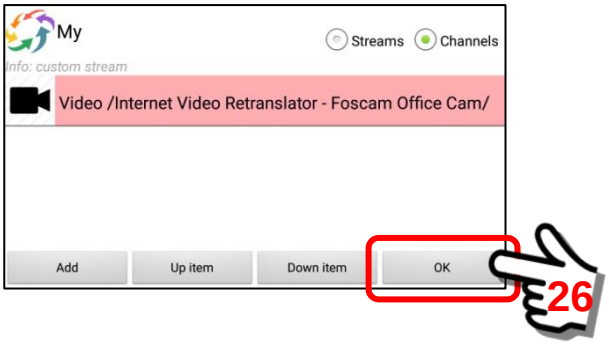
To SAVE the changes, click the “OK” Button.



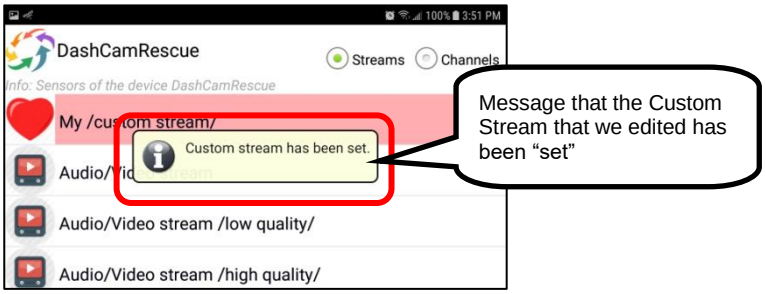
The “**My /custom stream/”** Panel will now display the custom stream panel with the NEW name.



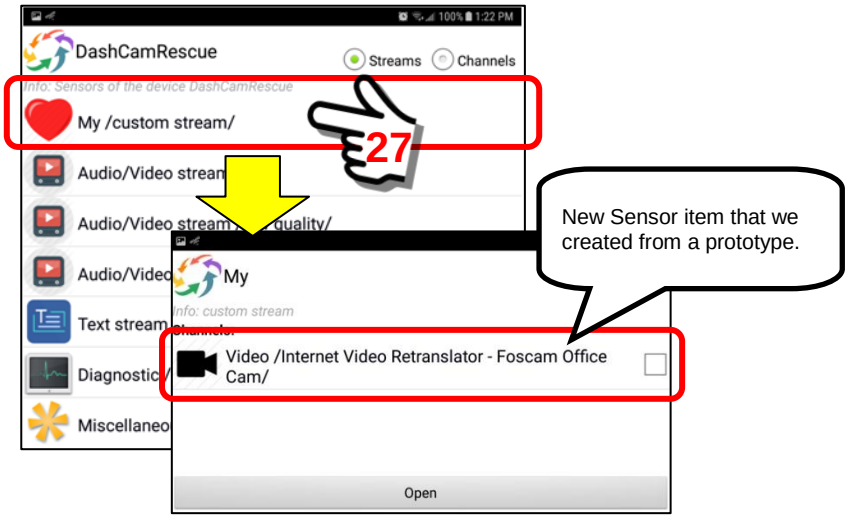
To save these “new” changes to the “**My /custom stream/”** Folder, click the “OK” Button at the bottom of the screen panel.



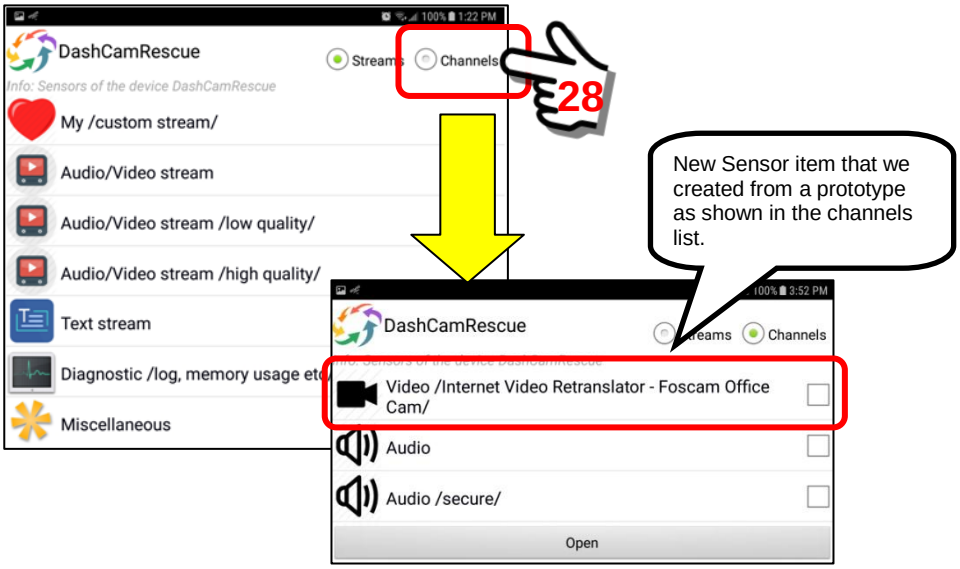
The screen will refresh and return to the Sensors Listing Panel.



To review the name, open “**My /custom stream/”** menu folder.



The item is also listed on the Channels Listing for all sensor channels. New entries are typically put at the top of the list, as shown below.



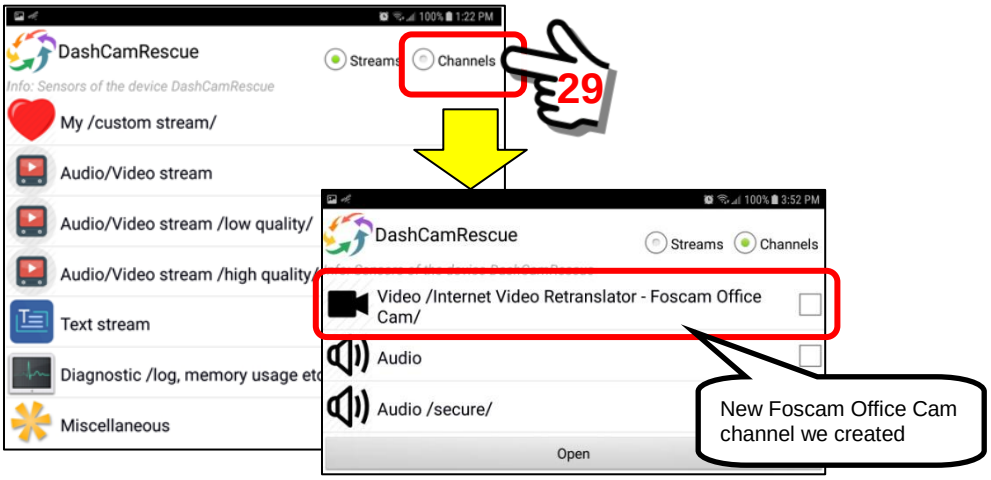
8. ***Import the Foscam Camera sensor channel into the Bookmarks Folder.*** The final step in this example is to use the prototype Foscam IP Camera URL to construct a "new" bookmark that can be imported into the Bookmark Folder. After the above steps, you should be at the Sensor Panel.

At the beginning of this exercise we created a prototype folder name.

"Foscam R2C IP Camera"

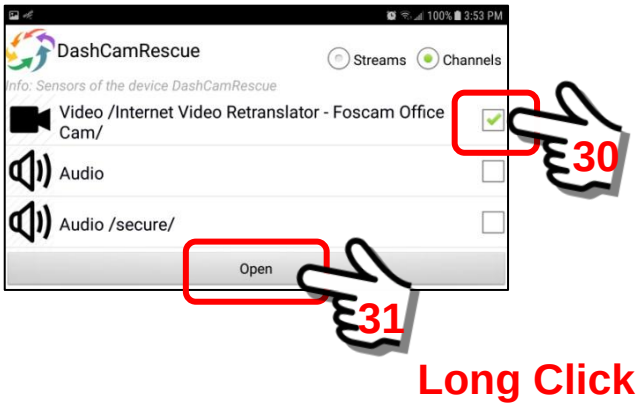
This name is still stored in the .TEMP folder ready for import as a bookmark. However, for this exercise, we are NOT going to use this feature, but will reference it later in this section.

Click on the "Channels" button on the Sensor Panel.This will open the list of available Sensor Channels. Notice that the "new" channel we created with the prototype feature is at the top of the list.



To create our **Foscam IP Camera Bookmark**, we will select this new channel and copy the URL for a bookmark.

Put a "checkmark" in the checkbox, then "Long click" on the Open Button.



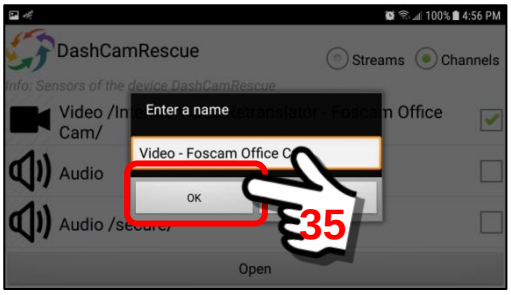
This will open a pop-up Operations panel that will allow us to save the URL for this sensor channel. We are going to SAVE the Bookmark so that we can also SEND it to others so they can access the Foscam IP Camera.

On the Operations Panel, select the "**Copy stand-alone URL-link**" option from the list. This will store the URL for this sensor channel in a .TEMP folder that may be used to import this URL into a bookmark.

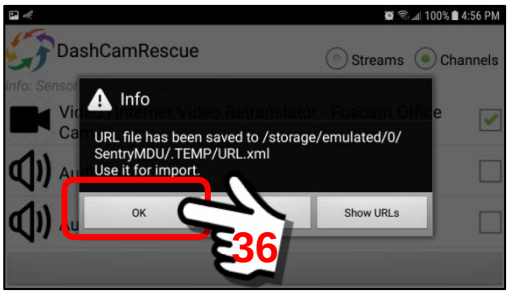
Enter a name for this "new" bookmark. The data field defaults to the sensor type (ie Video). We recommend a more descriptive name. In this example, we will enter "Video – Foscam Office Cam".

Click inside the data field to begin editing.

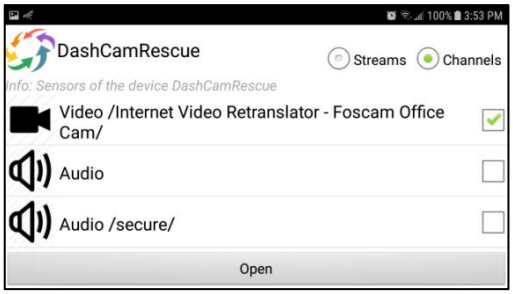
When finished, click the "OK" Button to continue.



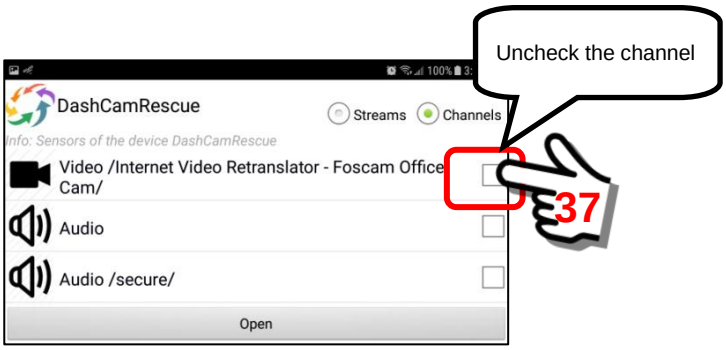
As the screen refreshes, the **Info Panel** is displayed (for saving a bookmark). Click the “OK” Button to save the URL file as a bookmark.



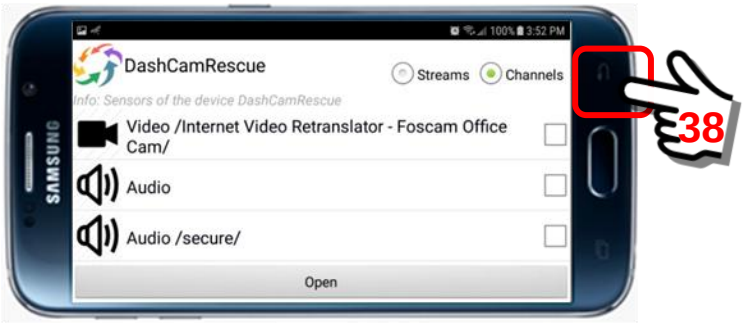
When you click the ”OK” Button, the system will refresh and return to the Sensor Listing panel.



You may now “uncheck” the “**Video /Internet Video Retranslator – Foscam Office Cam/**” sensor channel. We are done with it.

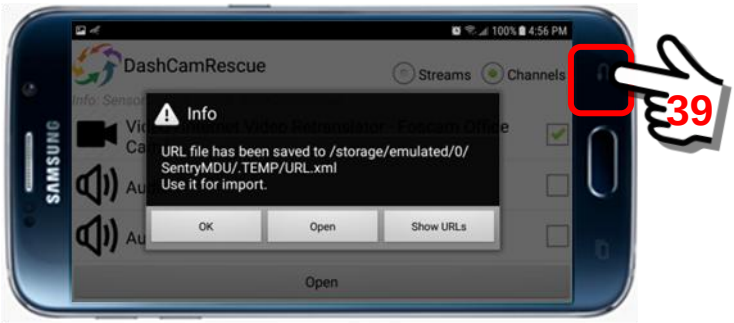


Click on the “Back” Button on the phone.

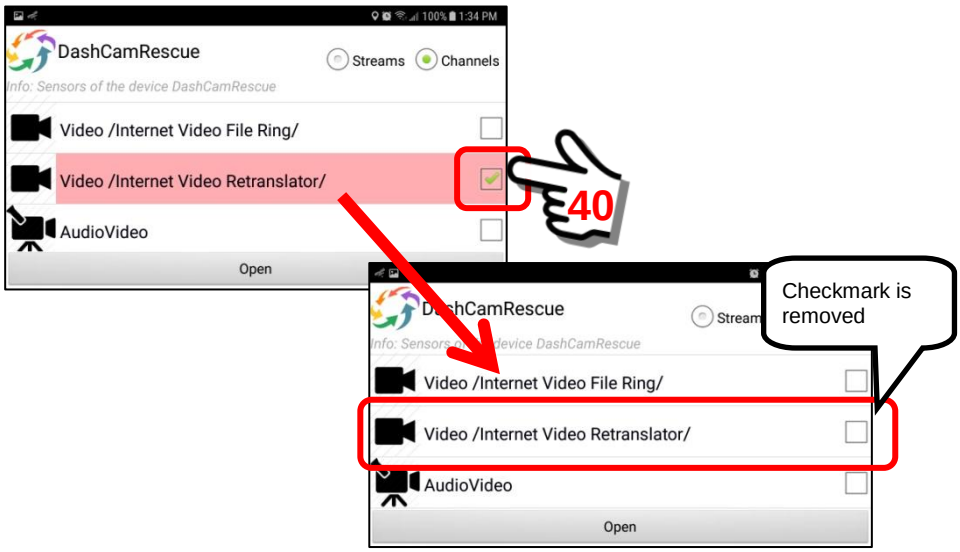


When you click on the “Back” Button, the screen will return to a previous Info Panel. Since, for this exercise, we do NOT need to save the prototype folder name, we may cancel this panel. Remember the “name” we created at the beginning of this exercise? … this was it.

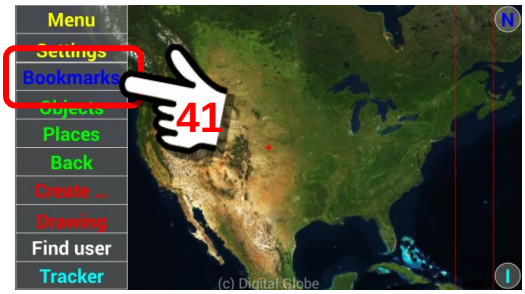
Click the “Back” button AGAIN to cancel this panel.



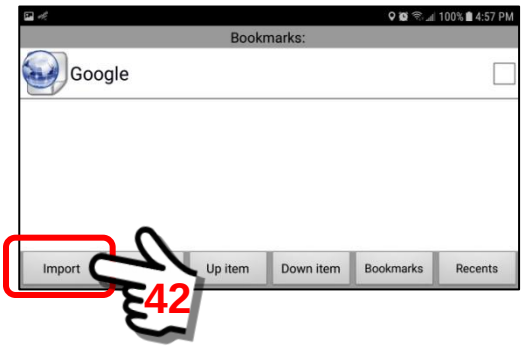
You will be returned to the Sensor Panel listing. We can “uncheck” the original Sensor Profile that we used as the prototype. We are done with it.



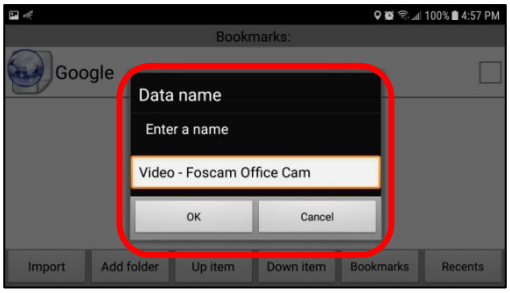
Use the “Back” Button on the device to return to the Main Map Screen. Click to open the Bookmarks Section.



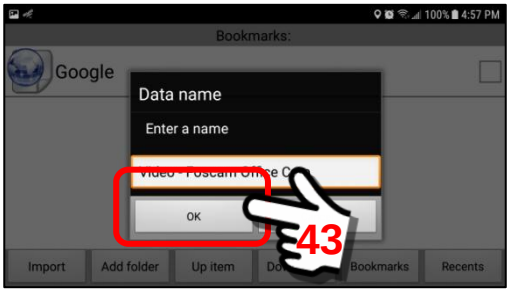
We will “import” the bookmark that was “saved” into the Bookmarks Folder.



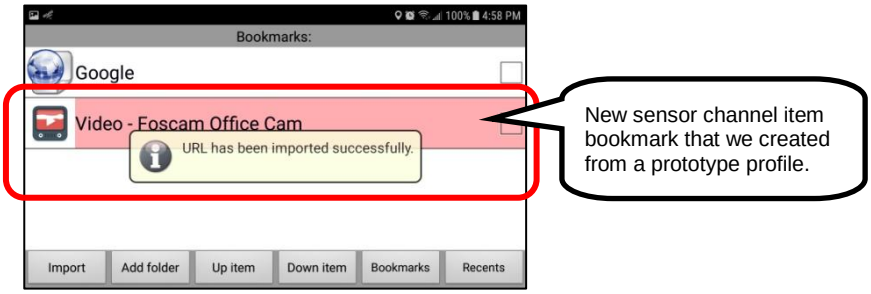
By clicking the **Import Button**, we will retrieve the bookmark name that we saved earlier in the exercise … “**Video – Foscam Office Cam**”. At this point you may edit and make changes to the name if you desire.



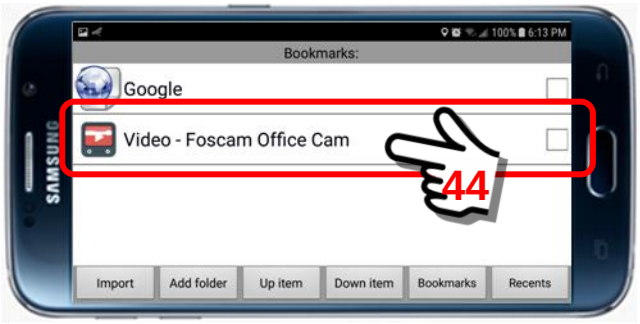
When finished, click the “OK” Button to install the bookmark.



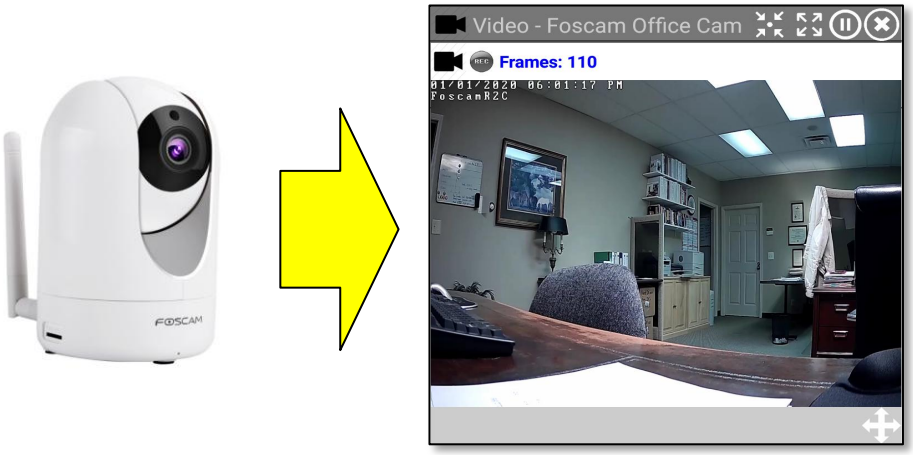
The **“Video – Foscam Office Cam”** bookmark is now installed and ready to use.



To test the new Foscam IP Camera, click on the Bookmark listing.



This will launch the Foscam IP Camera in a Floating Window. You may now access the Foscam IP Camera from anywhere in the world.

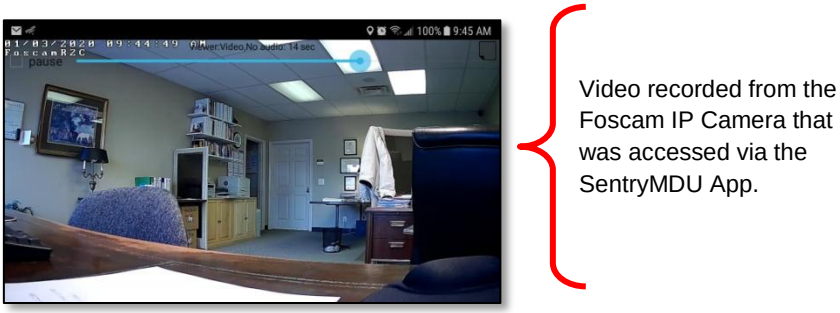


If you wish to “record” the video from the Foscam IP Camera (for later viewing) simply activate the Record Button (REC) on the video floating window panel. This will store the video on YOUR device in the Archive.

REC Recording is turned “off” (Default)

REC Recording is turned “on”

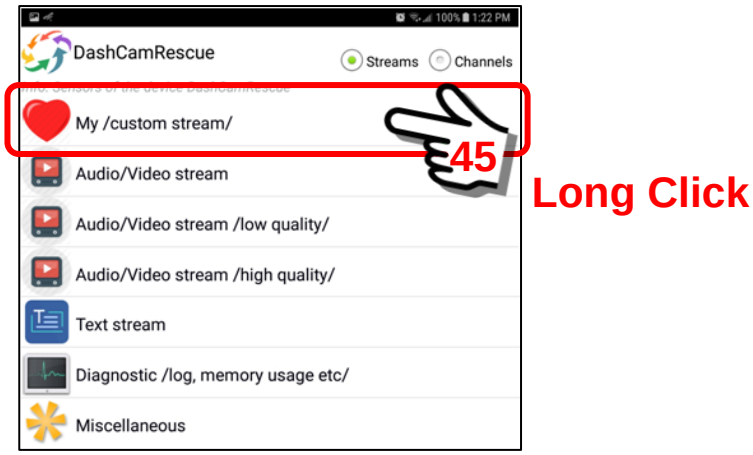
To play the video, simply access the Archive section of the Mobile Object or Tracker Panel, and click on the Video File. The result will be something like what is shown below.



Video recorded from the Foscam IP Camera that was accessed via the SentryMDU App.

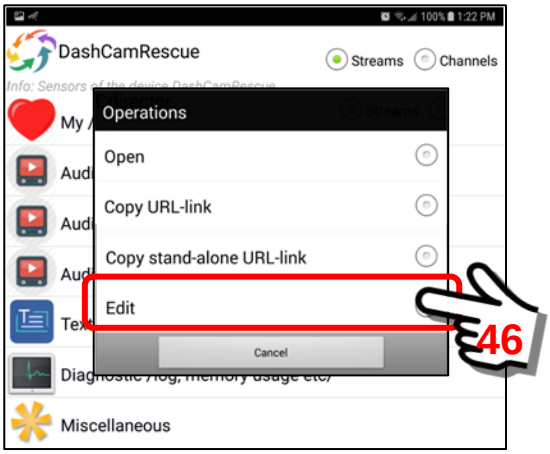
9. ***How to REMOVE a Custom Stream.***

To remove a custom stream from the "**My /custom stream/"** folder, do the following. Open the Sensors Panel and perform a "Long click" on the "**My /custom stream/"** menu item.

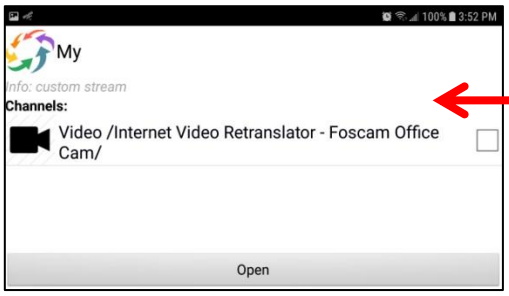


The objective is to "edit" the "**My /custom stream/"** folder and remove the entry that we do not want.

Click on the "Edit" option from the Operations pop-up menu.

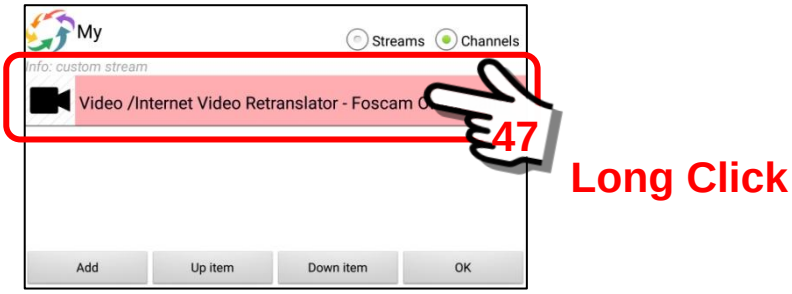


The "**My /custom stream/"** folder will open to display the available list of Custom Streams.

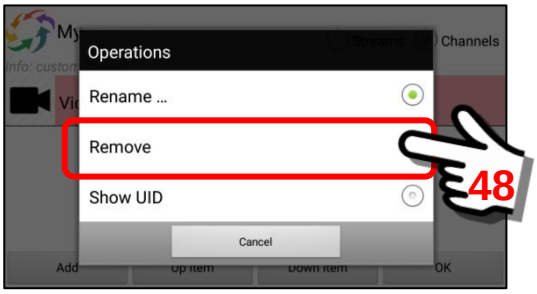


List of available Custom Streams.

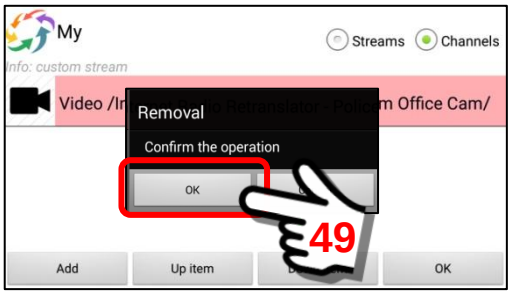
Perform a “Long click” on the custom stream you wish to remove.



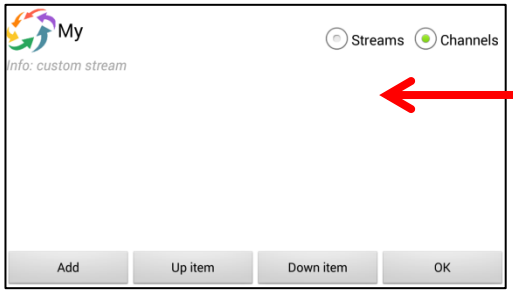
A pop-up Operations menu will appear with an option to remove the custom stream. Select the “Remove” Button.



When the “Remove Button” is clicked a pop-up Removal Box will appear asking for confirmation. Click the “OK” Button.

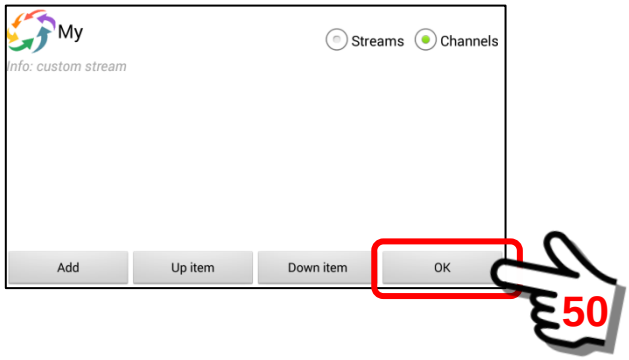


The screen will refresh and display the “**My /custom stream/”** folder with the selected item removed.

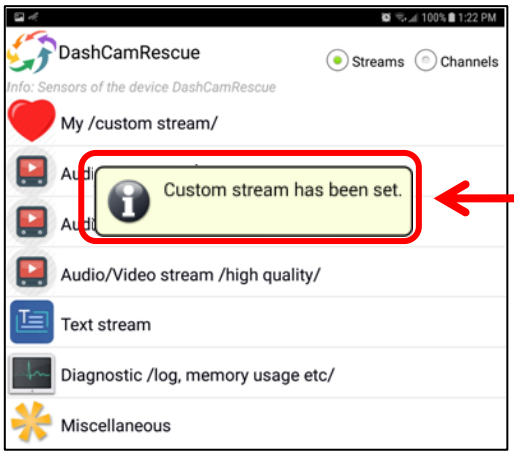


Custom stream sensor item is removed.

Click the “OK” Button on the “**My /custom stream/”** panel to finalize the change and update the listing (this removes the items from the Sensor Listing).



The screen will refresh and display the Sensor Panel.
A brief message will flash for a few seconds “Custom stream has been set” (in this case = removed).



When this message displays, the removal is now complete

9.32. Using the Sentry MDU Bookmarks Icon shortcut

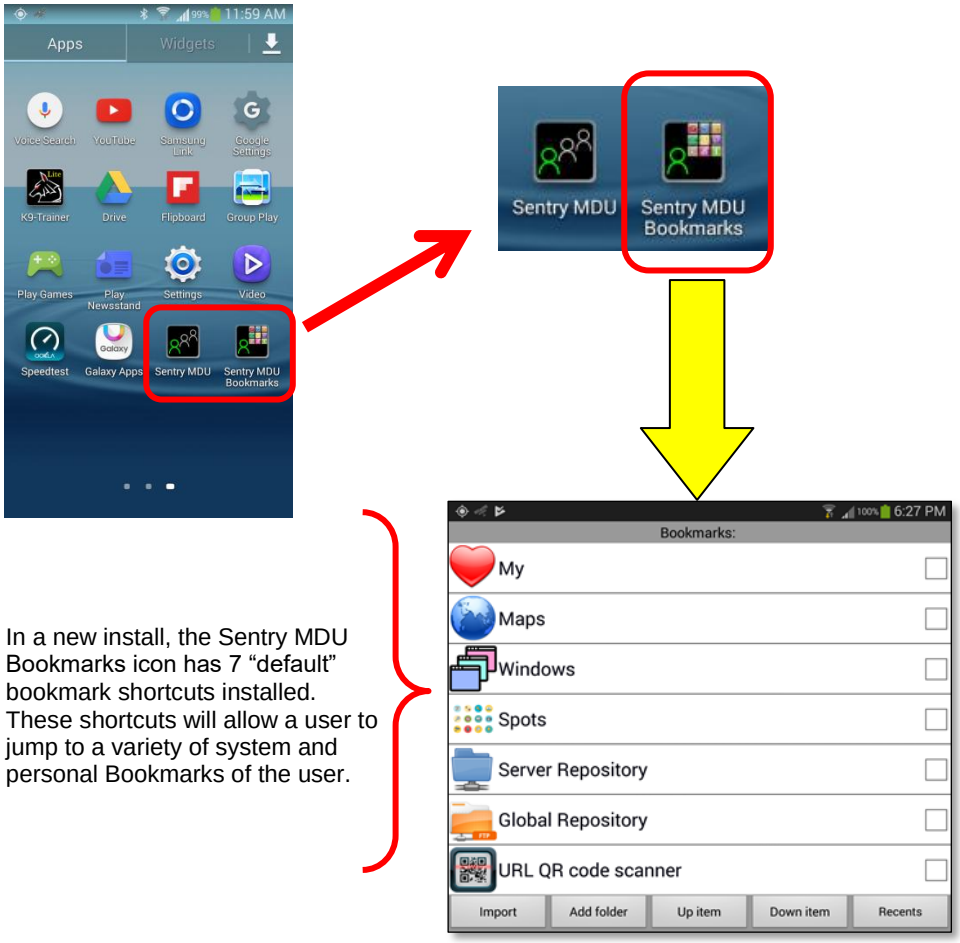
Overview:

To further enhance the rapid access to Sentry MDU features, a Sentry Bookmarks Icon is available on the mobile device App icon screen. This will allow a “one click” access to those areas of the Sentry MDU feature set that are most often used. These bookmarks are separate from the bookmarks stored WITHIN the Sentry MDU mobile App.

Note that bookmarks created from “local” sensors on the mobile device may be saved and used on the local device but NOT sent to other users.

Sentry MDU Bookmarks Icon:

In a new install of the Sentry MDU System, seven (7) default bookmark shortcuts are created.



In a new install, the Sentry MDU Bookmarks icon has 7 “default” bookmark shortcuts installed. These shortcuts will allow a user to jump to a variety of system and personal Bookmarks of the user.

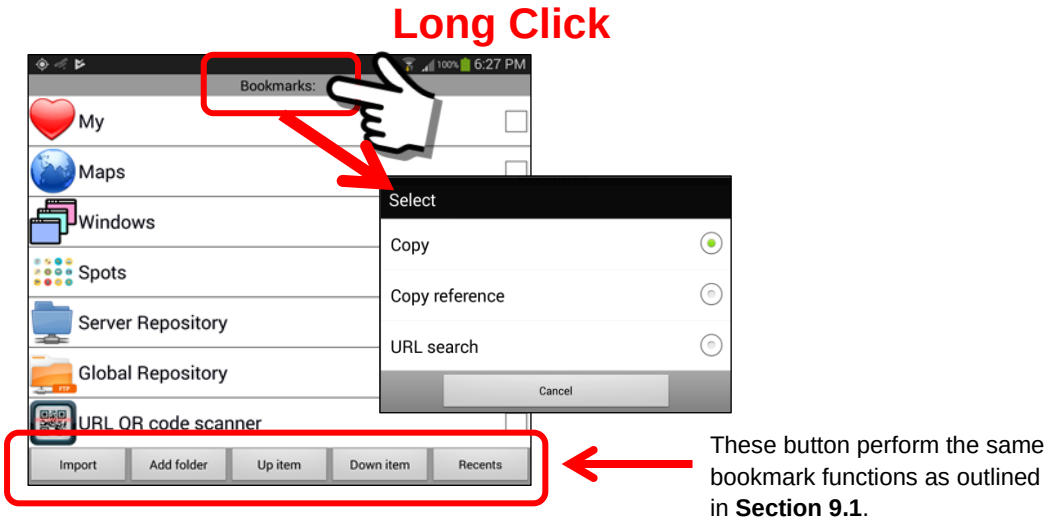
Additional bookmarks may be added that will allow a shortcut to those features used most often. Bookmarks should be “saved” in the same manner as described above. Then use this Sentry MDU Bookmark feature to import the new bookmarks under this icon.

Review of the Bookmark Sections on the shortcut panel:

1. ***Layout of the bookmark shortcuts folder.***
   The Bookmark Shortcuts Folder contains 7 pre-defined groups of bookmarks that will be available to the User. As a user, you may add/delete items to this shortcuts panel.

   The default panel has the following entries:
   (1) My
   (2) Maps
   (3) Windows
   (4) Spots
   (5) Server Repository
   (6) Global Repository
   (7) URL QR-code scanner

   In addition to the 7 default menu items, the panel has an auxilliary menu with 3 options.



   Performing a “Long click” on the Bookmarks Title Block will open a pop-up Select Menu with 3 options.

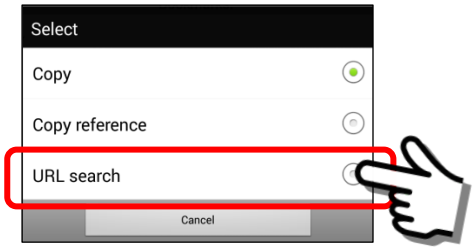
   <u>Copy</u>
   The “Copy” menu option will make a copy of the bookmark URL for the whole panel and store it on the Sentry MDU “clipboard” (.TEMP file folder). A user may then “Import” this bookmark and rename it to another name.

   <u>Copy reference</u>
   The “Copy reference” menu option is generally used when a large data item (ie Map with multiple objects and layers) needs to be sent as a bookmark. This feature does not actually “copy” the URL data. Instead, it uploads the body of the URL (the data) to the SentryMDU Data Server

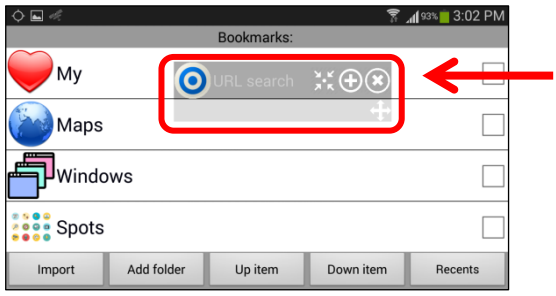
instance and then creates a reference “link” to that data. In this way, a large data item can still be transferred between mobile devices easily because only the “link” is being sent and not the complete data package. A bookmark created with the “Copy reference” may be sent to other Users the same way as other bookmarks are handled. A user may then “Import” this bookmark and rename it to another name. Allows easy setup of new bookmarks.

URL Search

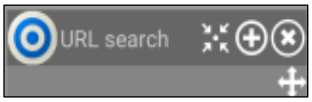
The “URL Search” option provides a Floating Window panel with a “target” button that can launch bookmarks and URL search functions across the SentryMDU App. See **Section 16.2** for a detailed discussion of the URL Search Panel.



This is an example of the “target panel button” that is launched by the URL Search function.



The URL Search Panel will appear as a floating window.



The following is an example of a floating window that is a result of using the Target Button.

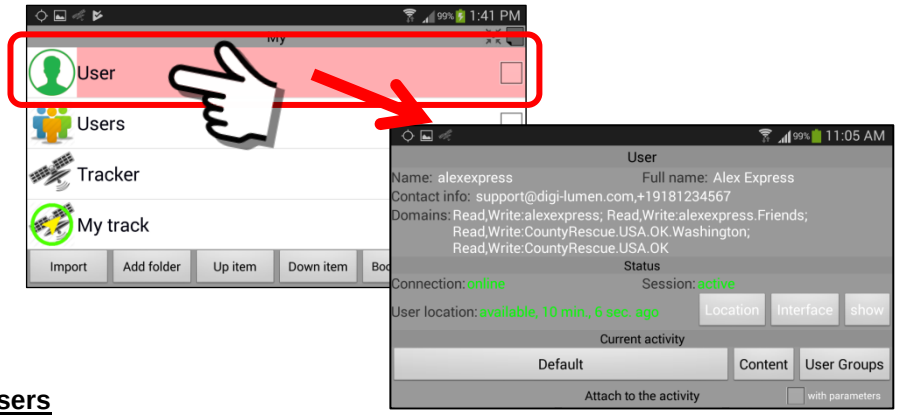
Typical result of a URL Search Panel floating window

2. ***The "My" bookmark folder.***

The "My" Bookmark folder contains shortcut access to the User Information Panel, other users installed on the mobile device and Tracker Information.

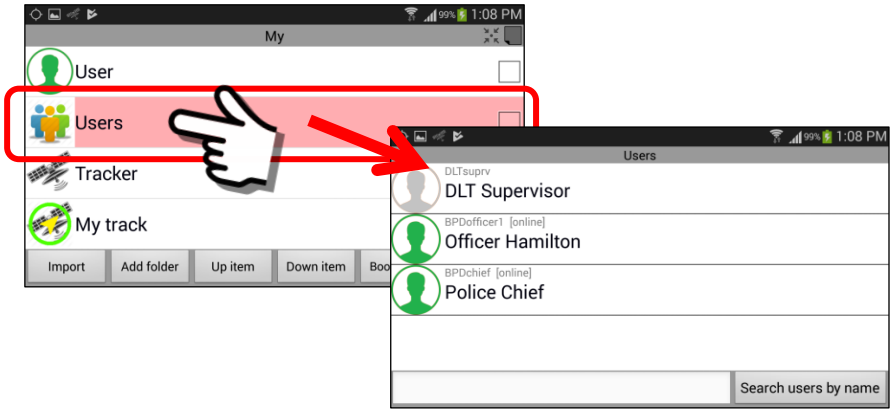
User

The "User" Menu item will display the **User Information Panel** for the user of this mobile device.



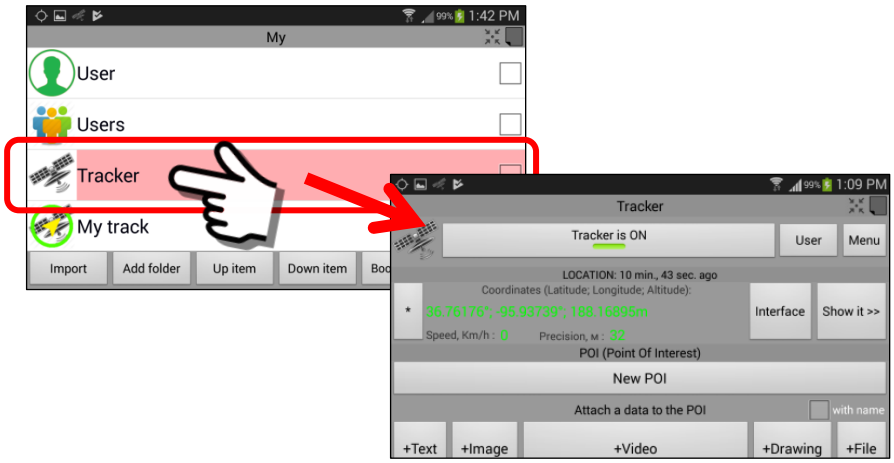
Users

The "Users" Menu item will display the list of other Users that this mobile device has installed.



Tracker

The “Tracker” Menu item will display the **Tracker Panel** for this mobile device.

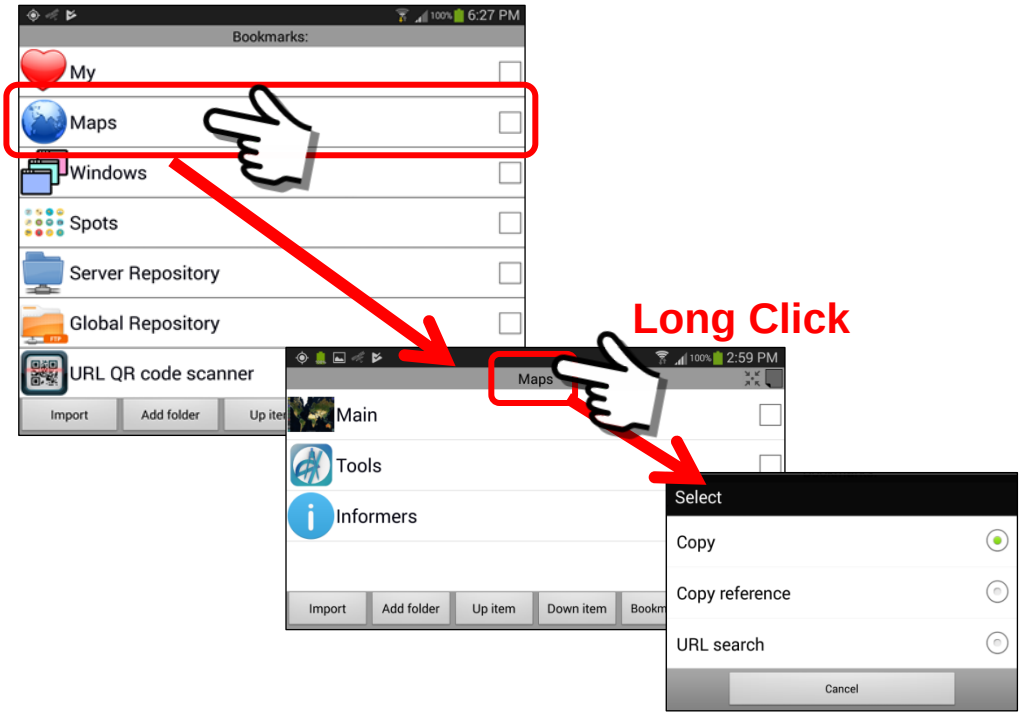


My track

The “My track” Menu item will display the current GPS track and location of your mobile device. The track will start from the time you activate the “My track” menu selection. See **Section 9.30** for an example of use.

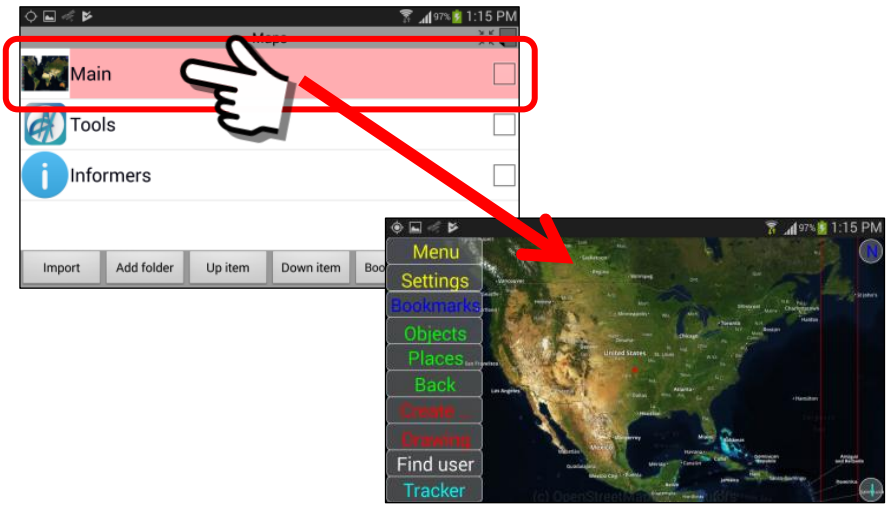
3. ***The "Maps" bookmark folder.***

The "Maps" Menu item will open a Maps Panel which can display the Main Map Screen, open Tools for measuring distance or displaying GPS coordinates and providing access to information (Informers) such as Wikipedia Pages, Weather Maps and OpenStreetMaps points-of-interest.



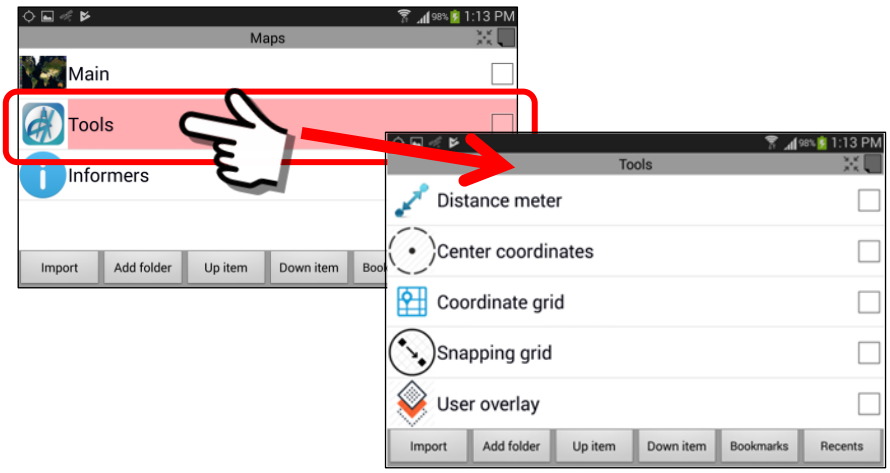
Main

The "Main" Menu item will launch the Main Map Screen display.



Tools

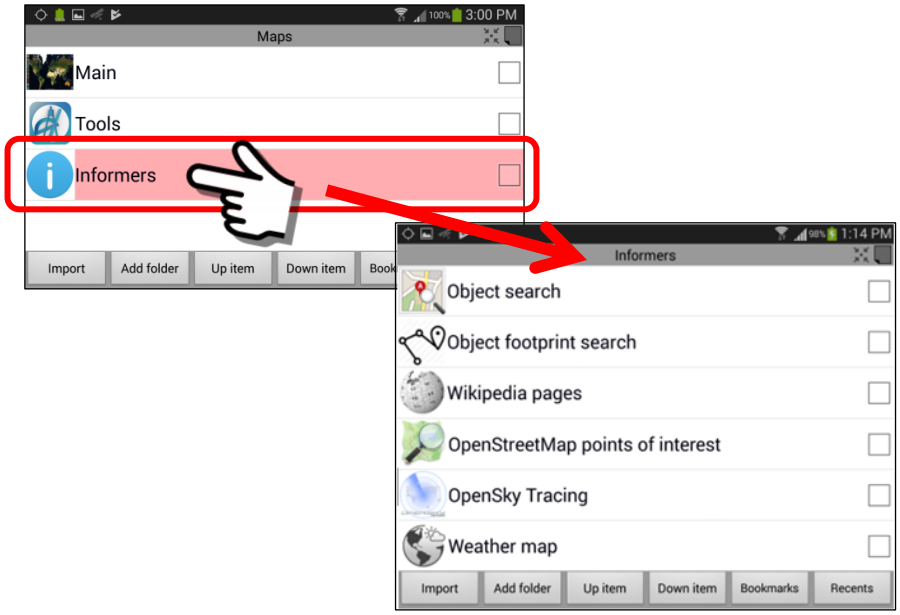
The “Tools” Menu item will open a set of bookmarked tools that provide for distance measurement, GPS coordinates, overlay grids and more. Other sections of this manual will describe these tools in detail.



Informers

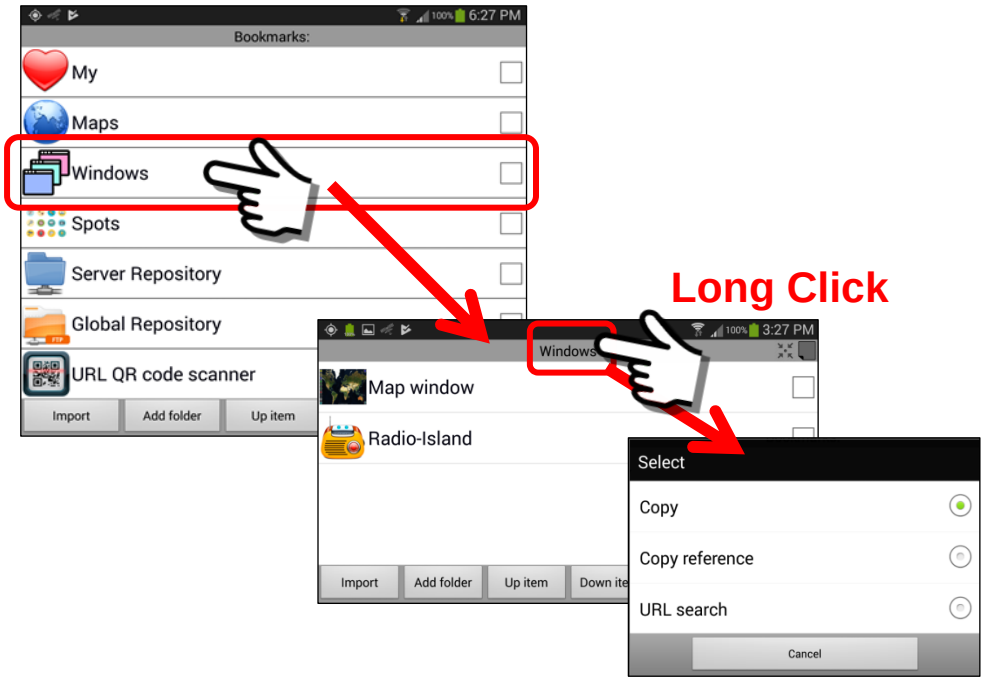
The “Informers” Menu item will provide a set of bookmark data sources which includes Wikipedia pages, Weather Maps, OpenStreetMap points-of-interest, OpenSky airplane tracking and more.

Additional details on each of these information sources (Informers) are contained in other sections of this manual.



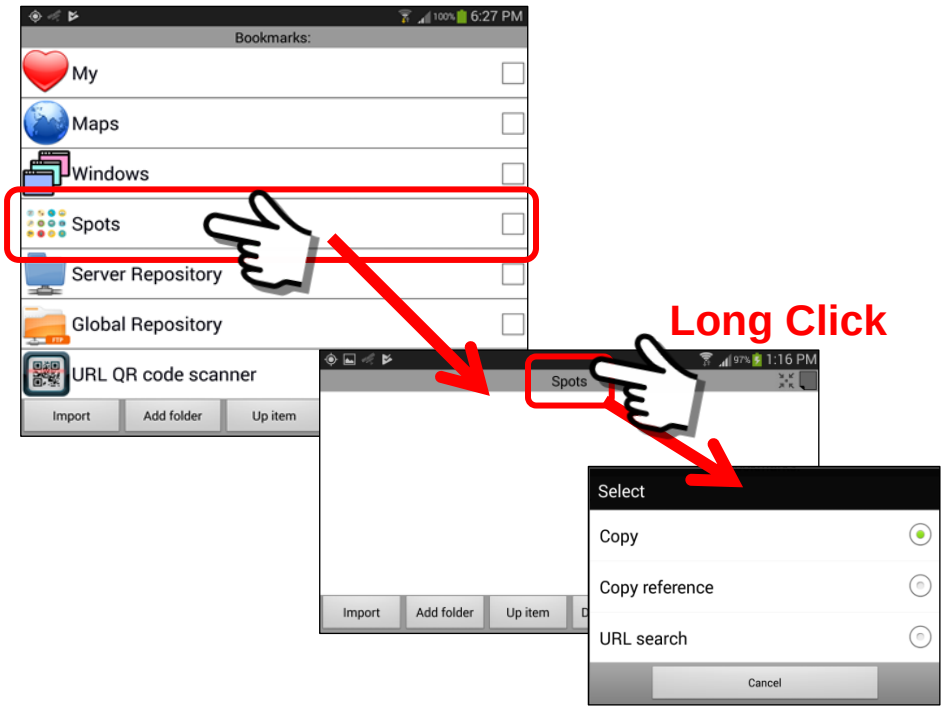
4. ***The "Windows" bookmark folder.***

The "Windows" Menu item will open a Windows Panel. This panel has two default bookmarks. Both the Map Window and Radio Island examples will open as floating windows.



5. ***The "Spot" bookmark folder.***

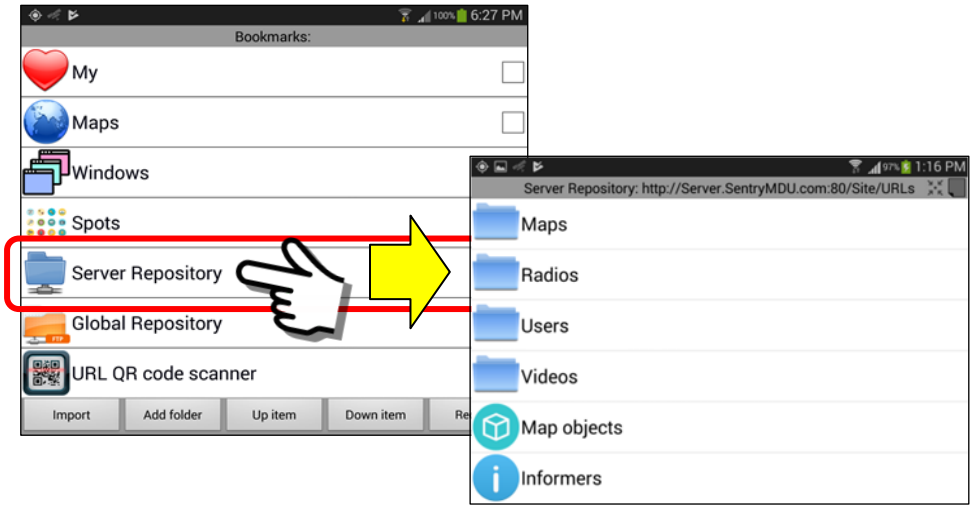
The "Spot" Menu item will open a Spot Panel. As a default this panel does NOT have any "Spot" bookmarks.



6. ***The "Server Repository" bookmark folder.***

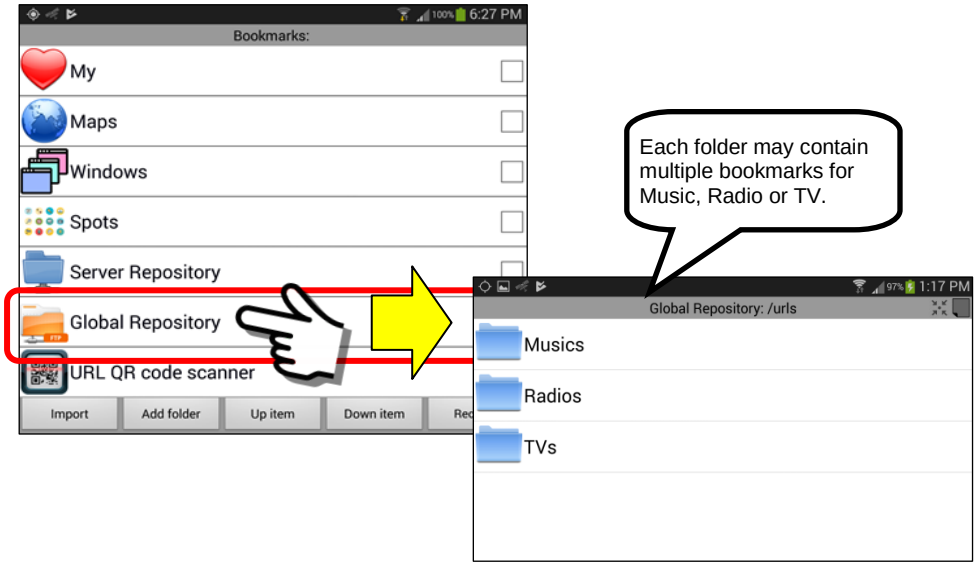
The "Server Repository" Menu item contains a set of bookmark folders and Map Objects that are available as "default" bookmarks for a particular server "instance". For those that operate their own "Licemsed Server" instance, they may create a library of specialized bookmarks that can be made available to all users on the server instance.

These bookmarks are retrieved from the SentryMDU Data Server and only apply to the Security Domain to which you have access. These bookmarks may be edited, modified (and renamed) to use in additional applications.



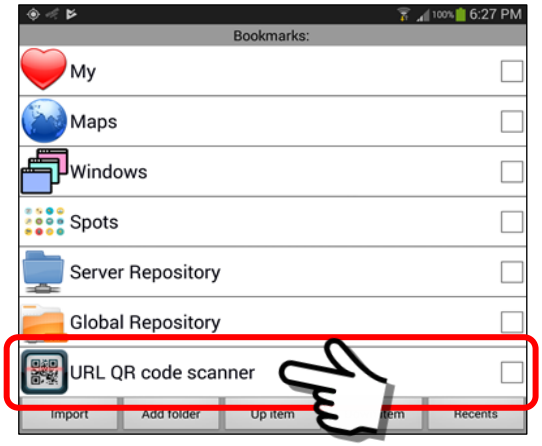
7. ***The "Global Repository" bookmark folder.***

The "Global Repository" Menu item contains a set of bookmark folders and Map Objects that are available as "default" bookmarks for ALL users (not a particular server instance). These bookmarks are retrieved from the SentryMDU Administrative Server. These bookmarks may be edited, modified (and renamed) to use in additional applications.

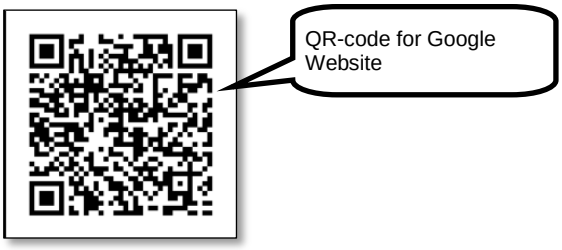


8. ***The "URL QR-code scanner" bookmark folder.***

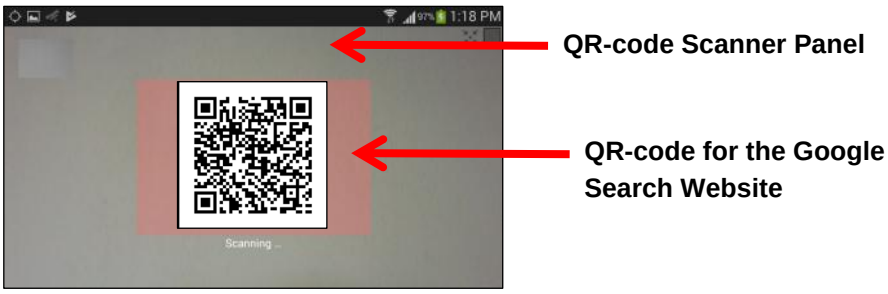
The "URL QR-code scanner" Menu item launches a QR-code scanner application that will enable a User to "scan" a QR-code of an internet website. The website will then "open" on the mobile device.



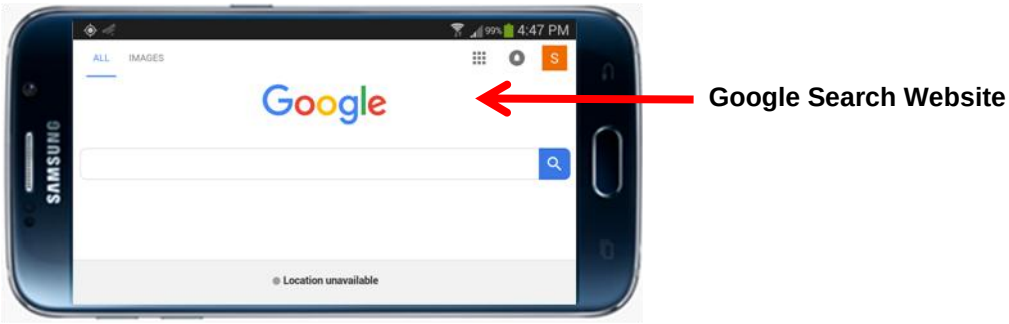
In this example, we will scan the QR-code for Google's Search Website.



Click on the QR-code scanner Menu item, you will be viewing through the camera lense. Place the "red box" over the QR-code, hold the phone still until the scanner has locked on to the image.



The Google Website will launch on your mobile device.



10. The “Objects” Button features

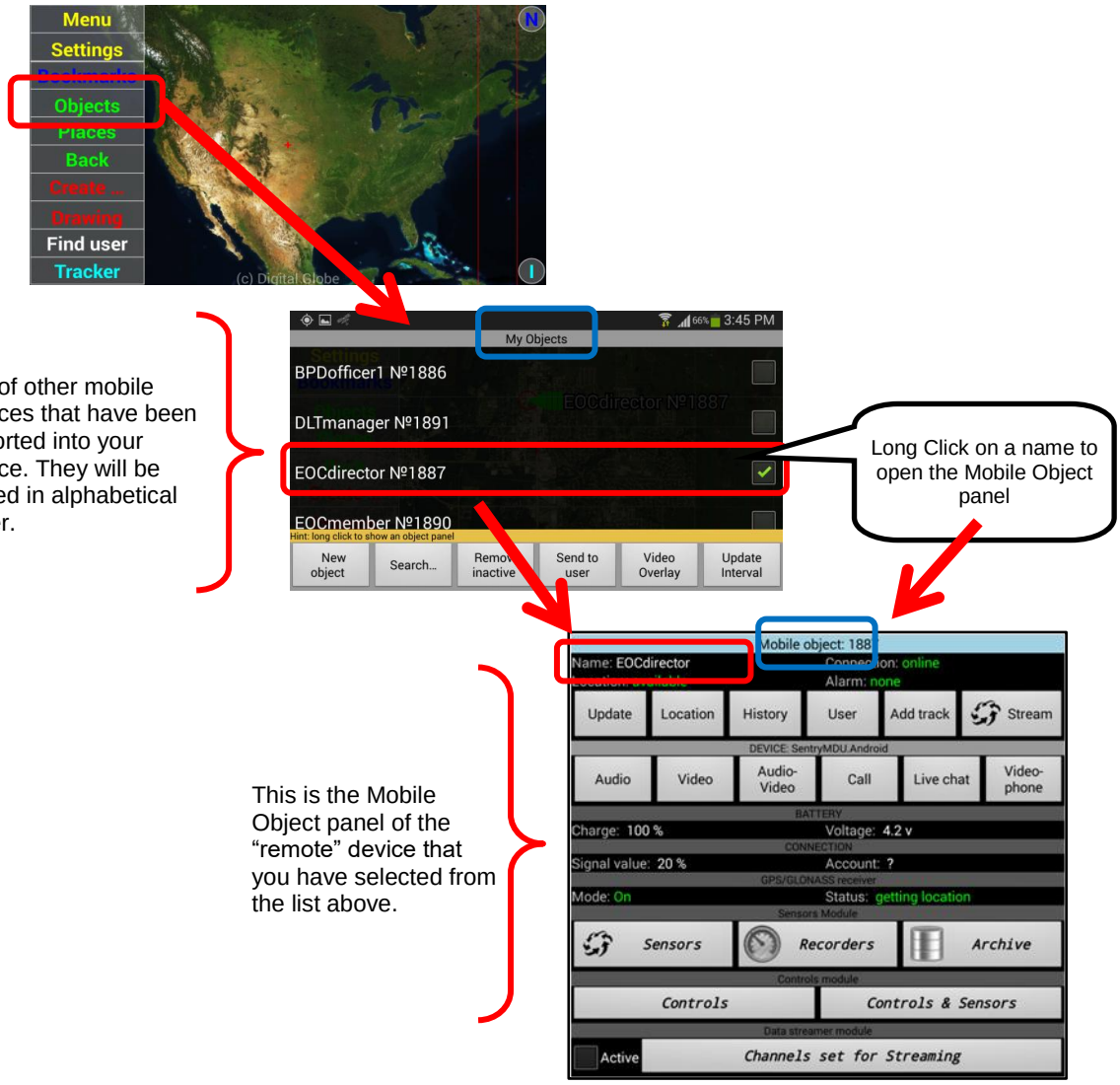
10.1. Overview of the My Objects and Mobile Objects panels

Overview:

The “Objects” Button opens a panel that provides a list of other mobile devices (objects) that have been identified on a specific Sentry MDU Data Server instance. When the SentryMDU App is initially installed on a mobile device, only the “object” of the device itself is installed. Depending on the security settings of a particular user the mobile devices of others on the network may also be installed on the device.

The “My Objects” Panel provides the list of other mobile devices that have been imported to the device. Performing a “long click” on a mobile device name (ie EOCdirector) will open the “Mobile Object” Panel for that particular device. Depending on your specific security access, you may have access to view the sensors of the remote device and monitor audio-video streams and other content.

This section will explain all features of the two panels.

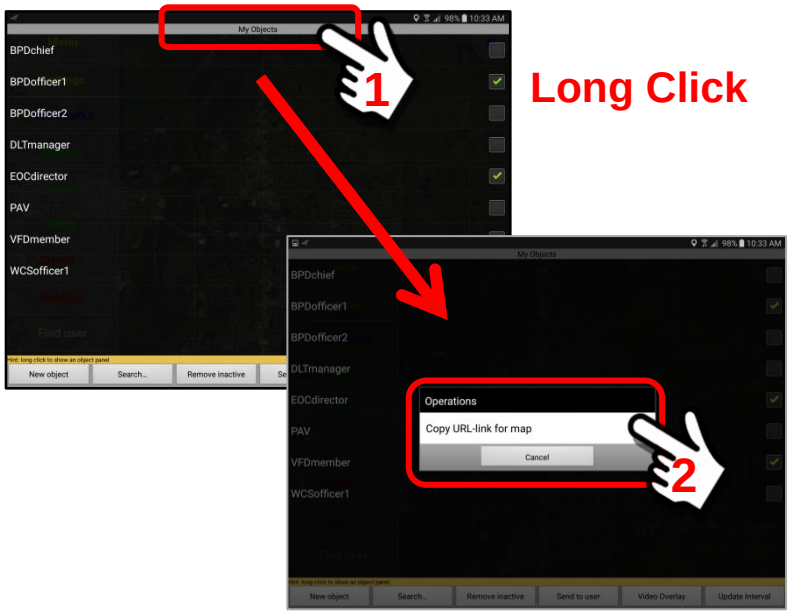


Custom Map option available from the "My Objects" Panel:

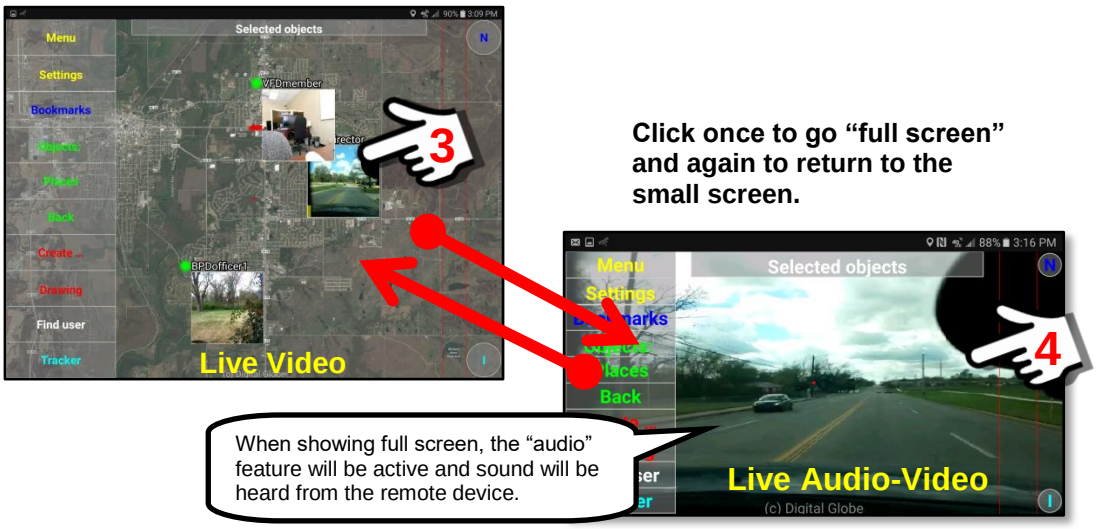
The "My Objects" Panel has a bookmarks feature that allows a user to save a SHORTCUT that will create a "custom map panel" that can monitor the audio/video from multiple remote devices. If a group of devices is monitored on a regular basis, a custom map screen bookmark can be created so that a user can access all of them with a few simple clicks without having to navigate other menus.

A full explanation is available in ***Section 9.16*** on how to create a Custom Map Bookmark that will display the audio-video from a group of remote devices.

Several of the key screens are illustrated below.



The result is a **Bookmark** that will create a custom map screen with multiple users in display mode. The data streams from each remote device may be toggled to "full screen". Simply "click" on the individual picture for the remote device and it will enlarge to full screen. In addition, when full screen, the audio stream from that particular remote device will now be active.



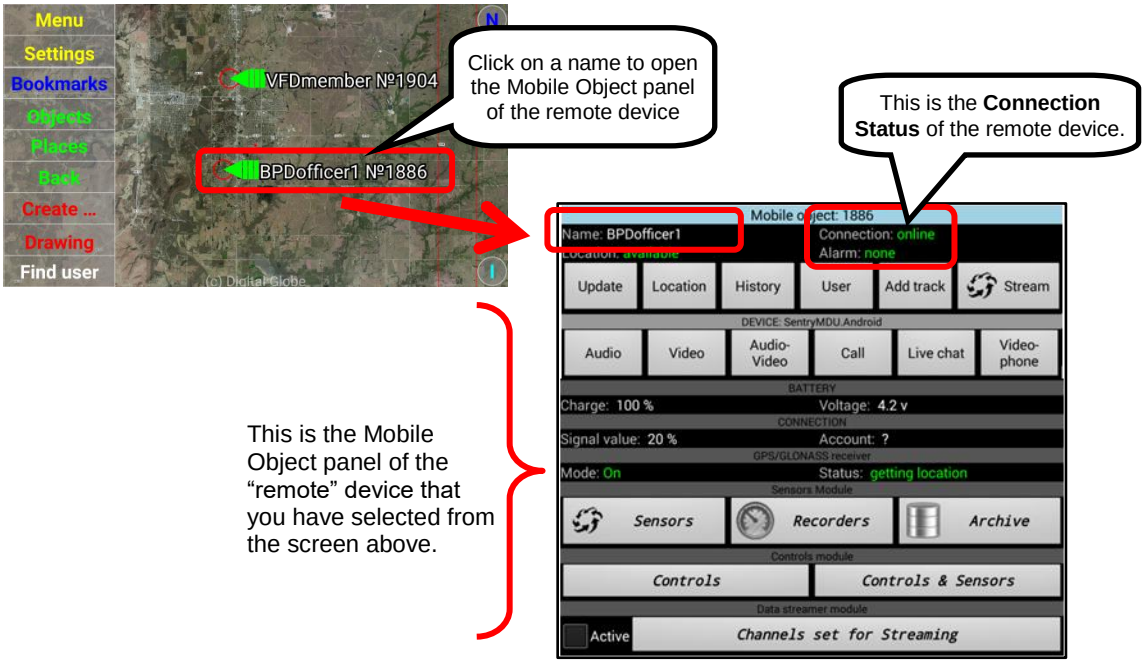
10.2. Access to Mobile Objects Panel from SentryMDU Main Screen

Overview:

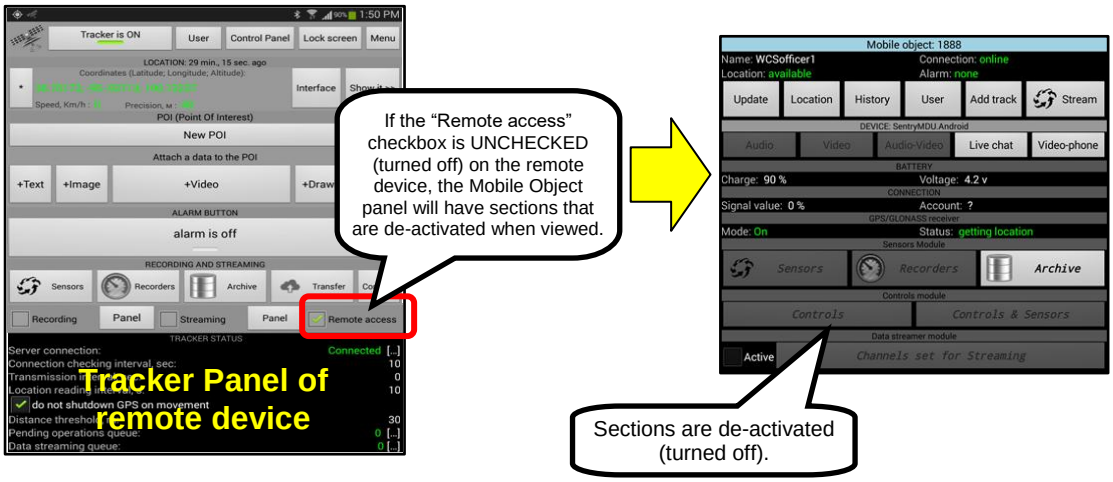
The Mobile Object panel of any remote device may be accessed by clicking on the object marker from the main map screen. The Connection Status of the remote device shows the current state of the network connection between the Object (remote User) and the SentryMDU Data Server. If an object loses connection, it does NOT attempt to reconnect immediately (avoiding multiple connect tries). The system will wait 30 seconds before a reconnect attempt.

Sentry MDU Mobile Object panel:

Click on the object "marker" on the main map screen. The Mobile Object panel for that user/device will open providing access to the remote device features.



If a remote user has disabled the ***Remote access*** feature on their Tracker Panel, the mobile object panel will have sections that are de-activated (grayed out) when viewed.

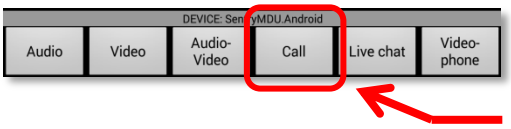


Depending on User Configuration, you may see two different layouts of the Communications Buttons on the Mobile Object Panel. These two versions will be used throughout this guide.

The differences in the panel buttons is due to the “Call” Feature (using the phone) included in the Sentry MDU System. During initial registration, if a User provides a telephone number (optional choice) then the “Call” Feature (Button) is provided on both the Mobile Object Panel and the User Information Panel.

<u>The Default button layout</u>

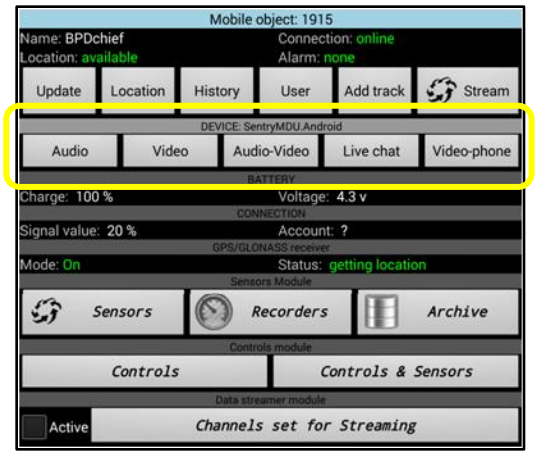
<u>The Call Feature button layout</u> (when a telephone number is provided)



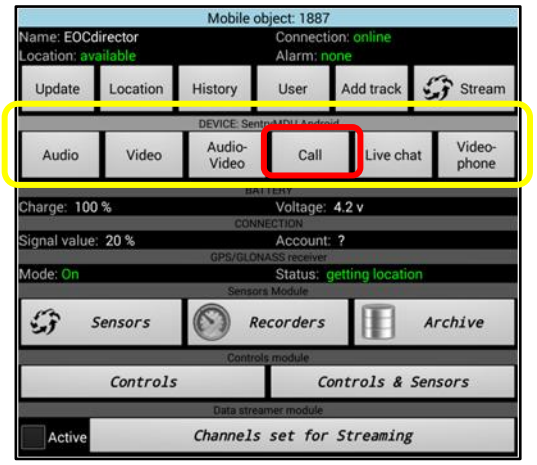
Call Button included

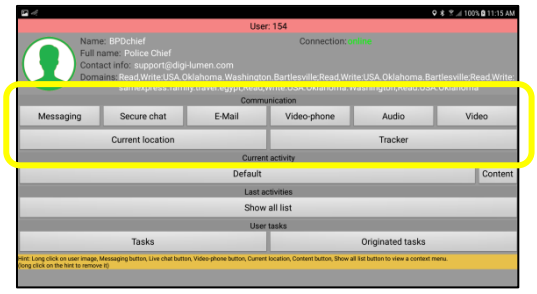
Review the two panels shown below.

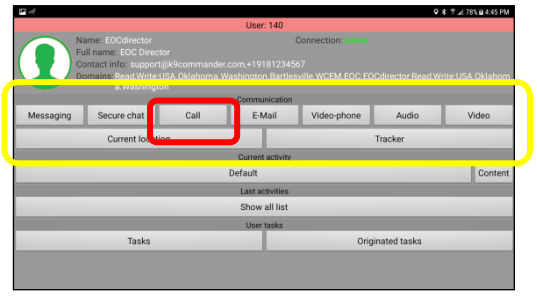
No Call Button Displayed



Call Button Displayed







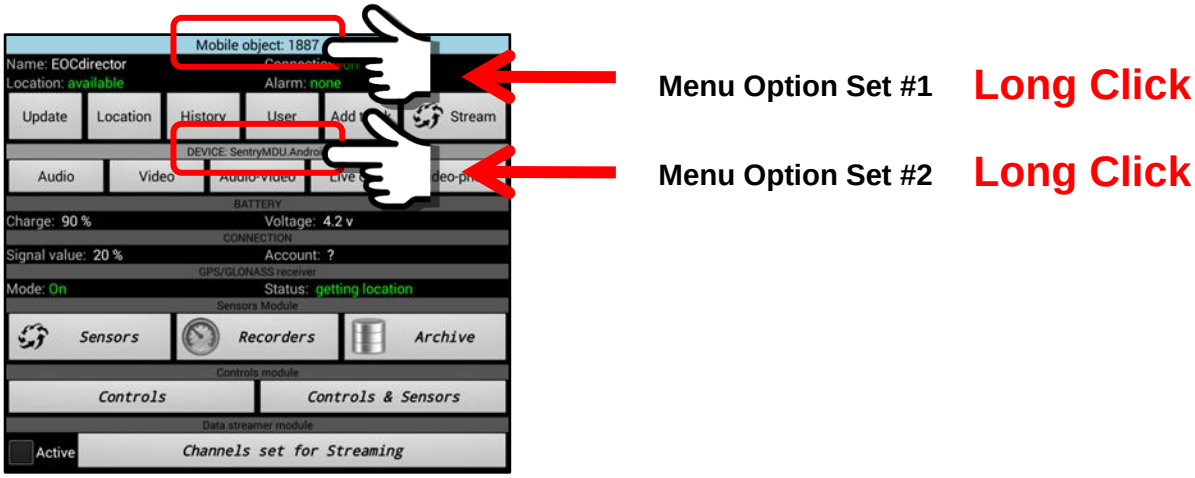
10.3. Menu options on the Mobile Objects Panel

Overview:

The Mobile Objects Panel has a series of Menu Options that are available by performing a “Long click” on specific parts of the Panel. One group has five (5) menu options and the other group has nine (9) menu options. This section will summarize each group of menu options. Detailed explanations will be provided in other sections of this guide.

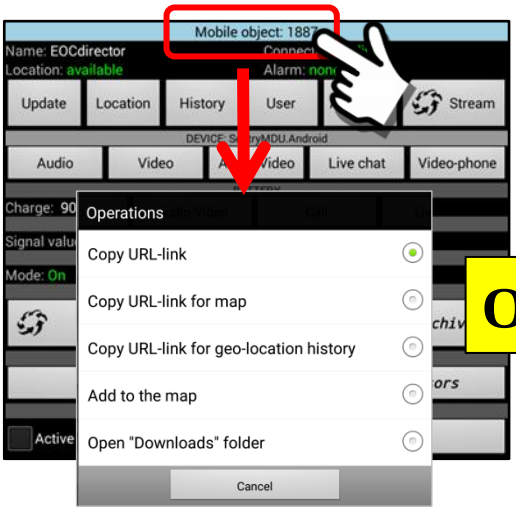
Sentry MDU Mobile Object Panel options:

Perform a “long click” on the header text to open the options menu.



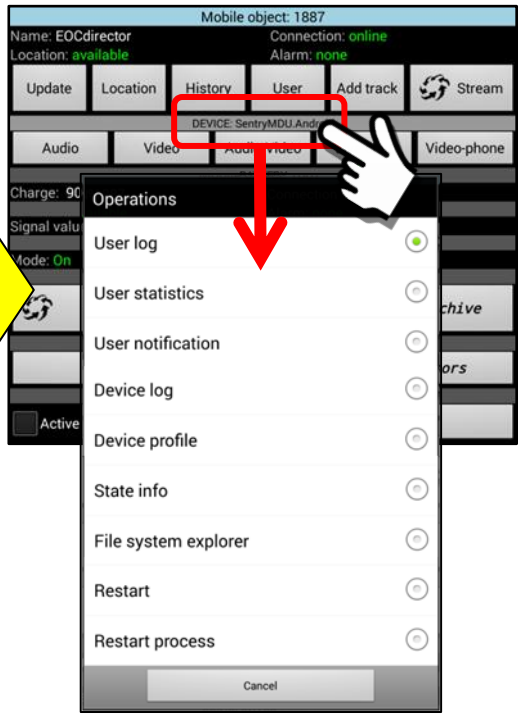
Depending on the option group you select, there are two (2) types of Menu Option lists that may be displayed. They are shown below.

Menu Option set #1

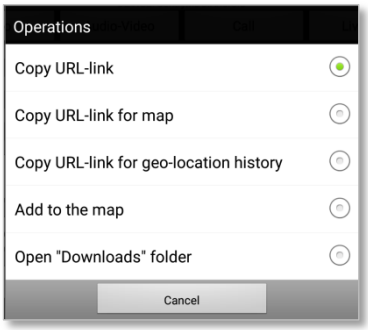


OR

Menu Option set #2



The 5 menu items for Option Set #1 are explained in detail below.



Copy URL-link

The “Copy URL-link” menu option will make a copy of the URL for the selected user’s Mobile Object Panel and store it on the Sentry MDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. Allows easy setup of new bookmarks.

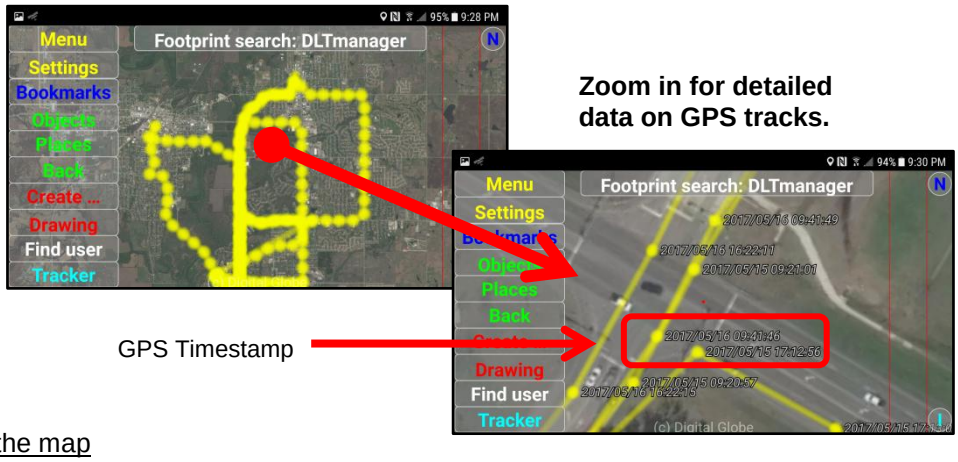
Copy URL-link for map

The “Copy URL-link for map” menu option will make a copy of the audio-video settings for the selected user’s mobile device and store it on the Sentry MDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. This allows for “one click” access to a live audio-video feed from the remote device.

Click once to go “full screen” and again to return to the small screen.

Copy URL-link for geo-location history

The “Copy URL-link for geo-location history” menu option will make a copy of the GPS track data for the selected user’s mobile device and store it on the Sentry MDU “clipboard” (.TEMP file folder). This URL link may then be “imported” as a bookmark. Allows the view/review of GPS tracks for the remote device over a variety of time periods (week, month, year, etc.).

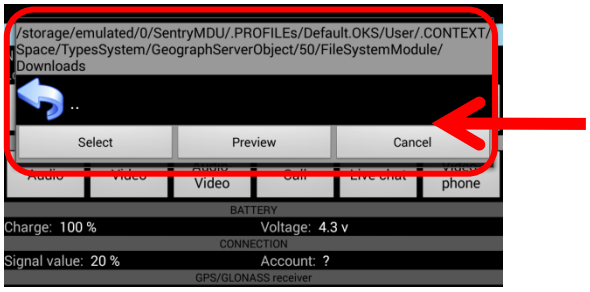


Add to the map

This option allows the selected user’s Object Marker to be quickly installed on the Map Screen.

Open “Downloads” folder

This option will open the Sentry MDU “Downloads” file folder on the mobile device of the selected User. See **Section 5.7** for additional details on enabling the “Internal Memory” access option.

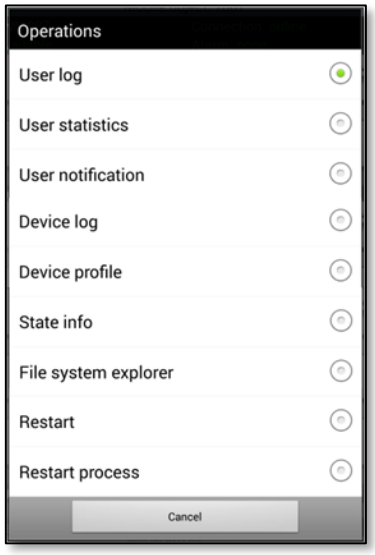


Screen showing the “Downloads” Folder. In this example, it is empty.

Important Notes:

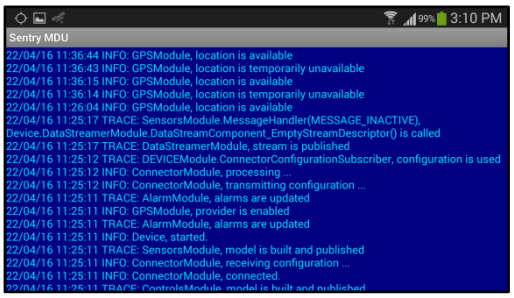
1. **This feature is turned “off” by default.**
2. **It must be explicitly turned “on” (Enabled) by the User of the mobile device since it allows access to the internal file system of the mobile device by others.**
3. **This feature CANNOT be changed by another user or by the system. Only the local user can adjust this setting.**
4. **For YOU to access this feature on another persons mobile device you must have security credentials that allow access.**

The 9 menu items for Option Set #2 are explained in detail below.



User log

The “User log” menu option will open a log file for viewing. The log file provides User level log data. Generally, there is no User relevant information here. It may be of benefit to Developers.



User statistics

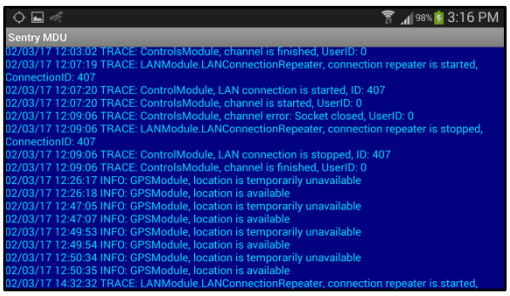
This option provides statistics on imagery tile usage.
A screen is shown in .xml format that provides tile usage statistics for the User Profiles on the mobile device. Generally only of use to Developers.

User notification

The “User notification” menu option allows a user to select a media file from a directory on their device (ie mp4) and then send this file to be played on a remote user’s mobile device. This would be used to distribute/play urgent alerts, tactical video newsletters or advertising clips. This feature is a one-to-one transfer (ie. one user sending a video clip to one user). The clip will start playing automatically on the remote users device and continue playing (looping) until they stop it. If the remote user is not logged into the Sentry MDU System, the video will begin playing as soon as they do log in.

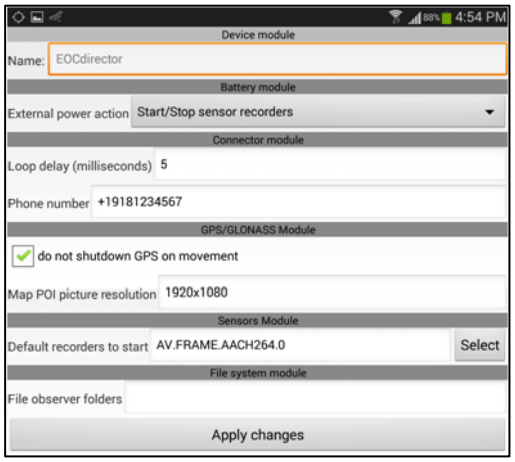
Device log

The “Device log” menu option will open a log file for viewing. The log file provides device level log data. Generally, there is no User relevant information here. It may be of benefit to Developers.



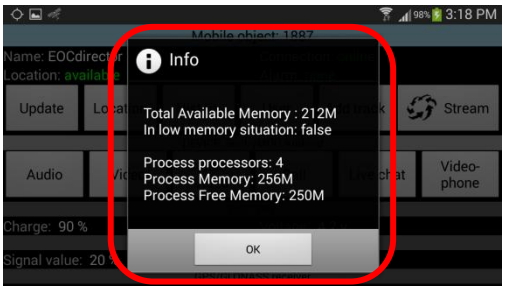
Device profile

This option allows a user to change a few specific Device Profile parameters such as External Power Action (ie for Dash Cam applications), user phone number and default recorders to start. These settings are a subset of more comprehensive configuration lists.



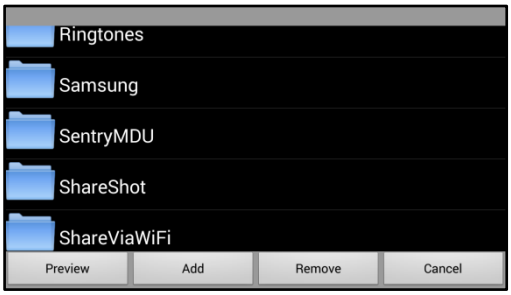
State Info

This option provides information on the memory conditions available in the mobile device. Generally only of use to Developers.



File system explorer

This option provides access to the file system on a device (either local or remote). In order to have access the target device must have the Internal Memory setting set to “Enabled” (and the appropriate Security Credentials).



This feature will be described in detail in **Section 15.9**.

Restart

This option allows a user to “restart” the Tracker Object in the SentryMDU Process. This is most often used to “remotely” restart the Tracker Process on a remote device if for some reason the process stopped (ie a Camera image froze up).

Restart process

This option allows a user to “restart” the complete SentryMDU App in the Android OS. This feature would be used to “remotely” restart the SentryMDU App on a remote mobile device. It is similar to exiting the application and starting again. This situation could occur if the Android OS did an automatic update and that action caused the SentryMDU process to freeze up.

10.4. Create shortcut "bookmarks" for features on the panel

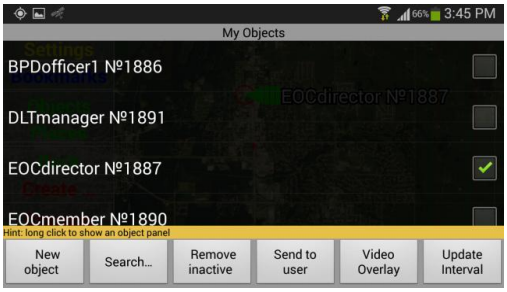
Overview:

Bookmarks may be created for many of the features on the Mobile Objects panel. This section will describe how to create bookmarks so that often used features can be accessed rapidly.

Bookmarking the Mobile Object panel features:

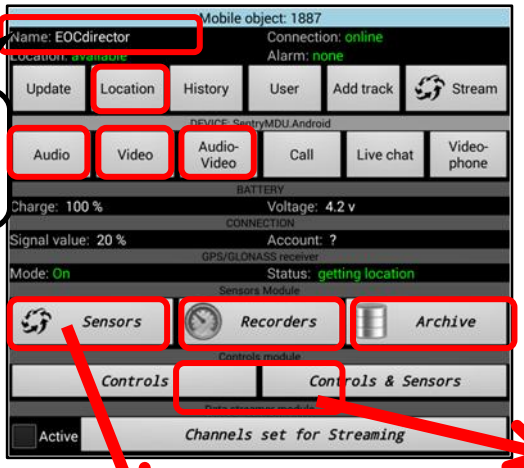
The images below show the "My Objects" and "Mobile Object" panels with those features that may be bookmarked outlined in red.

"My Objects" Panel



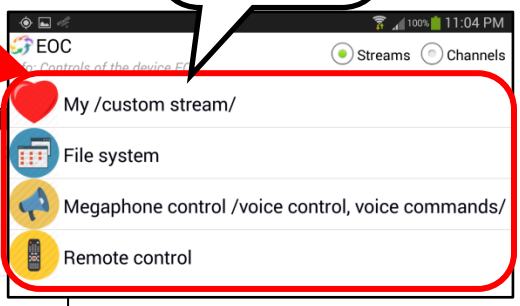
No items on this panel can be bookmarked.

"Mobile Objects" Panel

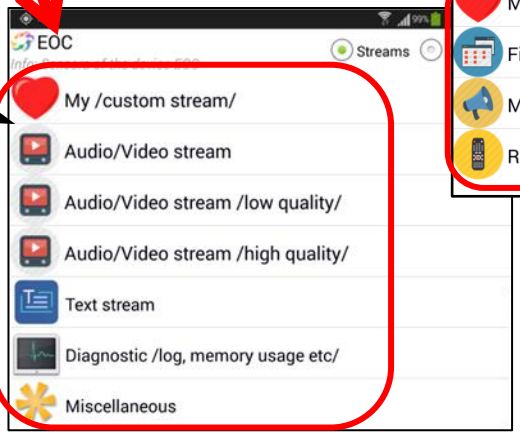


Long Click on the Name to bookmark the whole panel as a shortcut.

Long Click on any of these control features to create a bookmark

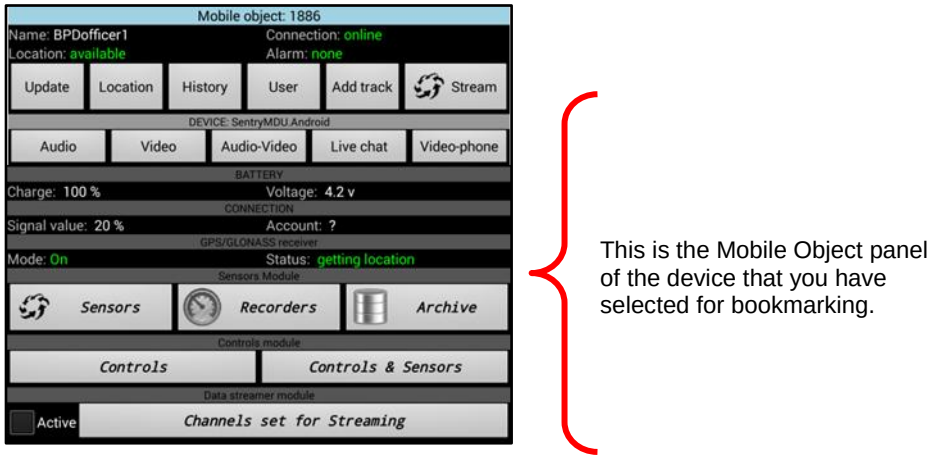


Long Click on any of these data streams to create a bookmark

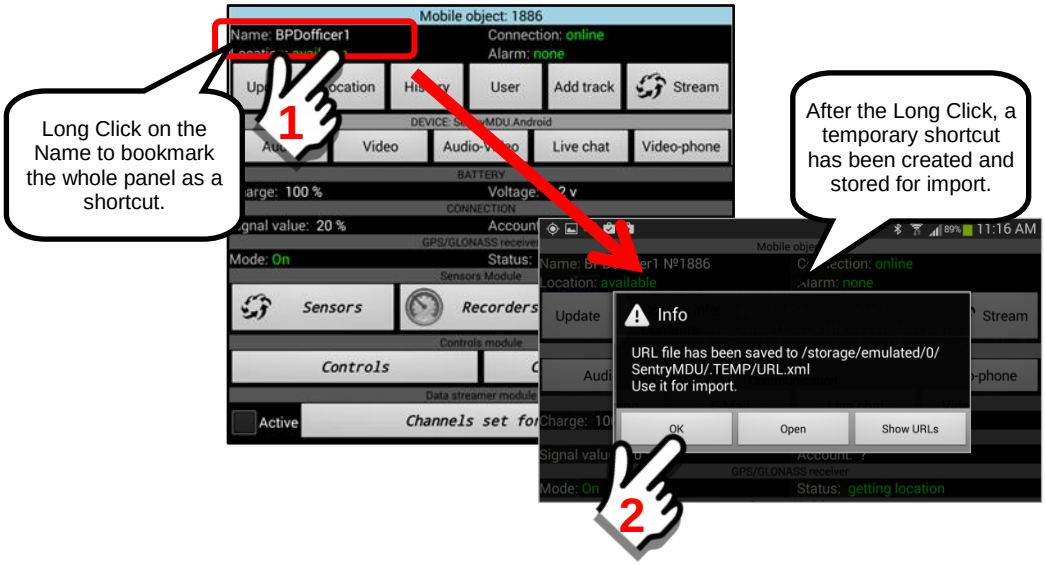


Example – Bookmark the complete Mobile Object panel:

1. ***Navigate to the Mobile Object panel that you want to create a bookmark.***
   In this example, we are going to create a "bookmark" of the Mobile Object panel of another user's mobile device.

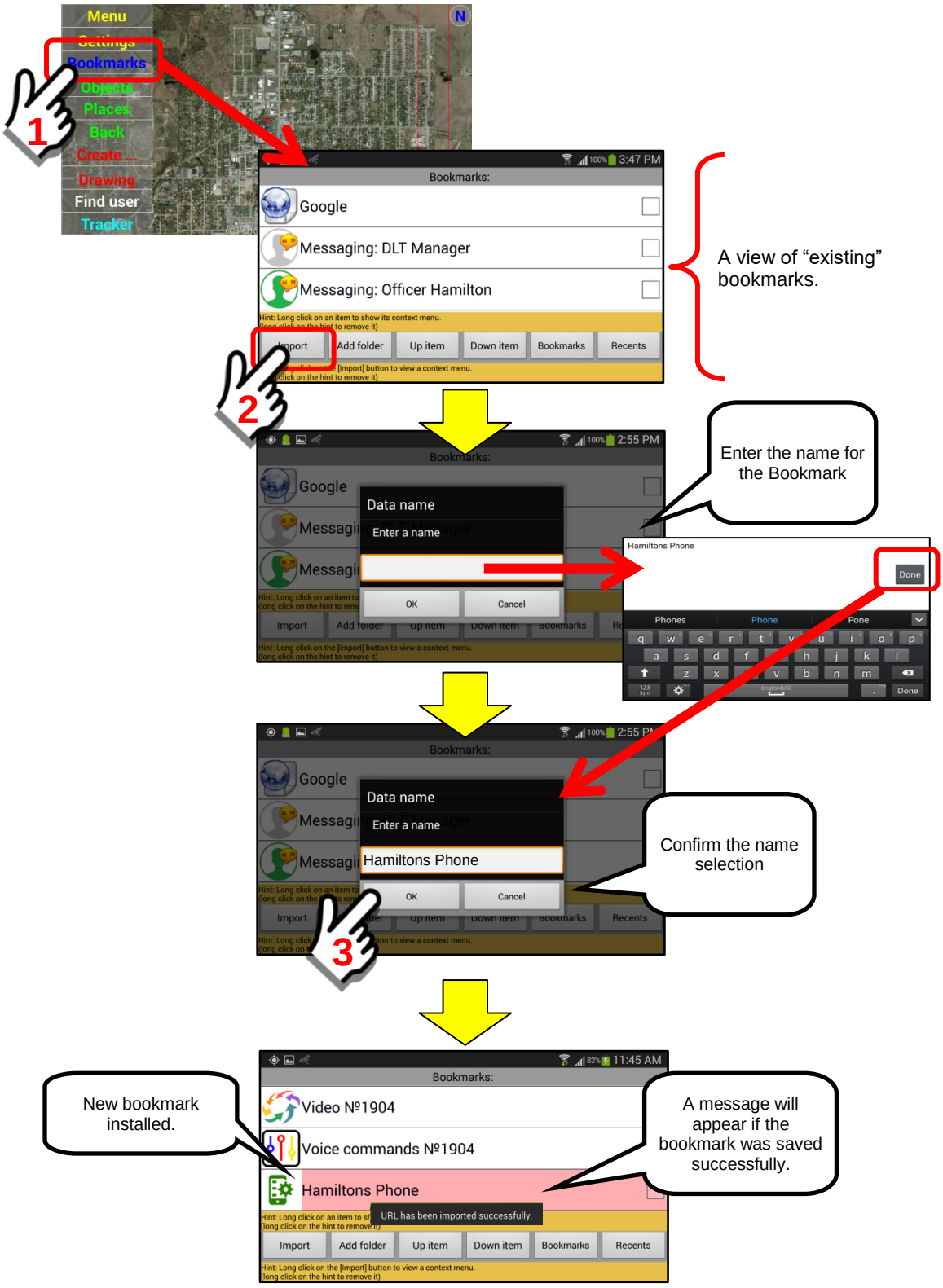


2. ***Select the "Name" on the Mobile Object panel.***
   To create a bookmark, perform a "Long Click" on the name at the top left corner of the Mobile Object panel. This will open a confirmation box indicating that a temporary shortcut has been created and stored.



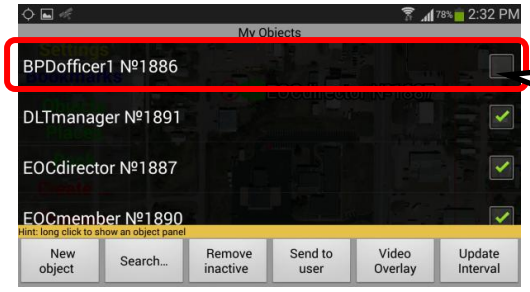
Click "OK" to confirm that the temporary shortcut has been created. It is important that the shortcut now be "imported" into the file system and made permanent. Proceed to the next step.

3. ***Import the "new" shortcut" into the Bookmarks Section.***
The "shortcut" to the remote user's Mobile Object Panel has been saved on your mobile device. However, it must still be "imported" as a bookmark into YOUR file system. This sequence of steps will show how to create the bookmark on your mobile device.

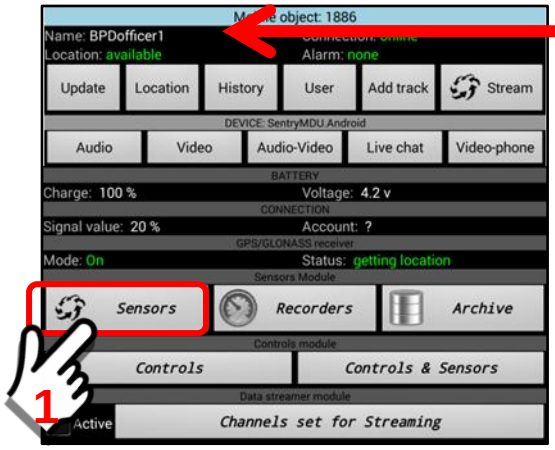


Example – Bookmark an audio/video stream from a remote device:

1. ***Navigate to a screen/panel where you want to create a bookmark.***
   In this example, we are going to create a "bookmark" so that we can remotely view the camera (stream audio/video) from another user's mobile device.



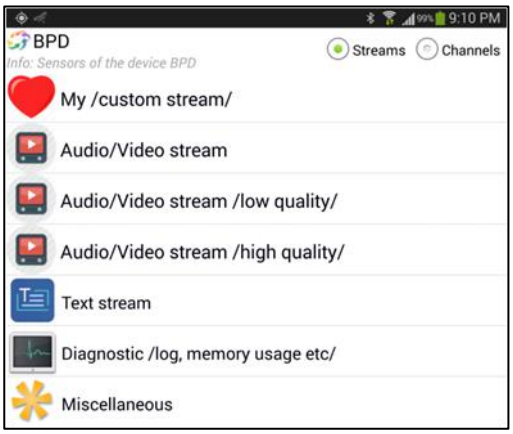
Click on the User you want to monitor the audio/video feed from.



Make sure this is the Mobile Object panel for the user you want.

The Mobile Object panel for the User will appear.

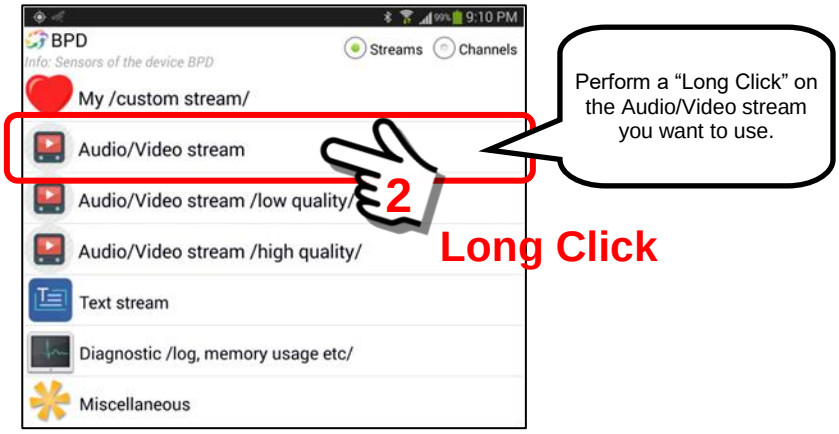
Click on the "Sensors" Button to gain access to the Audio/Video streaming data.

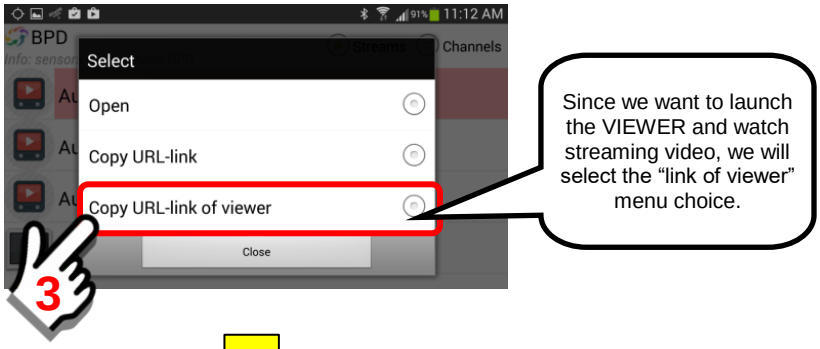


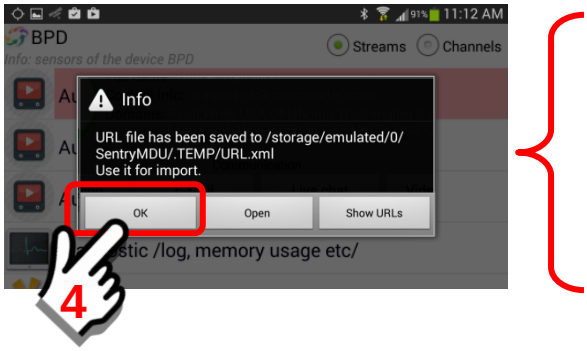
The available data streams and channels will appear on a screen panel.

2. ***Select the Audio/Video stream that you want to monitor on the remote device.***

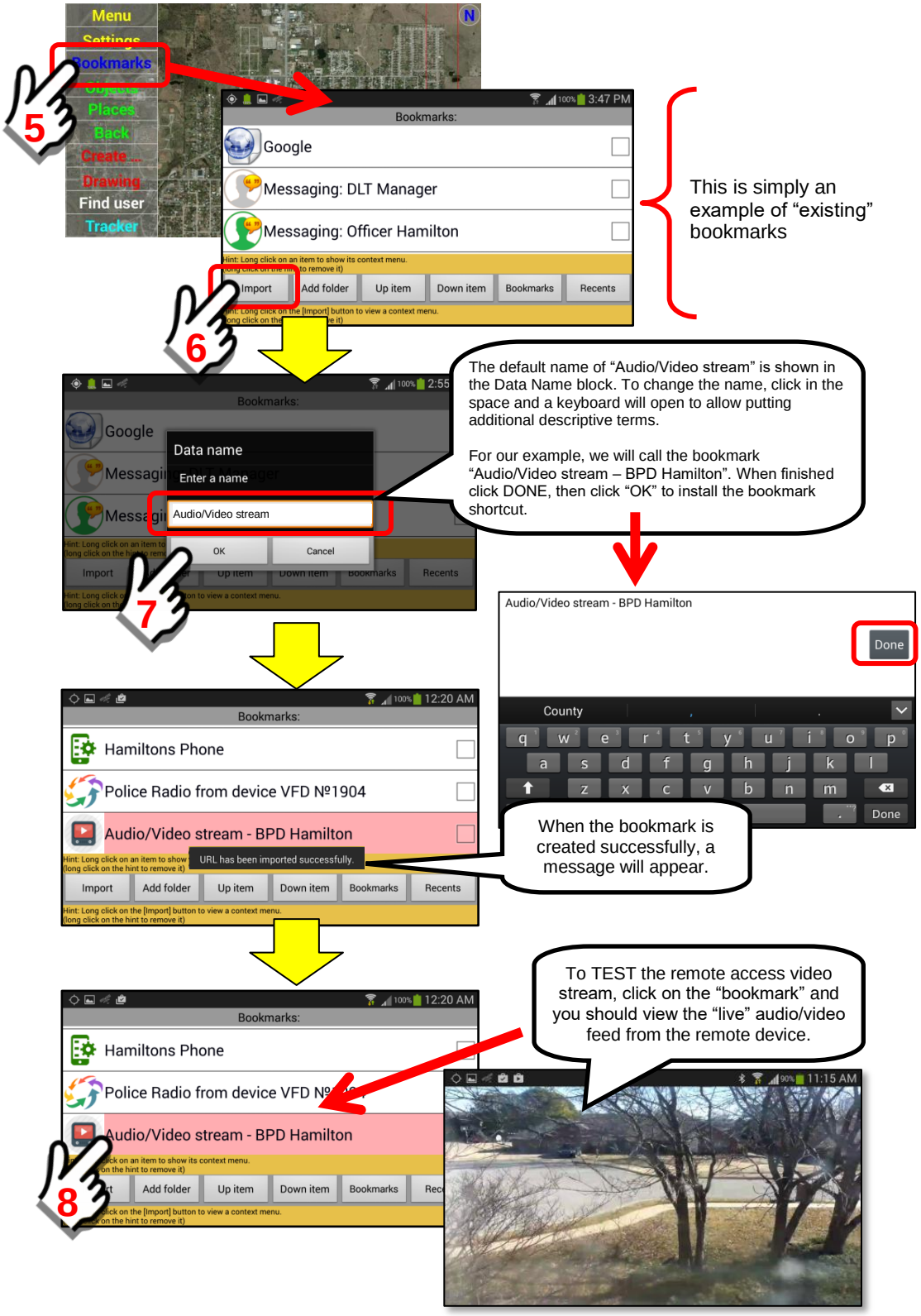
From the Audio/Video panel of the selected User, choose the type of video stream you want to view. Perform a “Long Click” to produce a menu. Select the “Copy URL – link of viewer” choice from the menu. Confirm a successful operation.





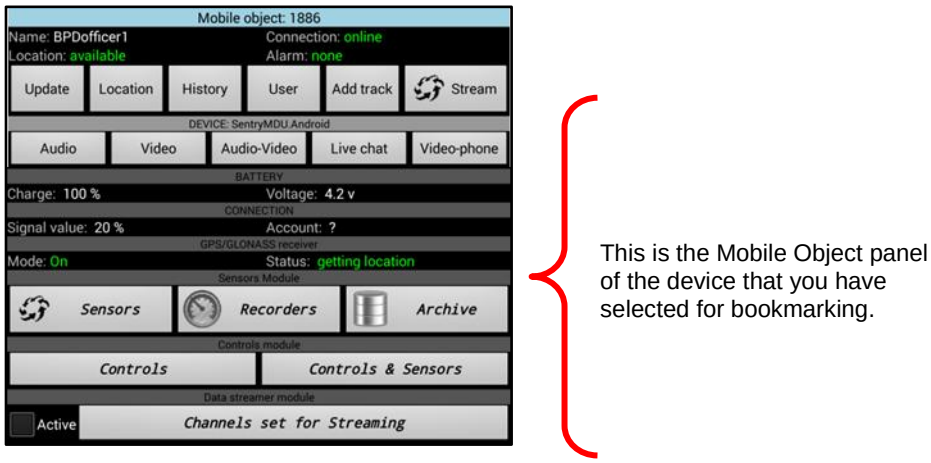


3. ***Install the saved "shortcut" as a new bookmark.***
The "shortcut" to the remote user's audio/video device has been saved on your mobile device. However, it must still be "imported" as a bookmark into YOUR file system. This sequence of steps will show how to create the bookmark on your mobile device.

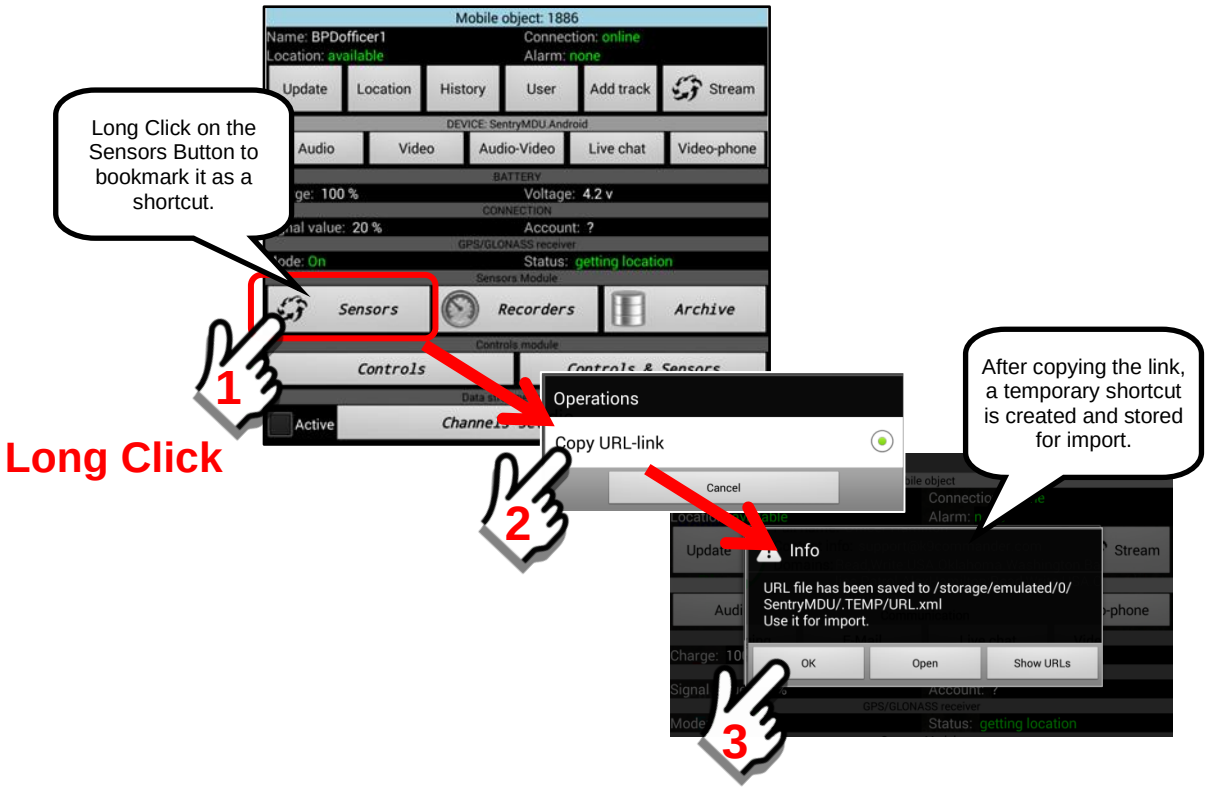


Example – Bookmark the Sensors Section of the panel:

1. ***Navigate to the Mobile Object panel that you want to create a bookmark of the Sensors Section.***
   In this example, we are going to create a "bookmark" so that we can access the Sensors Section of the remote device.

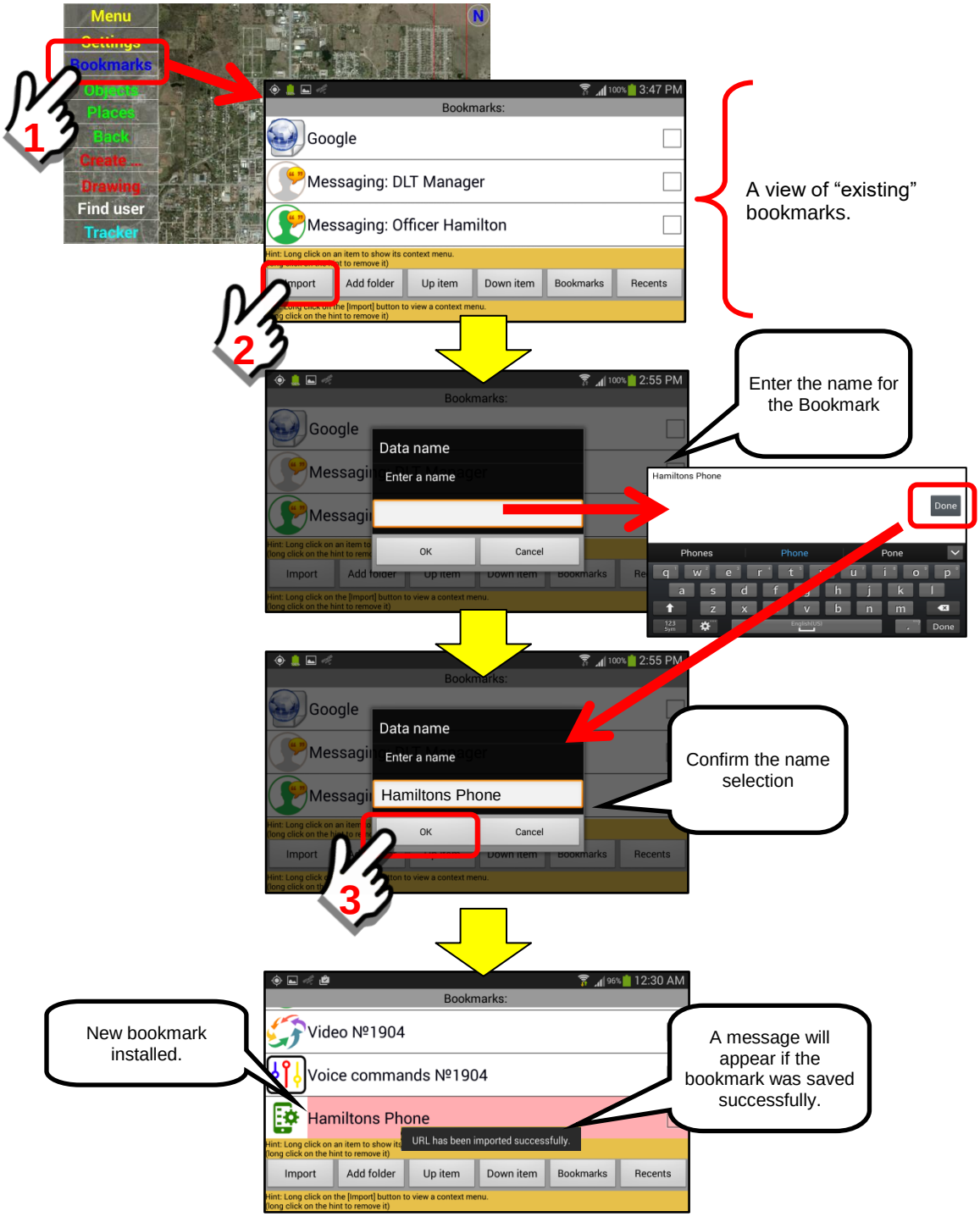


2. ***Locate the "Sensors Button" on the Mobile Object panel.***
   To create a bookmark, perform a "Long Click" on the Sensors Button on the Mobile Object panel. This will open an Operations Box with a "Copy URL – link" indicated. Click on the link. A second "Info" Box will open indicating that a temporary shortcut has been created and stored.



Click “OK” to confirm that the temporary shortcut has been created. It is important that the shortcut now be “imported” into the file system and made permanent. Proceed to the next step.

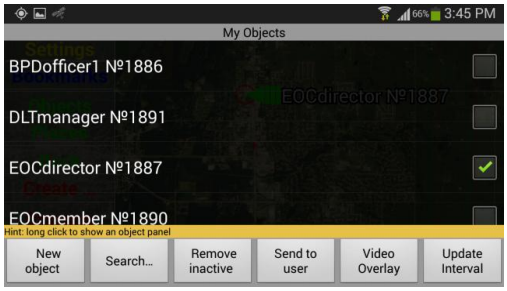
3. ***Import the “new” shortcut” into the Bookmarks Section.***
The “shortcut” to the Sensors Section of the remote user’s Mobile Object Panel has been saved on your mobile device. However, it must still be “imported” as a bookmark into YOUR file system. This sequence of steps will show how to create the bookmark on your mobile device.



10.5. The “My Objects” Panel

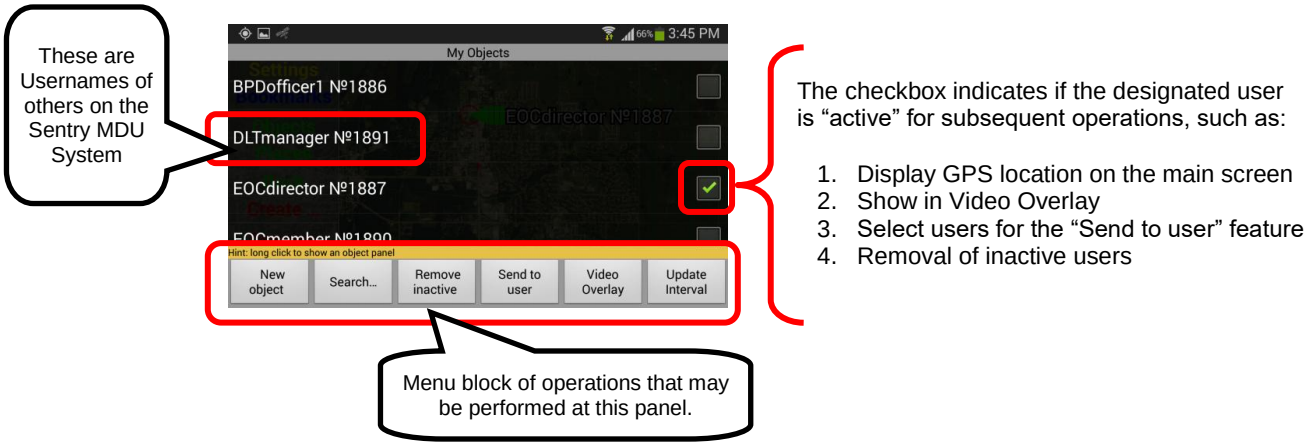
Overview:

The “My Objects” panel is the gateway to the Mobile Object panels for all users that are listed on the device. This section will describe the features/functions that may be performed on this panel.



General layout of the “My Objects” Panel:

The Sentry MDU Application uses the “My Objects” Panel for listing the other users on the system that have been imported into the specific mobile device.



Description of the Menu Buttons on the “My Objects” panel:

This section will describe the Menu Buttons and their associated features as used on the “My Objects” panel.

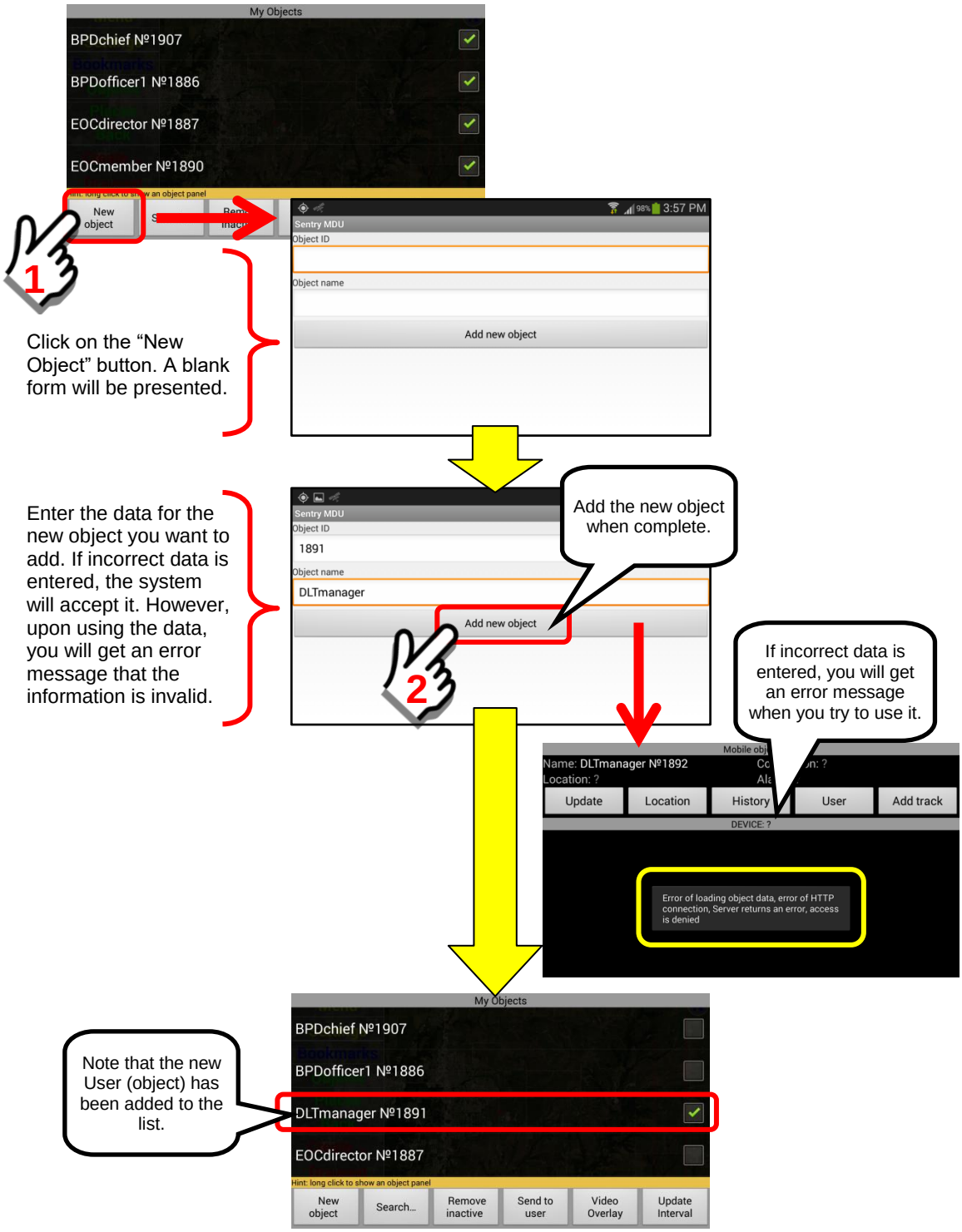
The menu is composed of 6 buttons located at the bottom of the “My Objects” Panel.

1. ***New Object button***

The "New Object" feature allows a user to add another user (object) to the list manually. This requires that the user know the ObjectID and Username of the person (mobile device) to add.

In this example, we will add the following:

a. Username = DLTmanager
b. UserID = 1891



2. ***Search … button – short click***

The "Search …" Button, when activated with a "short click", opens an "Object Search" Panel and provides a number of additional features:

- Ability to create custom map layers to search for remote devices.
- Search for other users by Security Domain.
- Broadcast an audio-video notification to groups of selected users within their security domain.

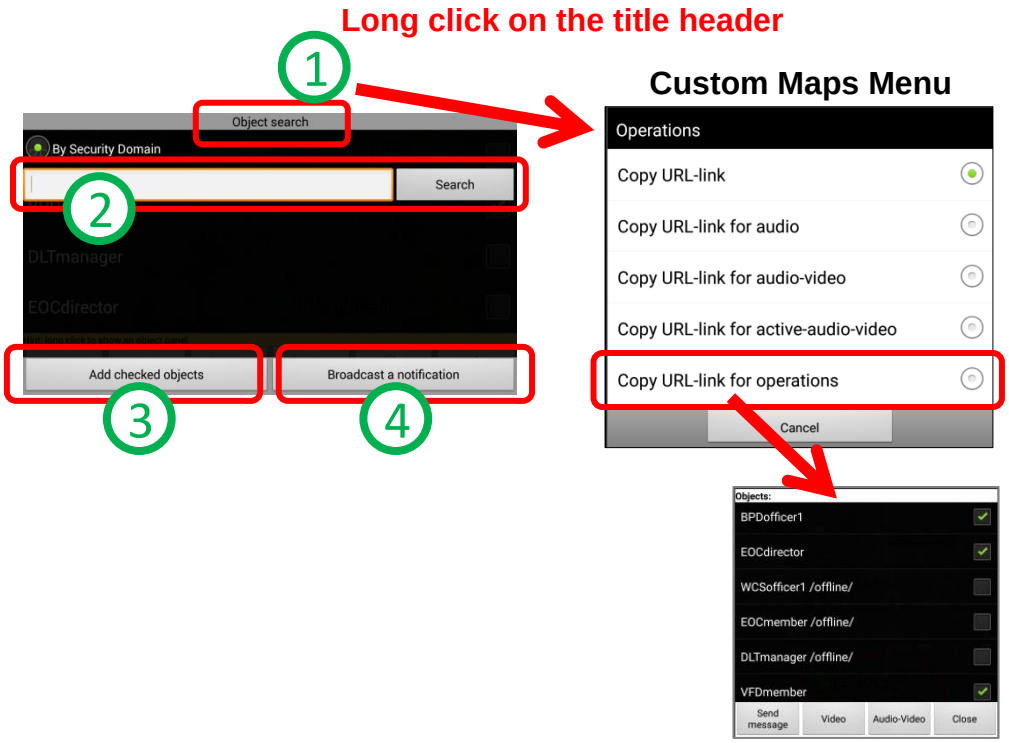
The Security Domain hierarchy will be established by your IT Department to meet the security requirements of your organization. They will publish the format to be used in searching domains. Please contact your IT Representative for details.

Your search will be restricted in the following manner:

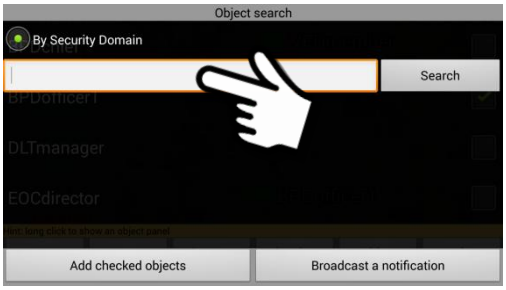
a. You must have adequate security access yourself to perform a search.
b. You must be in the SAME security domain in which you are searching (cannot search in other security domains).
c. Your "level" (access rights) within a security domain is set such that you can see people at your same level and lower. You cannot see people with a higher level of access.

Features available on the Object Search Panel

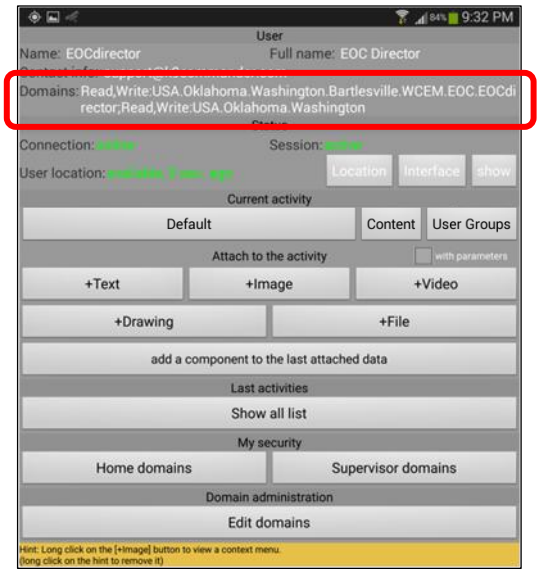
The Object Search Panel has four regions/buttons that provide additional menus and search options. The Custom Maps "Operations" Menu, with five link options, will be discussed in detail in the following section (10.6).



To search for other users by Security Domain, follow these steps:



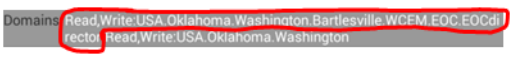
Enter the Security Domain for the User Group you wish to identify.
For this example, we will assume we are user EOCdirector. If we review the Security Domain of EOCdirector we will see it displayed on the User Information Panel (**Section 16.6.1**).



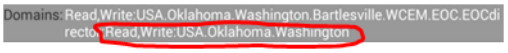
As explained in **Section 6.3** the user security privileges are divided into two categories.

Two components of the security access provisions:

1. ***The type of security access assigned to YOUR UserID.***
   The first component establishes Read/Write provisions of your account. This allows who can see your location (ie GPS), monitor the sensors on your mobile device and remotely access/control your mobile device.

2. ***What access you have to view/change OTHER USER mobile devices.***
   The second component establishes the access and control YOU have over other user devices. This determines whether or not you can view/monitor/control another user's mobile device.

In this example, notice that the access rights to view OTHER users is:

Read,Write:USA.Oklahoma.Washington … (Country, State, County)

This means, in order to do a SEARCH for other users, the user EOCdirector may only search for other users that have Domain settings for USA.Oklahoma.Washington and lower levels. The concept is illustrated below.

EOCdirector CAN search for users in these Domains:

Read,Write:USA.Oklahoma.Washington
Read,Write:USA.Oklahoma.Washington.Bartlesville
Read,Write:USA.Oklahoma.Washington.Bartlesville.WCEM
Read,Write:USA.Oklahoma.Washington.Bartlesville.WCEM.EOC
… and more at lower levels

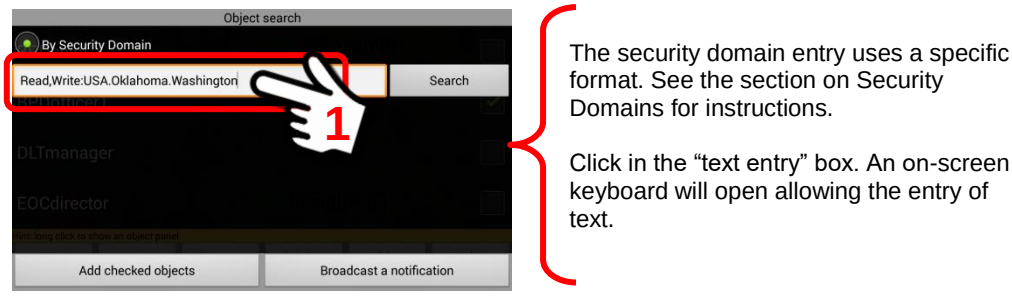
EOCdirector CANNOT search for users in these Domains:

Read,Write:USA.Oklahoma
Read,Write:USA.Texas
Read,Write:USA
Read,Write:Spain
… and more at higher levels

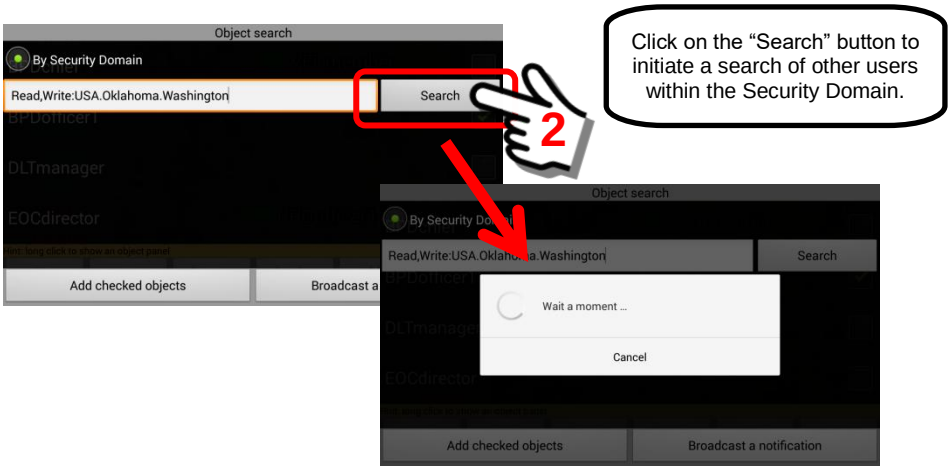
In the event a User attempts to search for other users in a Domain in which he does not have access, he will get an error message as shown below.

We will now proceed with an example of a successful search for users in the security domain of EOCdirector.

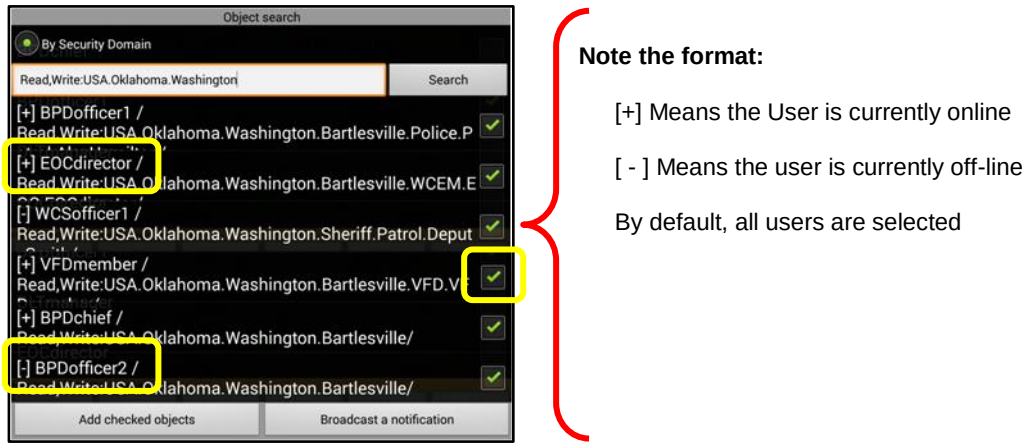
Enter the desired security domain.



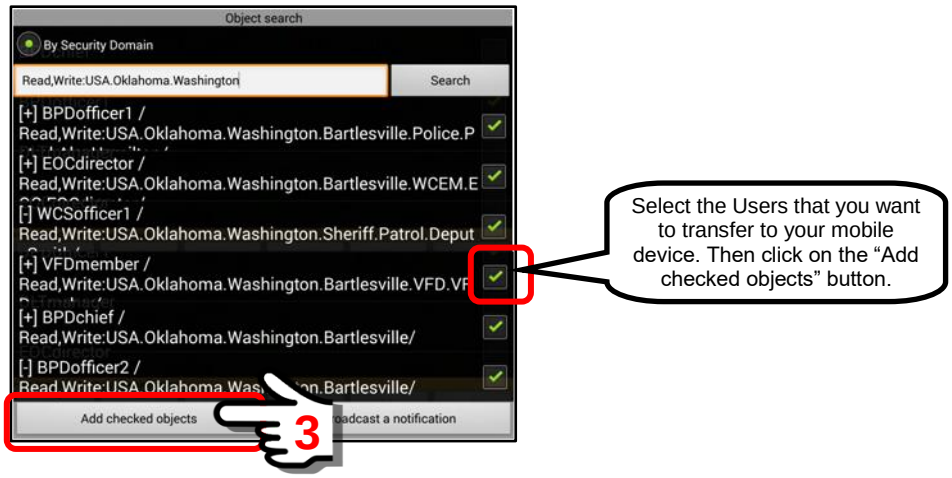
Click on the “Search” Button. It will take a moment to contact the Sentry MDU Data Server and retrieve the users within that domain.



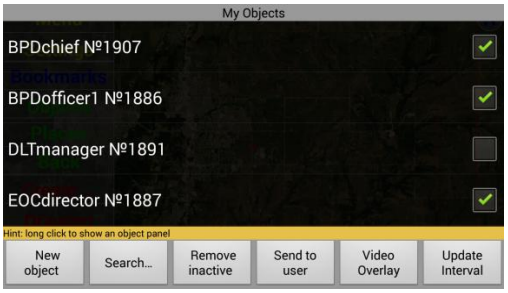
In this example, a group of users in this Security Domain have been retrieved.



From the list of users, select those that you would like to add to your list of Mobile Objects (put a checkmark next to the name). Click on the “Add checked objects” Button.

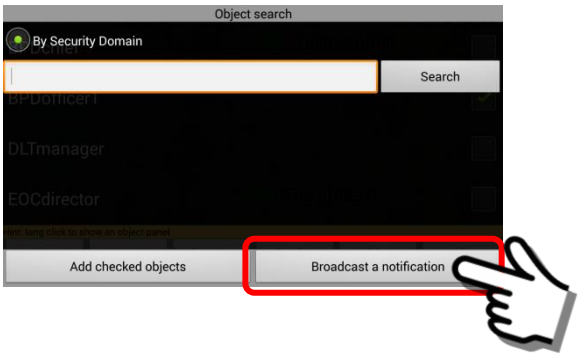


The selected users are now added to your Mobile Device.



Broadcast an audio-video notification

The Sentry MDU System allows a user to “broadcast” an audio-video message to groups of users. Typically, this would be a short .mp4 video that has been stored on the Sentry MDU Data Server.

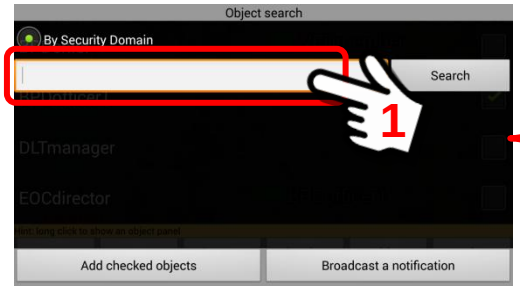


The following criteria apply when using the broadcast feature:

a. The video must be “uploaded” to the Sentry MDU Data Server via the Sentry Manager Desktop application.
b. When the video is sent to a Mobile Device, it will begin to play automatically.
c. When the video finishes playing, it will begin to play again (looping mode) and continue in this way until the user clicks on the “back” button on their mobile device.
d. If a user is “off-line” during the time the video is broadcast, they will receive the video as soon as their Mobile Device comes on-line and is connected to the Sentry MDU Data Server.
e. Depending on security credentials, all users have the ability to send “broadcast” videos to other users in their Security Domain.
f. If a user wants to review a video that has been sent to them previously, they have the option to send the video just to themselves by selecting only their mobile device as the recipient.

To begin the “broadcast” process, a user will select the user group that is to receive the broadcast video. Although all users have the ability to use the broadcast feature, it would typically be used by a Department Head or Supervisor. In this example, we will assume a Department Head wants to send a video to a single user.

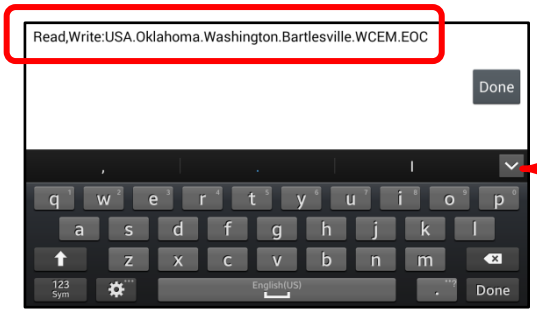
Begin by selecting the User Group that will receive the video broadcast.



The security domain entry uses a specific format. See the section on Security Domains for instructions.

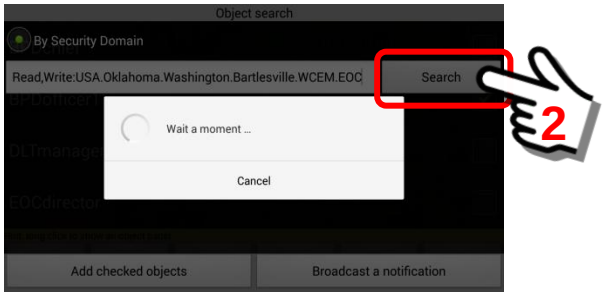
Click in the “text entry” box. An on-screen keyboard will open allowing the entry of text.

Enter the security domain for the user group desired.

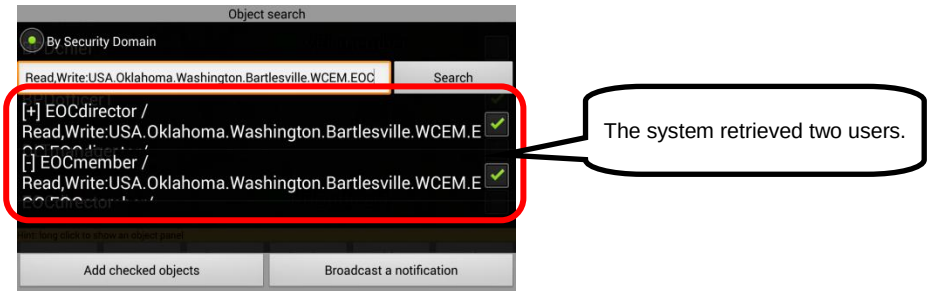


In this example, we are looking for an employee of the Emergency Operations Center (EOC), that is part of the Washington County Emergency Management organization (WCEM), located in the City of Bartlesville, Washington County, Oklahoma, USA.

Click on the “Search” Button and the system will search for users in this domain.

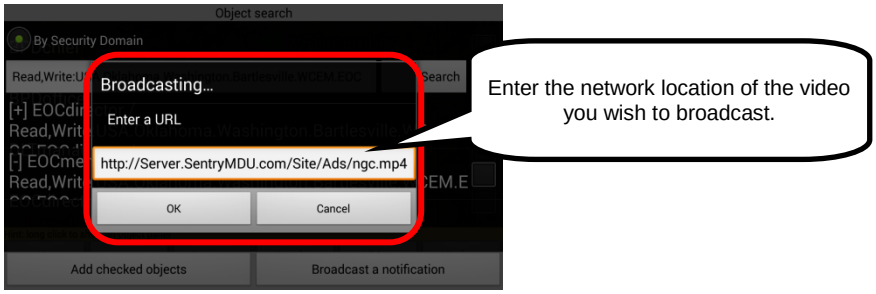


The Sentry MDU System returns two results from the search.

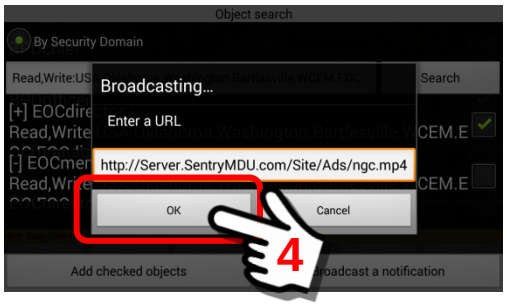


We will “uncheck” the user = EOCmember and only send the broadcast video to the user = EOCdirector.

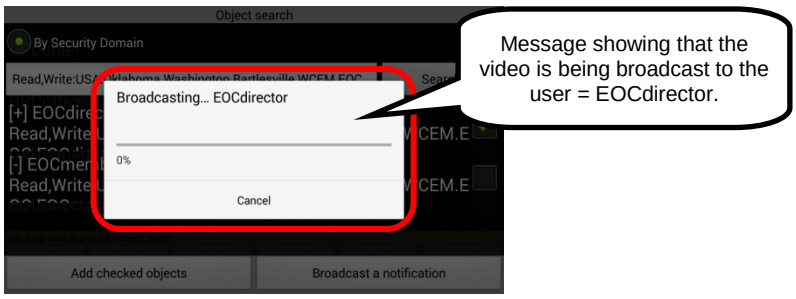
Once you have selected the User(s), click on the “Broadcast a notification” Button. This will open a box where you will enter the network address of a Sentry MDU Data Server.



To “send” the video to the selected users, click on the “OK” Button.



The video is now being sent to the user = EOCdirector. You will see a Broadcasting Message Box indicating that the video is being processed and sent.



The broadcast video will now begin playing on the remote device.

3. *Search … button – long click*

The “Search …” Button, when activated with a “long click”, allows a user to perform two types of visual search functions. (1) Search for other users by their GPS location on a Map Screen and (2) Search for other users via the “Live Search” virtual camera feature.

Both types of search allow the user to select a “distance” within a search radius (i.e. you want to search for all users within a 5 km radius, etc.).

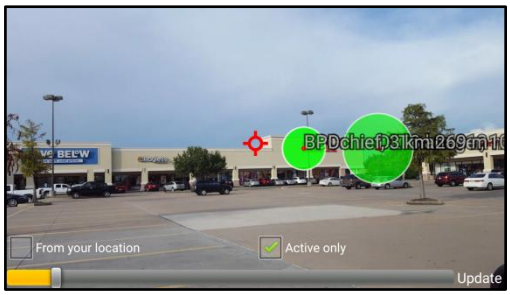
Your search will be restricted in the following manner:

a. You must have adequate security access yourself to perform a search.
b. You must be in the SAME security domain in which you are searching (cannot search in other security domains).
c. Your “level” (access rights) within a security domain is set such that you can see people at your same level and lower. You cannot see people with a higher level of access.
d. A mobile device **must have** a Gyroscopic Sensor in order for the “Live Search” feature to work.

Examples of the Map Search and Live Search screens are shown below:

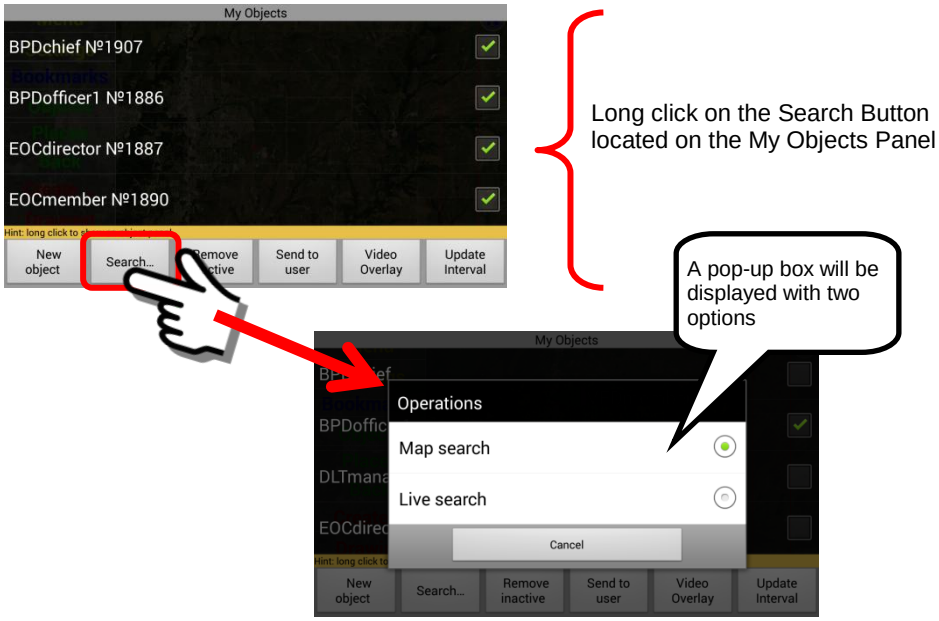
Map Search Feature as shown on Smartphone

Live Search Feature as shown on Smartphone



Map Search Feature as shown on a 10” Tablet

Access to the **Map Search** and **Live Search** features is available by performing a long click on the “Search …” Button located on the bottom of the My Objects Panel.



Map Search Option

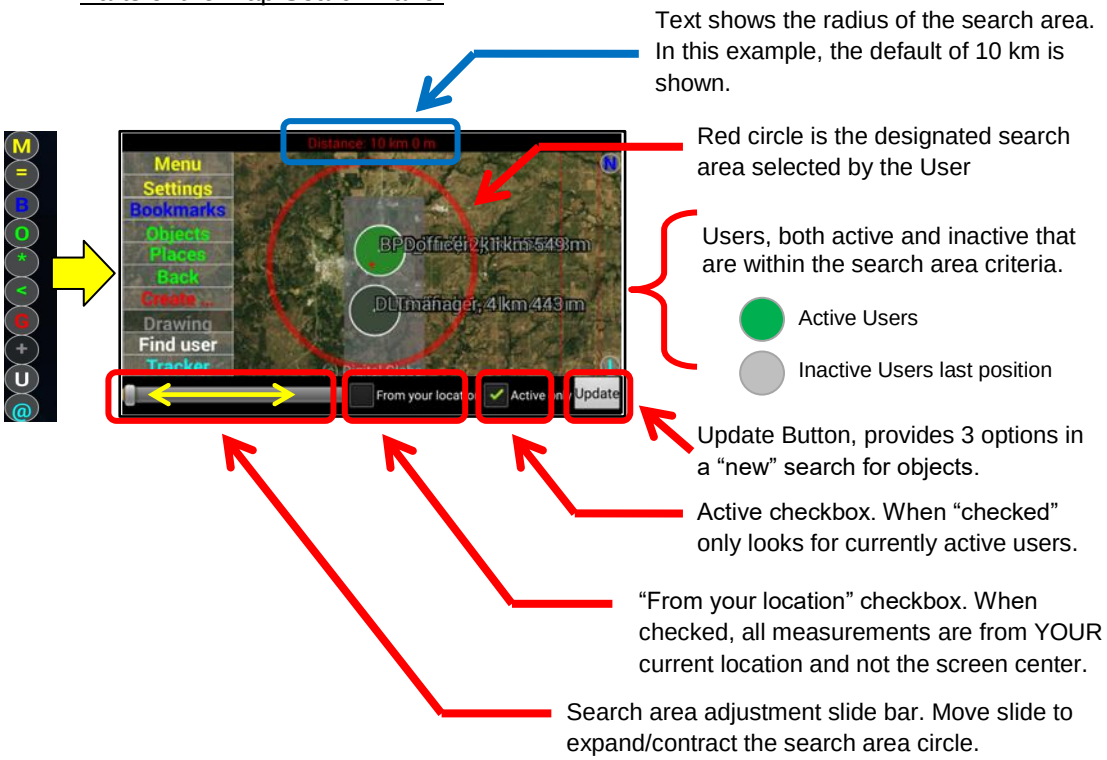
The Map Search option will allow a user to search for other users on the system and display them on a Map Overlay.

The available features are as follows:

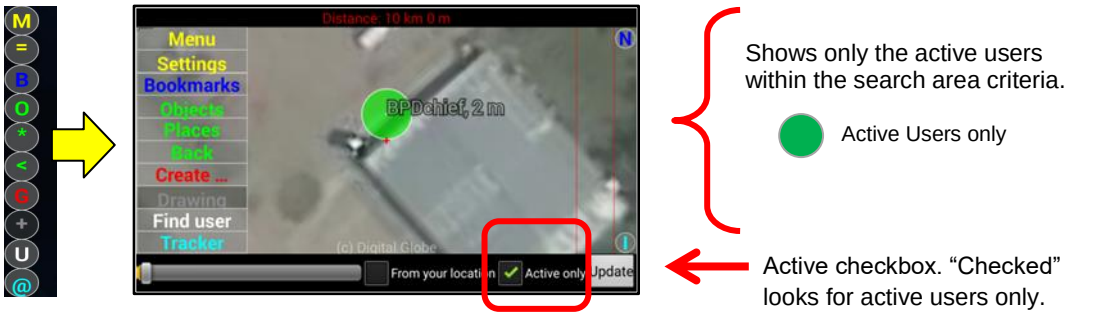
a. When first opened, the default search radius is 10 km.
b. The search radius can be between 5 km and 1000 km.
c. Both “active” (currently online) and “inactive” (not online) users may be displayed.
d. As the search radius is changed, users will appear and disappear from the display.
e. Users that are currently “online” will display as a green icon, users “offline” will display as gray.
f. The GPS location of “offline” users will be the LAST known GPS location that was received from the Sentry MDU System of that user’s mobile device. This is not necessarily their current location.
g. Clicking on the displayed user icon will open the Mobile Object Panel for that user.
h. The Map is a real-time view of the current location of all users. As others on the network move about the GPS location of the screen icons will also move. Please note however, that each individual remote device has a “setting” of how often their GPS location is reported to the Sentry MDU System. Some may be once every 10 seconds others may be once every 5 minutes.

i. The “Update” Feature has 3 options … a manual update by the user and two automatic updates at 1 minute and 5 minute intervals.

Parts of the Map Search Panel



Example of “Active” and “Inactive” Map Search User display



The Update Button options

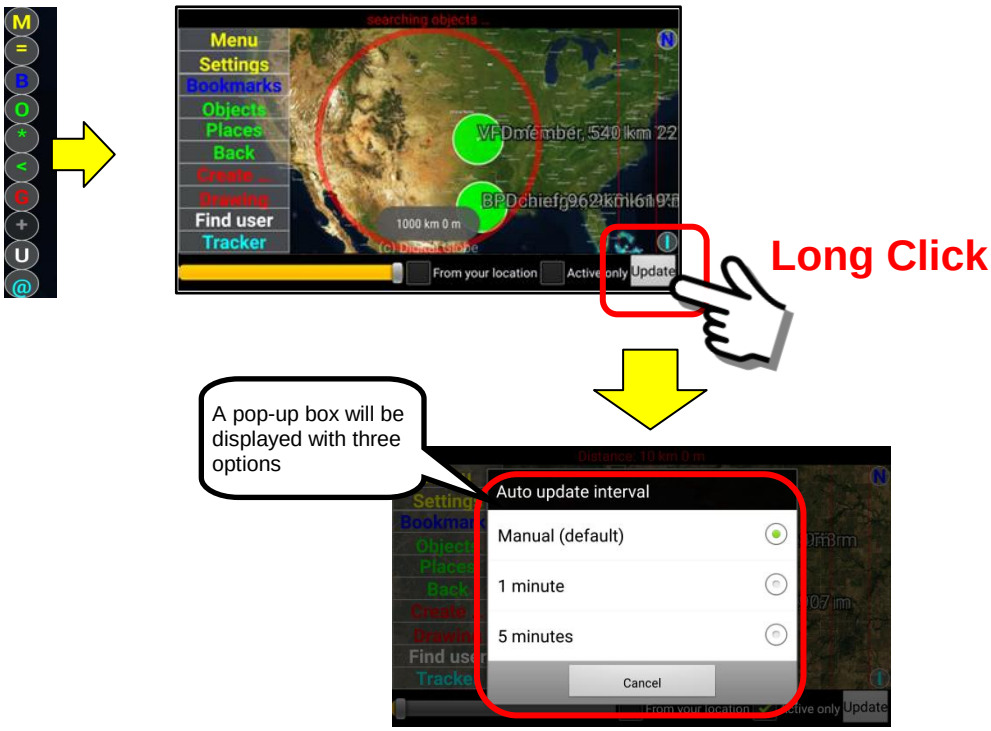
The “Update” Button provides the user with 3 options on how the Map Search Screen will be updated by the system.

a. **Manual update**. This is the default setting. This means a user will click (short click) on the “Update” Button which will then re-initiate a search for users on the system.

b. **1 Minute**. This option will automatically trigger a search update on 1 minute intervals. This setting would be used when a user would like to watch the Map Search Screen and monitor the current location of all users on the network that come into and out of a particular search area.

c. **5 Minutes**. This option will automatically trigger a search update on 5 minute intervals. This setting would be used when a user would like to watch the Map Search Screen and monitor the current location of all users on the network that come into and out of a particular search area.

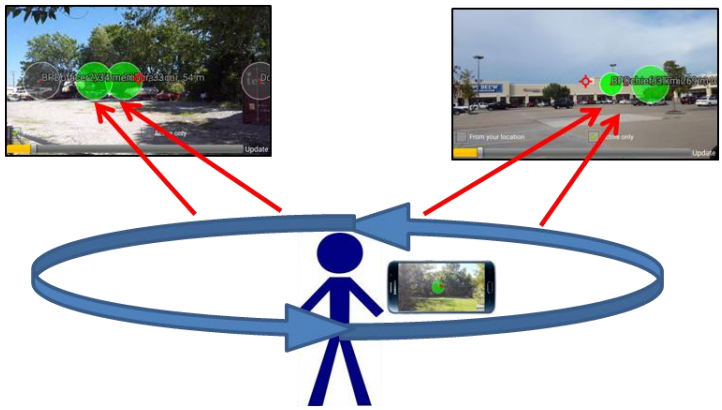
To gain access to the Update Options, a user would “Long Click” on the Update Button. This will open the “Auto Update Interval” options menu. Any change to this option is permanent until a user changes this setting (i.e. the next time you use the Map Search feature the auto update interval setting selected here will still be used).



Live Search Option

The Live Search option will allow a user to search for other users on the system by simply pointing your phone in the direction of the other users. As the phone is rotated around, a green icon with the User's Name will come into view when you are pointed in the direction of the location of the other user(s).

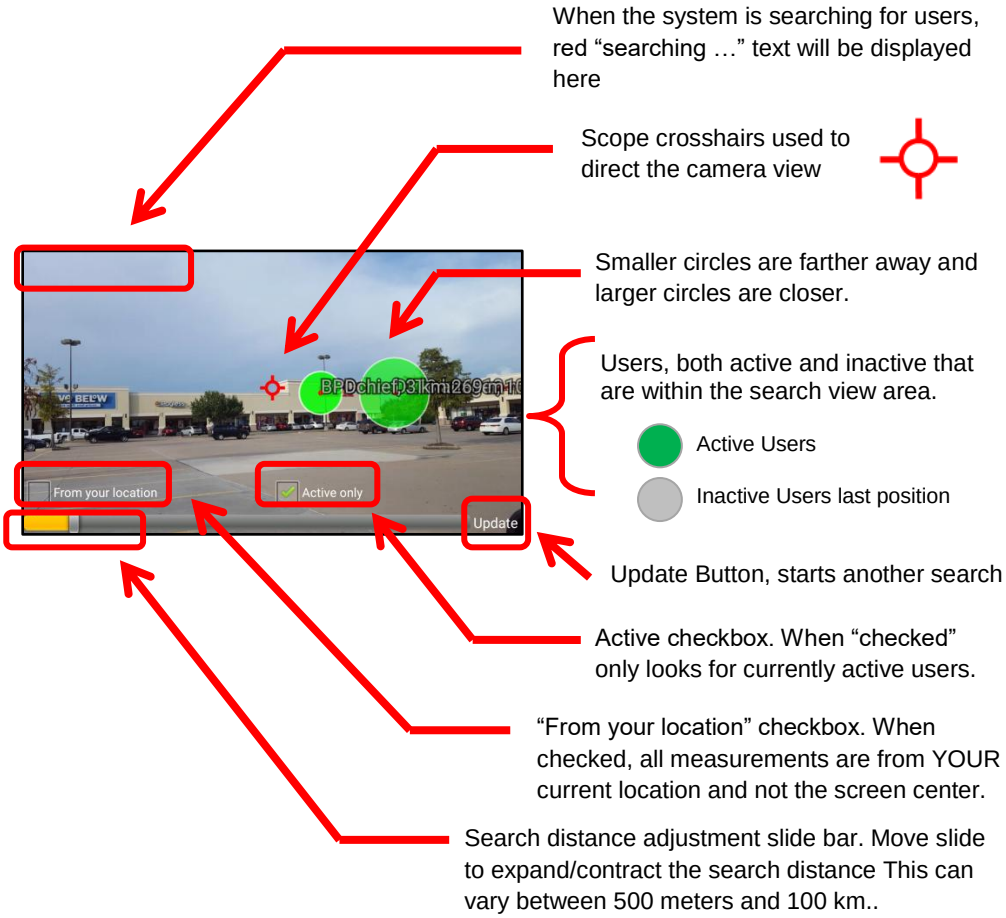
Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, the Live Search feature will NOT work.



The available features are as follows:

a. When first opened, the default search distance is 10 km.
b. The search distance can vary between 500 m and 100 km.
c. Both "active" (currently online) and "inactive" (not online) users may be displayed.
d. As the search distance is changed, users will appear and disappear from the display.
e. Users that are currently "online" will display as a green icon, users "offline" will display as gray.
f. The farther away a user is from the reference point the "smaller" the green dot will be. Closer is larger.
g. The GPS location of "offline" users will be the LAST known GPS location that was received from the Sentry MDU System of that user's mobile device. This is not necessarily their current location.
h. Clicking on the displayed user icon will open the Mobile Object Panel for that user.
i. The Map is a real-time view of the current location of all users. As others on the network move about the GPS location of the screen icons will also move. Please note however, that each individual remote device has a "setting" of how often their GPS location is reported to the Sentry MDU System. Some may be once every 10 seconds others may be once every 5 minutes.
j. The "Update" Feature is a manual update of users.

Parts of the Live Search Panel



Example of “Active” and “Inactive” Live Search User display

Using the “Scope Crosshairs” to locate other users

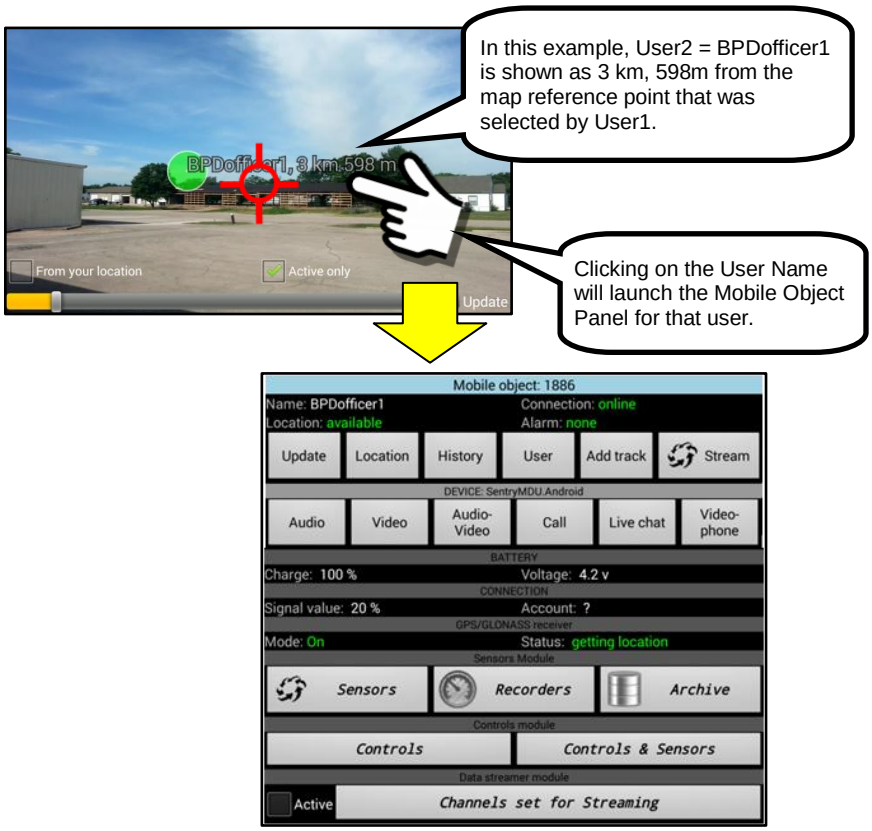
The scope crosshair feature provides a user the ability to aim the mobile device (Smartphone or Tablet) in the precise direction of another user. The orientation of the crosshairs on the mobile device screen uses the built-in sensors of the device to aim and position the crosshairs within the display.

This feature is valuable in that it can locate other users behind objects, building, trees … and at great distances (100 km). This feature is especially valuable at night or when objects are between the user and the targeted user. The display will provide the direction and distance from one user to another.

Important Note: The accuracy of the location can be affected by the following:

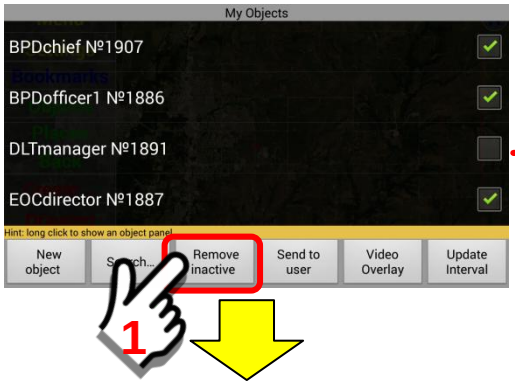
1. **Device configuration settings. Default tolerance is 30 meters (can be adjusted via Sentry Manager Desktop).**
2. **Quality of GPS receivers in the User mobile device and Target mobile device.**
3. **The number of GPS satellites that each mobile device has a “fix” on (the more the better). This can often be affected by the time of day and relative position of the GPS satellites.**

Example of a Live Search performed by User1



4. *Remove inactive button*

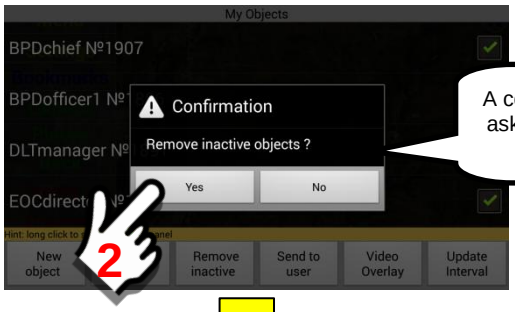
This option allows a user to remove objects that are no longer needed.



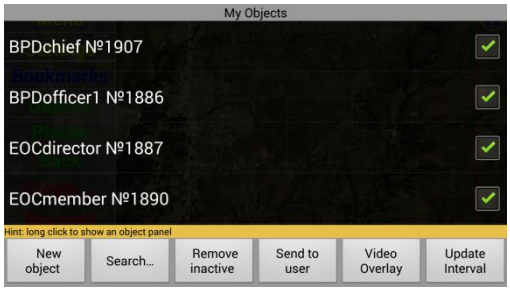
Put a checkmark in all objects EXCEPT the ones you want to remove. Leave them blank.

In the example below we want to remove DLTmanager. We have made it "inactive" by removing the checkmark from the box.

Click on the "Remove inactive" button.



A confirmation box will appear asking to remove the inactive objects …. Click "Yes".

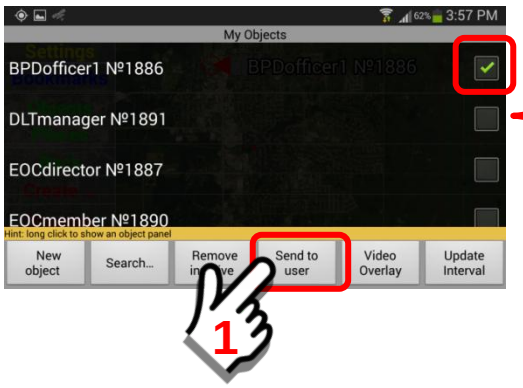


The "My Objects" screen will refresh and the selected "inactive" object is now removed.

Notice that DLTmanager is now gone from the list.

5. *Send to User button*

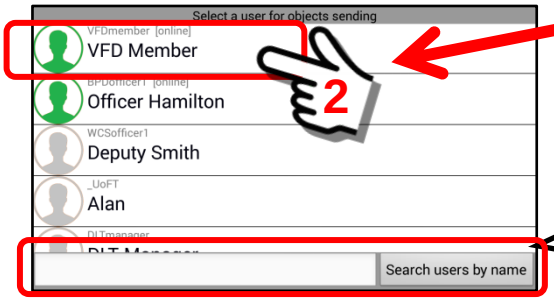
The "Send to user" menu option allows a user to send a user object on the list to another user in the network. This feature will allow the sending of one or many objects to other users.



De-select all objects … then select only those objects that you want to send to another user.

In this example, we will send BPDofficer1 to another user.

After selecting the object(s) to send, click on the “Send to user” button. A list of Users will now appear as shown below. If the user you desire is not in the existing list, you may search for a User by name as shown in the panel below.



Select a user to send to

If the User you want is not on the existing list, enter a name (part of a name) in the blank and “search” for the user. Additional names will be displayed that match your search criteria.

In the example above, we have selected User Object = BPDofficer1 to be sent to user VFD Member.

After clicking on the name, the screen will provide a message that the object has been sent.

This appears on the mobile device of User = VFD Member.

The mobile device of User = VFD Member will receive a message indicating that an object has been sent by BPDofficer1.

Click “Yes” and the object will be added to the list in “My Objects” of the mobile device.

6. ***Video Overlay button***

The Video Overlay feature allows a user to select other users from the list and then monitor an audio/video feed from those users in real-time. This feature is available with the following constraints.

a. User security settings must allow video monitoring.
b. The network connection, either cellular or WiFi must have enough bandwidth for multiple streams of audio/video.
c. The remote mobile devices must be configured for data streaming.
d. The remote mobile devices must be configured for the appropriate video resolution, framerate and bitrate for the hardware (see your IT Department or other sections of this manual for guidance).

You may have as many video streams as your hardware and network will support. With 2 remote devices implemented, your screen should look similar to the following screen.

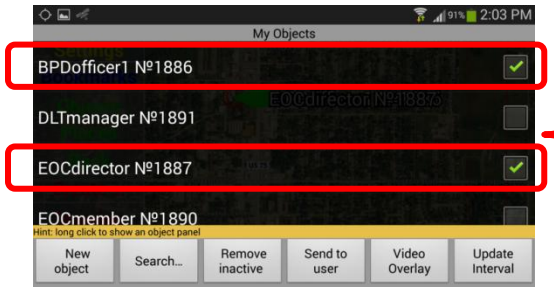
Shows video from two different remote devices at the same time.

Clicking on either of the small pictures and the screen will toggle to a full screen display of real-time video.

1

2

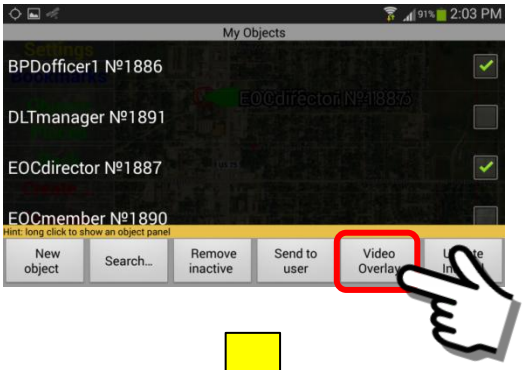
Setting up the Video Overlay feature



Put a checkmark in those objects that you want to display real-time audio/video.

In this example, we have selected two remote devices:

a. BPDofficer1
b. EOCdirector



Click on the Video Overlay Button

It will take a few seconds for the connections to be established.

The screen will be dimmed and the video thumbnails will be displayed.

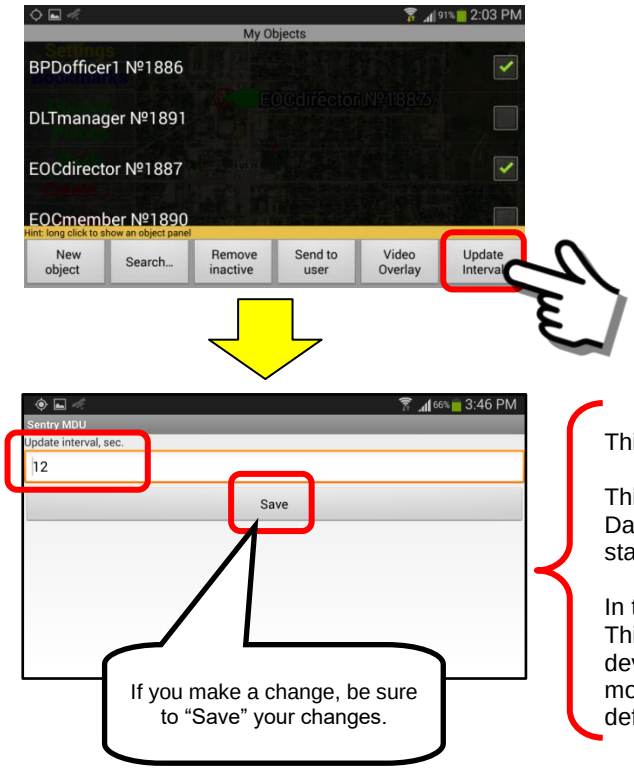
Click on either video image to make it show “full screen”.

When screen is displayed “full screen” simply tap on the screen again and it will revert to the small thumbnail images again.

You may then tap on the other thumbnail image and take it full screen.

7. ***Update Interval button***

The Sentry MDU System has a variety of configuration items that may be optimized for your particular application, hardware and internet bandwidth. The “Update interval” is one such setting. The update interval is the time period in seconds that the Sentry Data Server uses between updates to the mobile device. **The default is 30 seconds.** DLT Tech Support can work with your organization to optimize the setting for your application.



This is a configuration setting.

This is the time period that the Sentry Data Server uses to update the device status.

In this example, the setting is 12 seconds. This means that the status of each remote device in the list is updated on THIS mobile device every 12 seconds. The default setting is 30 seconds.

10.6. The "Object search" Panel (create/bookmark custom Maps)

Overview:

The "Object search" Panel is a subset of the "My Objects" Panel. This section will describe 5 menu options that allow a User to create and bookmark custom Map Panels that will provide ***domain wide search*** capability for other mobile devices on the network. Furthermore, these custom Map Panels may be saved as a SHORTCUT bookmark. This feature will search for all devices within a specific geographical area as viewed on a map (assuming security credentials allow). As the screen is zoomed in-out, remote devices will be added in or drop out.

<u>This feature has 5 user selectable display/data formats</u>

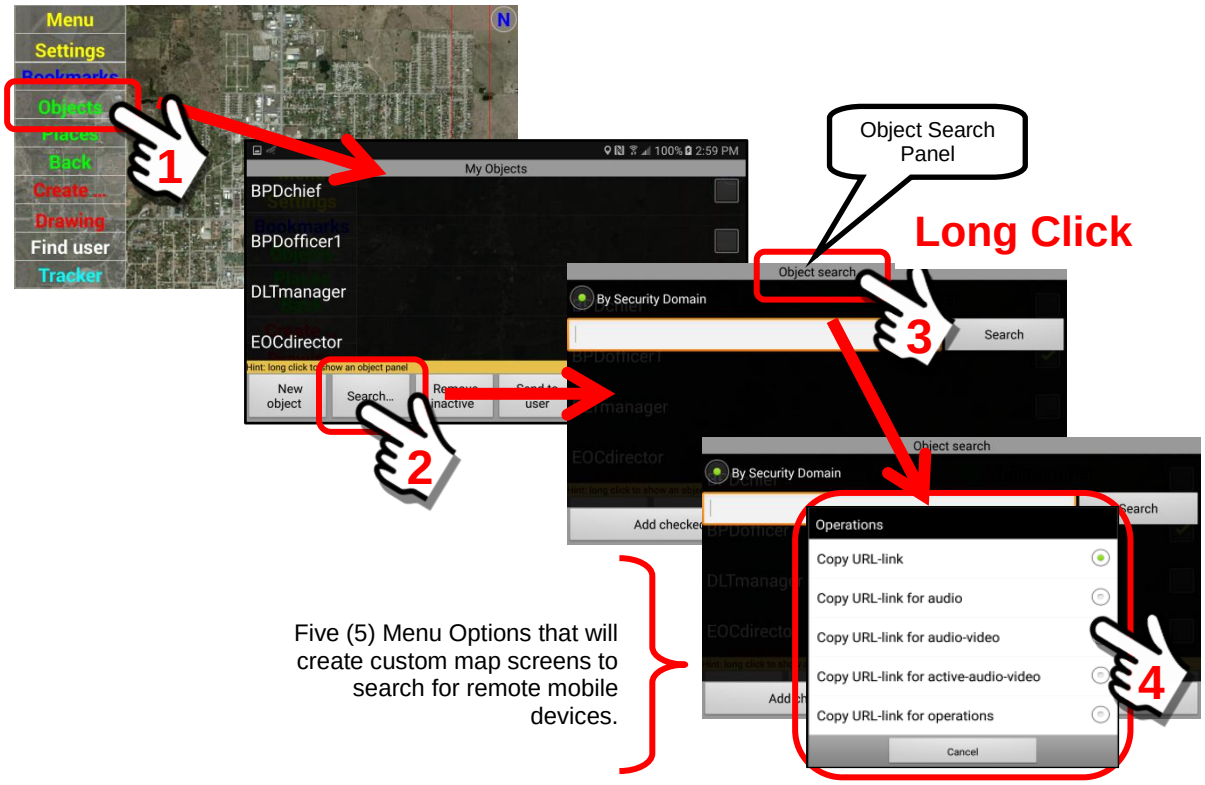
a. **General Search of Users**: Shows location of active and inactive users
b. **Audio Only**: No video component, audio from all devices simultaneously
c. **Audio-Video**: Video images with audio optional when selected
d. **Active-Audio-Video**: Video + audio from all devices simultaneously
e. **User Selectable Operation**: User may draw polygons to select devices

This feature will allow various options of live-streaming audio and video from a search area containing several remote devices.

Important Note: You must be in the same or higher security domain level in order to view data feeds from other remote devices.

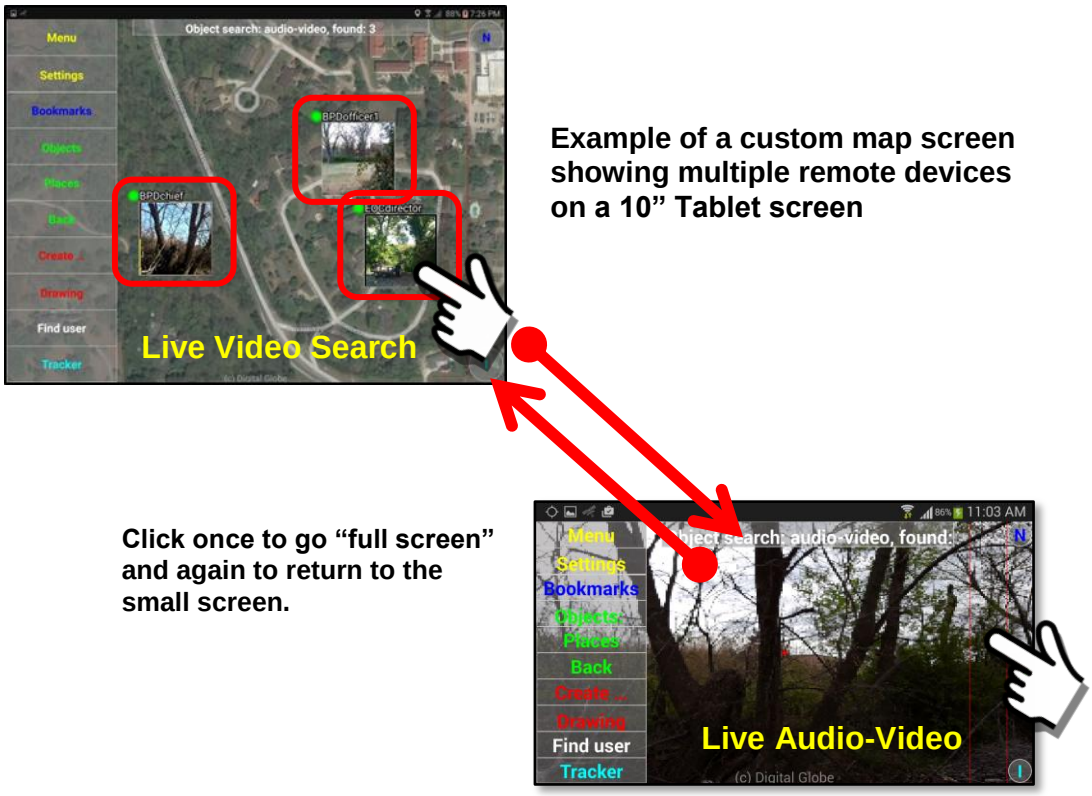
Access to the "Object search" Panel feature set:

To gain access to the Custom Map features of the Object Panel, follow the steps shown below.



A typical Custom Map Screen panel:

Shown below is an example of a custom map screen panel with multiple remote devices that have been detected within the search area.

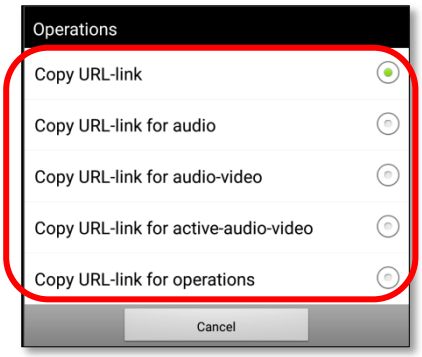


Example of a custom map screen showing multiple remote devices on a 10" Tablet screen

Click once to go "full screen" and again to return to the small screen.

Description of the Operations Panel menu options:

1. ***Review of menu choices for the Operations Panel***
   This section will describe the 5 menu choices that are available for the search function.

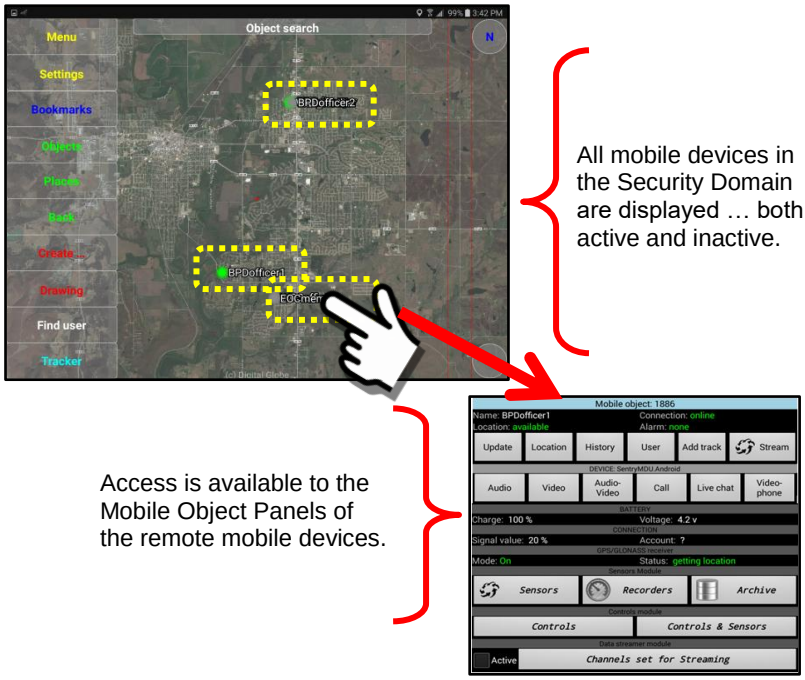


These 5 options create a custom map panel and will be discussed below.

Copy URL-link

Provides a search for all users in the Security Domain (both online and offline) and displays a map screen with the last known GPS location and name of each remote device.

The links for each remote device are active and the Mobile Object Panel for each device may be accessed from this screen.



Copy URL-link for audio

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a picture of a small speaker icon.

Audio from all devices are active.
Audio from all devices within the viewing area are played simultaneously. Devices can be selected to monitor their audio individually.

Copy URL-link for audio-video

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a live streaming video thumbnail.

Audio from all devices are muted.
Each remote device can be toggled full screen. In full screen mode the audio channel will be played.

Copy URL-link for active-audio-video

Provides a search for all users in the Security Domain and displays a map screen with the GPS location of each remote device shown as a live streaming video thumbnail.

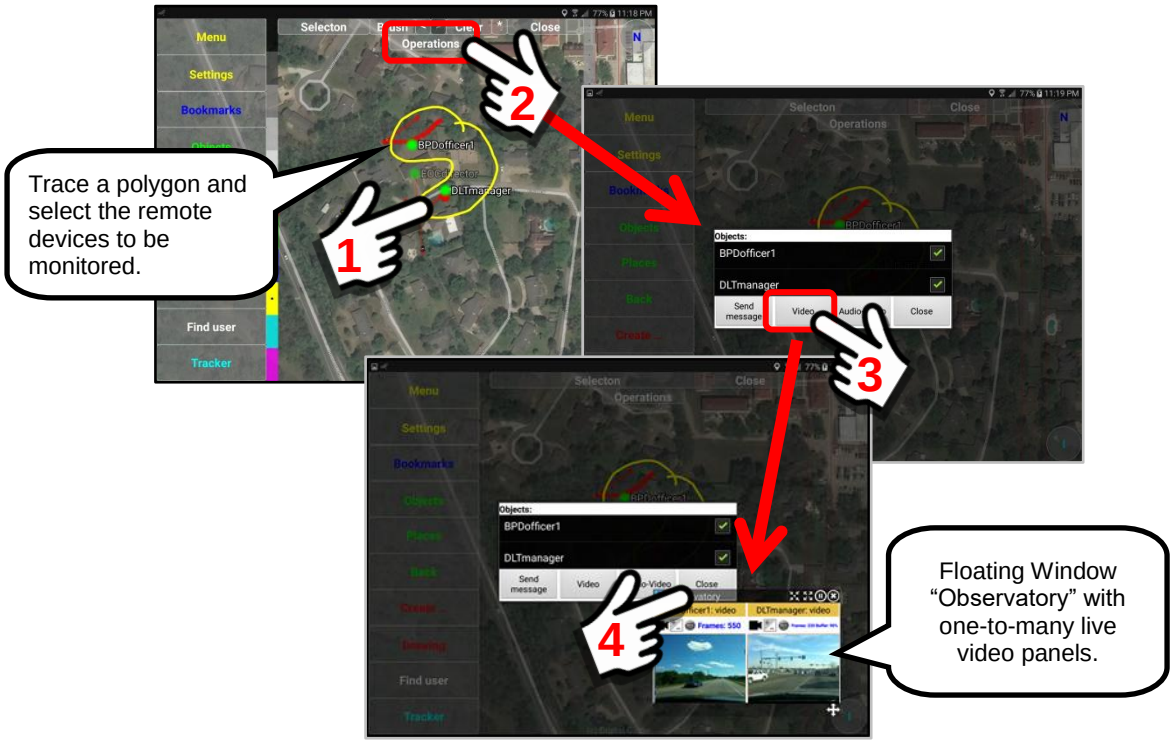
Audio from all devices are active.
Each remote device can be toggled full screen. In full screen mode the audio channel for the particular remote device will be played.

Copy URL-link for operations

Provides a drawing canvas map upon which a user can view the Object Marker and GPS location of remote mobile devices. The User will then draw a polygon around those mobile devices of interest. From an available pop-up menu the user can then perform several operations on those selected remote devices:

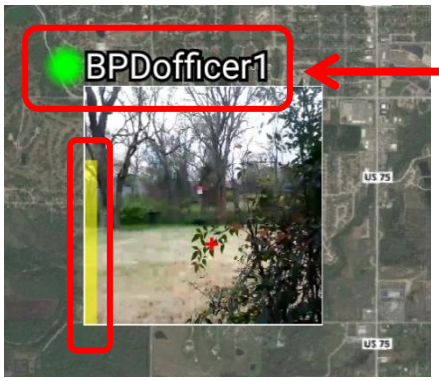
a. Send a message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

This feature will be discussed in detail in **Section 9.18**.



3. *Features of the audio and video display modes*

The custom map layer displays output from the remote devices in two different formats. The Audio format uses a speaker icon and the audio-video format uses a live-streaming video thumbnail. These formats are shown below.



Name of the Remote Device monitored

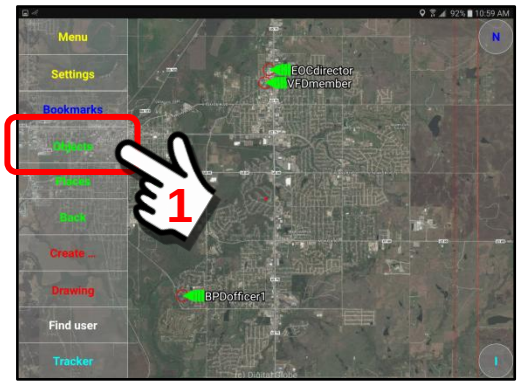
Green = Device is online

Gray = Device is offline

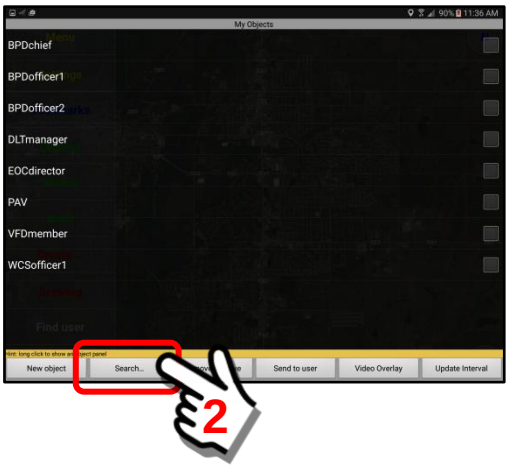
Steps to create a custom Map Panel with Audio search:

1. ***Configuration of the Audio custom map screen.***
   This section will use the "*Copy URL-link for audio*" menu option to create a custom map panel that will search for all remote devices within the selected map viewing area. The number of devices that can be processed is only limited by available resources (CPU, memory and internet bandwidth).

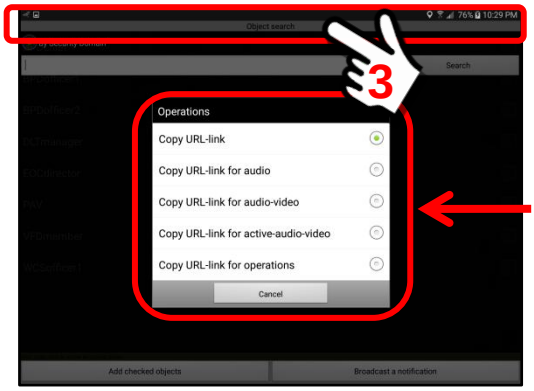
   Starting at the Main Map Screen, click on the Objects Menu Button.



   Since we are to be using a "search" function, click on the "Search …" Button at the bottom of the My Objects panel.



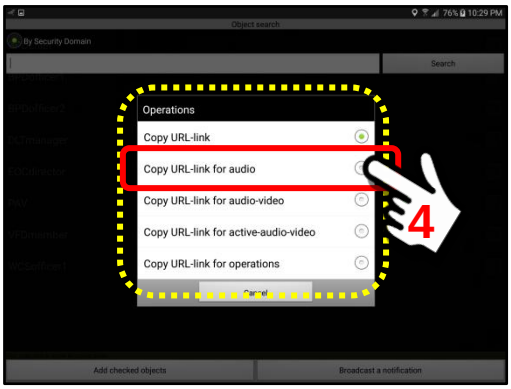
   At the Object Search Panel, perform a "long click" on the panel heading to open the Operations menu.



Long Click

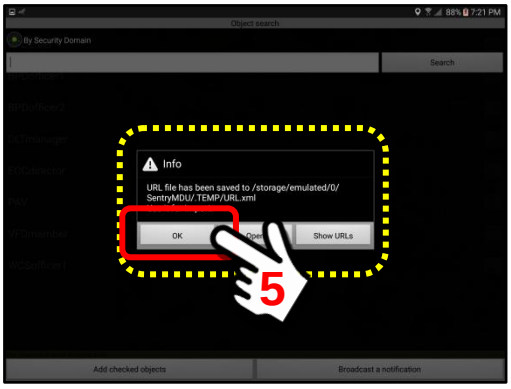
Pop-up Operations Menu will open

At the Operations Menu, select the “**Copy URL-link for audio**” choice.



A pop-up Info Box will appear. The URL “link” for the audio custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

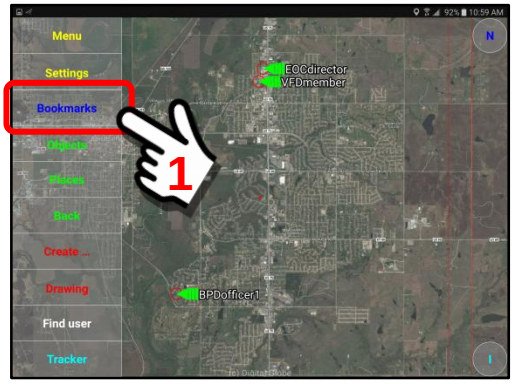
Click on the “OK” Button to save the URL.



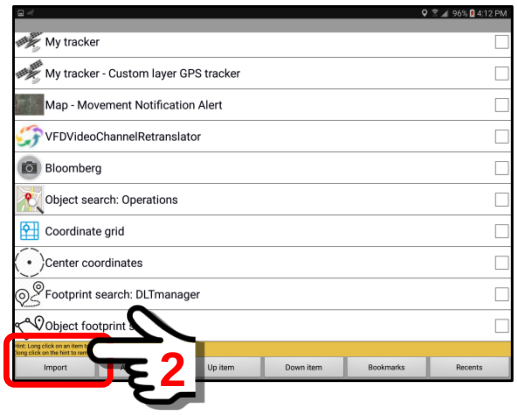
Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

2. ***Create the Bookmark entry for an Audio Search custom map layer.*** Once the URL link for the "audio search feature" has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

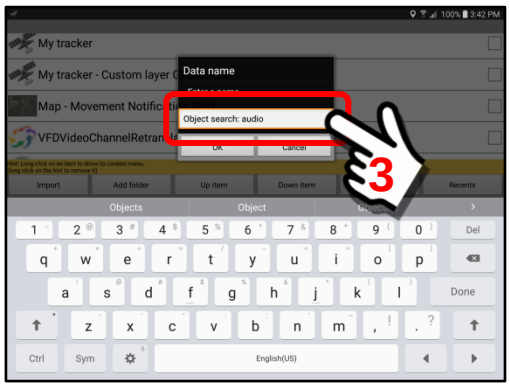


At the Bookmarks Panel, click on the Import Button

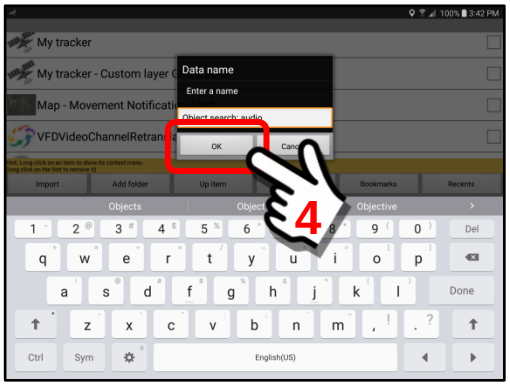


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the audio custom map panel. The system will default to the name "Object search: audio". We recommend using a better description. However, in this example, we will leave the default.

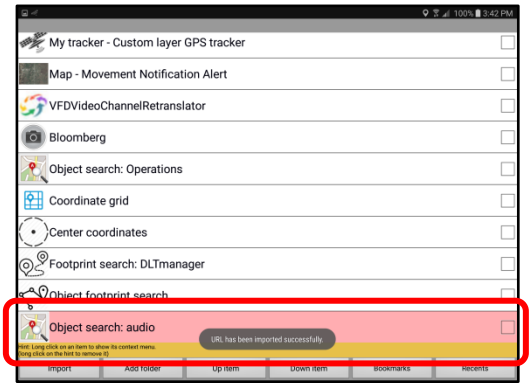
Click inside the text block to open an onscreen keyboard for editing.



When finished, click the “OK” Button to save any changes.



The system will now create a bookmark entry with the new name.



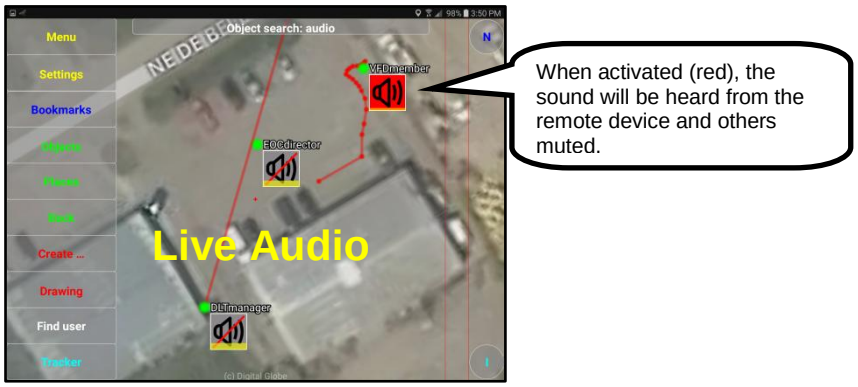
3. ***Launching the Audio Search custom map layer bookmark***
To launch the bookmark entry, click on the name. A custom map panel will open, searching for remote devices within the displayed area on the screen. It may take a few seconds for the audio to connect to each of the sources, but soon you should hear live audio being transmitted from the remote devices that are discovered.

All remote devices are transmitting combined audio.

Also note that as the mobile device moves on the display, a GPS track is plotted on the path.

To “activate” and listen to a single remote device, click on the icon, it will turn red and mute the other devices.

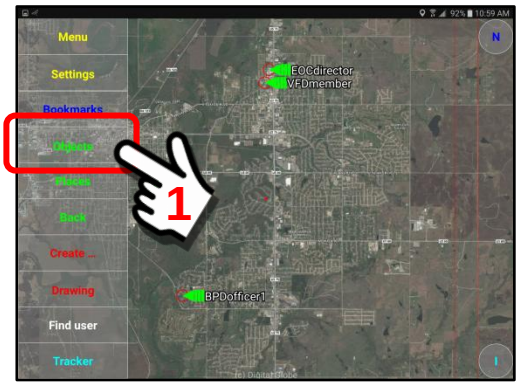
The data streams from each remote device may be “muted”. Simply “click” on the individual speaker icon for the remote device and it will turn red, showing that it is the “active” device. You will hear sound from the microphone of that mobile device.



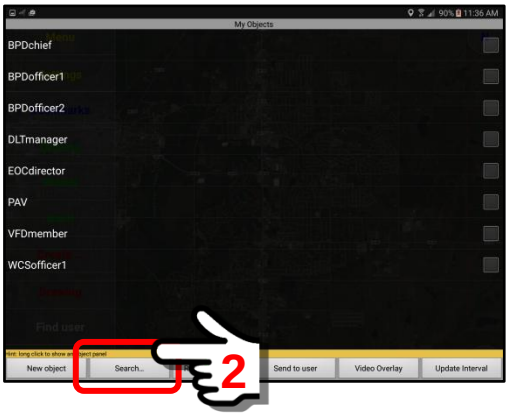
Steps to create a custom Map Panel with Audio-Video search:

1. ***Configuration of the Audio-Video custom map screen.***
   This section will use the "*Copy URL-link for audio-video*" menu option to create a custom map panel that will search for all users in the Security Domain. It will display a map screen with the GPS location of each remote device shown as a live streaming video thumbnail.

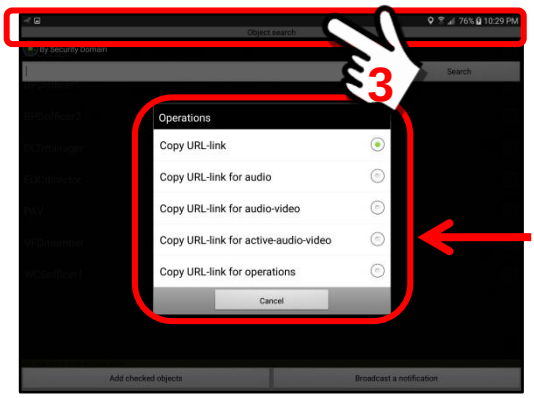
   Audio from all devices are muted.
   Starting at the Main Map Screen, click on the Objects Menu Button.



   Since we are to be using a "search" function, click on the "Search …" Button at the bottom of the My Objects panel.



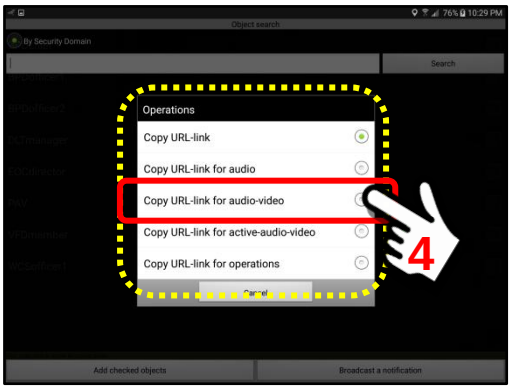
   At the Object Search Panel, perform a "long click" on the panel heading to open the Operations menu.



Long Click

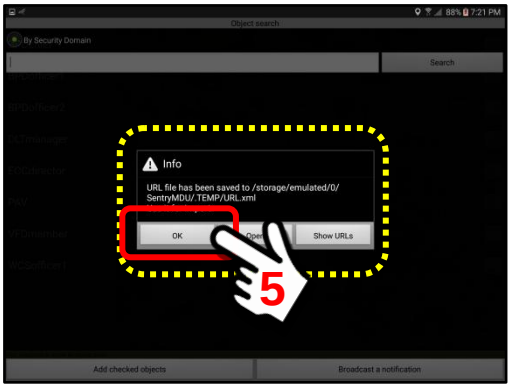
Pop-up Operations Menu will open

At the Operations Menu, select the “**Copy URL-link for audio-video**” choice.



A pop-up Info Box will appear. The URL “link” for the audio-video custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

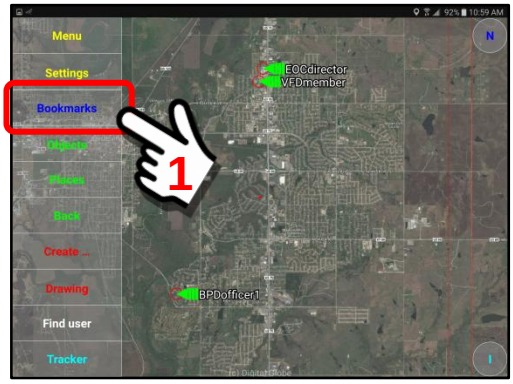
Click on the “OK” Button to save the URL.



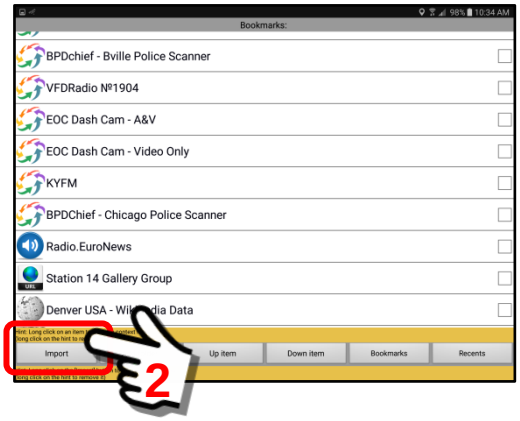
Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

2. ***Create the Bookmark entry for an Audio-Video Search custom map.*** Once the URL link for the Audio-Video Search panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

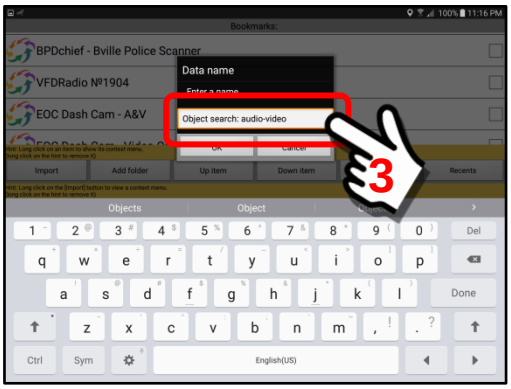


At the Bookmarks Panel, click on the Import Button

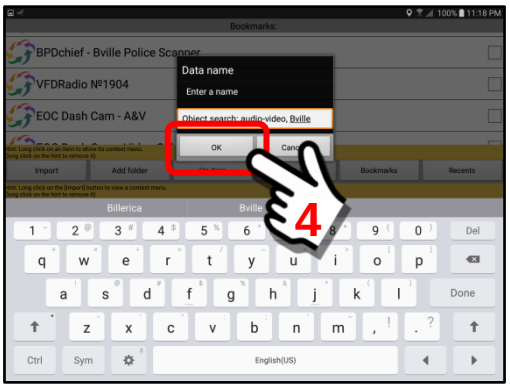


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the audio-video custom map panel. The system will default to the name "Object search: audio-video". We recommend editing the text and putting a better description as shown below.

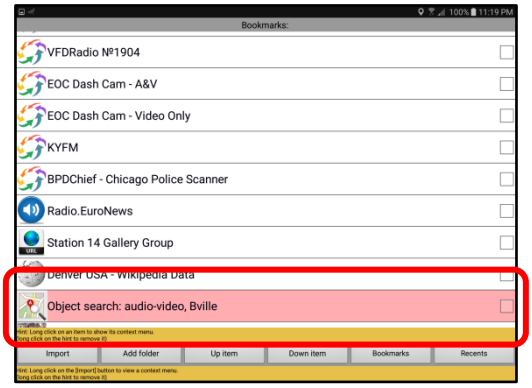
Click inside the text block to open an onscreen keyboard for editing.



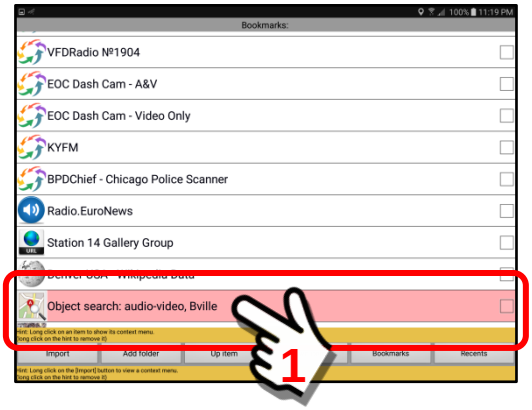
Edit the text to make a better description. In this example, we will enter “Object search: audio-video, Bville”. When finished, click the “OK” Button to save the changes.



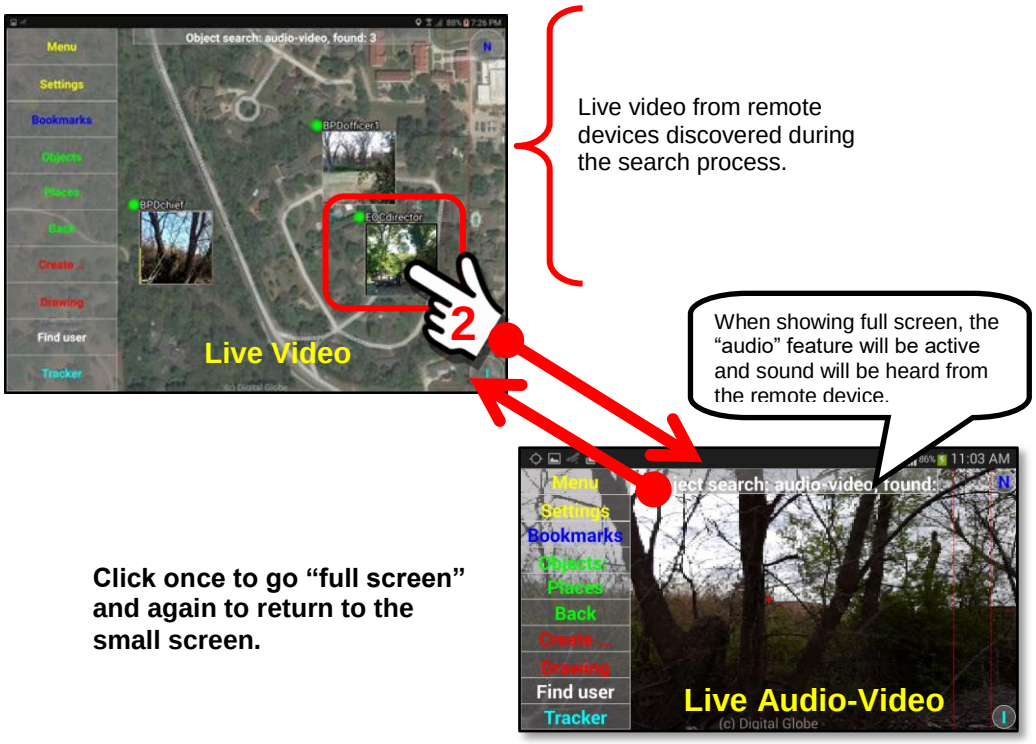
The system will now create a bookmark entry with the new name.



3. ***Launching the Audio-Video Search custom map layer bookmark***
To launch the bookmark entry, click on the name that we entered previously “Object search: audio-video, Bville”.



A custom map panel will open, searching for remote devices within the displayed area on the screen. It may take a few seconds for the video to connect to each of the sources, but soon you should see live video being transmitted from the remote devices that are discovered.



Click once to go "full screen" and again to return to the small screen.

The data streams from each remote device may be toggled to "full screen". Simply "click" on the individual picture for the remote device and it will enlarge to full screen. In addition, when full screen, the audio stream from that particular remote device will now be active and you can listen.

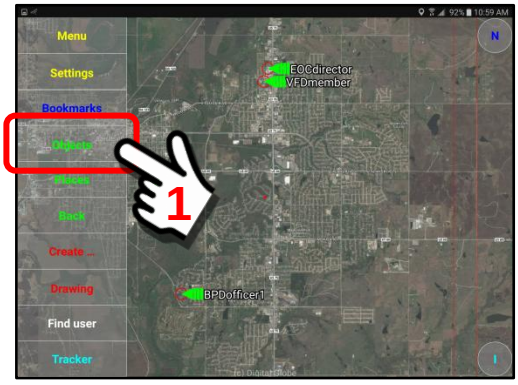
4. *Monitoring the GPS track of a Search Object remote device*

As the remote mobile device moves, a GPS track (red line) is plotted on the screen to show active movement. In the example below, User ***EOCdirector*** is shown moving in a southeasterly direction away from user ***BPDofficer1***.

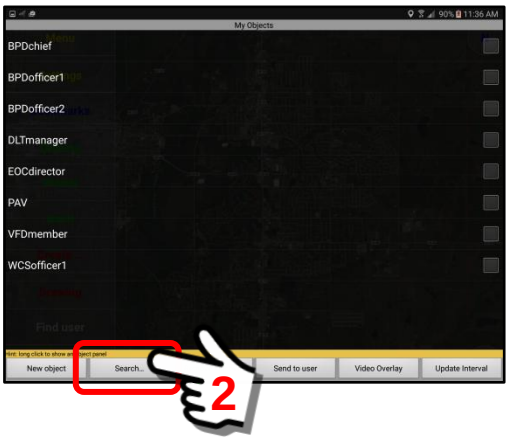
Steps to create a custom Map Panel with active-Audio-Video search:

1. ***Configuration of the active-Audio-Video custom map screen.***
   This section will use the "*Copy URL-link for active-audio-video*" menu option to create a custom map panel that will search for all users in the Security Domain. It will display a map screen with the GPS location of each remote device shown as a live streaming video thumbnail. **Audio from all devices are active.**

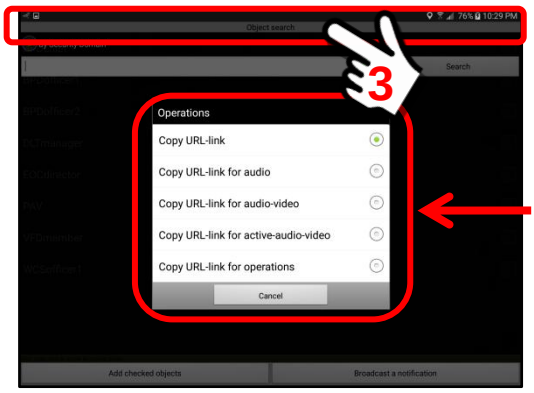
   Starting at the Main Map Screen, click on the Objects Menu Button.



   Since we are to be using a "search" function, click on the "Search …" Button at the bottom of the My Objects panel.



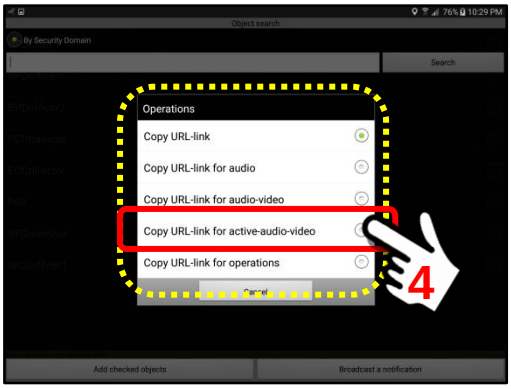
   At the Object Search Panel, perform a "long click" on the panel heading to open the Operations menu.



Long Click

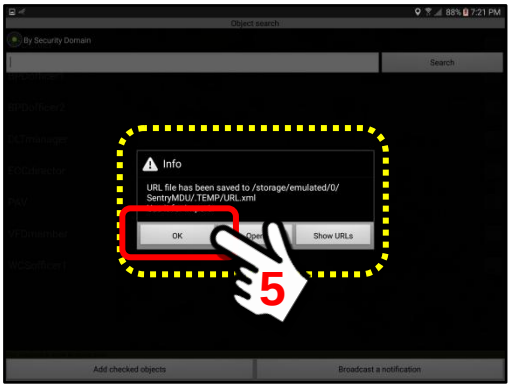
Pop-up Operations Menu will open

At the Operations Menu, select the “**Copy URL-link for active-audio-video**” choice.



A pop-up Info Box will appear. The URL “link” for the active-audio-video custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

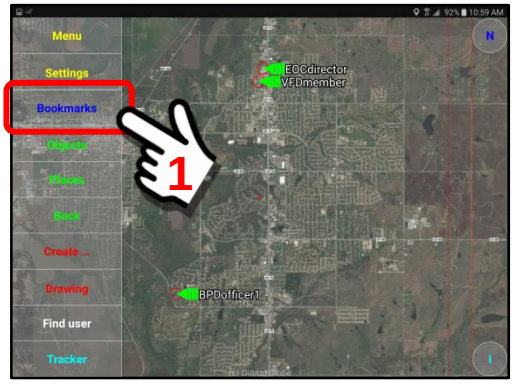
Click on the “OK” Button to save the URL.



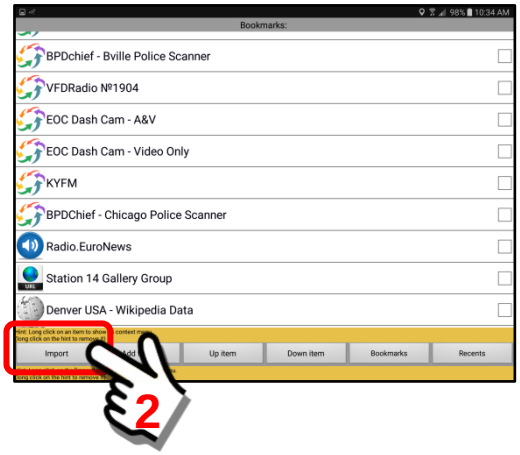
Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

2. ***Create the Bookmark entry for an active-Audio-Video Search map.***
Once the URL link for the active-Audio-Video Search panel has been saved in a temporary folder, it will be necessary to import the URL link into the Bookmarks Section.

To begin, click on the Bookmarks Button on the Main Map Screen.

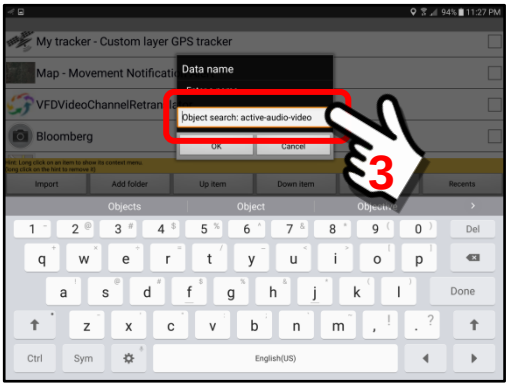


At the Bookmarks Panel, click on the Import Button

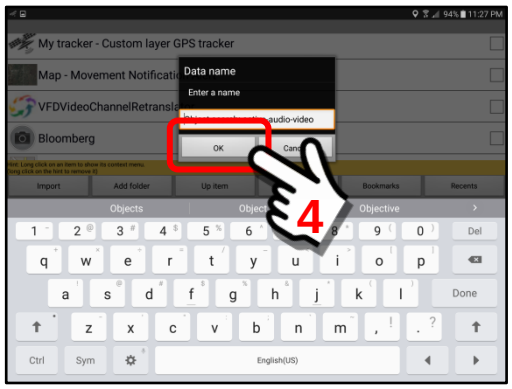


The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the active-audio-video custom map panel. The system will default to the name "Object search: active-audio-video".

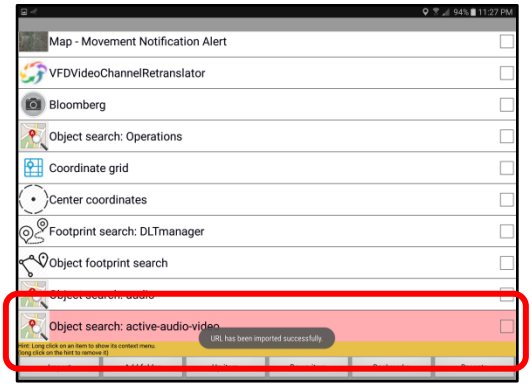
Click inside the text block to open an onscreen keyboard for editing.



If desired, edit the text to make a better description. In this example, we will keep the default. When finished, click the “OK” Button to save the changes.

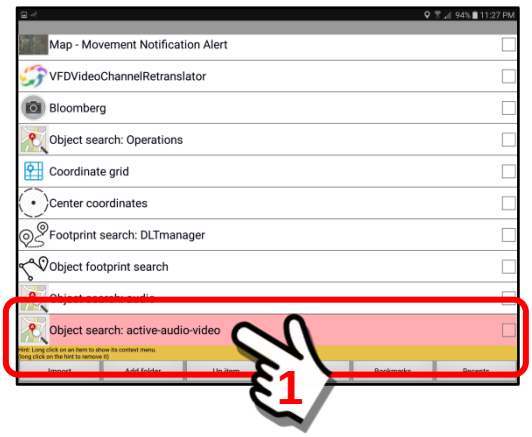


The system will now create a bookmark entry with the new name.



3. *Launching the active-Audio-Video Search custom map bookmark*

To launch the bookmark entry, click on the name that we entered previously “Object search: active-audio-video”.

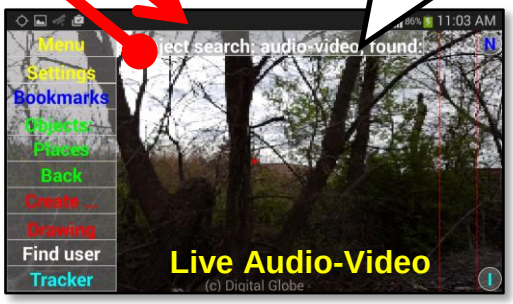


A custom map panel will open, searching for remote devices within the displayed area on the screen. It may take a few seconds for the video to connect to each of the sources, but soon you should have live audio and video being transmitted from the remote devices that are discovered.

Live audio and video from remote devices discovered during the search process.

When showing full screen, the "audio" feature will be active and sound will be heard from the remote device.

Click once to go "full screen" and again to return to the small screen.



The data streams from each remote device may be toggled to "full screen". Simply "click" on the individual picture for the remote device and it will enlarge to full screen. In addition, when full screen, the audio stream from that particular remote device will be the only audio that is playing.

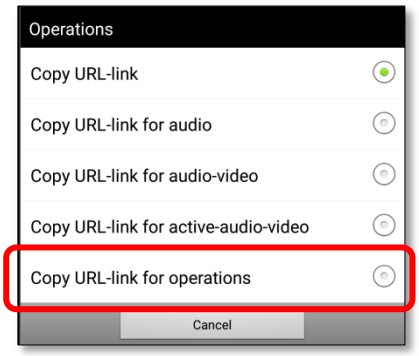
4. ***Monitoring the GPS track of a Search Object remote device***

As the remote mobile device moves, a GPS track (red line) is plotted on the screen to show active movement. In the example below, User ***EOCdirector*** is shown moving along a road south of user ***BPDofficer1***.

GPS track is in "red" to show active movement of the device.

Steps to create a Map Search Panel with multi-Operation menus:

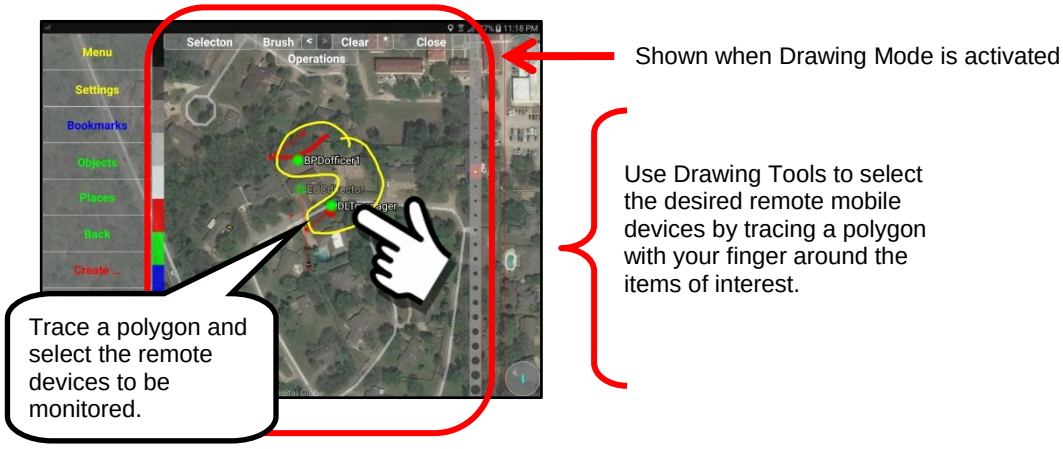
1. ***Screens of the Map Search Panel and multi-Operation menu.***
   This section will use the "*Copy URL-link for operations*" menu option to create a custom map panel that will search for all users in the Security Domain.



This feature provides a drawing canvas map upon which a user can view the Object Marker and GPS location of remote mobile devices. The User will then draw a polygon around those mobile devices of interest. From an available pop-up menu the user can then perform several operations on those selected remote devices:

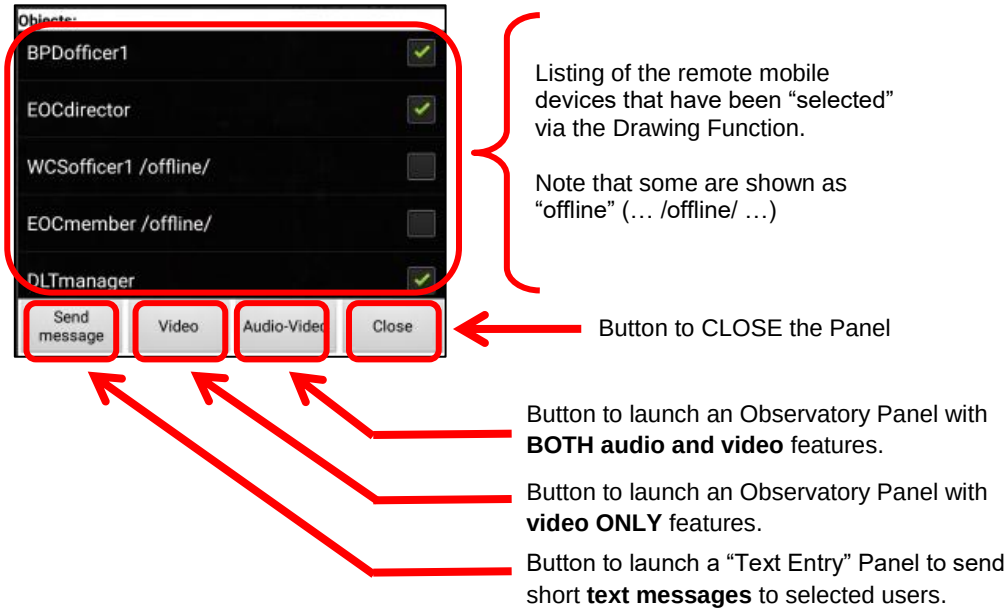
a. Send a "text" message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

<u>The Map Search Panel with Drawing Tools activated</u>



See ***Section 13*** of this guide for additional details on using the SentryMDU Drawing Tools.

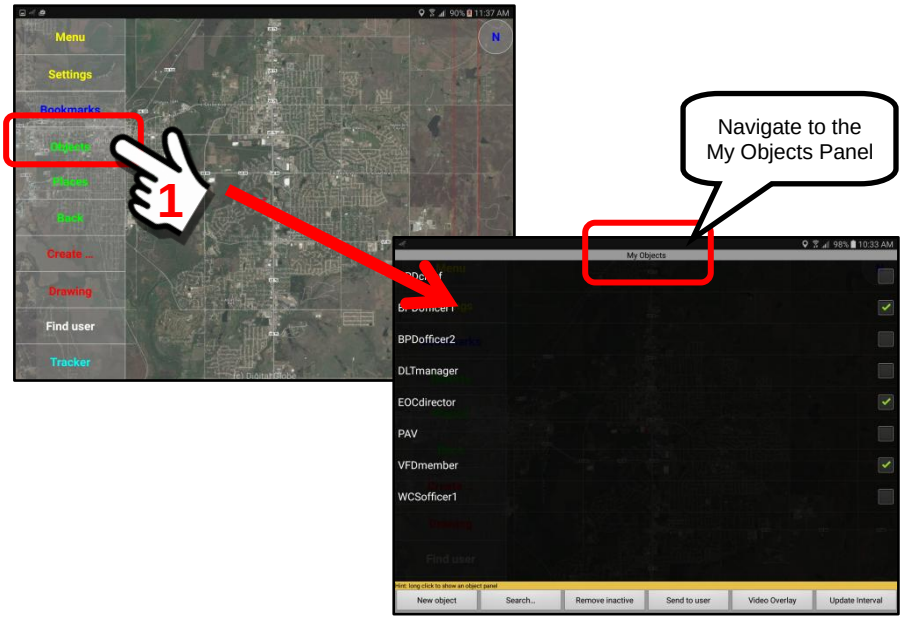
The multi-Operation Menu pop-up panel



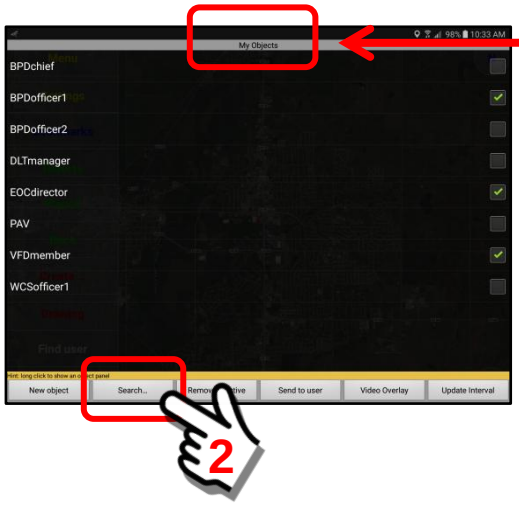
2. ***Preparing to create the multi-Operations custom map layer***

The Operations custom map layer is best created while the remote devices are "online" (although this is not a requirement). This is to ensure that the parameter settings of the camera and microphone sensors on the remote devices are adequate for the task and that you can do a "test" before using in production.

At the Main Map Screen, click on the Objects Button.

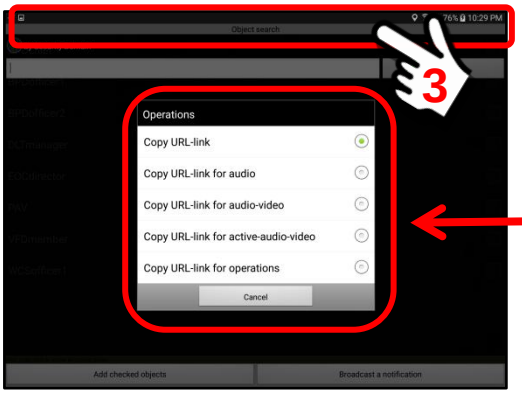


Since we will be doing a system wide “search” using the Drawing Features, we will select the “Search…” Button located at the bottom of the **My Objects** Panel.



My Objects Panel

The “Search …” Button opens the Object Search Panel. This panel allows a search for SentryMDU devices using a variety of methods. Since we want to create a “bookmark”, we will perform a “Long click” on the **Object Search** Panel heading bar as shown below.



Long Click

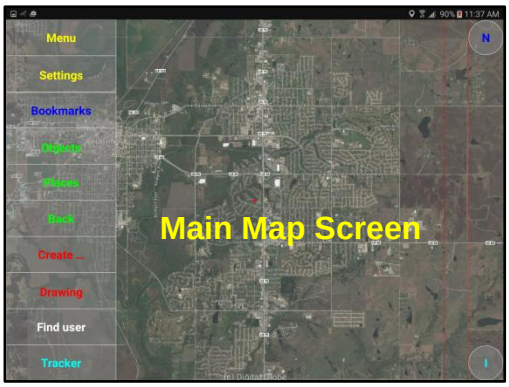
A “Long click” on the Object Search header bar will open an options menu with 5 choices.

Select the “Copy URL-link for operations” menu option.

By clicking on the “Copy URL-link for operations” menu option, a pop-up **Info Box** will appear. The URL “link” for the **Operations** custom map panel will be saved in a temporary file, ready to be imported into the bookmark folder.

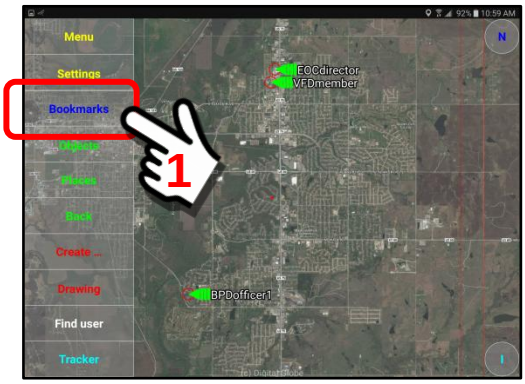
Click on the “OK” Button to save the URL.

Now that the URL link for the custom panel has been saved, return to the Main Map Screen.

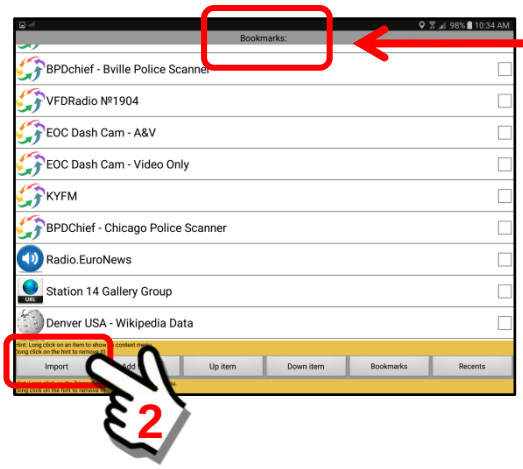


3. ***Create a bookmark for the multi-Operations custom map screen.***
To create the Operations Feature, we must import the URL “link” for the **Operations** custom map panel into the Bookmarks Section of the SentryMDU system.

Starting at the Main Map Screen, click on the Bookmarks Menu Button.

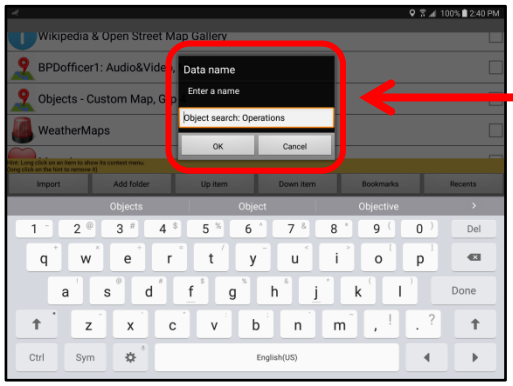


At the Bookmarks Panel, click on the Import Button.



Bookmarks Panel

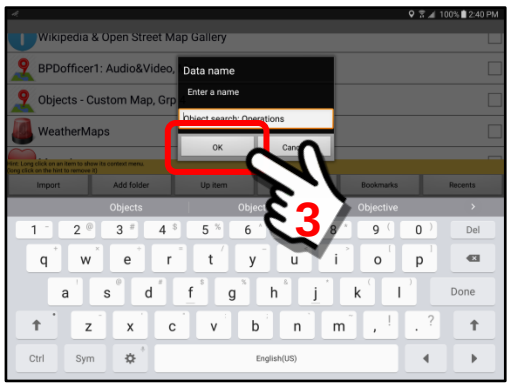
The Import Button will automatically retrieve the URL link that was previously "saved" when we created the URL link for the **Operations** custom map panel. A pop-up box will appear to create a name for the Bookmark. The system will default to the name "Object search: Operations".



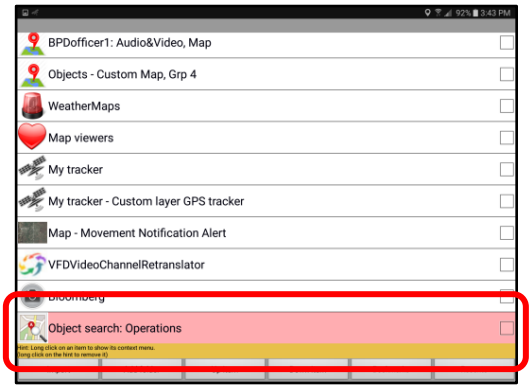
Data Name pop-up box

If you wish to change the data name, click inside the text block to open an onscreen keyboard for editing. In this example, we will leave as the default.

When finished, click the "OK" Button to save the changes.

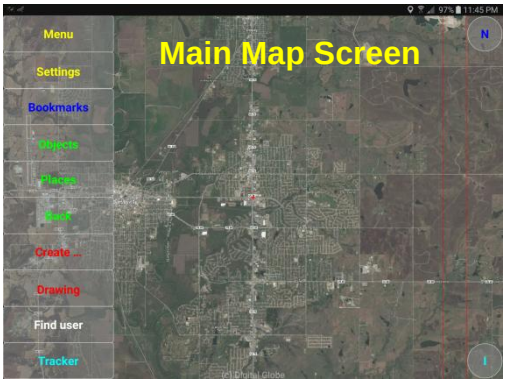


The system will now create a bookmark entry with the new name.



4. ***Clear the Main Map screen of Object Markers and set zoom level.***
Although it is NOT a requirement, it is recommended to clear the Main Map screen of existing Object Markers (those you have "checked" on the My Objects Panel). This is done to unclutter the Map Screen since the multi-Operations Search feature will locate ALL mobile Objects (both active and inactive) within a selected map view geographical area.

In the Map Screen shown below, we have cleared all Object Markers..



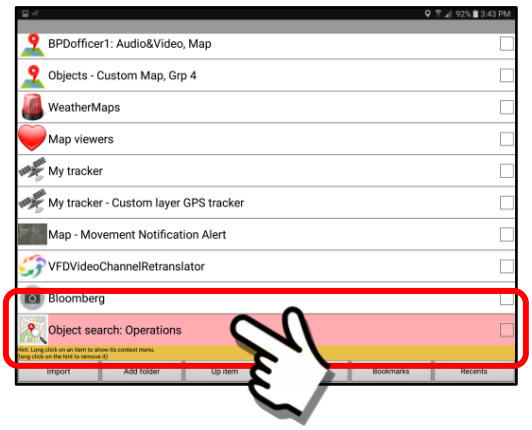
Main Map Screen

You may select whatever "zoom level" you desire. In this example, we are at a City Level.

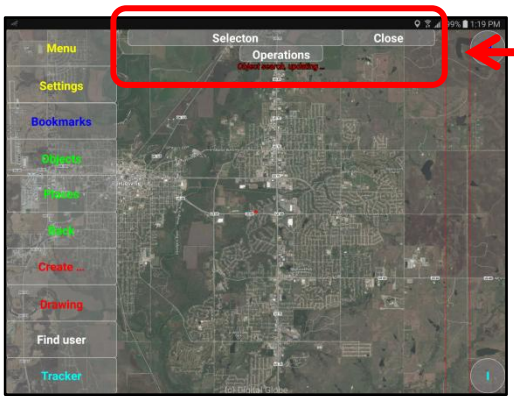
Important Note: The zoom level that you currently have on the Main Map Screen will be the geographical area that will be included in the domain-wide search for mobile objects. You may zoom in to street level or stay at the city level depending on how wide of an area you wish to search in.

5. ***Searching for Mobile Devices within the selected Map Area.***
When launched, the system will perform a “search” for all mobile devices within the Security Domain that show GPS locations within the designated geographical area on the Main Map Screen.

To begin, click on the “*Object search: Operations*” Bookmark we have just created.

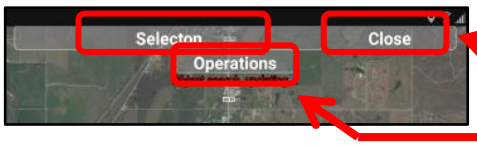


The multi-Operations custom Map Screen will now be created using the zoom level of the current Main Map Screen. The screen will appear as shown below.



Configuration Buttons for the multi-Operation Map Panel

The Configuration Buttons for the multi-Operation Map Panel as shown below.



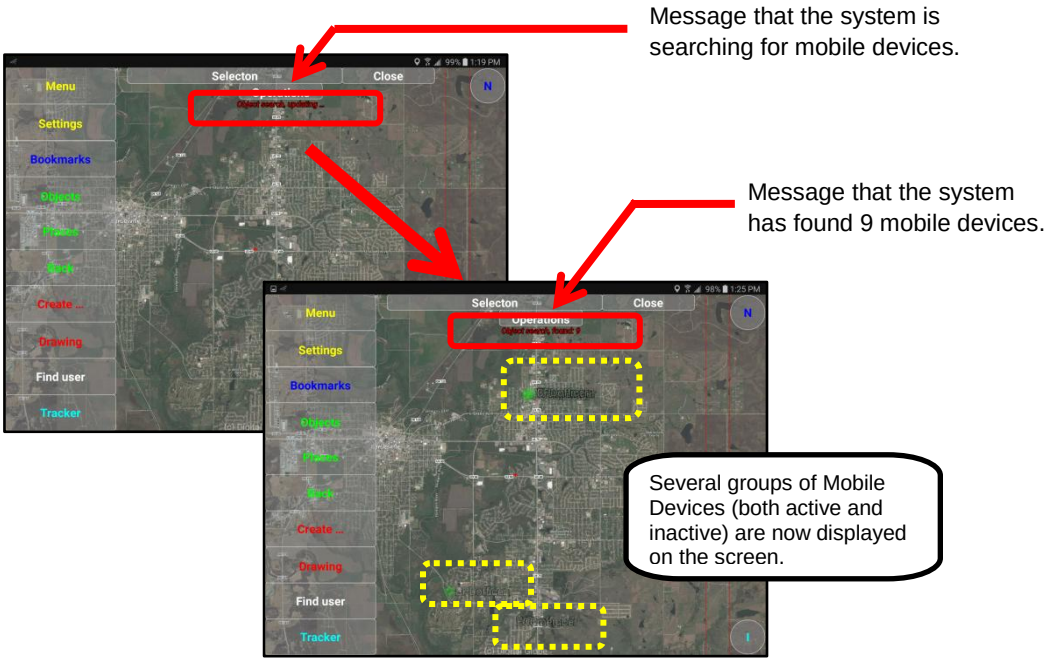
The Selection Button toggles the Drawing Mode on-off

The Close Button closes the custom map panel

The Operations Button opens a pop-up menu of options (messaging and audio-video)

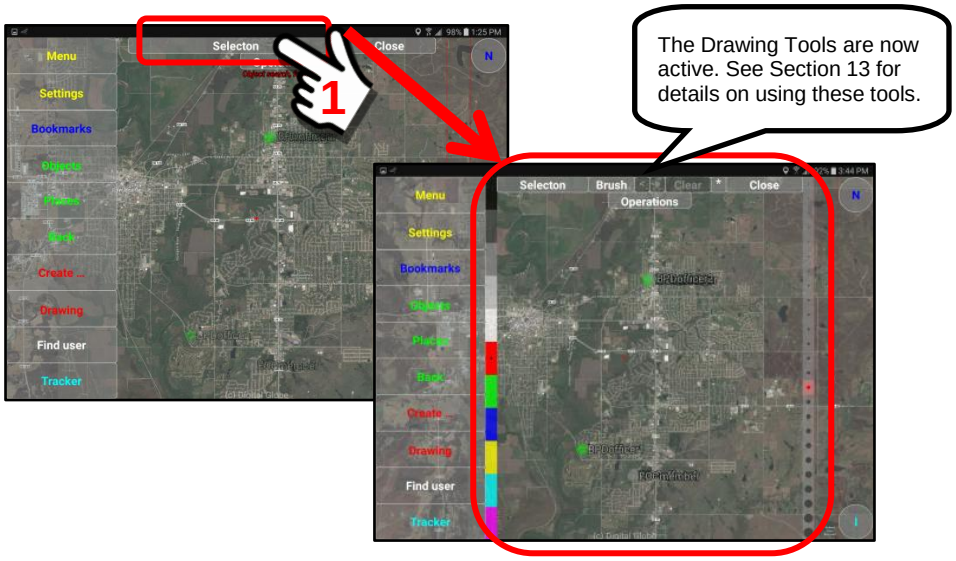
When the "*Object search: Operations*" Bookmark is first opened, the SentryMDU System will start a search for mobile devices within the selected area of the Main Map Screen. Depending on the number of mobile devices in the search area, this process may take from 3 – 15 seconds.

The screen will display a message in red text … "*Object search: updating…*" while the system is looking for mobile devices.



6. ***Selection of remote devices for the multi-Operation map screen.***
To configure the multi-Operations map layer, we must use the SentryMDU Drawing Tools feature to select those remote mobile devices that we are interested in.

To access the Drawing Mode Tools, click on the "Selection" Button. This will toggle the Drawing Mode Tools to "on".

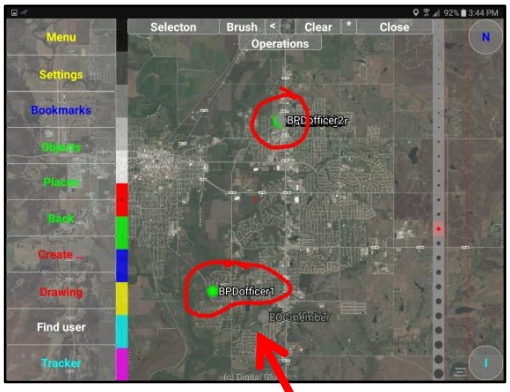


In this example, we will select remote mobile devices “graphically” by tracing a polygon (ie circle, rectangle) around the devices we want and to exclude those devices we do not want to monitor.

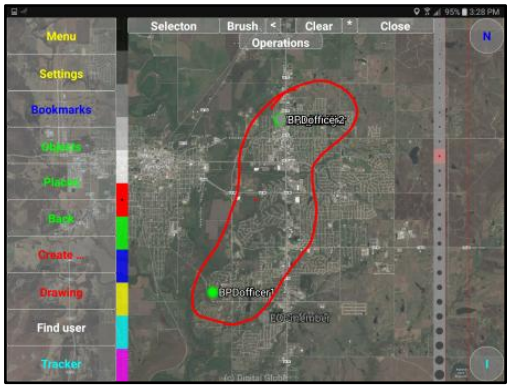
While in Drawing Mode, any touch to the screen will leave a “mark”. You may toggle the drawing mode on-off (via the Selection Button) if you need to reposition the screen or adjust the zoom level.

All selection polygons must be “closed” (no gaps). You may draw multiple polygons or a single continuous shape. Both examples are shown below.

Multiple Polygons



Single Polygon Shape

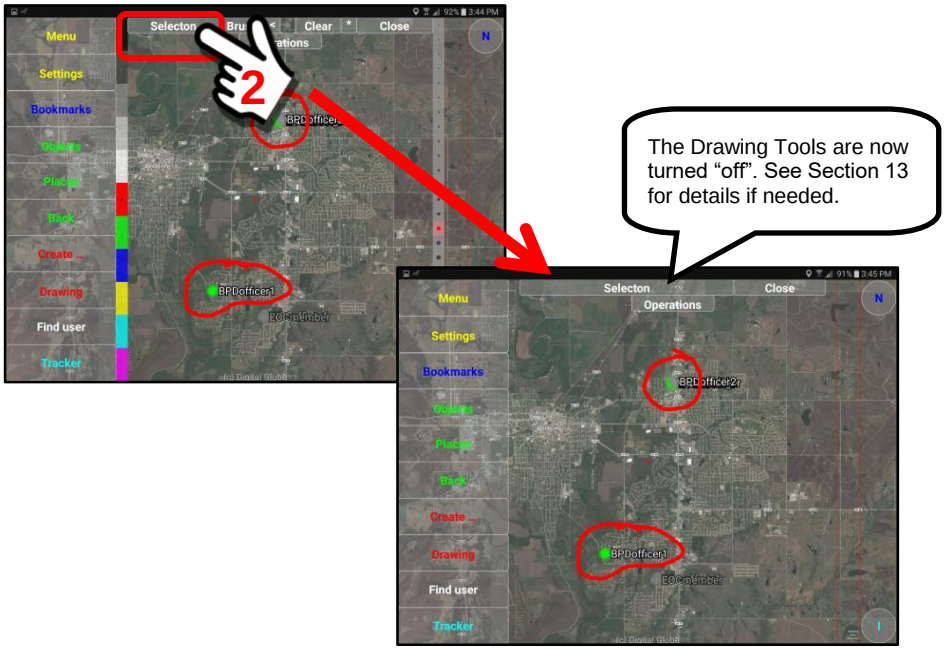


Name of the Remote Device to be monitored

Green = Device is online

Gray = Device is offline

Once the polygon selection process is finished, click the “Selection” Button to turn “off” the Drawing Mode.



7. ***Configuration of the multi-Operation custom map screen.***

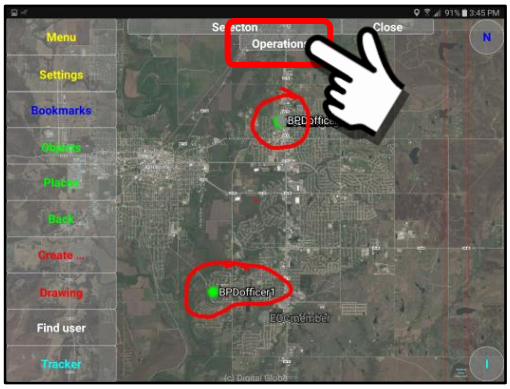
The next step, after selecting the desired groups of mobile devices, is to open the Operations Menu and select an “action” to perform on these remote mobile devices. We are provided with 3 primary options:

a. Send a “text” message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.

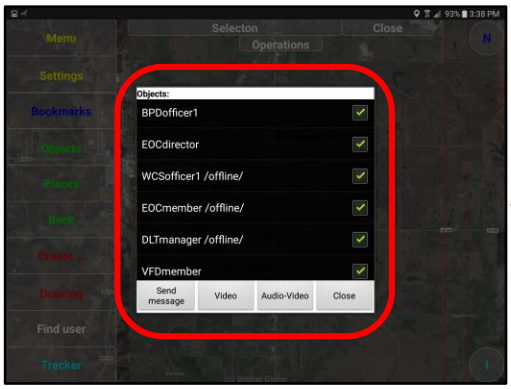
To select an action to perform, click on the ***Operations Button*** located just below the Drawing Tools toolbar. This will open a pop-up box that displays:

(1) the mobile devices that were selected in the Drawing Mode and
(2) a menu of actions that may be performed

Click on the Operations Button ….



A pop-up menu will be displayed. In the example shown, when we selected the remote devices, we inadvertently included some devices that are “offline” at this time. From the list of selected devices below, we may now “uncheck” the offline mobile devices if we do not want to include them in our menu action.



Pop-up Menu

List of mobile devices we selected by drawing the polygon.

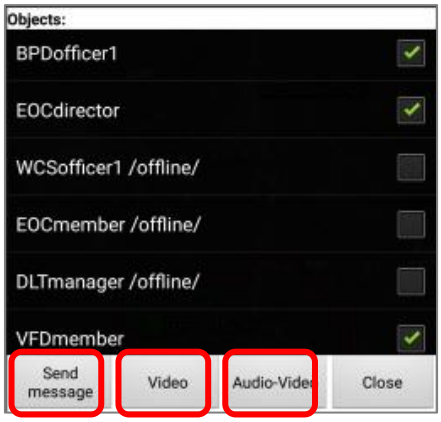
As shown on the image below, of the six available mobile devices shown in the list, we have “unchecked” three (3) of the offline mobile devices. Now, whatever actions we take will be directed toward the remaining three online devices.

Pop-up Menu

We have selected 3 mobile devices to take actions.

Now that we have selected the remote devices upon which we will take actions, we need to decide which of the three available options we want to do. We have the following choices:

a. Send a “text” message to the selected devices.
b. Monitor a live video feed from the selected devices.
c. Monitor a live audio-video feed from the selected devices.



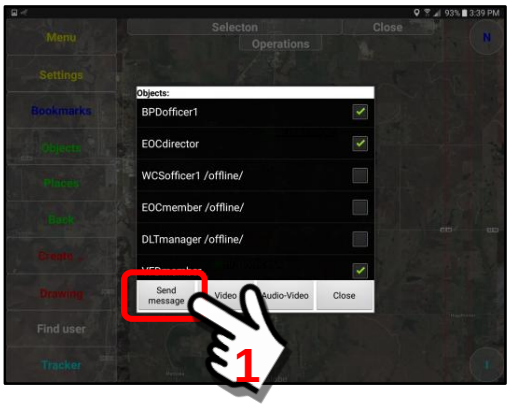
a. **b.** **c.**

The next three sections will cover the 3 menu options.

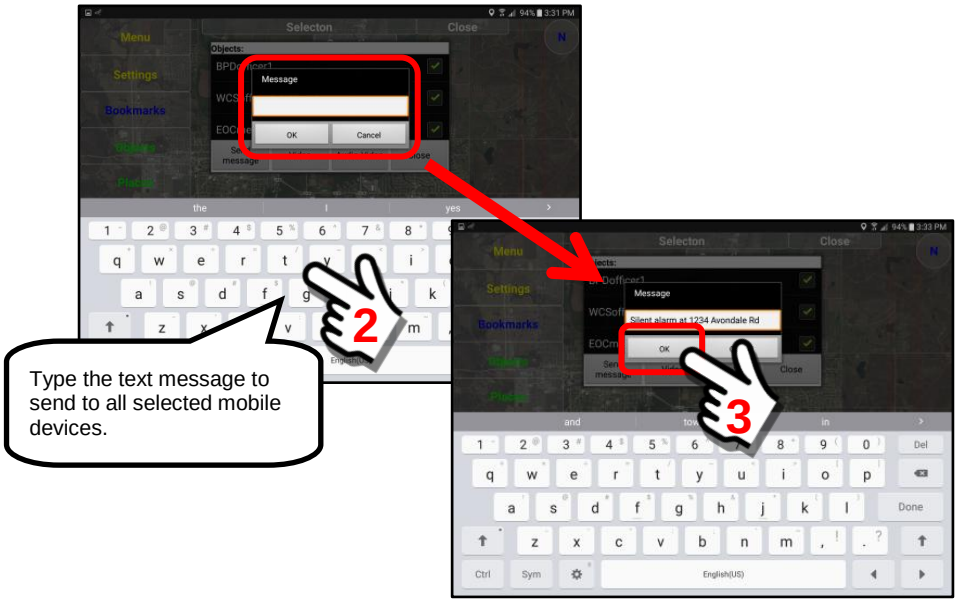
8. ***Send a "text" message to the selected devices.***

The "Send Message" feature will allow you to send a short text message to those remote devices you have selected. You will type ONE message and it will be sent to as many devices as you have selected (1 – 1000's). This is an easy way to send a group of users the same message.

Click on the *Send Message* Button.



A pop-up "Message" Box will appear with an on-screen keyboard. Type a message into the box, then click "OK" when finished.



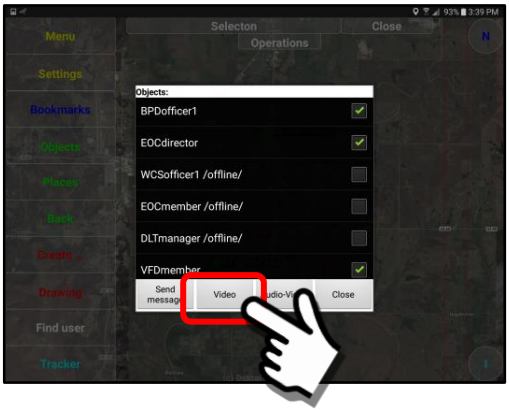
When the "OK" Button is clicked, the text message will be sent via the SentryMDU Messaging System to all designated mobile devices. The receiving devices will sound an "alert" tone and a SentryMDU Messaging "Icon" will appear on the device notification bar. The user may click on the messaging icon and the sent text message will be opened for review. Each user may "respond" to the text message if so desired.

9. ***Monitor a live video feed from the selected devices.***
The “Video Button” option provides a floating window panel with a “set” of live streaming video images from the selected remote mobile devices. This feature will use the Object Observatory panel structure to display the selected video streams. **This option will display video only, no audio.**

The number of simultaneous video streams that may be displayed is only limited by the hardware of the receiving device (CPU, Memory, etc.), the available internet bandwidth and the video parameter settings of the sending devices (framerate, bitrate, camera resolution, etc.).

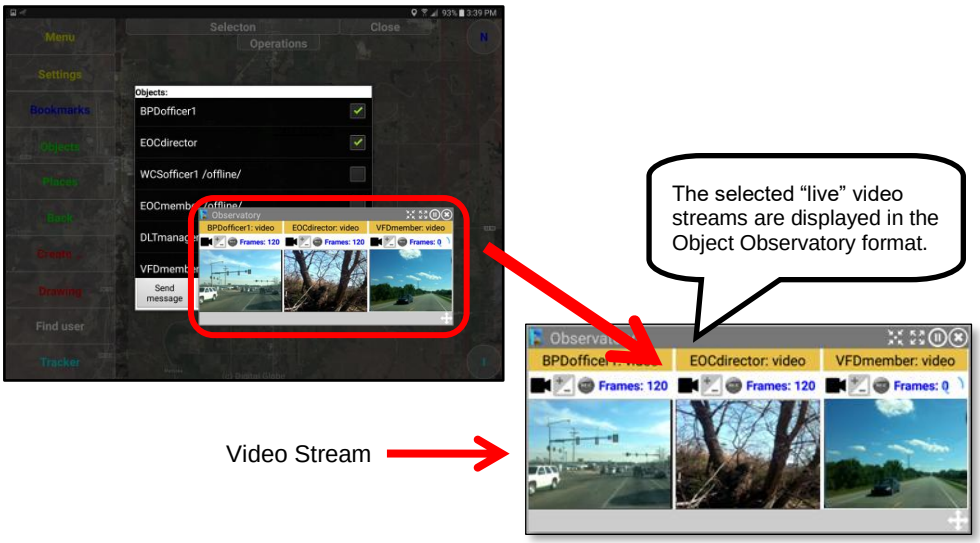
A typical application should expect perhaps 5 simultaneous video streams at standard resolution and framerate.

To activate, click on the “Video Button”.



A floating window panel (in the Object Observatory format) will appear on the screen with the number of live-streaming images that corresponds to the number of monitored remote devices.

See **Section 9.12** for additional details on the Object Observatory Panel format and the options available for recording and saving content on-the-fly.



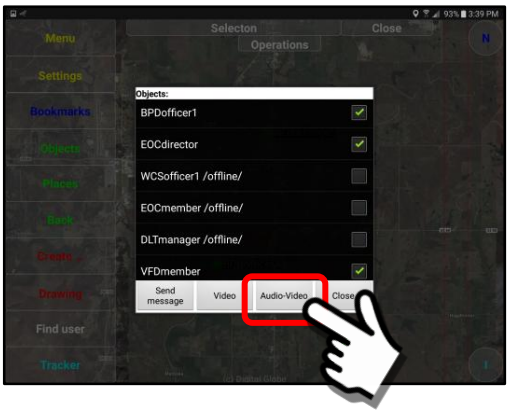
10. ***Monitor a live audio-video feed from the selected devices.***

The “Audio-Video Button” option provides a floating window panel with a “set” of live streaming video images and the corresponding audio from the selected remote mobile devices. This feature will use the Object Observatory panel structure to display the selected video streams. **This option will display video and audio.**

The number of simultaneous audio-video streams that may be displayed is only limited by the hardware of the receiving device (CPU, Memory, etc.), the available internet bandwidth and the video parameter settings of the sending devices (framerate, bitrate, camera resolution, etc.).

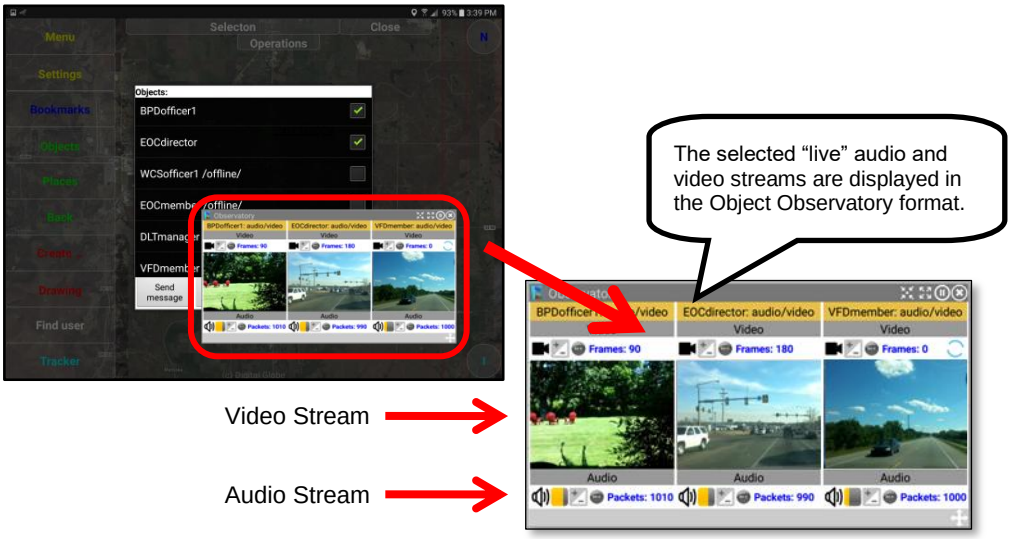
A typical application should expect perhaps 5 simultaneous audio-video streams at standard resolution and framerate.

To activate, click on the “Audio-Video Button”.



A floating window panel (in the Object Observatory format) will appear on the screen with the number of live-streaming images (with audio) that corresponds to the number of monitored remote devices.

See **Section 9.12** for additional details on the Object Observatory Panel format and the options available for recording and saving content on-the-fly.



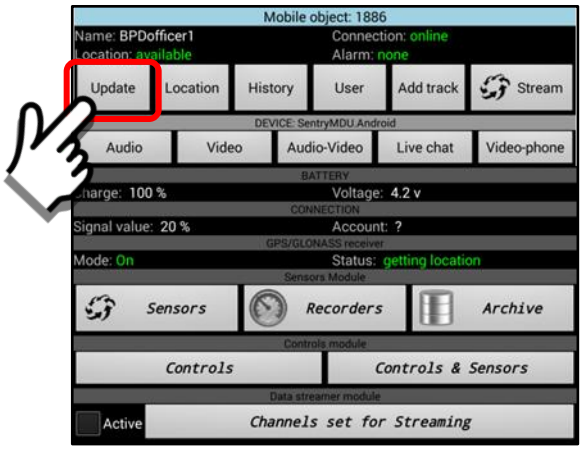
10.7. The “Update” Button

Overview:

The “Update” Button, when clicked, provides an immediate update from the Data Server. It is only used/needed in special circumstances.

Mobile Object Panel – Update Button:

As explained previously, the update interval (**Section 10.5, Item #7**) is a configuration option with a default of 30 seconds. This “Update” Button overrides the configuration setting and provides an immediate update from the Data Server.



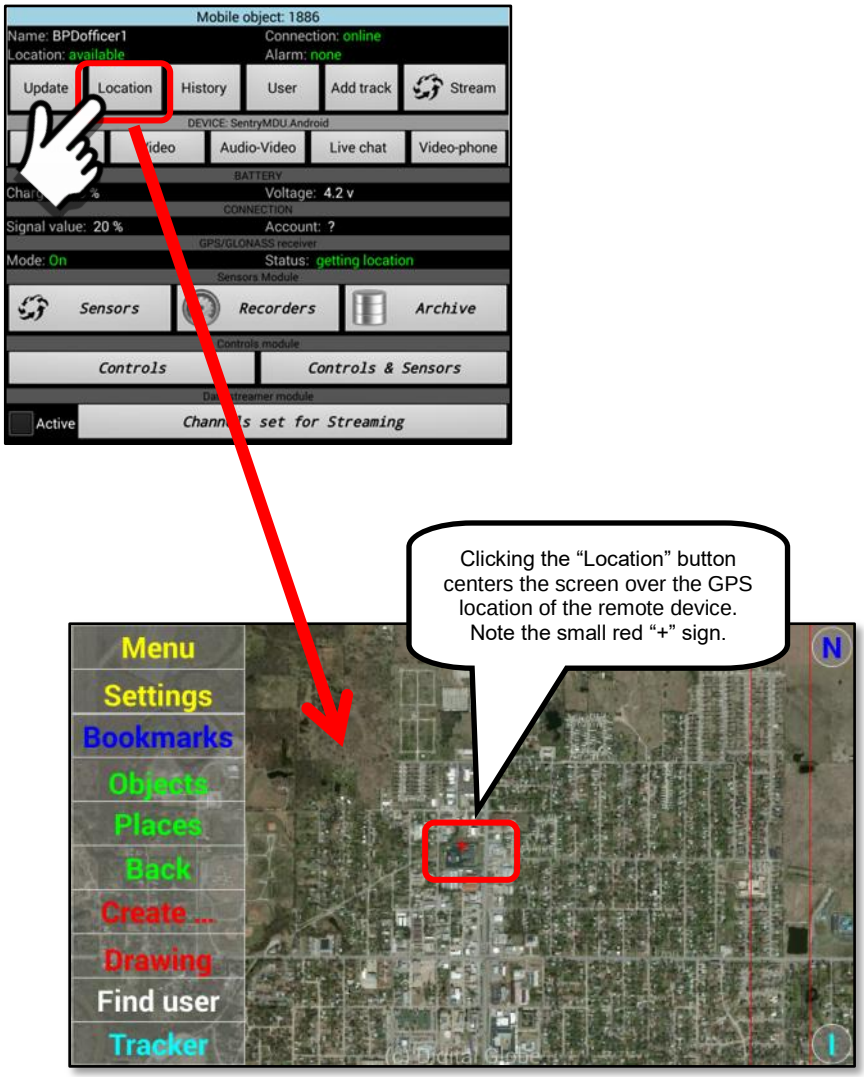
10.8. The “Location” Button

Overview:

The “Location” Button centers the main map screen (red “+” mark) at the GPS location of the remote mobile device. This location uses the “last available fix” from the GPS sensor on the device. This provides an easy way to locate other devices on the network.

Mobile Object Panel – Location Button:

Provides an easy way to find the current GPS location of any mobile device on the network.



10.9. The "History" Button

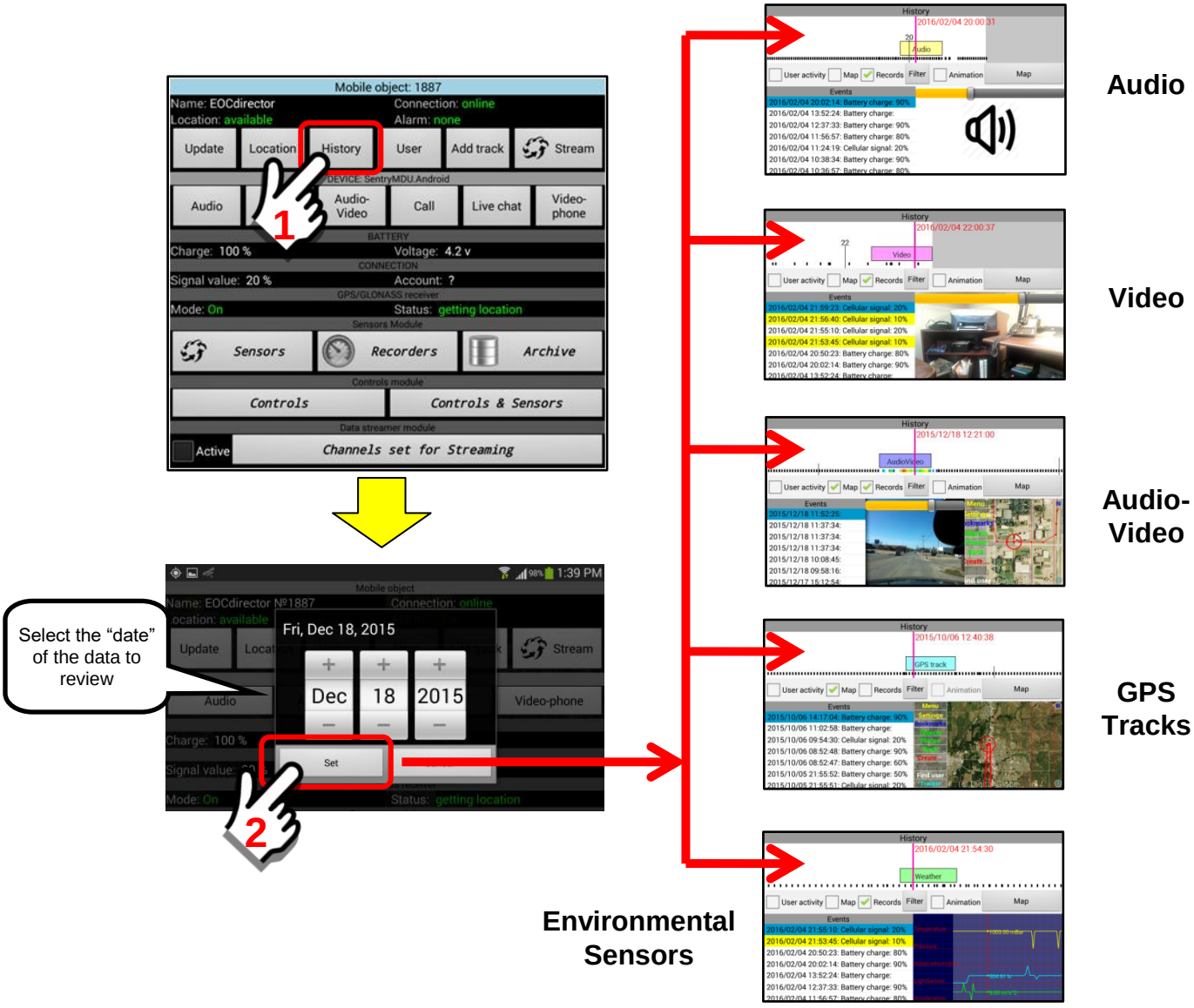
Overview:

The "History" Button enables a user to review historical data that has been saved on the mobile device. This historical data may include previous audio/video recordings, GPS tracks, environmental sensors, etc. The amount of historical data available will be determined by whether the data has been uploaded to the Sentry Data Server or stored on the local device and whether or not the data has been erased by the user.

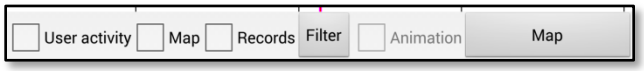
Access to the historical data will be governed by the security settings of both the owner of the mobile device and other users that want to access the data.

Options available for history data review:

The History feature allows a user to review past Audio Recordings, Video Recordings, GPS Tracks and combinations of this historical data. The group below shows 5 possible displays of historical data, other combinations are also available.

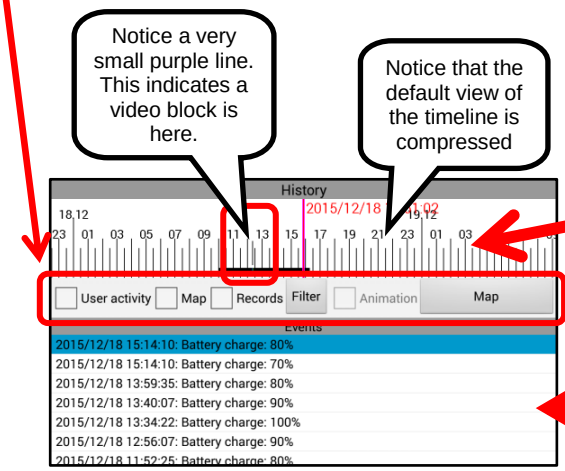


Description of components and features of the History Panel:



The feature bar has buttons/checkboxes for the following:

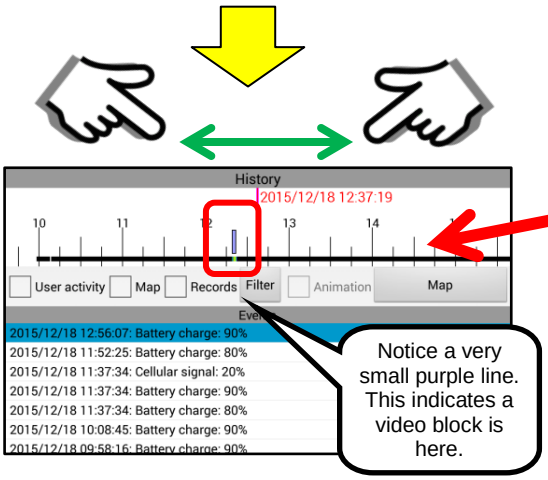
1. To show User Activity content
2. Display a map of where the video or GPS readings were taken
3. Play data records at a particular time … it can be sync'd with the map view
4. Filter Button allows records to be filtered by "type" selection.
5. Animation, when checked it plays an audio or video file.
6. Map Button launches a separate full size map screen.



Scrolling timeline showing hours of the day in a 24 hour format

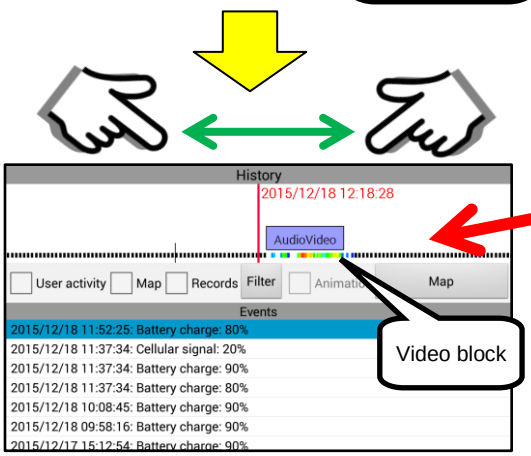
Buttons to display video recordings, maps, GPS Tracks and user activities.

Specific events that are monitored and displayed on the timeline



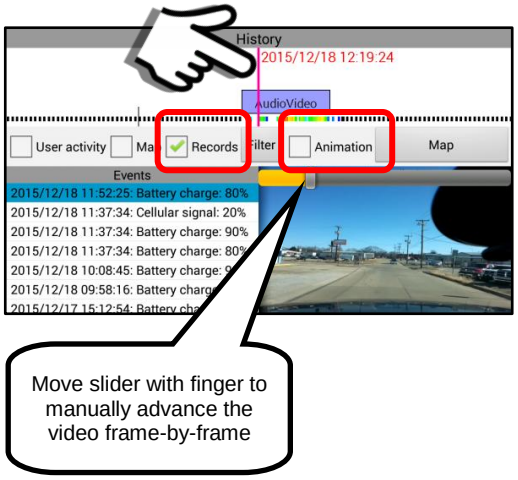
To expand the timeline, use a two-finger drag to zoom in or out on the timeline.

As you zoom in, recorded events will come into view.



Continue to expand the timeline, using a two-finger drag to zoom in until the purple AudioVideo block becomes larger.

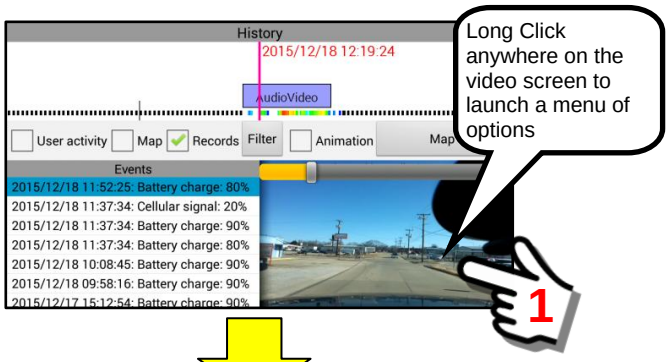
To display the recorded data (i.e. AudioVideo), perform the following steps.

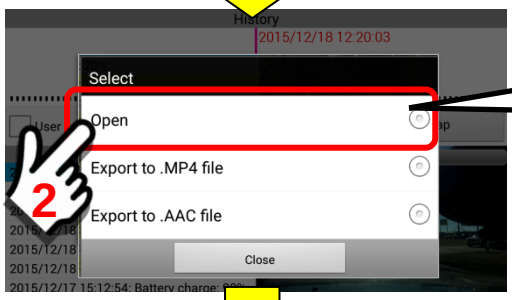


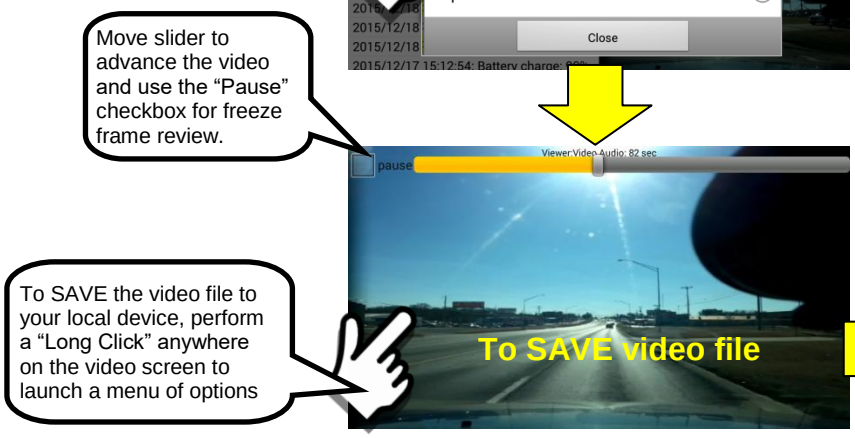
Steps to display recorded data:

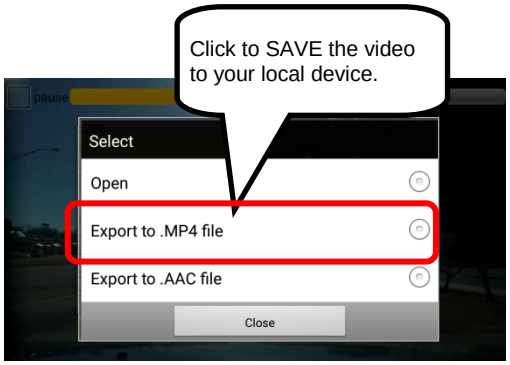
1. Drag the screen timeline until the vertical red line is over the AudioVideo block
2. Put a checkmark in the "Records" checkbox.
3. The Video should now display in the lower right of the screen.
4. To put the video into "motion" click on the "Animation" checkbox.

To "open" the file and display the video "full screen".

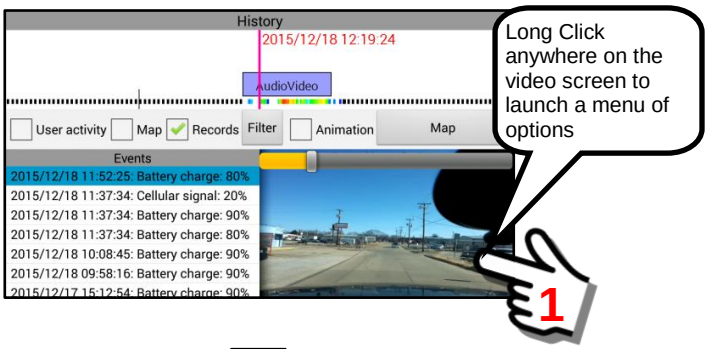




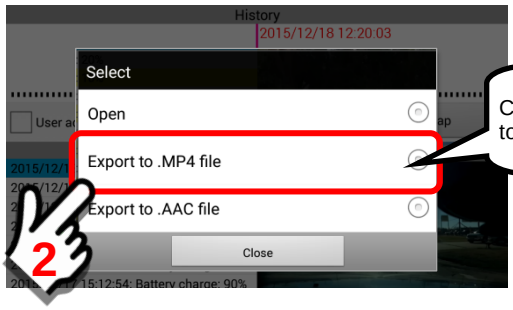




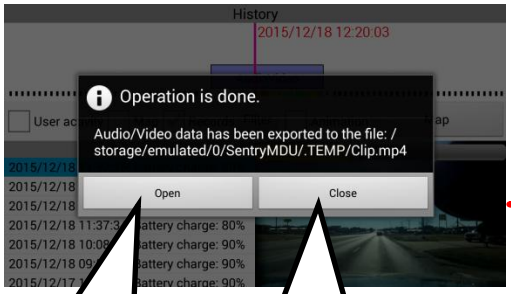
To SAVE the video to a file on the local device (save as .mp4).



Long Click anywhere on the video screen to launch a menu of options



Click to SAVE the video to your local device.



To "Open" the video file and play it as an MP4 file on your mobile device, Click here.

To "Close" the notification box and remain at the History Panel.

The video file is saved to a TEMP folder on the device.

See other sections of this guide on how to save this video file (converted to .mp4) and play on computer desktops or send the video clip to other users on the network.

Note that the MP4 file is stored in a .TEMP folder. If you want to save/send it you will need to take action before the data is removed or overwritten by other actions.

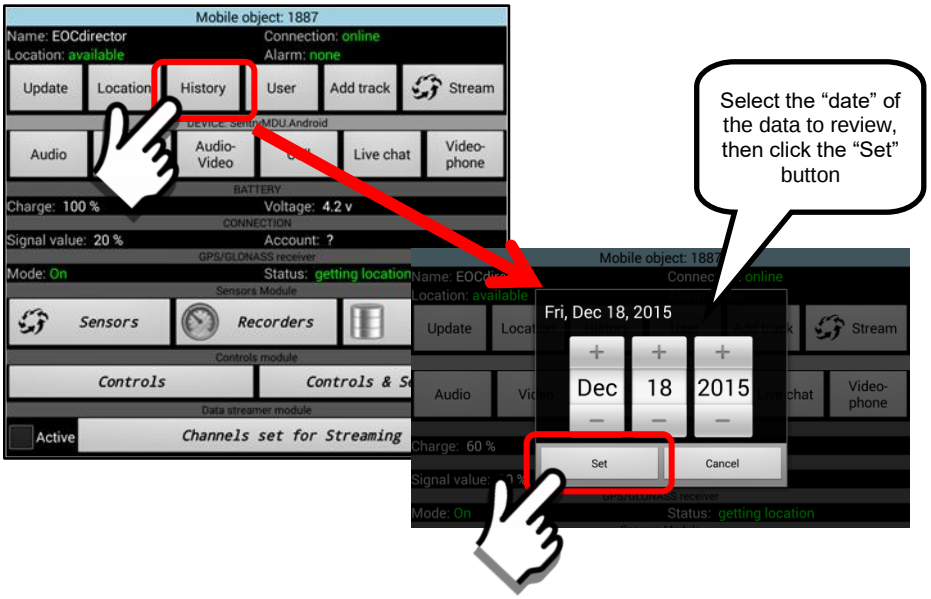
Example – Review previously recorded Audio-Video files:

This example will describe the following scenario:

1. Select a date in the past when audio-video recordings were made.
2. Play the retrieved audio-video files
3. Show a map screen with a GPS track of the mobile object while the recording was being made.
4. Save the audio-video files in MP4 format for alternate uses.

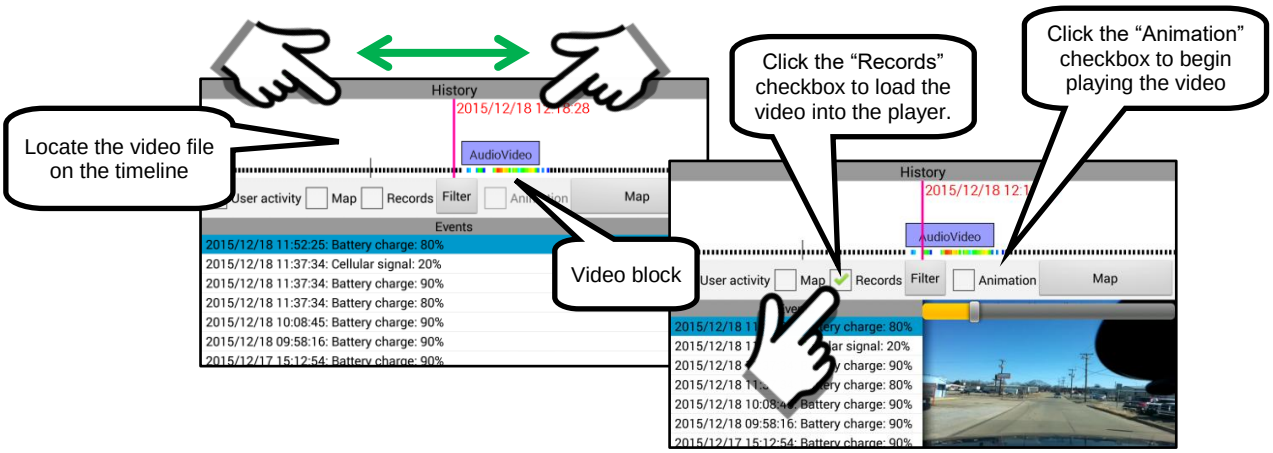
1. Select a date for retrieving the data

Select the Mobile Object panel of the User that you want to review historical data, Click on the "History" Button. The "Date" selection block will appear. Select the desired date for the audio-video files (or other data) that you want to review.



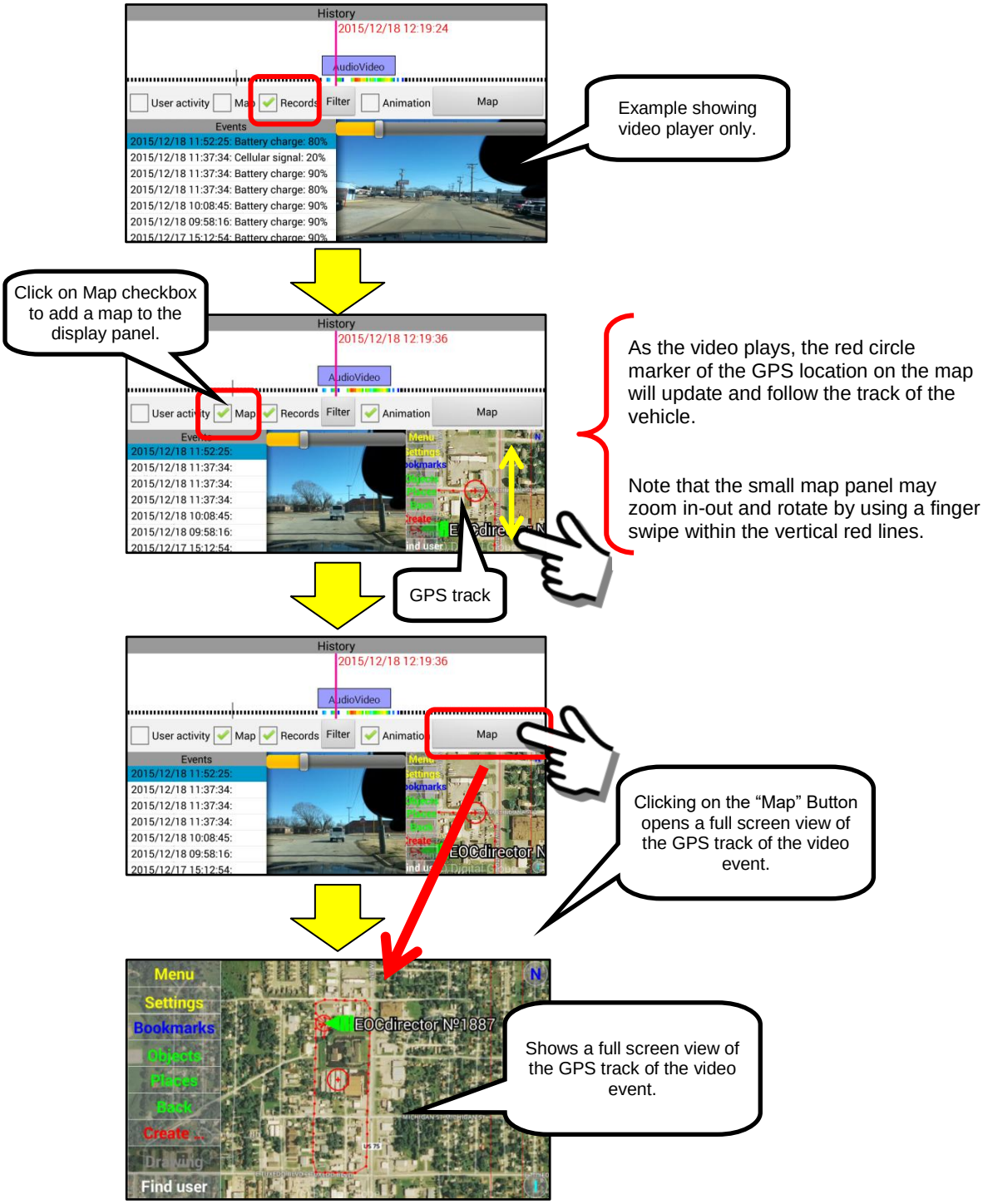
2. Play the audio-video files and review

Review the timeline and locate the data files you wish to review. Center the red vertical line over the video block and click the "Records" checkbox.



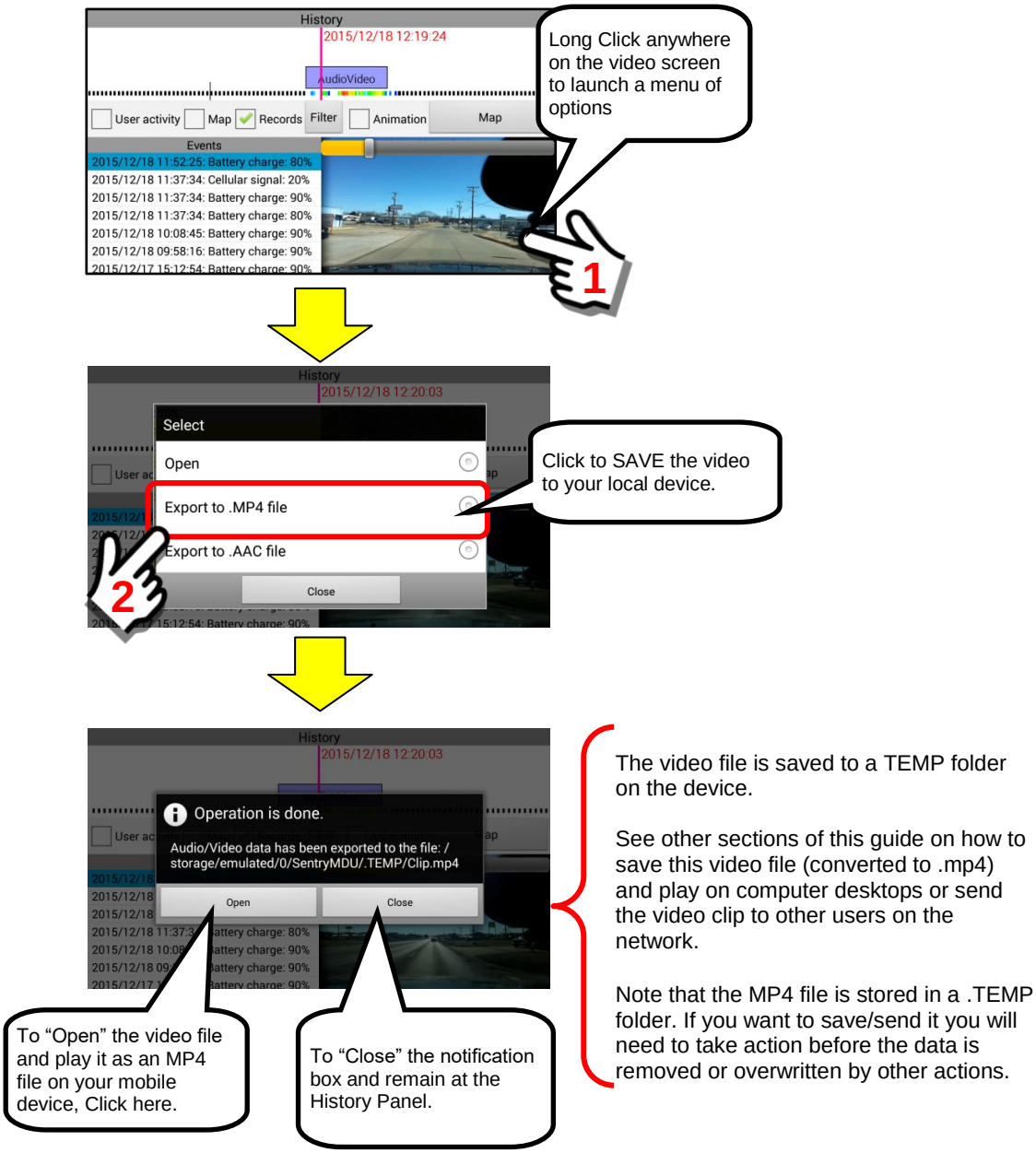
3. ***Play audio-video files again, this time add the GPS Track map***

The History Panel also has an option to add a GPS enabled map screen to the display. Click on the “Map” checkbox. When active, the mapping feature will add the GPS location to the History display and as the video plays in animation, the GPS track will be updated to show the location of the particular video sequence.



4. *Save the audio-video files in MP4 format*

The Sentry MDU System provides for saving audio-video files in MP4 format. This video format will play on most computer system video players and mobile devices.



The video file is saved to a TEMP folder on the device.

See other sections of this guide on how to save this video file (converted to .mp4) and play on computer desktops or send the video clip to other users on the network.

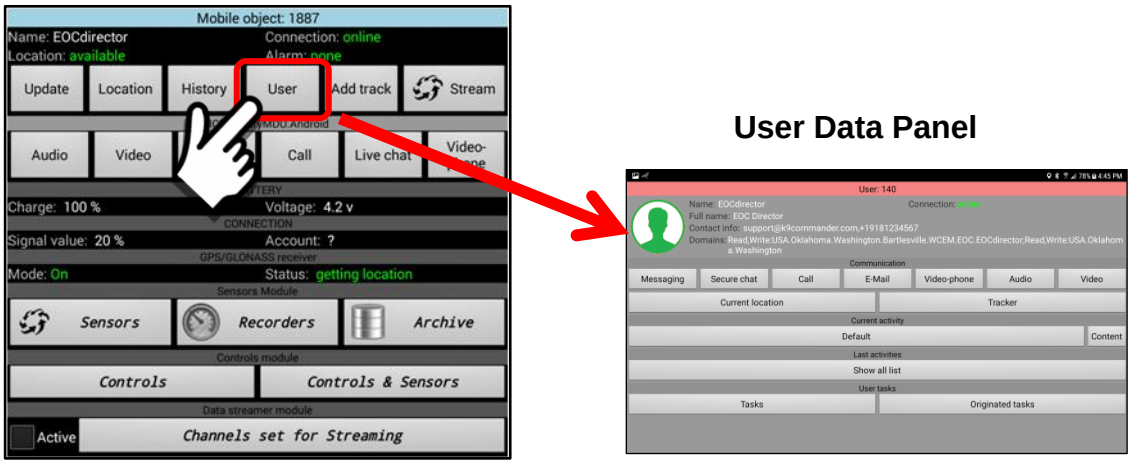
Note that the MP4 file is stored in a .TEMP folder. If you want to save/send it you will need to take action before the data is removed or overwritten by other actions.

10.10. The "User" Button

Overview:

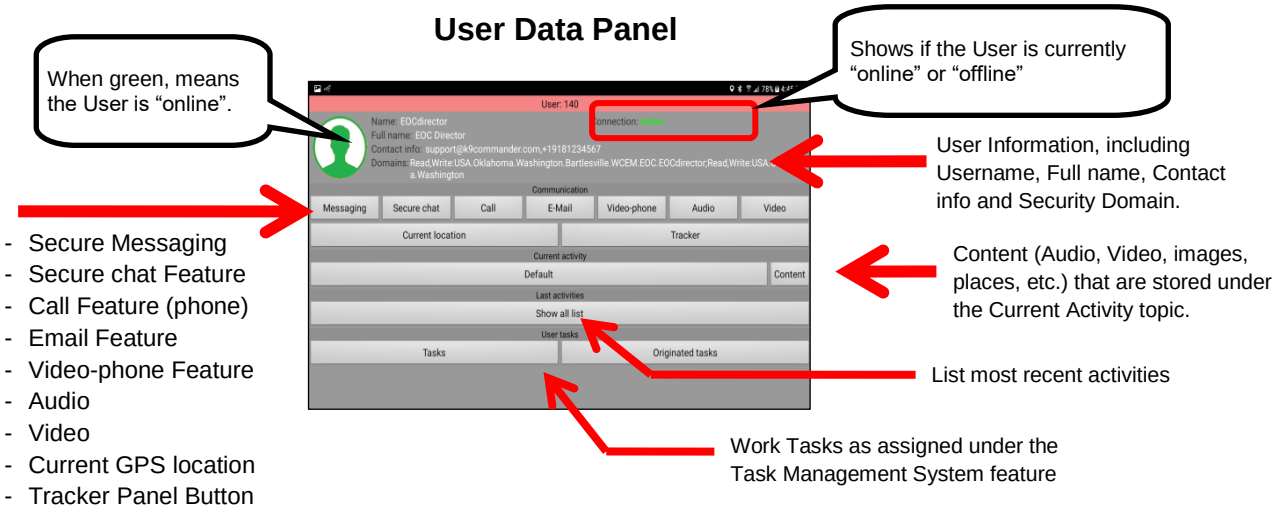
The "User" Button opens a user data panel for the selected mobile device. It is primarily a communications panel that provides access to Messaging, Live chat, a Video Phone, current location data and content stored on the mobile device.

Many of the "features" may have bookmarks created that will allow rapid access to those items used most often. See **Section 14.3** for a detailed discussion of all options on the User Panel. This section is a summary of the features.

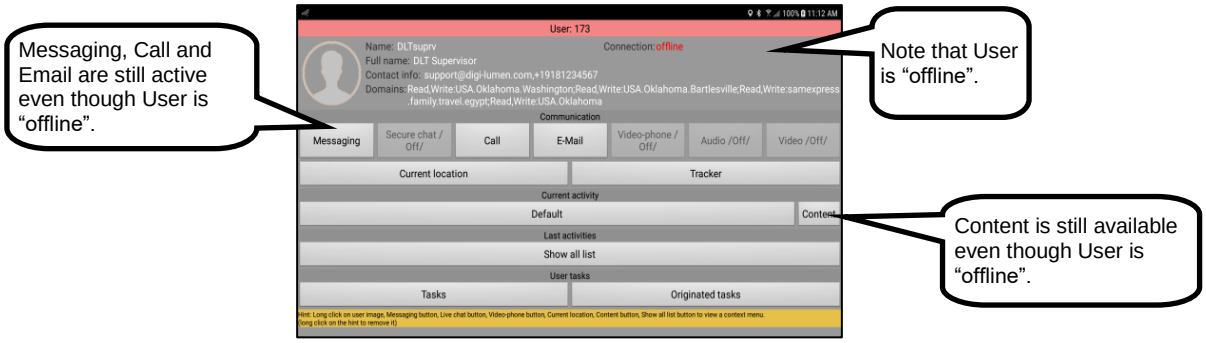


General layout of the User Data Panel:

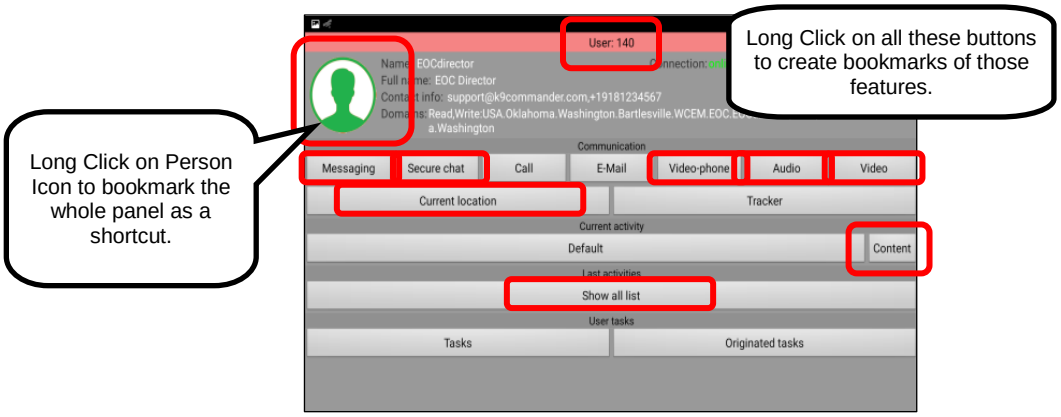
The User Data Panel has a series of buttons arranged under different topics. See the illustration below.



If a User is “offline” (not connected to the Sentry Data Server) the User Data Panel will have several grayed out sections as shown below. Note that if another user is “offline” you can still use the Messaging, Call and Email features even though the user will not receive the message/email until they are back online. In addition, you may still review Content and Activities.



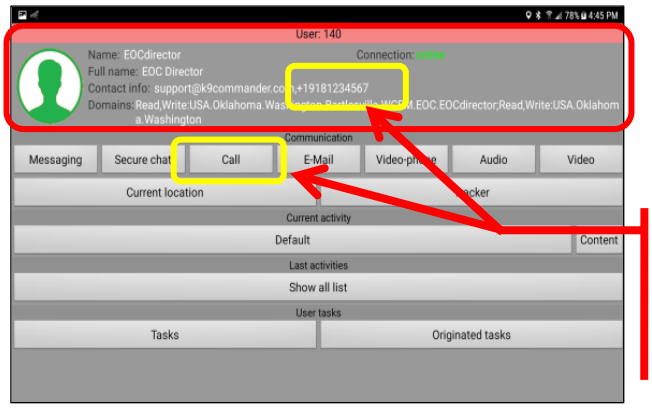
The User Data Panel has the capability to be bookmarked in a variety of locations as shown below.



Description of the button functions and features:

1. *User Information*

The User information includes the Name, Full name, Contact Info and Security Domain.

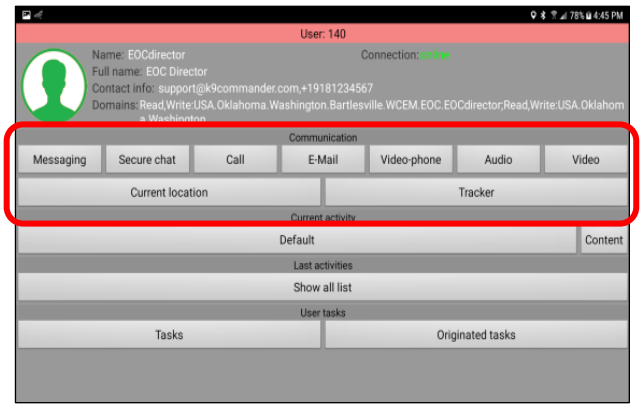


User Information Section

Note:
If a phone number was provided during initial registration a “Call” Button will also be displayed on the User Panel. Clicking on this button will place a phone call to the User.

2. *Communications*

The Communications Section of the User Data Panel has 7 default feature buttons plus 2 optional (Call and Email) that will be described in this section.



- Secure Messaging Feature
- Secure chat Feature
- Call Feature (place a phone call)
- Email Feature
- Video-phone feature
- Audio
- Video
- Current GPS location
- Access to Mobile Object Panel

Description of the button functions and features:

<u>Messaging Feature</u>

The Messaging Feature is similar to native “Text Messaging” on a smartphone in that the other party does not have to be “online” at the time. The Sentry MDU System will send a notification signal to the mobile device. The device will emit a “beep/tone” and display a SentryMDU Icon in the notification bar when a message is received. The messaging feature has a 10MB limit. Keep this in mind if you will be attaching “pictures” to the message.

All SentryMDU messaging is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms (such as AES). The application will automatically update/replace session encryption keys at 15 minute intervals.

The Messaging Feature may combine text entry with drawings and with pictures taken with the camera. In addition, active content (streaming video) may be embedded into text messages. Examples below will show how this is done.

<u>Secure chat</u>

The “Secure Chat” Feature will require that BOTH users are online. It is called “secure chat” because the Sentry MDU System will establish a “live” encrypted connection between the two devices.

Secure chat is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. The application will automatically update/replace session encryption keys at 15 minute intervals during the live chat session.

Call Feature

The Call Feature is “optional” since the button will not appear unless a phone number has been entered during registration. This feature simply uses the native “Phone App” on the mobile device to place a phone call. The phone number that will be called is the number the User entered during initial registration of the Sentry MDU system.

Email Feature

The Email Feature simply uses the native “Email App” on the mobile device to compose and send an email. The email address that will be used is the a ddress the User entered during initial registration of the SentryMDU system.

Video Phone Feature

The “Video Phone” feature will establish an audio- video communications channel between two mobile devices. The feature will allow video from the remote device and face camera video from the local device.

Audio Feature

The Audio Button on a User’s Panel will activate the microphone on the mobile device of a remote user. You will receive an audio feed from the remote device.

Video Feature

The Video Button on a User’s Panel will activate the camera on the mobile device of a remote user. You will receive a video feed from the remote device.

Current Location Feature

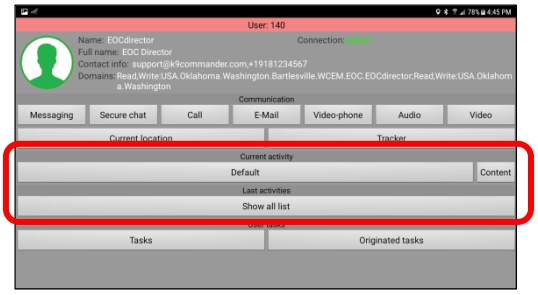
The “Current Location” Button will contact the mobile device and retrieve a new GPS reading from the sensor. This will display the current GPS location of the user selected. The main map screen will be displayed with the screen centered (red “+” mark) over the location of the user.

Tracker Feature

The “Tracker Button” opens the Mobile Object Panel for the selected remote device. The mobile object panel provides access to sensors, recorders, data archive and tracking history for other users.

3. *Current Activity and Last Activity*

This section has Category tile blocks for both the “Current” and “Last” activities and a Content button. The current activity category, marked “Default” in the example below, is where current “content” is stored.



Content may include the following data types:

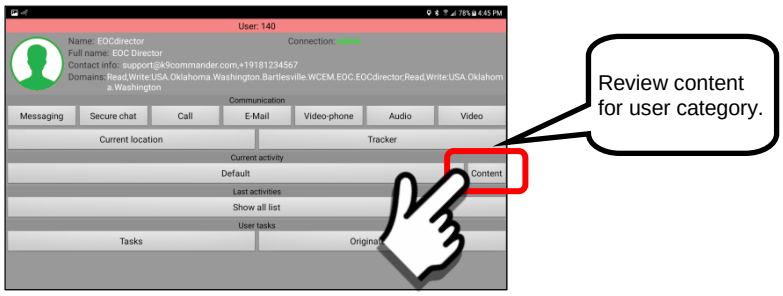
1. Pictures
2. Videos
3. Telemetry (GPS) data
4. Points-of-Interest
5. Audio Files
6. Places
7. Imported Data Files

In the example above, content that is created by the User will be stored in the current activity (shown as Default). To access the content, click on the “Content” button which allows access to data within the current activity.

Users have the ability to create a variety of “Activity Categories”.

4. *Reviewing User Content*

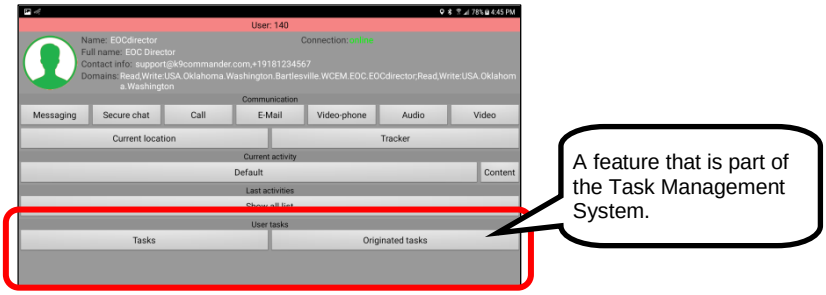
The “Content” Button allows a user to review a variety of data stored on the mobile device (and associated Data Server).



5. *User Tasks*

The “User Tasks” buttons are part of the SentryMDU Task Management System. This requires access to the Sentry MDU Desktop client application to properly use this feature.

These buttons provide a listing of Tasks for the User.



10.11. The “Add track” Button

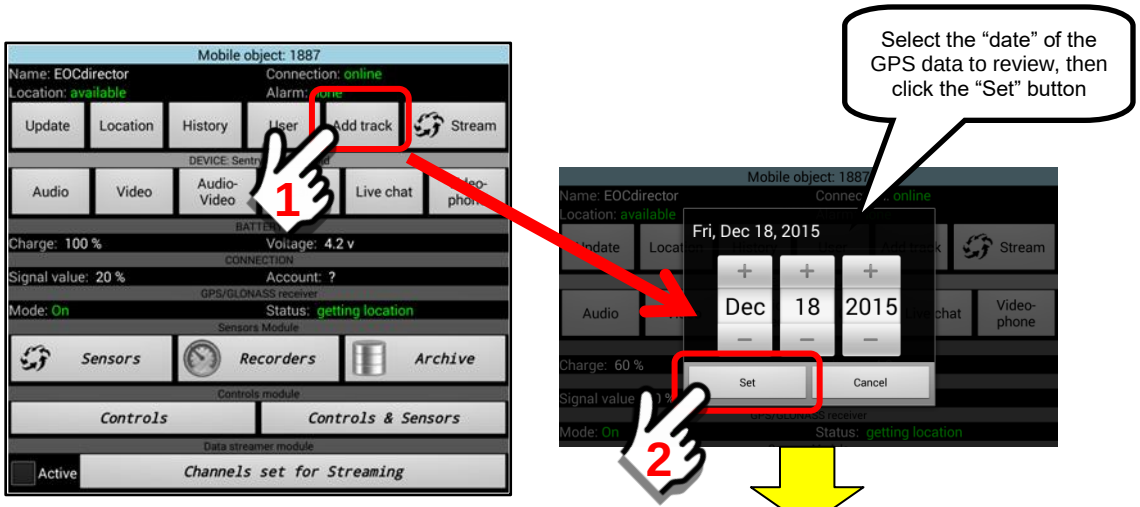
Overview:

The “Add Track” button allows a user to add the GPS tracks of his/her own mobile device or the mobile device of other users to the Main Map screen. These GPS tracks will be retrieved from historical data that is stored on the Sentry Data Server.

> **Note: The “date” times for GPS tracks are stored in UTC. Since tracks may span a day (ie past midnight), or a time zone, we have programmed the App to display GPS track data for the “date” selected +/- 1 to the day. Although this will display additional data, it will represent a more accurate tracking feature.**

Using the Add Track feature:

GPS tracks that are added using this feature will remain on the screen until the Sentry MDU App is “closed”. By keeping the tracks on the screen, this will allow several tracks over several time periods to all reside on the screen at the same time.



Using the color-wheel, select the color that you want the GPS track to be displayed in.

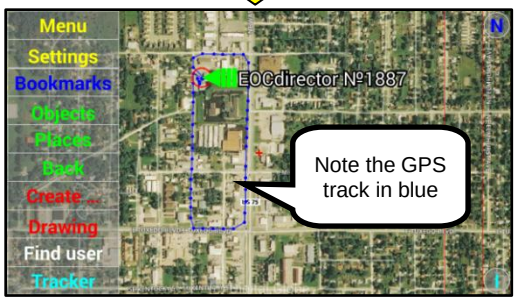
If you have multiple tracks, consider displaying them in multiple colors for easy identification.

Click on the center of the color-wheel once you have selected your color.

Note the GPS track in “blue” color.

The small dots on the GPS track represent the points (nodes) where the GPS readings were acquired.

The distance between the nodes correspond to the time interval that is set in the Main Configuration menu (ie 20 secs).



10.12. The "Stream" Button

Overview:

The "Stream" Button allows a User to monitor the data stream from a remote mobile device. Typically this data stream is an audio/video stream, but it could be any number of sensors that have been configured to stream the data.

The advantage of "streaming" is that one device may stream data to many other mobile devices without placing a high load on the originating device.

> **Important Note: The originator of the data streaming MUST configure their device for data streaming. All users wanting to "view" the data stream must have adequate security access to monitor the streaming.**

Description of how data streaming works:

In order to know when to use data "streaming" and when to use "direct connections" between mobile devices, it will be important for the user to understand how these two methods are used in the Sentry MDU System.

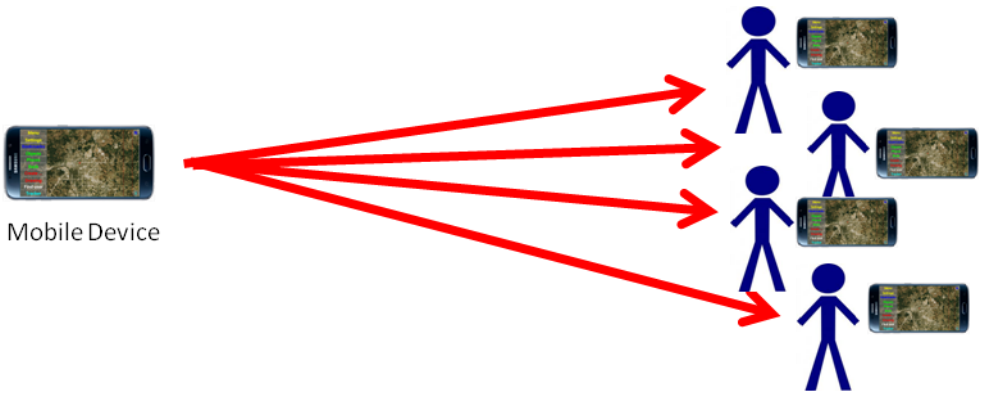
<u>Direct Connection</u>

The "direct connection" method is where one mobile device connects directly with another mobile device WITHOUT routing through the Sentry Data Server. The direct connection method may be limited by the available bandwidth (WiFi or Cellular) or the hardware itself (amount of memory and processing ability of the mobile device). Typically, a high quality mobile device will become overloaded with more than 8-10 direct connected devices.

In the direct connection method, as each new remote user connects to the originating mobile device, a "new" socket connection is created on the mobile device to handle the data flow. As more and more connections are made, eventually, this affects the performance of the originating mobile device and connections become unstable as data processing becomes overloaded.

Typically, you may assume that 1-5 direct connections will work fine and you should not have any issues. If you expect more than 5 users monitoring your data feed (audio-video) we would suggest you use the streaming method.

The illustration below shows a direct connection scenario.



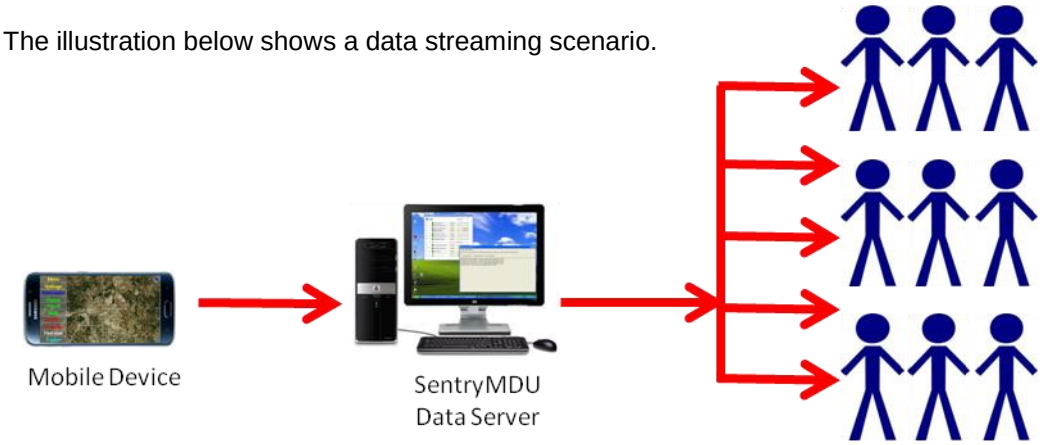
Data Streaming Method

The “data streaming” method is where one mobile device connects to the Sentry Data Server, which in turn connects to many remote mobile devices. The advantage of the Streaming Method is that the Sentry Data Server handles all of the bandwidth, processing and data streaming overhead. Since the Data Server is typically a high performance computer, it has the ability to provide hundreds of simultaneous streaming connections to remote mobile devices.

In this method the originating mobile device only sends a single data stream to the Sentry Data Server. Other remote mobile devices, in order to view the audio-video stream, simply click on the “Streaming” Button in the originators Mobile Object Panel. By doing this, they are actually connecting to the Sentry Data Server to receive the audio-video stream and therefore do not load the originating device.

The “Data Streaming” method can theoretically process hundreds of thousands of simultaneous connections. In practical terms, a system will be limited by the available internet bandwidth and the type of data being transmitted (ie bitrate and framerate of video transmissions).

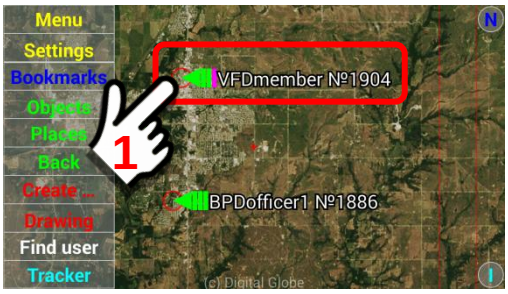
The illustration below shows a data streaming scenario.



Access to the Streaming Button on the originating mobile device:

To monitor a video stream coming from an originating mobile device a User would navigate to the Mobile Object Panel of that device and click on the “Streaming” Button. In the screen below we will select the User = VFDmember.

Click on the object marker of VFDmember to launch the Mobile Object Panel for that user.



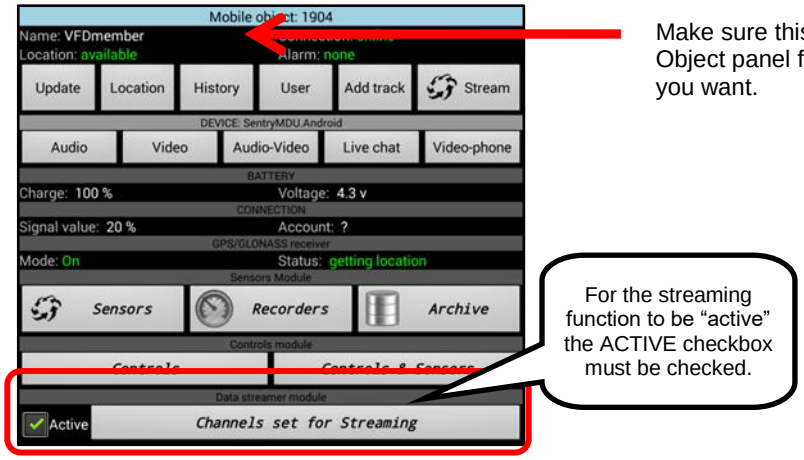
In this example, we assume we are user **EOCdirector** and we want to monitor the video stream from user **VFDmember**.

Note that when EITHER a direct connection or streaming method of video transfer is turned “on” a Mobile Object marker will have a “fushia” colored block in the marker.

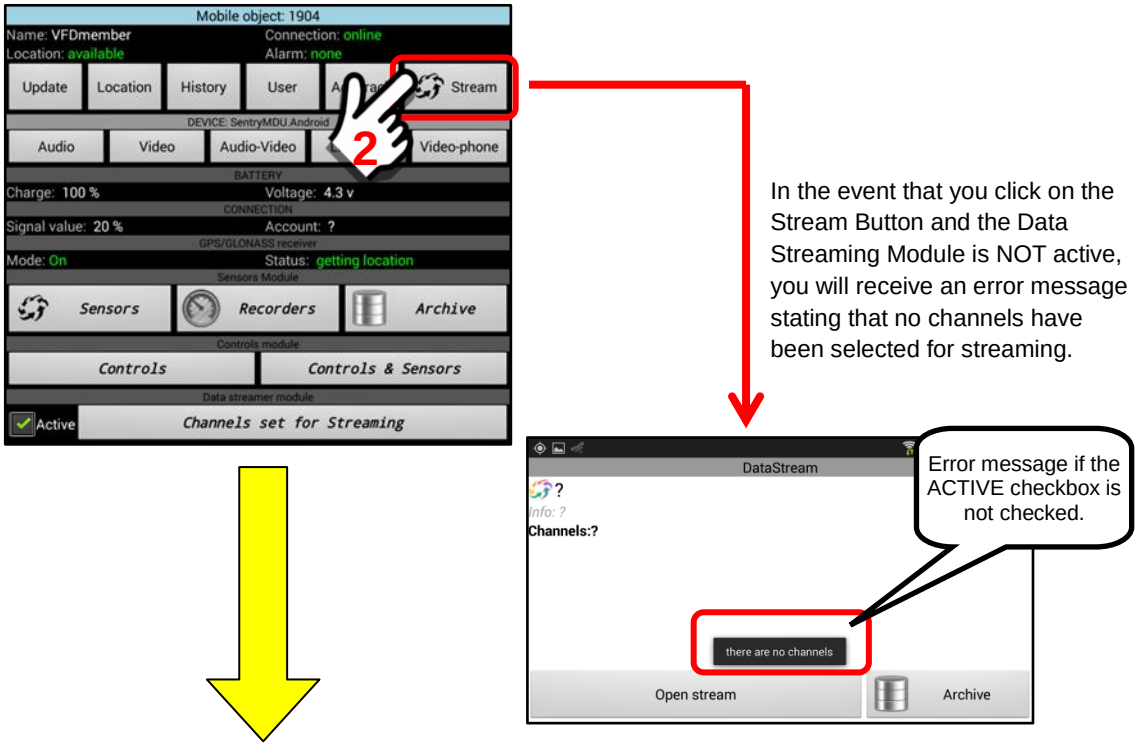
Clicking on the object marker will take us to the Mobile Object Panel of user VFDmember. Before we can click on the Streaming Button we need to determine which method of video transfer is being used on the originating device.

Look at the Mobile Object panel and see if the Data Streamer Module is “active”. If the active checkbox is checked, this verifies that the user has implemented the Streaming Method of video transfer and not the Direct Connection method.

In our example below the Data Streamer Module is active.

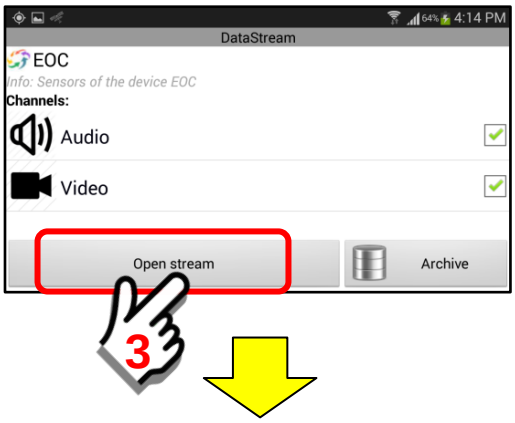


To view the streaming video from the originators mobile device, click on the “Stream” Button for that user.



Clicking on the “Stream” Button will open a Data Stream Panel that lists the device channels that the originating User has designated as part of the data stream. In this example, both an Audio and Video channel are selected. The user wanting to monitor the data stream may select which channels to monitor (audio, video or both).

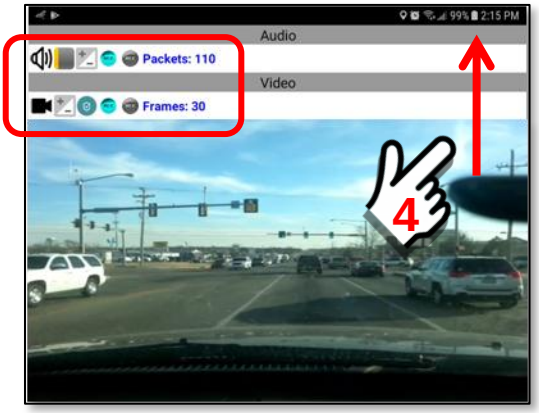
This example shows that BOTH audio and video channels are selected to be monitored.



In this example, we assume BOTH the audio and video channels will be monitored.

Click on the “Open stream” Button to start the audio-video streaming from the remote device to your mobile device.

Click on the “Open stream” Button to view the audio-video.



In this example, note that when BOTH the audio and video channels are monitored, that a packets indicator is shown at the top of the video screen. This provides an indication of data processed.

Using a finger, swipe the screen in a vertical upward motion. This will raise the packets information and hide it off the top of the screen.

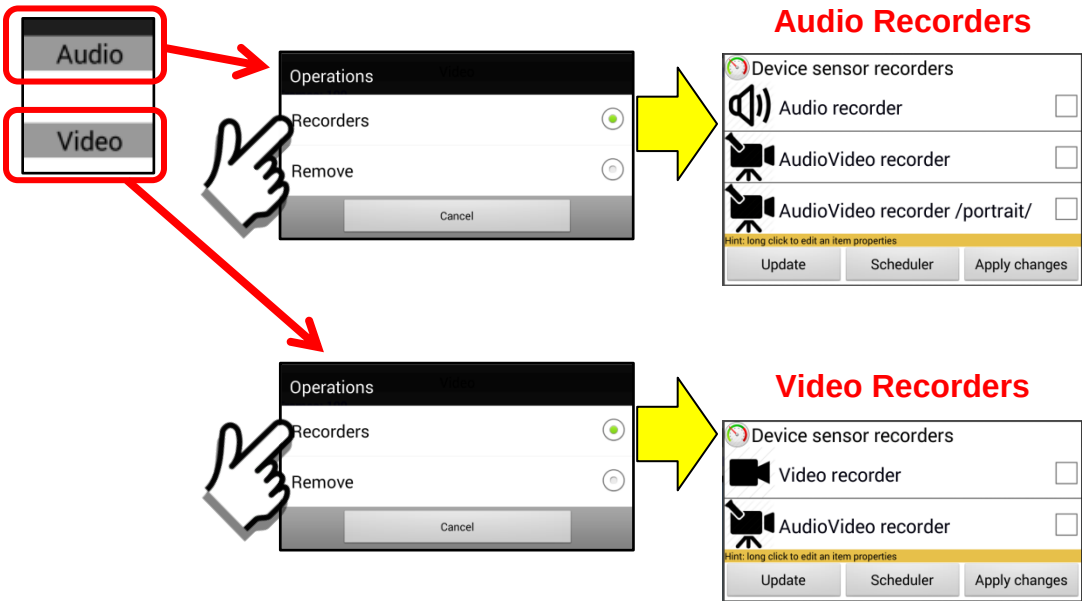
With the audio-video packets indication hidden, the full streaming video is available.

When finished monitoring the streaming video, click the “back” button on the phone to close the session.

Description of the Audio-Video panel:

The display of an audio-video panel gives the user specific options to control both the audio and video on the mobile device. This section will highlight those options.

1 A “Long Click” on the Audio or Video buttons will launch a “Recorder” panel that will enable a User to record the data for further analysis.



2 The audio indicator bar provides the user with a progress indicator on the number of data packets that have been received by the mobile device.

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned “on” (Default)

Speaker is muted, turned “off”

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

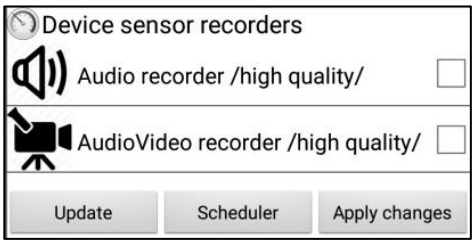
High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

Flow control is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The audio output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

Recording is turned “on”

3 The video indicator bar provides the user with a progress indicator on the number of data packets of video information that has been received by the mobile device.

The video output of the mobile device may be paused by clicking on the video camera icon on the indicator bar.

Video is turned “on” (Default)

Video is paused, stopped but active

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” the flow control and let the system use the settings provided during configuration. However, if poor video output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

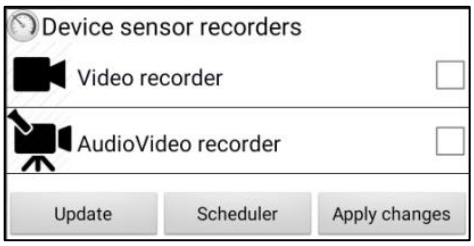
Flow control is turned “on”

The Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in video transmissions.

RSPP Reliability Mode is turned “off” (Default)

RSPP Reliability Mode is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The video output of the mobile device may be "recorded" at any time by simply clicking on the "record" button. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

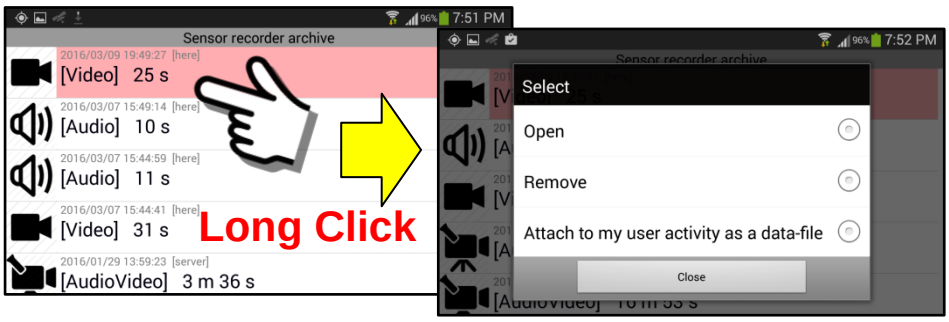
Recording is turned "off" (Default)

Recording is turned "on"

Once a recording has been made, there are additional options for the User. Navigate to the Data Archive and select the file.

Short Click – Play the video

Long Click – Will display 5 menu options which include features to Open (play), Remove (delete), save and export the file.



10.13. The “Audio” Button

Overview:

The “Audio” Button allows a user to monitor the audio of a remote mobile device. It turns “on” the microphone of the remote device and allows a user to listen to any sounds or conversation that is taking place in the vicinity of the remote mobile device. This feature also has the ability for a user to “record” the remote audio if they would like to save it for future analysis. This feature uses “Floating Window” panels. See **Section 9.13** for details.

This capability is only available if the User requesting access has the appropriate security credentials to control the remote device.

Mobile Object Panel – Audio Button:

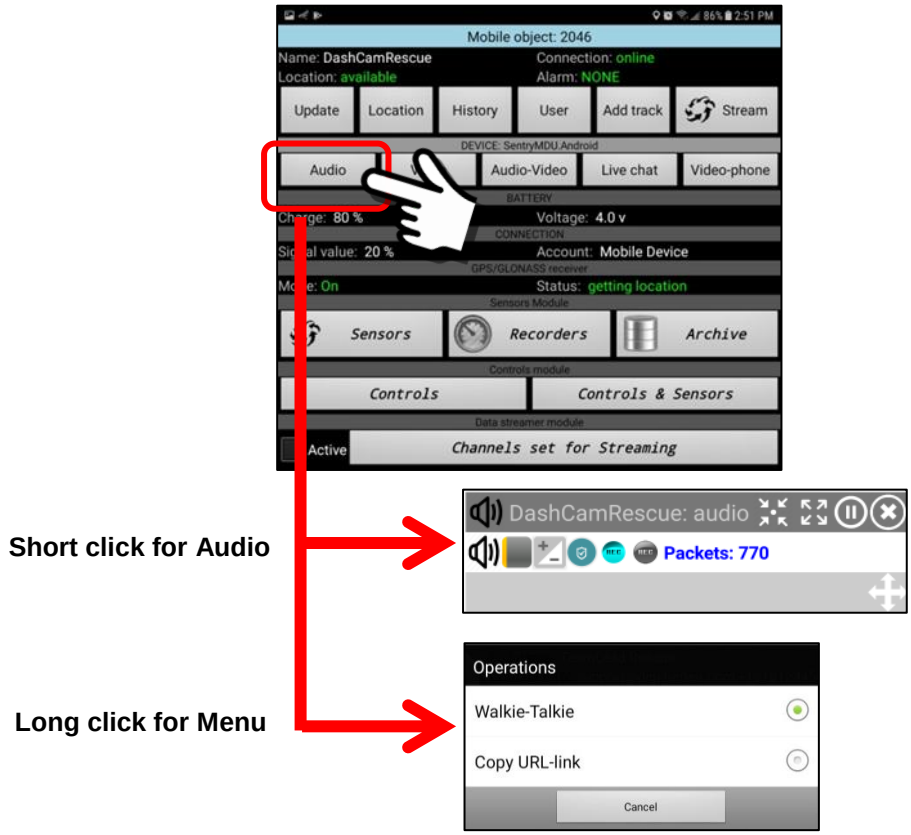
The “Audio” Button is located on the left side of the Mobile Object Panel. This button will initiate a connection to listen to the microphone on the remote user device.

> **Important Note: This feature does not provide notification on the remote device that another user(s) is listening to the audio.**

This Audio Button is a shortcut to the same capability available through the Sensors Section. The audio parameters (digital sampling rate, bitrate, etc.) must have been configured previously for this feature to work. To learn more, see **Sections 10.19 or 15.2** on configuration of sensors for a mobile device.

<u>Two functions available with the Audio Button</u>

The Audio Button has two functions. A “Short click” will launch the Audio Feature and a “Long click” will open an Operations Menu with two additional options.

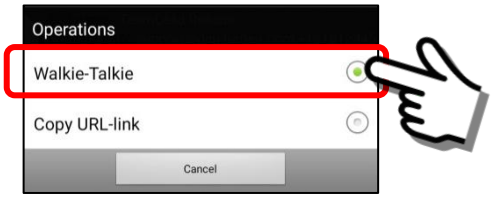


Operations Menu, "Long click" options

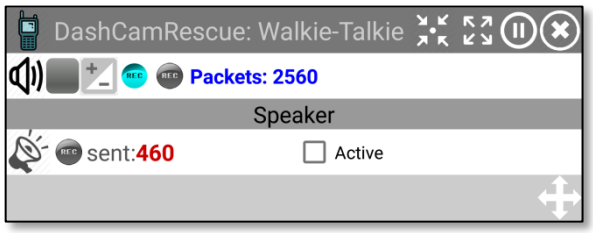
The Operations Menu has two options. The first will open an audio channel ("Walkie-Talkie" Feature) between two mobile devices. The second will copy a URL-Link that may be used to create a Bookmark of the Audio Feature for easy access (see **Section 9** for details).

A detailed example of using the "Walkie-Talkie" Feature is covered in **Section 15.13** of this User Manual. For this section, we will simply provide a review of available features and screen panels.

Click on the "Walkie-Talkie" Button to launch the feature.



To use the Walkie-Talkie Feature, you will "open" a User Information Panel for another user … someone you want to talk with. When you click the "Walkie-Talkie" Button, it will establish a two-way audio connection between YOUR device and their device. A floating window panel will open with additional controls for adjusting volume, recording the conversation and more.



The audio indicator bar provides the user with a progress indicator on the number of data packets that have been received by the mobile device.

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned "on" (Default)

Speaker is muted, turned "off"

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

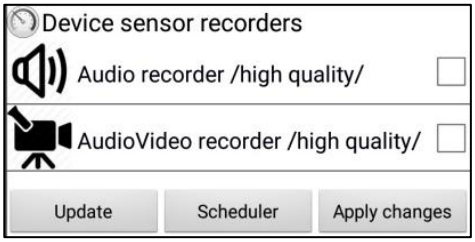
High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

Flow control is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The audio output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

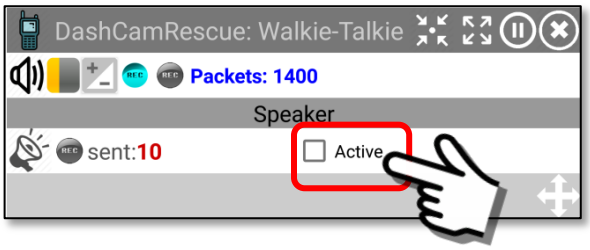
Recording is turned “off” (Default)

Recording is turned “on”

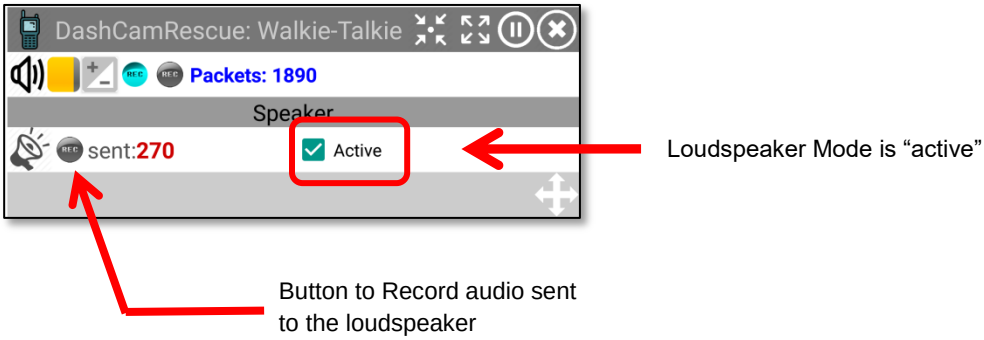
Speaker Access Option

The Walkie-Talkie Feature also has an option to turn on the external speaker of the remote device such that it acts as a “loudspeaker”. Typically, this would be used in conjunction with an External Bluetooth Speaker. This will enable increased volume and coverage.

Click the “Active” Button.



The speaker on the remote device is now in “loudspeaker” mode.

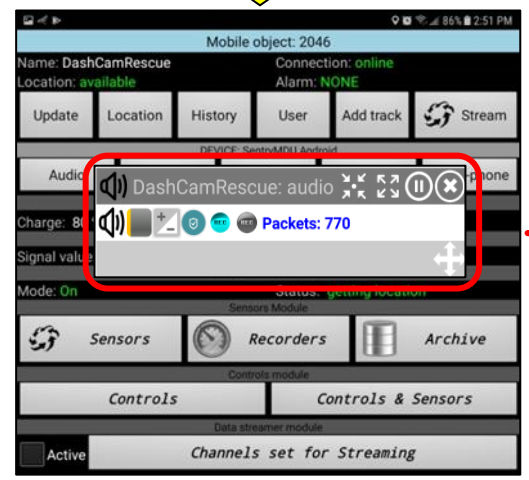


Steps for access to audio on remote mobile device:

1. ***Select the User mobile device you want to access.***
   Using either the “My Objects” panel or the Object Markers displayed on the main map screen, select the user that you want to monitor the audio.

2. ***Open the audio channel between your device and the remote device.***
In this instruction set we are assuming that all configuration parameters have been set previously and this action is simply to initiate the audio.

Click on the “Audio” Button.



When you see this panel you should start hearing sound

A “floating” Audio Panel will open. As the “packets” numbers begin to change this indicates that data is being received from the remote device.

A “Mute” button is available to mute the sound if you have other activities to do, but want to leave the screen active.

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device

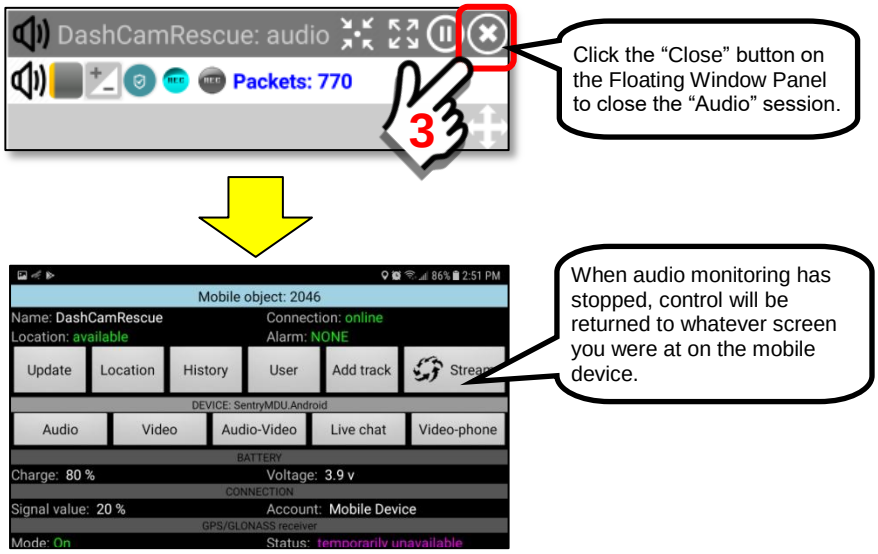
A “Flow control” feature is also available that will automatically optimize parameters (sample rate and bitrate) in the event you have an unstable network connection.

Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in audio transmissions.

Sensor Recorder Panel Button. This opens the Sensor Recorder Panel on the remote device to schedule recording parameters.

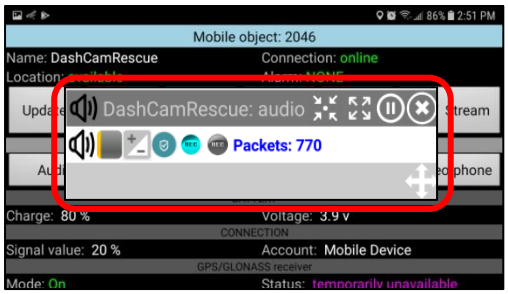
A “Recording” feature is also available to start-stop recording of the Audio at any time.

3. ***Finish listening to the audio, close the channel.***
To close the Audio monitoring, click on the “close” button on the Floating Window panel.

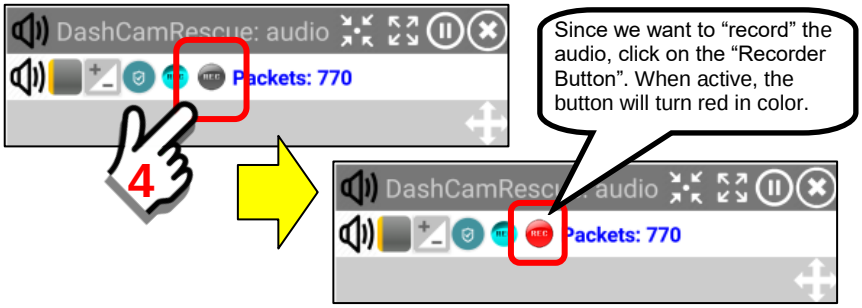


4. ***Optional – Record the audio if you wish to save the data.***
In addition to monitoring the audio of a remote device, the Sentry MDU System has the capability to “record” the audio at any point while a user is listening. This section will describe how to start-stop recording and then review the recorded data.

To start this process, we will assume you are listening to a remote User. You will see the Floating Window panel on your mobile device.



To start the “Recorder” simply click on the **Record Button**. If successful, the button color should change from Gray to Red.

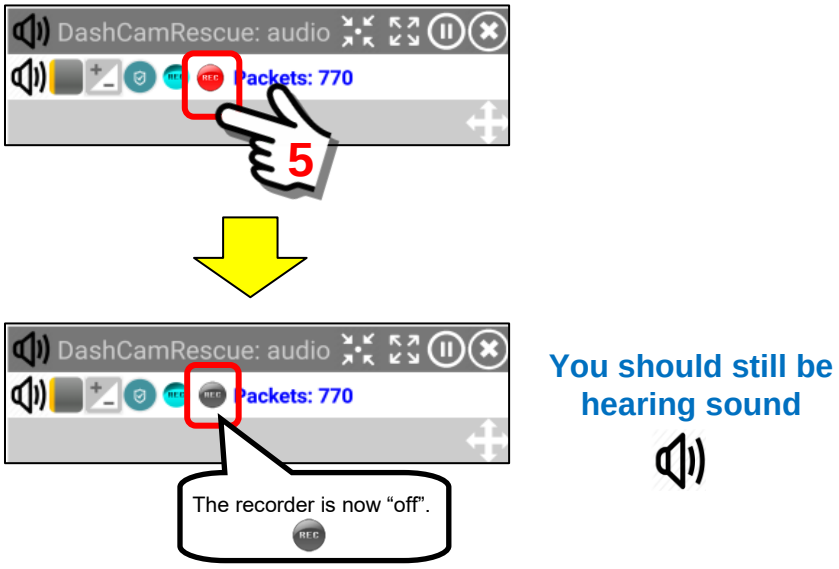


When you click on “Record Button” this will START the recorder. Since you are on a floating window, you may minimize the window and still record or listen to the remote device. Use the phone’s “back” button to return to other panels or other Apps on the mobile device (the recorder is still running).

5. ***Optional - Stop the recorder and continue listening to the audio.***
Assume we want to stop the “recording” but continue listening to the audio from the remote device.

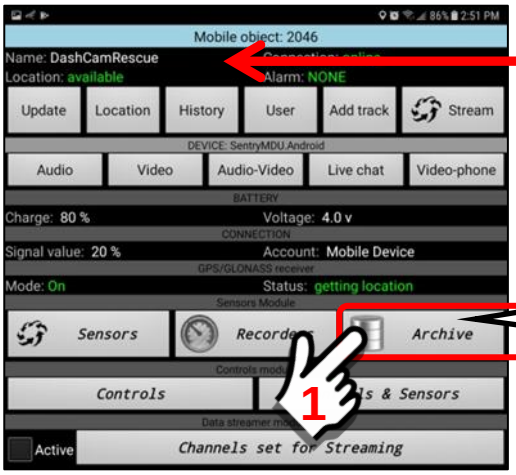
Navigate to the “Audio” Floating Window Panel for the remote device.

Click on the “red” record button to toggle it to “off”.



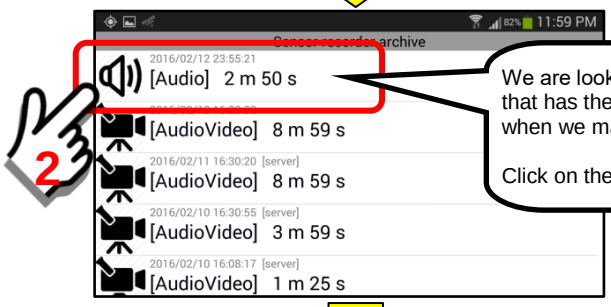
The recording function is now stopped, you are still listening to audio from the remote device … but you are not recording. We will now “close” the Floating Window panel to terminate the audio stream.

6. ***Listen to the recording of the audio from the remote device.***
To listen to the recording you have made you will need to access the "Archive" folder of the remote user to retrieve the data.



Make sure this is the Mobile Object panel for the user that you recorded … not your own Mobile Object panel.

The recordings are stored in the archive folder of the user.

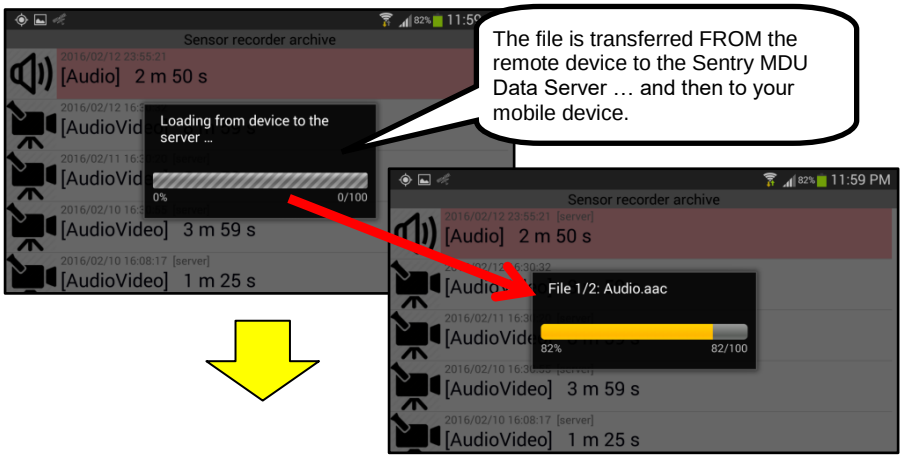


We are looking for an "Audio" file that has the date and time of when we made our recording.

Click on the file name.

As you click on the audio file on the remote device, the file is transferred FROM the remote device to the Sentry MDU Data Server … and then to your mobile device.

This transfer may take a few seconds depending on the file size and the speed of your network connection.

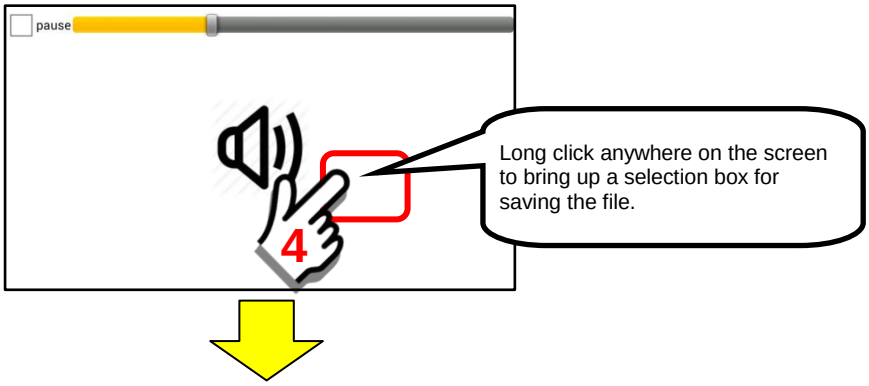


The file is transferred FROM the remote device to the Sentry MDU Data Server … and then to your mobile device.

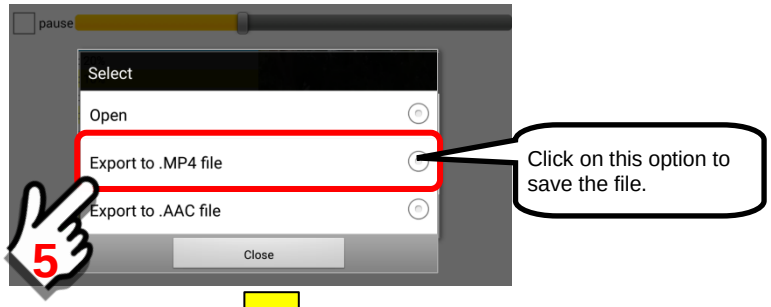
Once the audio file has been transferred from the SentryMDU Data Server to your local device, it will begin playing.

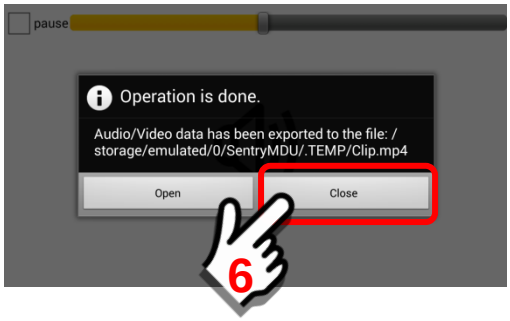
You will see the following audio panel

If you would like to SAVE the recording as an MP4 file and send it to someone else, perform a “Long-click” anywhere on the display screen.



Click on the option to “Export to a file (MP4)”. This will save the file to a temporary directory on the local device (your file system).





An “Open” button is available to open the file for playing (of course, now it is already playing).

A “Close” button is available to close the panel and return to listening to the Audio file that is still playing.

10.14. The “Video” Button

Overview:

The “Video” Button allows a user to monitor the video of a remote mobile device. It turns “on” the camera of the remote device and allows a user to view everything that is taking place in the vicinity of the remote mobile device. This feature also has the ability for a user to “record” the remote video if they would like to save it for future analysis.

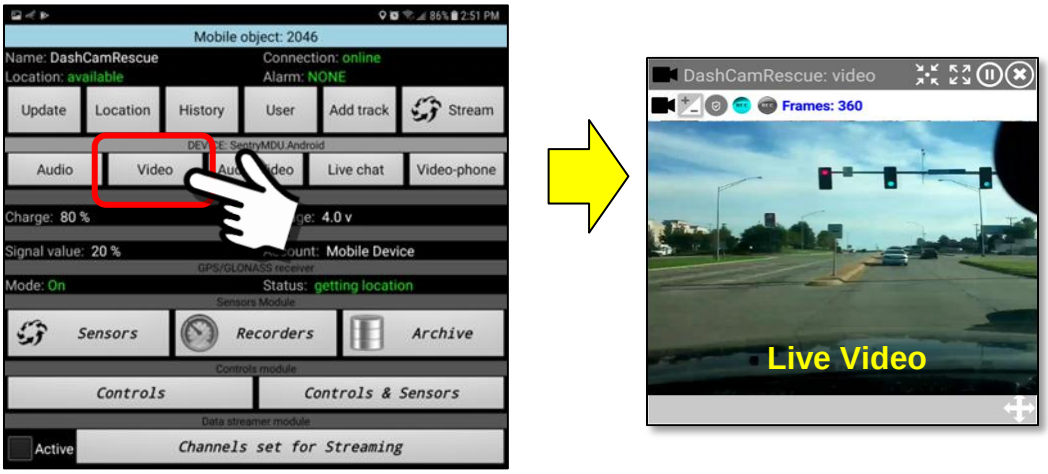
This capability is only available if the User requesting access has the appropriate security credentials to control the remote device.

Mobile Object Panel – Video Button:

The “Video” Button is located on the left-middle side of the Mobile Object Panel. This button will initiate a connection to the camera and record video on the remote user device.

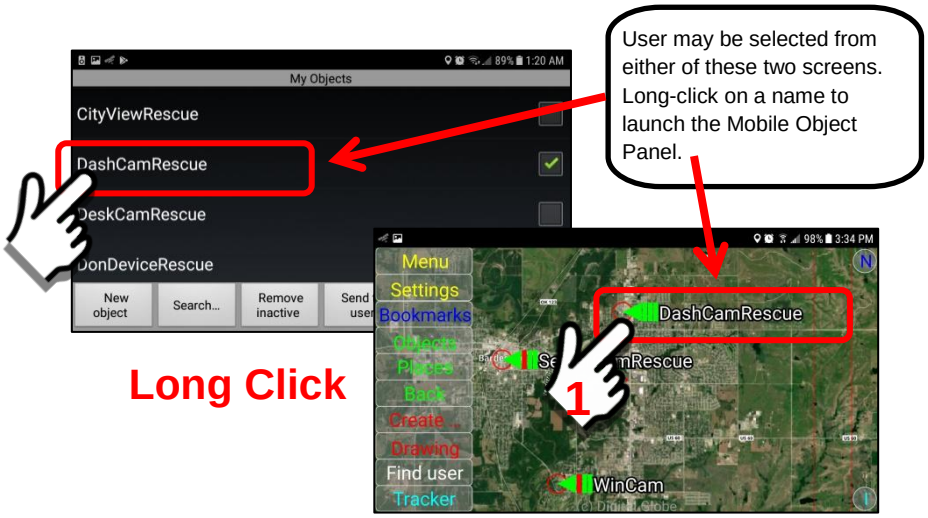
> **Important Note: This feature does not provide notification on the remote device that another user(s) is monitoring and/or recording video.**

This Video Button is a shortcut to the same capability available through the Sensors Section. The video parameters (digital sampling rate, bitrate, video frames-per-second, etc.) must have been configured previously for this feature to work. See sections 10.19 or 15.2 on configuration of sensors for a mobile device to learn more.



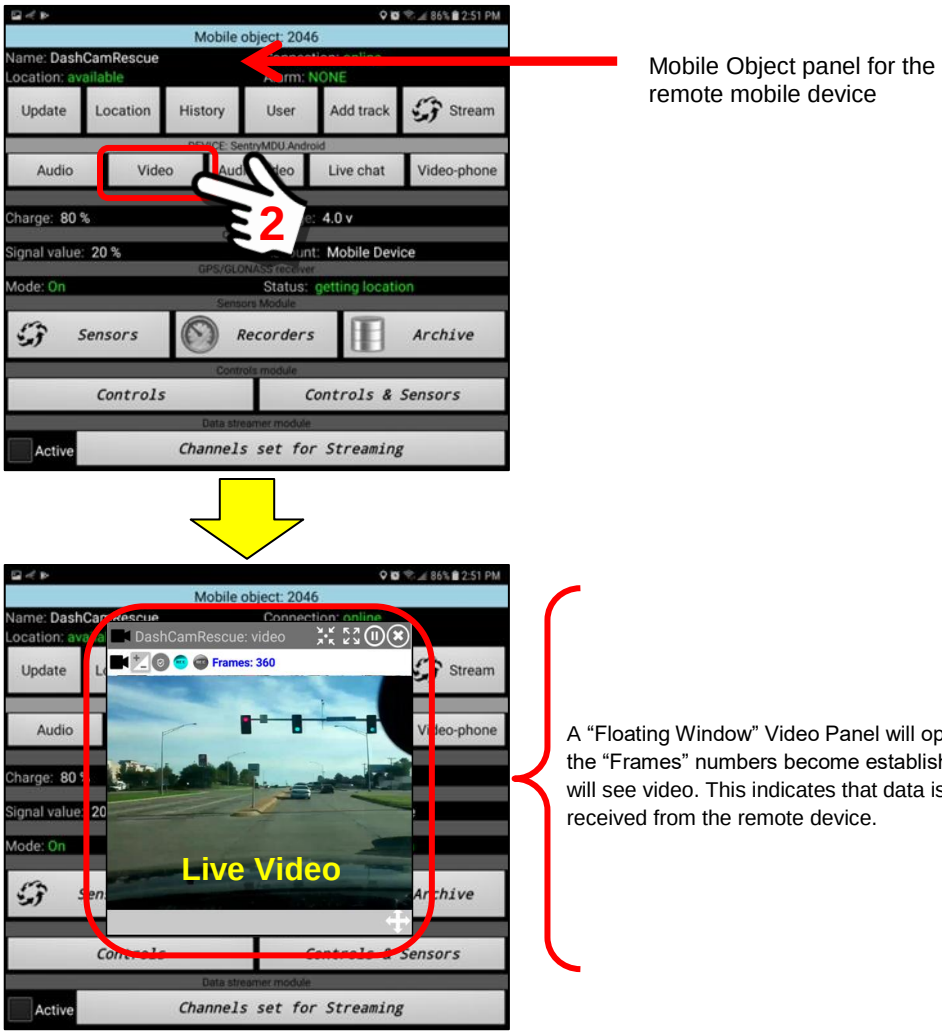
Steps for access to video on the remote mobile device:

1. ***Select the User mobile device you want to access.***
   Using either the “My Objects” panel or the Object Markers displayed on the main map screen, select the user that you want to monitor the video.



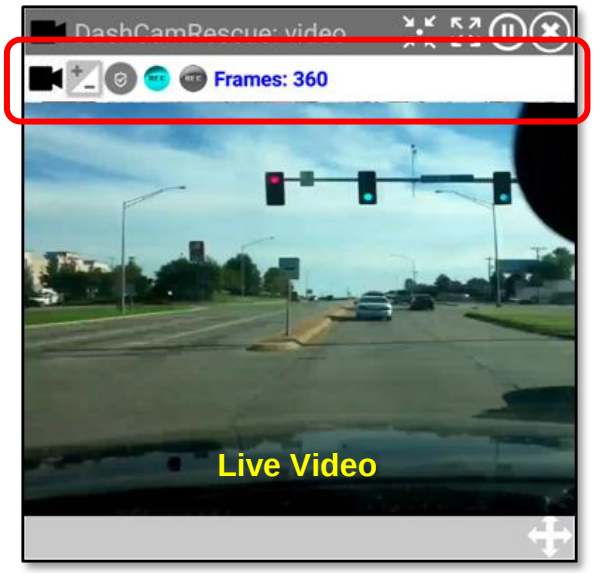
2. ***Open the video channel between your device and the remote device.***
In this instruction set we are assuming that all configuration parameters have been set previously and this action is simply to initiate the video.

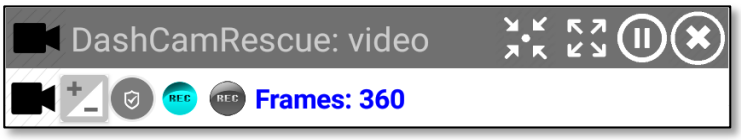
Click on the "Video" Button.



3. *Functions of the Floating Window "Video" Panel Buttons*

The Video Button launches a floating window panel that has a number of "user adjustable" settings. These settings are located on the top header of the panel.





The video output of the mobile device may be turned on-off by clicking on the camera icon on the indicator bar.

Video is turned "on" (Default)

Video is turned "off"

The Sentry MDU software has "Flow Control" technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn "off" flow control and let the system use the settings provided during configuration. However, if poor video output exists, clicking the "flow control" feature (turning it "on") may help.

Flow control is turned "off" (Default)

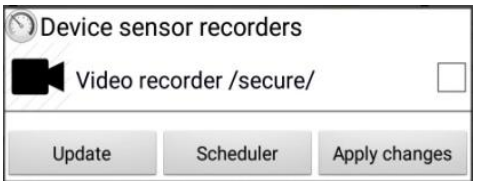
Flow control is turned "on"

The Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in video transmissions.

RSPP Reliability Mode is turned “off” (Default)

RSPP Reliability Mode is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

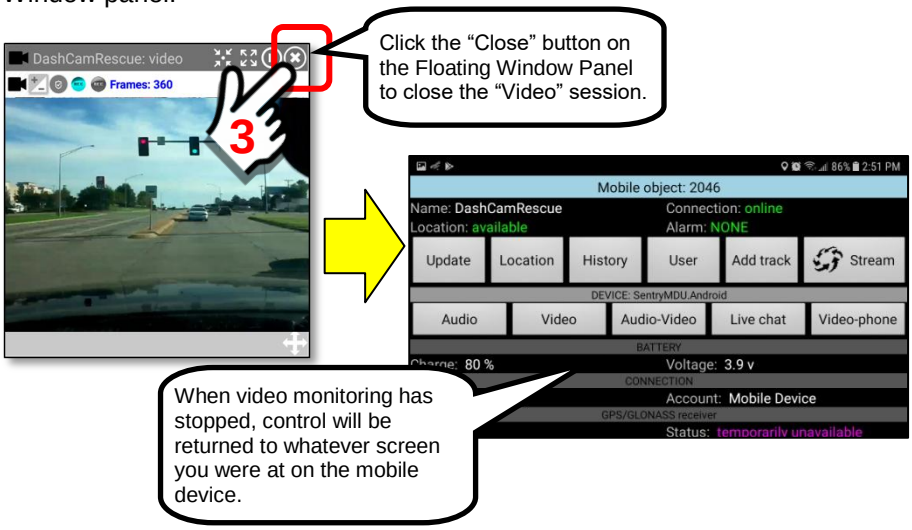


The video output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

Recording is turned “on”

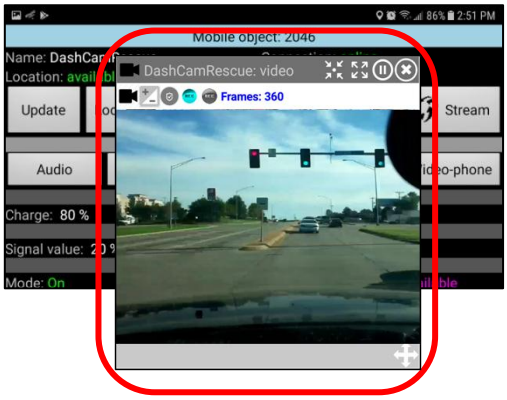
4. ***Finish monitoring the video, close the channel.***
To close the Video monitoring, click on the “close” button on the Floating Window panel.



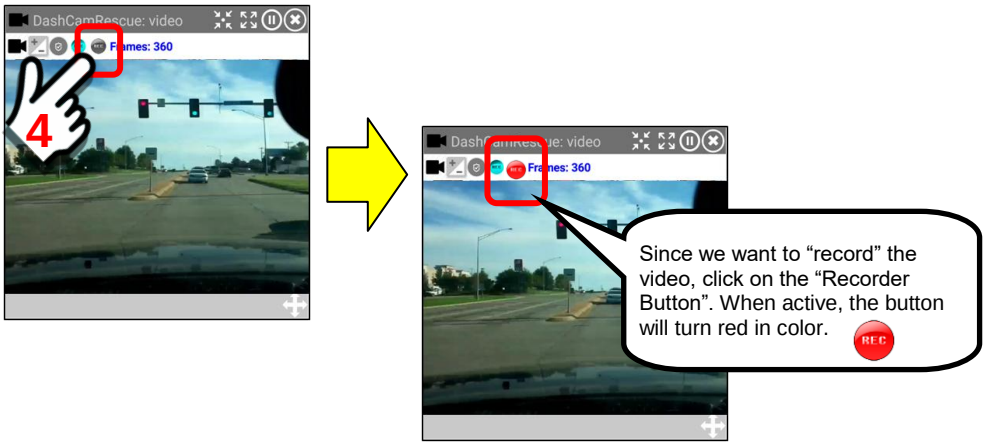
5. ***Optional* – Record the video if you wish to save the data.**

In addition to monitoring the video of a remote device, the Sentry MDU System has the capability to “record” the video at any point while a user is monitoring. This section will describe how to start-stop recording and then review the recorded data.

To start this process, we will assume you are watching video of a remote User. You will see the Floating Window panel on your mobile device.



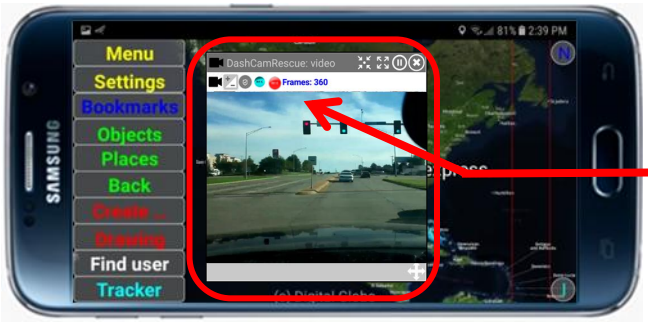
To start the “Recorder” simply click on the **Record Button**. If successful, the button color should change from Gray to Red.



When you click on the “Record Button” this will START the recorder. Since you are on a floating window, you may minimize the window and still be recording the remote device. Use the phone’s “back” button to return to other panels or other Apps on the mobile device (the recorder is still running).

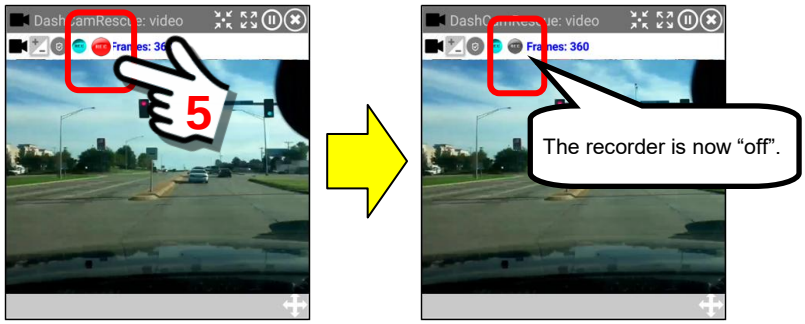
6. ***Optional* - Stop the recorder and continue viewing the video.**
Assume we want to stop the “recording” but continue monitoring the video from the remote device.

You should be at the Video panel.

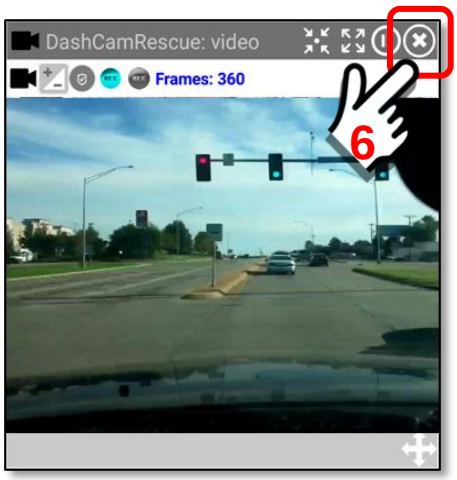


The recorder is active.

Click on the “red” record button to toggle it to “off”.

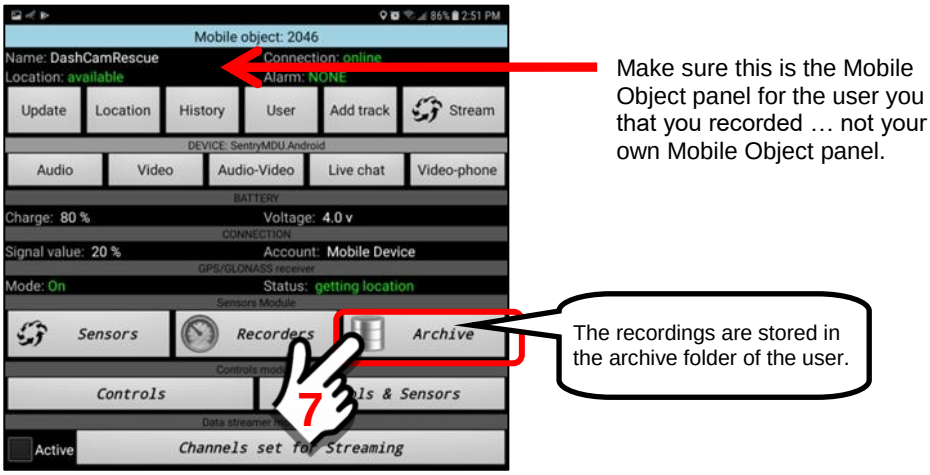


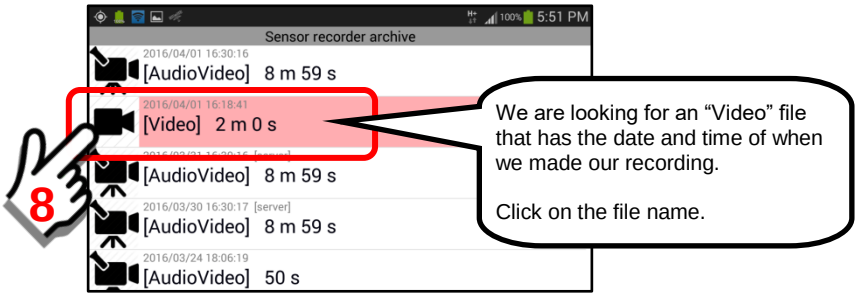
The recording function is now stopped, you are still watching video from the remote device … but you are not recording. We will now “close” the Floating Window panel to terminate the video stream.



7. ***View the recording of the video from the remote device.***

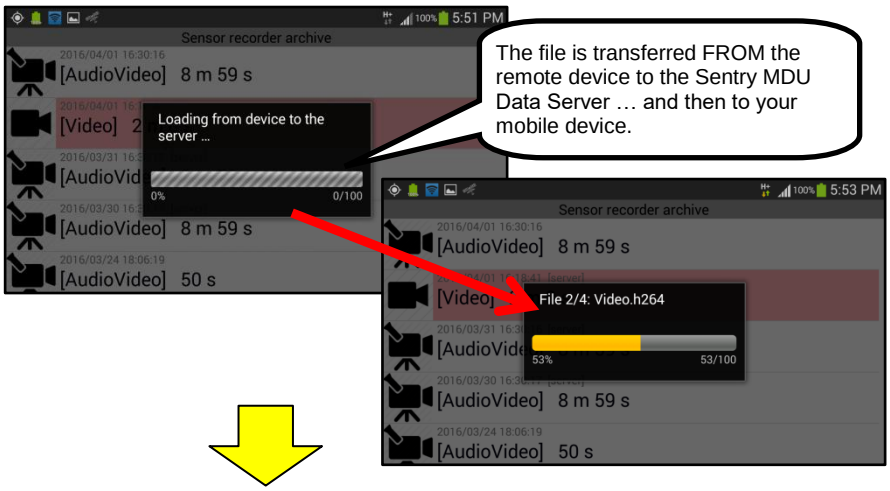
To view the recording you have made you will need to access the "Archive" folder of the remote user to retrieve the data.





As you click on the video file on the remote device, the file is transferred FROM the remote device to the Sentry MDU Data Server … and then to your mobile device.

This transfer may take a few seconds to several minutes depending on the file size and the speed of your network connection.

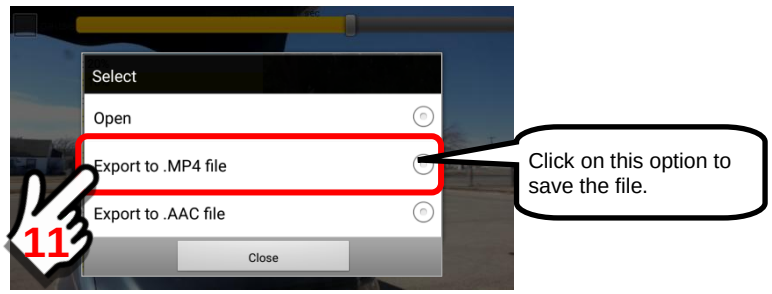


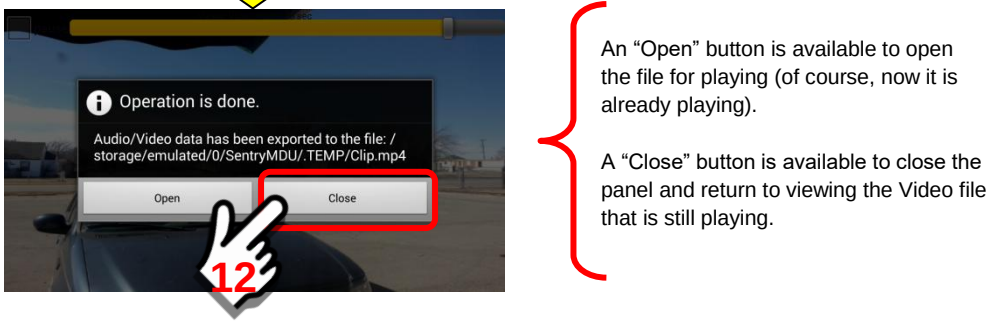
Once the video file has been transferred from the SentryMDU Data Server to your local device, it will begin playing.

You will see the following video screen.

If you would like to SAVE the recording as an MP4 file and send it to someone else, perform a “Long-click” anywhere on the display screen.

Click on the option to “Export to .MP4 file”. This will save the file to a temporary directory on the local device (your file system).





10.15. The “Audio-Video” Button

Overview:

The “Audio-Video” Button allows a user to monitor the combined audio and video of a remote mobile device. It turns “on” the microphone and camera of the remote device and allows a user to listen/view everything that is taking place in the vicinity of the remote mobile device. This feature also has the ability for a user to “record” the remote audio and video if they would like to save it for future analysis.

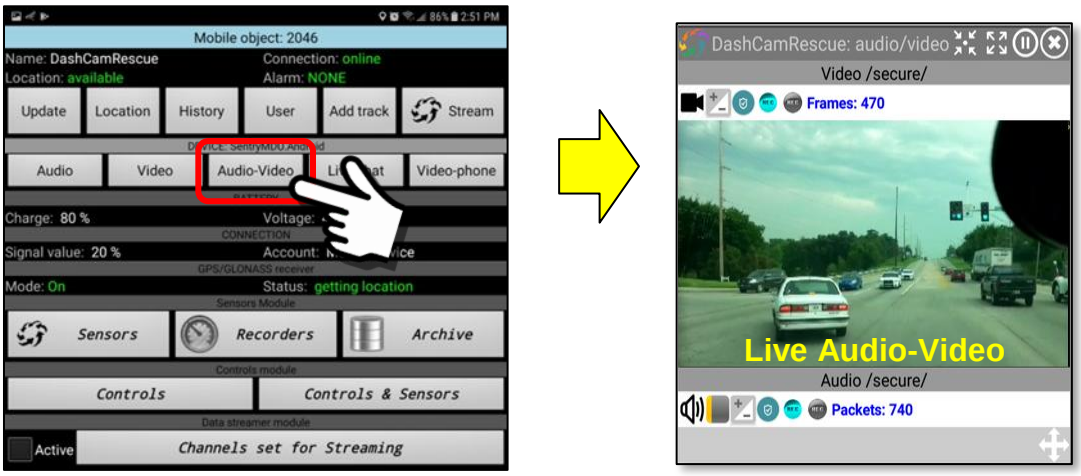
This capability is only available if the User requesting access has the appropriate security credentials to control the remote device.

Mobile Object Panel – AudioVideo Button:

The “Audio-Video” Button is located on the left-middle side of the Mobile Object Panel. This button will initiate a connection to listen to the microphone and record video on the remote user device.

> **Important Note: This feature does not provide notification on the remote device that another user(s) is listening to the audio and recording video.**

This Audio-Video Button is a shortcut to the same capability available through the Sensors Section. The audio and video parameters (digital sampling rate, bitrate, video frames-per-second, etc.) must have been configured previously for this feature to work. To learn more, see **Sections 10.19 or 15.2** on configuration of sensors.



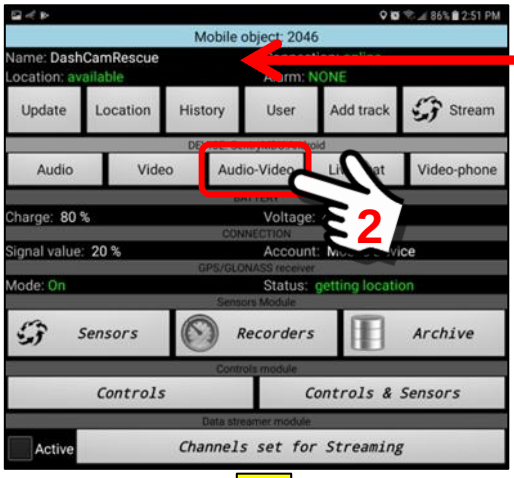
Steps for access to audio and video on remote mobile device:

1. ***Select the User mobile device you want to access.***
   Using either the “My Objects” panel or the Object Markers displayed on the main map screen, select the user that you want to monitor the audio/video.

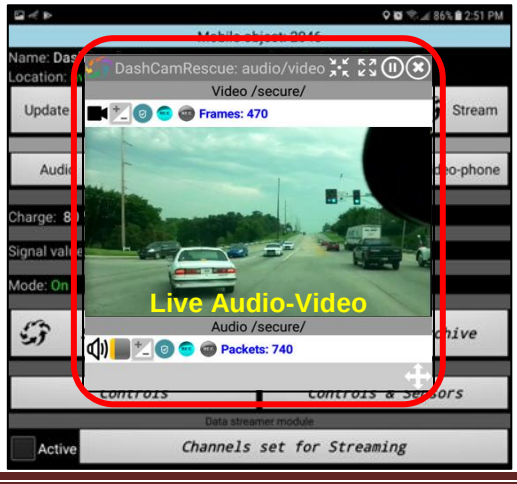
2. ***Open the audio-video channel between your device and the remote device.***

   In this instruction set we are assuming that all configuration parameters have been set previously and this action is simply to initiate the audio-video.

   Click on the "Audio-Video" Button.



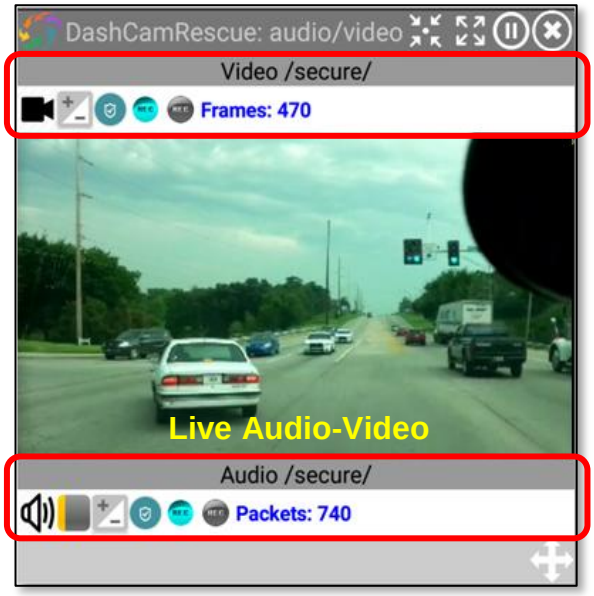
Mobile Object panel for the remote mobile device



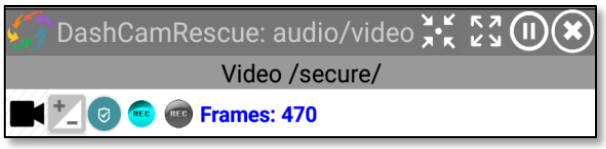
A "Floating Window" Video Panel will open. As the "Frames" numbers become established you will see video and hear audio. This indicates that data is being received from the remote device.

3. ***Functions of the Floating Window "Audio-Video" Panel Buttons***

The Audio-Video Button launches a floating window panel that has a number of "user adjustable" settings. These settings are located on the top header of the Video Panel and top header of the Audio Panel.



Video Functions -



The video output of the mobile device may be turned on-off by clicking on the camera icon on the indicator bar.

Video is turned "on" (Default)

Video is turned "off"

The Sentry MDU software has "Flow Control" technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn "off" flow control and let the system use the settings provided during configuration. However, if poor video output exists, clicking the "flow control" feature (turning it "on") may help.

Flow control is turned "off" (Default)

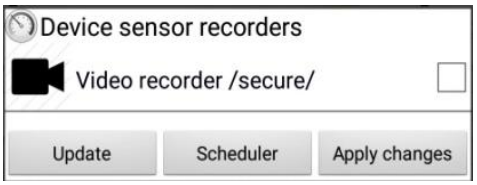
Flow control is turned "on"

The Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in video transmissions.

RSPP Reliability Mode is turned “off” (Default)

RSPP Reliability Mode is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The video output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

Recording is turned “on”

Audio Functions -

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned “on” (Default)

Speaker is muted, turned “off”

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

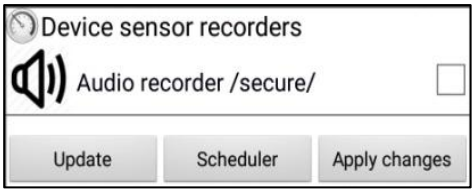
Flow control is turned “on”

The Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in audio transmissions.

RSPP Reliability Mode is turned “off” (Default)

RSPP Reliability Mode is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

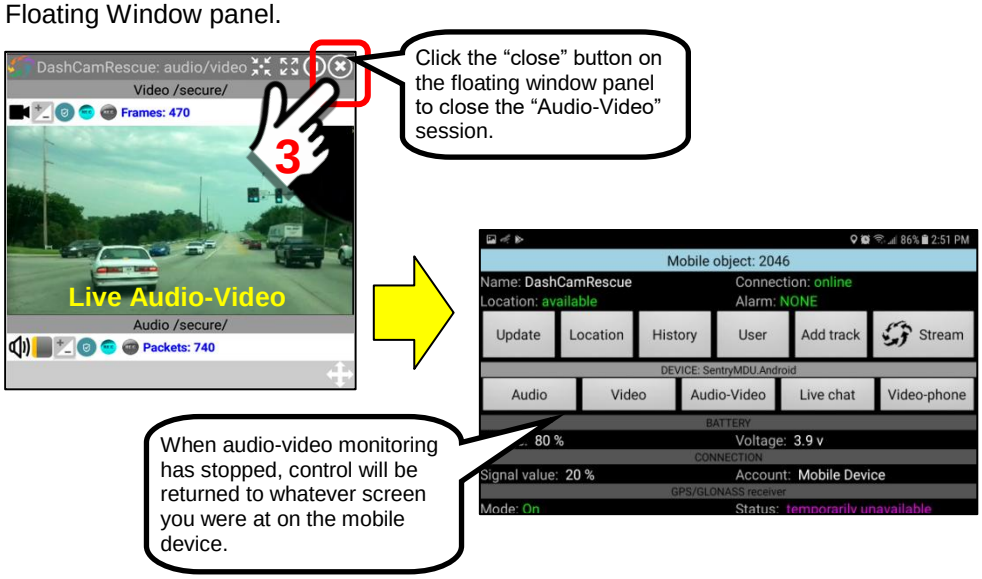


The audio output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

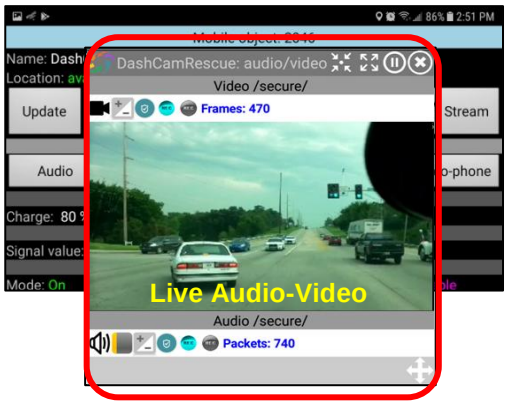
Recording is turned “on”

4. ***Finish listening to the audio-video, close the channel.***
To close the Audio-Video monitoring, click on the “close” button on the Floating Window panel.



5. ***Optional – Record the audio-video if you wish to save the data.***
In addition to monitoring the audio-video of a remote device, the Sentry MDU System has the capability to “record” the audio-video at any point while a user is monitoring. This section will describe how to start-stop recording and then review the recorded data.

To start this process, we will assume you are watching audio-video of a remote User. You will see the Floating Window panel on your mobile device.



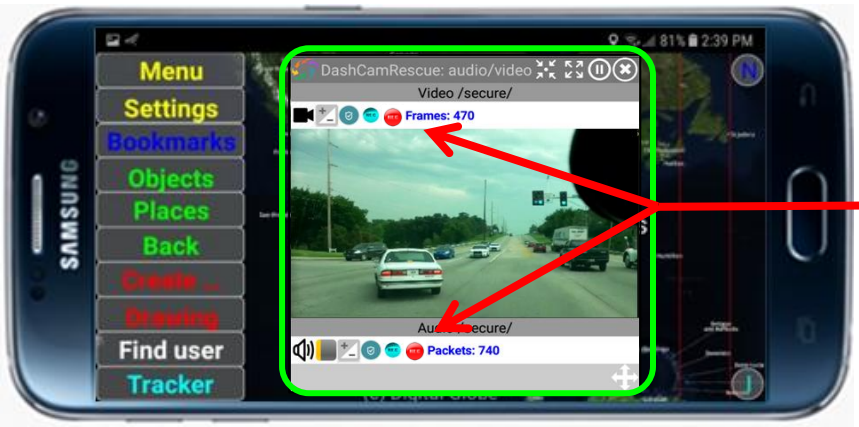
Notice that each component (the Video panel and audio panel) each have separate controls. You may record ONLY the video or ONLY audio or BOTH.

To start a “Recorder” for the channel, simply click on the **Record Button**. If successful, the button color should change from Gray to Red.

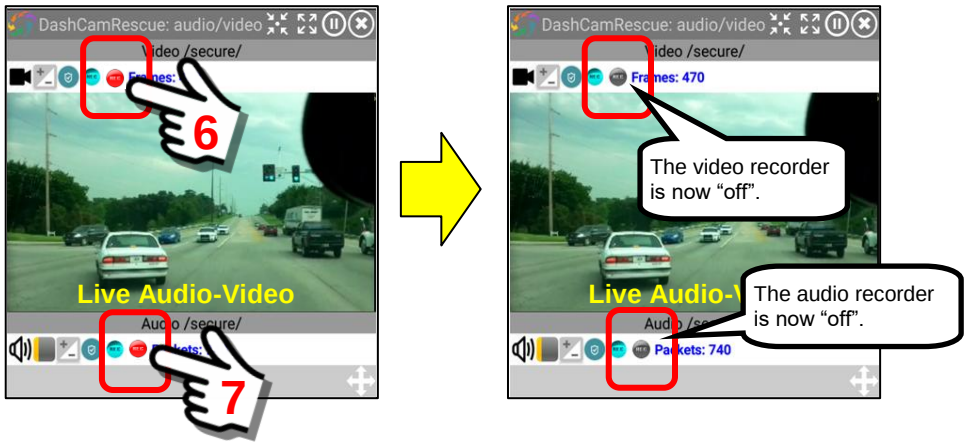
When you click on the “Record Button” this will START the recorder. Since you are on a floating window, you may minimize the window and still be recording the remote device. Use the phone’s “back” button to return to other panels or other Apps on the mobile device (the recorder is still running).

6. ***Optional - Stop the recorders and continue viewing the audio-video.***
Assume we want to stop the “recording” but continue monitoring the audio-video from the remote device.

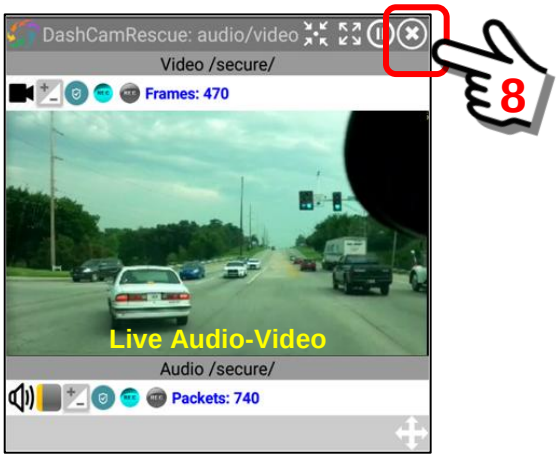
You should be at the Audio-Video panel.



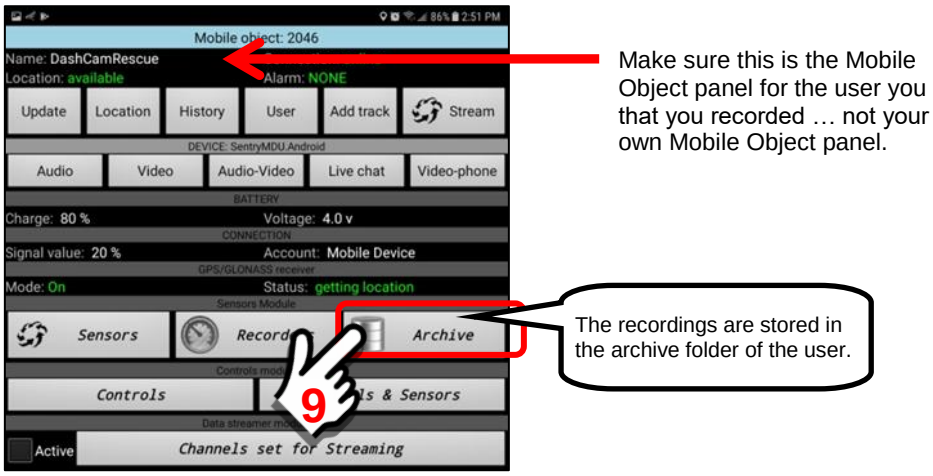
Click on the “red” record button to toggle it to “off”.



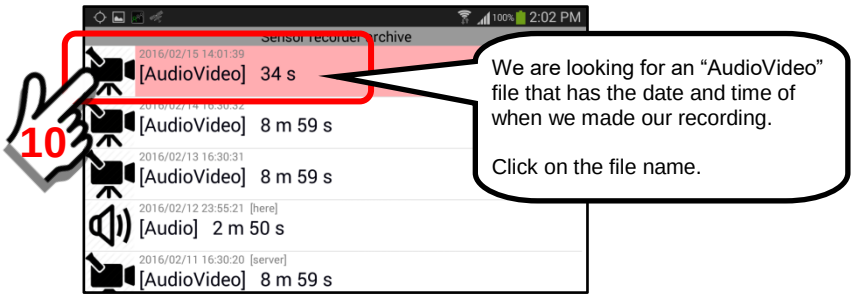
The recording function is now stopped, you are still watching audio-video from the remote device … but you are not recording. We will now “close” the Floating Window panel to terminate the audio-video stream.



7. ***View the recording of the audio-video from the remote device.***
To view to the recording you have made you will need to access the “Archive” folder of the remote user to retrieve the data.

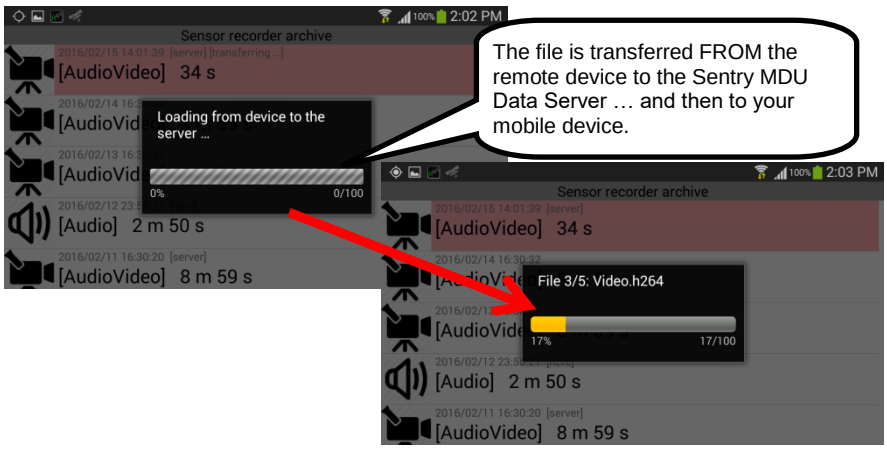


The Sensor Recorder Archive Folder will open and display the contents. In this example, we will select the [Audio-Video] listing we just created (most recent is at the top of the list).



As you click on the audio-video file on the remote device, the file is transferred FROM the remote device to the Sentry MDU Data Server … and then to your mobile device.

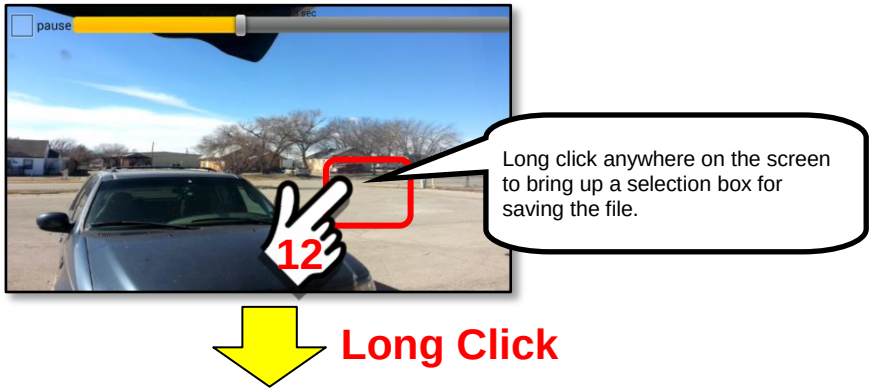
This transfer may take a few seconds to several minutes depending on the file size and the speed of your network connection.



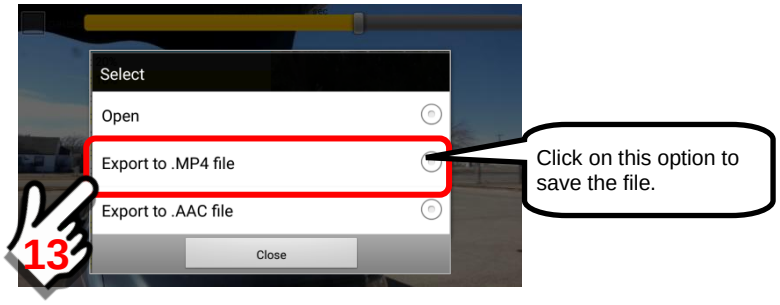
Once the audio-video file has been transferred from the SentryMDU Data Server to your local device, it will begin playing.

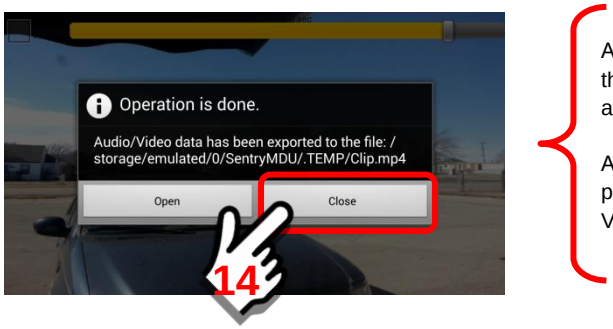
You will see the following audio-video screen.

If you would like to SAVE the recording as an MP4 file and send it to someone else, perform a “Long-click” anywhere on the display screen.



Click on the option to “Export to .MP4 file”. This will save the file to a temporary directory on the local device (your file system).





An “Open” button is available to open the file for playing (of course, now it is already playing).

A “Close” button is available to close the panel and return to viewing the Audio-Video file that is still playing.

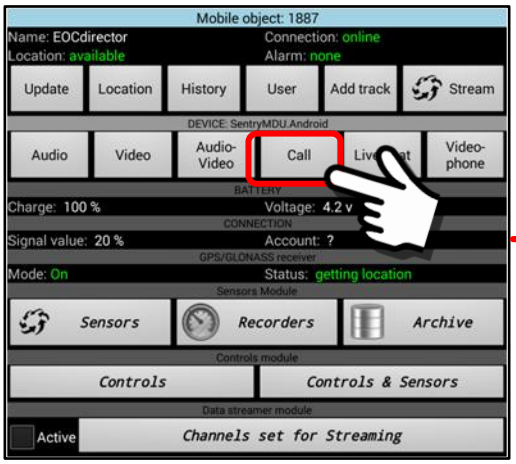
10.16. The “Call” Button

Overview:

The “Call” feature requires that a phone number, in the correct format, has been entered into the Sentry MDU System. The Call Button simply uses the phone’s native calling capability to place a phone call to another user.

Mobile Object Panel – Call Button:

The “Call” button is located on the middle portion of the Mobile Object Panel. As the name implies, the call feature makes a phone call for direct device-to-device communications.



This is the Mobile Object panel of the User you want to have a “call” with.

If a phone number has not been entered, the “call” Button will not appear.

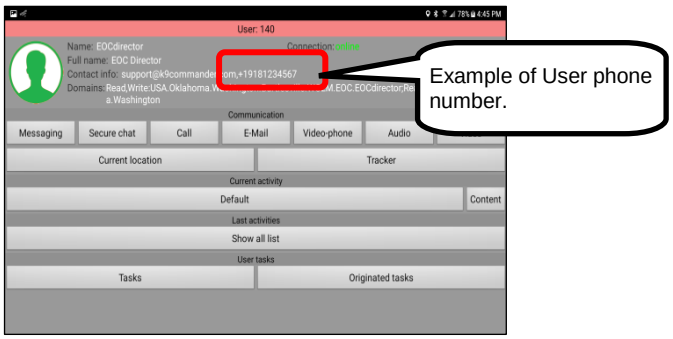
Using the “Call” feature:

The “call” feature will require that BOTH devices have a phone number and network/cellular service is available because the Sentry MDU System will establish a “live” connection between the two devices.

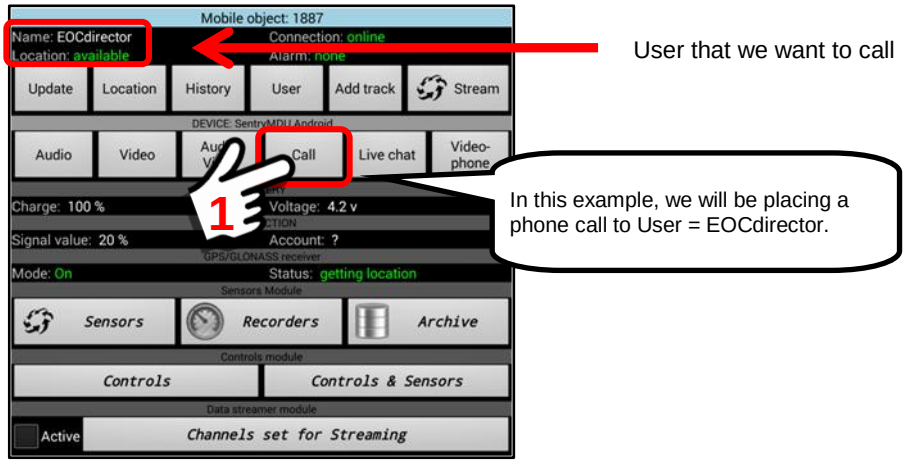
<u>Phone Number</u>

The phone number must start with a “+” sign and may not include inter-country, inter-town access codes. It must be made up entirely of numbers. It should follow the standard international telephone format such as the USA example shown below:

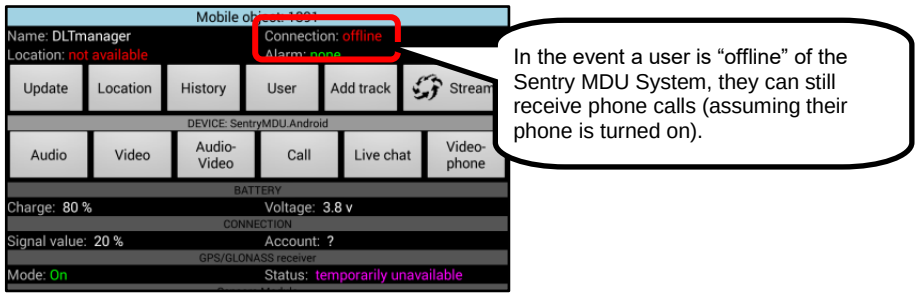
+19181234567



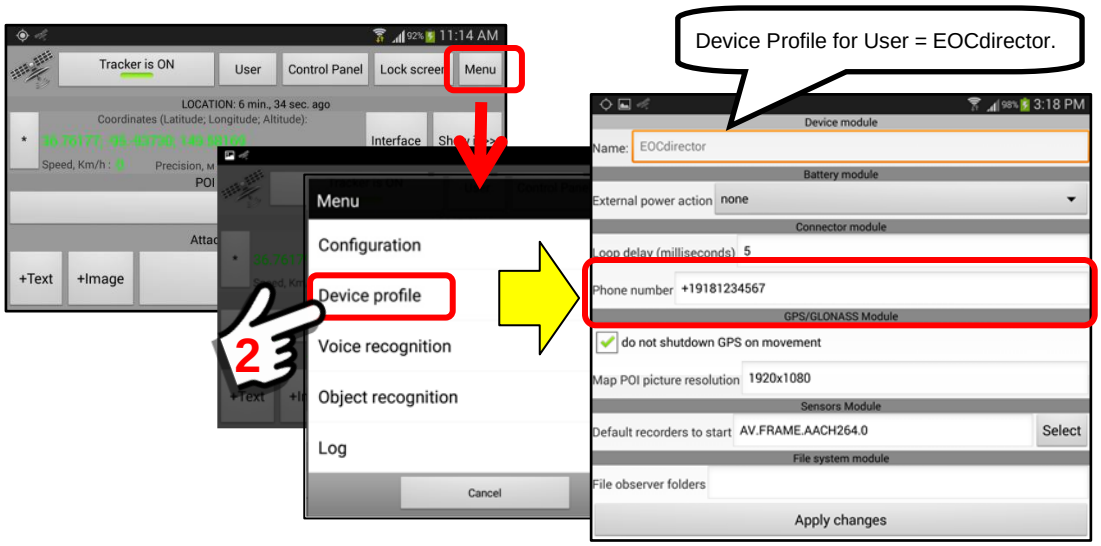
To place a call, simply click on the “Call” Button on the user’s Mobile Object Panel as shown below.



The user being called does NOT have to be “online” with the Sentry MDU System. However, they must have their phone active for receiving regular phone calls.



Reminder: If the “Call Button” does not display, make sure that a phone number is entered into the Device Profile “phone number” location (see the Tracker Panel).



10.17. The "Live chat" Button

Overview:

The "Live chat" feature on the Mobile Object Panel is the SAME as the one on the User Panel (it is called Secure Chat) ... except, the Live Chat feature on the Mobile Object panel opens as a Floating Window.

> **Important Note: Live Chat uses the Diffie-Hellman encryption method. Cryptography keys are updated/exchanged at 15 minute intervals to further enhance security.**

The "Live Chat" Feature will require that BOTH users are online (unlike the messaging feature). It is called "live chat" because the Sentry MDU System will establish a "live" encrypted chat connection between the two devices.

Mobile Object Panel – Live Chat Button:

The "Live chat" button is located on the right-middle portion of the Mobile Object Panel. As the name implies, live chat is an "instant messaging" protocol of direct device-to-device communications. All messaging takes place in real-time.

This is the Mobile Object panel of the User you want to have a "Live chat" with.

Note: In this example, this user does NOT have a phone number, therefore no "Call" Button is displayed.

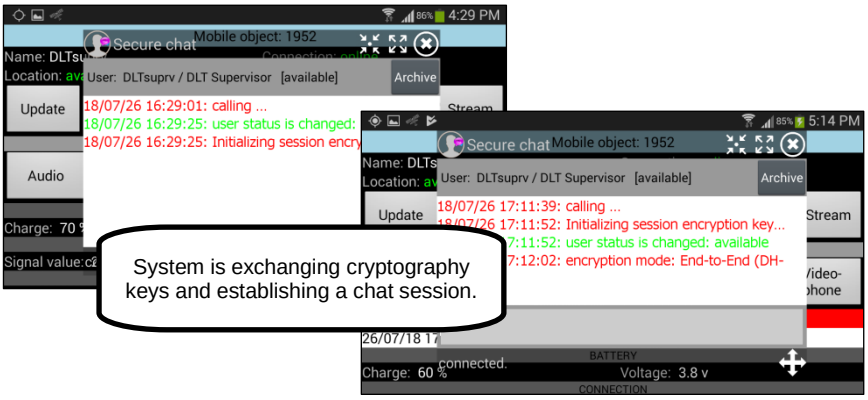
Using the "Live Chat" feature:

The "Live chat" feature will require that BOTH users are online. It is called "live chat" because the Sentry MDU System will establish a "live" connection between the two devices.

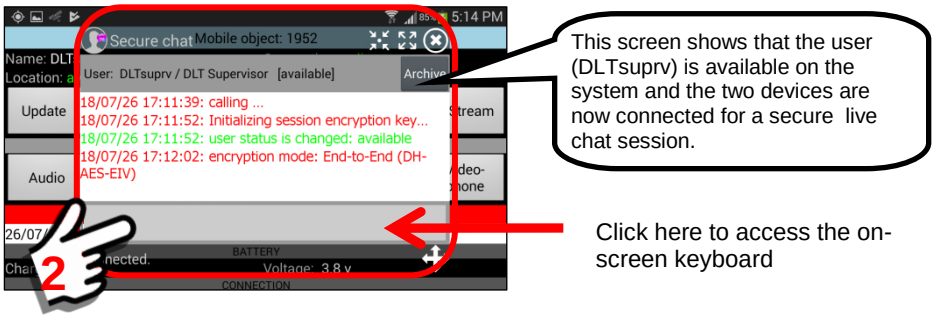
Note that the User must be "online" for the feature to work.

In this example, we will be having a "live chat" with the User = DLTsuprv (DLT Supervisor)

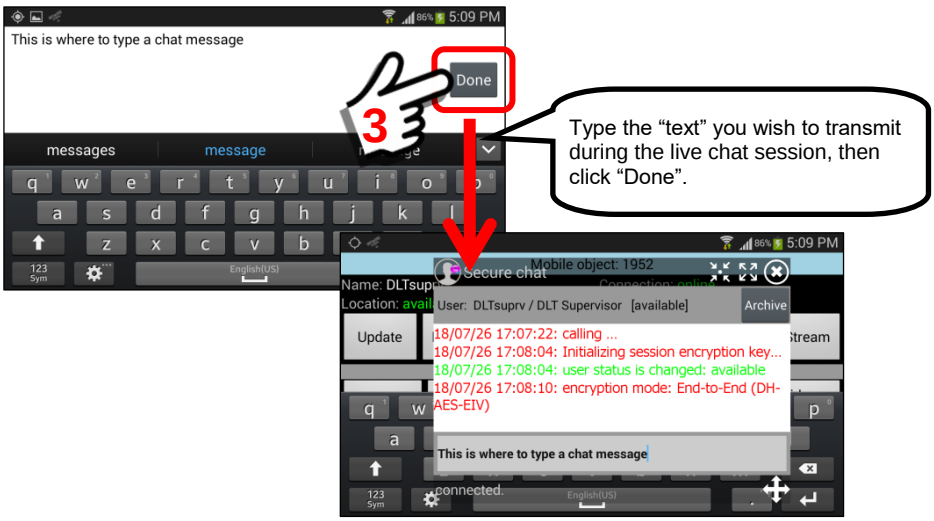
Click on the “Live chat” Button. A floating window will open with an enclosed “chat panel”. The SentryMDU system will attempt to contact the other User. Several messages will be displayed during the initialization process.



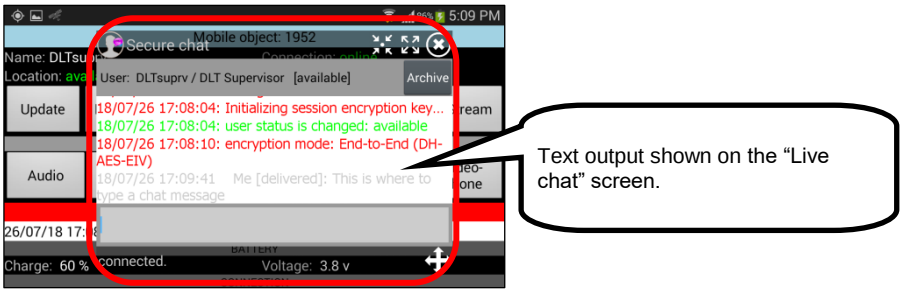
It may take several seconds for the encrypted connection to initialize, exchange keys, and be ready for input. When completed, the chat panel will be similar to the following.



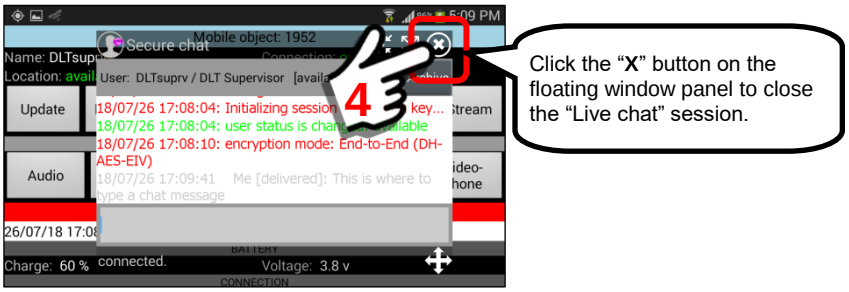
Clicking on the text entry field opens an on-screen keyboard to enter text.



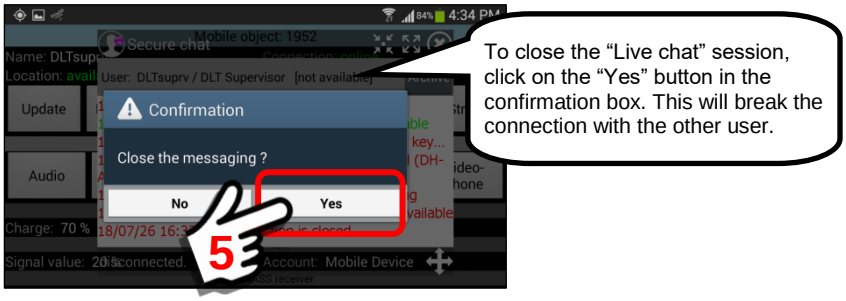
The display panel shows the text of the “chat” session. The notes are time-stamped to show time.



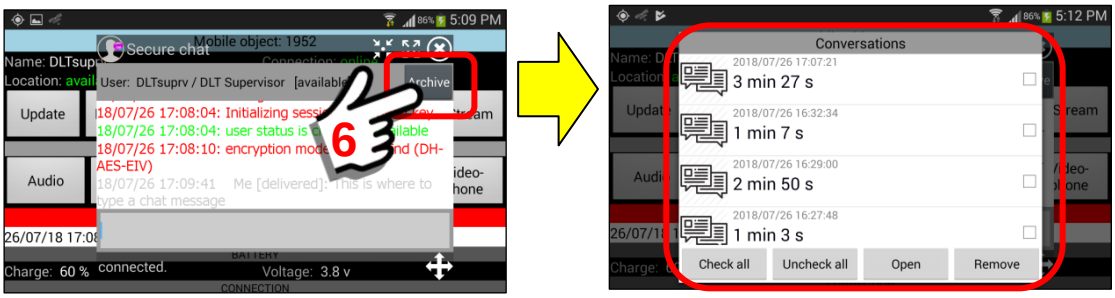
To close the “Live chat” session, click on the “X” button on the floating window. A confirmation box will display asking to confirm closing the “Live chat” messaging feature.



The system will ask for confirmation to close the “Live chat” session, click “Yes”.



Reminder: To review PREVIOUS chat sessions, click on the “Archive” Button. This will provide a menu of past sessions. Select one to review.



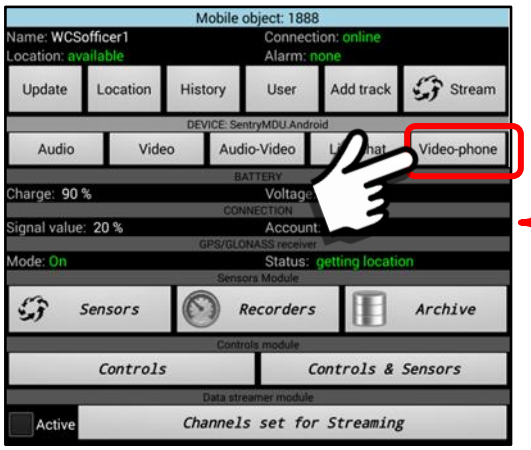
10.18. The “Video-phone” Button

Overview:

The “Video Phone” feature requires that BOTH users are online at the time. This feature establishes a real-time audio-video connection between two mobile devices. Each device has options to turn on-off the audio or video features separately. This is similar to Apple FaceTime, Google Duo, Skype and any number of video call applications. It is not a videoconferencing feature for multiple devices, it is for two mobile devices.

Mobile Object Panel – Video Phone Button:

The “Video Phone” button is located on the right side of the Mobile Object Panel. As the name implies, the video phone is an audio-video communications protocol for direct device-to-device communications.



This is the Mobile Object panel of the User you want to have a “Video Phone” conversation with.

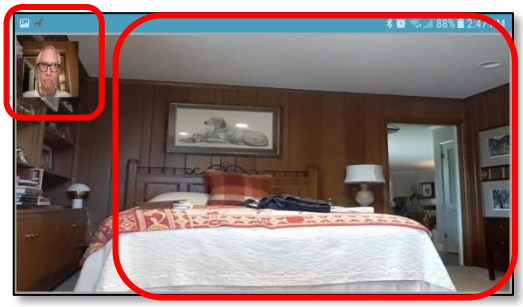
Note: In this example, this user does NOT have a phone number, therefore no “Call” Button is displayed.

Using the “Video Phone” feature:

The “Video Phone” feature will establish an audio-video communications channel between two mobile devices. The feature will allow video from the remote device and face camera video from the local device.

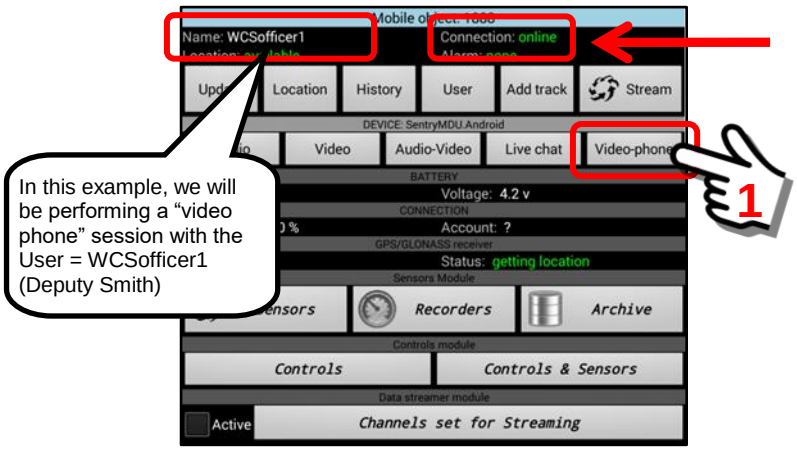
Video feed from “Face” camera of local device

Video feed from “Face” camera of remote device



Mobile display screen showing the Video-Phone feature running.

Clicking on the “Video-phone” button opens a communications channel to the User.



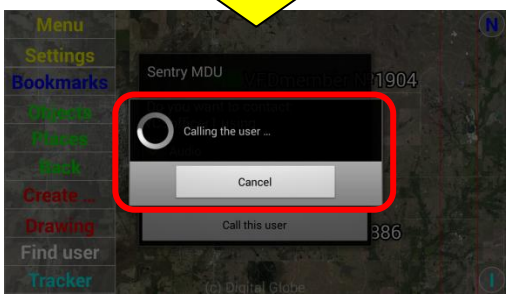
Note that the User must be “online” for the feature to work.

In this example, we will be performing a “video phone” session with the User = WCSofficer1 (Deputy Smith)

When activated, the Video-Phone Feature opens a panel with 2 choices for the user that is originating the call. They may select video, audio or both for the call. When selected, click on the “Call this user” button.

We have the User = WCSofficer1 (Deputy Smith) and have selected BOTH audio and video in the session.

When ready to call … click here.



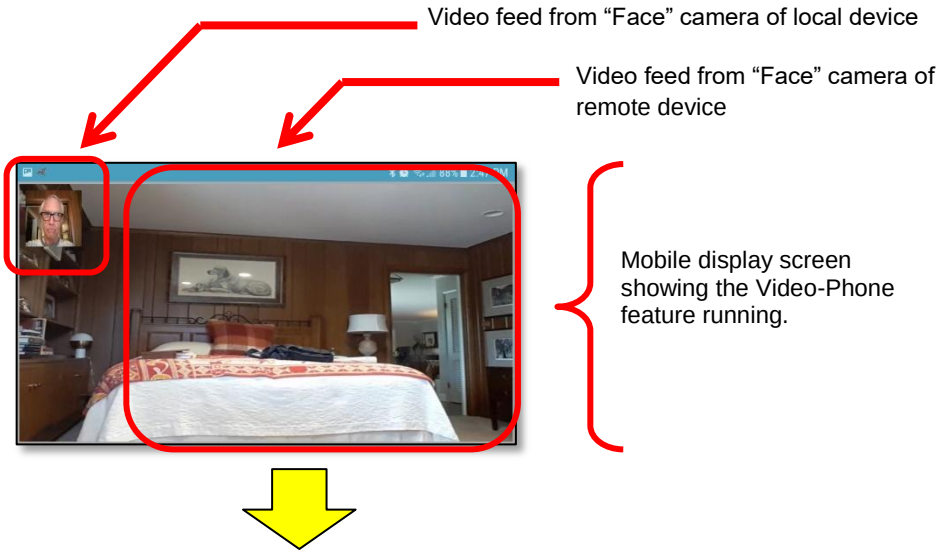
When calling is initiated, the screen on the local device will provide a message as the Sentry MDU system attempts to contact the remote device.

The phone RECEIVING the video call will get a pop-up notification box indicating that a video-phone call is waiting. The user may decide to accept the call or not and whether or not to allow audio, video or both.

As the Sentry MDU system attempts to contact the remote device a notification box will appear on the remote device indicating that a “call” is waiting.

Click “Accept” to answer the video-phone.

As the remote device “Accepts” the video call, a picture-in-picture screen display will appear. In the upper, left hand corner will be the video from the face camera of the local device and the right side of the screen will be the video feed from the remote device.



When finished with the video call, click the “back” button on the mobile device. This will display a confirmation panel to close the video-phone feature..

As the video conversation is closed, the other mobile device will receive a notification that the “Video Phone” session has been closed.

Using the “Video Phone” as an unattended remote terminal:

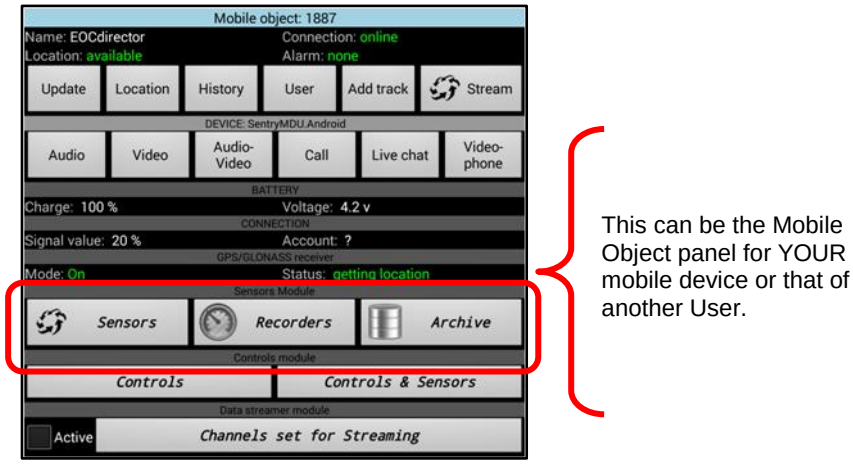
The “Video Phone” feature also has the ability to establish a two-way audio/video session with an unattended remote mobile device. This capability is most often used with remote users that do not have sufficient dexterity or computer skills such that they can initiate a remote video-phone session on their own. This feature can allow friends and family members to initiate and control video-phone sessions with people that are bed-bound, developmentally disabled, have dementia/memory issues or are technically challenged.

See **Sections 10.24** and **15.2.6** for an example of the configuration steps necessary to use the Video Phone as a two-way unattended remote video display terminal.

10.19. Using the Sensors Module (Sensors, Recorders, Archive)

The Sensors Module section on the Mobile Objects Panel allows a User to access the Sensors, Recorders and Archive of a remote user's mobile device. Of course, the level of access to monitor, view or change settings will depend on the security privileges of the User wanting access.

This section will provide an overview of the topics. Please see **Section 15** for detailed discussions on features and applications.



10.19.1. Access to "Sensors" on the mobile device

Overview:

The "Sensors" button provides a user access to the setup, configuration and testing of individual sensors on the mobile device. Depending on the type of mobile device the sensors may include:

1. Audio (microphone sensor)
2. Video (2 camera sensors)
3. Geo-location (GPS / GLONASS Satellite sensor)
    a. Geo-Coordinates
    b. Altitude (meters)
    c. Speed (Km/hr)
4. Temperature (internal device temperature, C)
5. Barometric Pressure
6. Light Sensor
7. Acceleration
8. Magnetic Field
9. Gyroscope
10. Cellular Network Signal Strength
11. Battery Indicators (Voltage, Charging, % Charge remaining)

All of these sensors may be monitored and/or recorded either locally or remotely. Information may be collected and stored for future analysis.

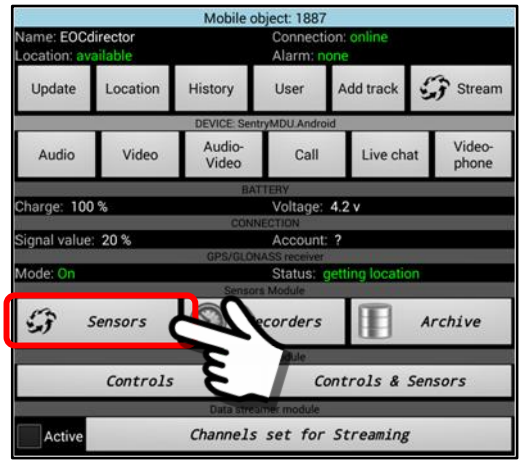
Mobile Object Panel – Sensors Button:

The "Sensors" Button is located on the left-lower side of the Mobile Object Panel. This button will allow user access to the sensor setup, configuration, testing and use on the local or remote mobile device.

Important Note #1: Access to the sensors (turning them on-off and monitoring) do not provide notification on the remote device that another user(s) is accessing the device.

Important Note #2: All users have the option to TURN OFF the "Remote Access" option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the system will show that the "Remote Access" feature has been turned off. See Section 15.2.24 on how to turn off the Remote Access feature.

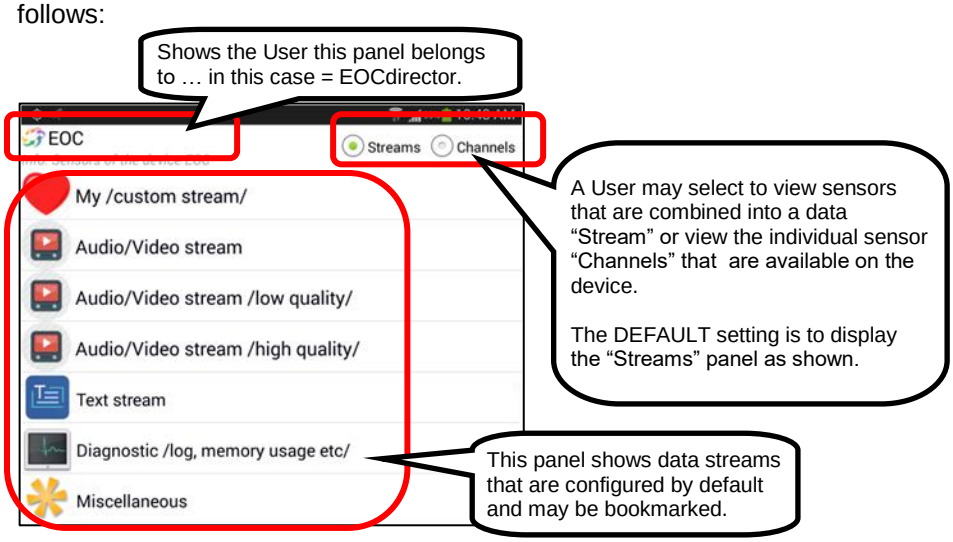
The "Sensors" Button may be bookmarked (Long Click) for rapid access to the Mobile Object panel of another user (assuming security credentials allow).



Description of the "Sensors" function and features:

1. ***Parts of the Sensors Panel***

   A click on the "Sensors" Button from the Mobile Object Panel opens a Sensors Panel. The parts of the Sensors Panel are identified as follows:

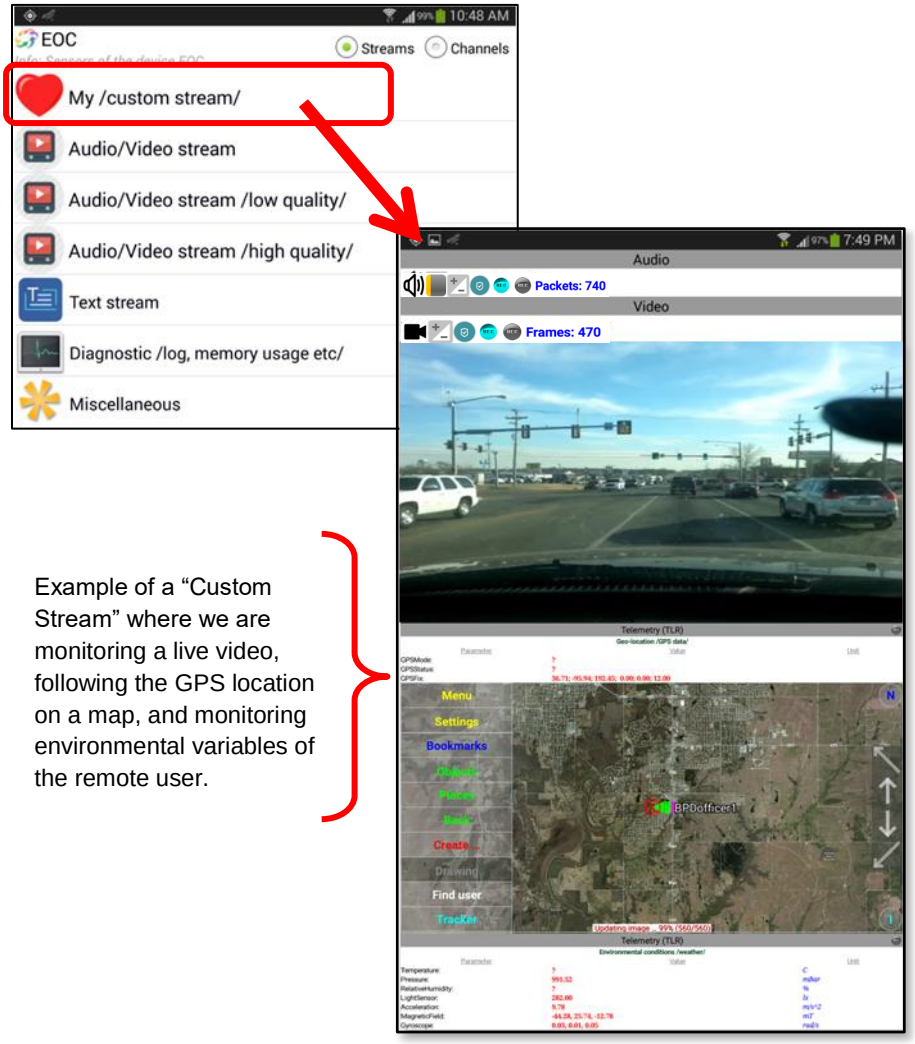


2. ***Review of the Streams option.***

   The "streams" option enables a user to launch a viewer that streams the data from a remote device to a local mobile device. The viewer has been "pre-configured" with specific channels. Simply "select" the desired channels and click "Open" to begin monitoring. Details on the configuration requirements will be discussed in **Section 15.2**.

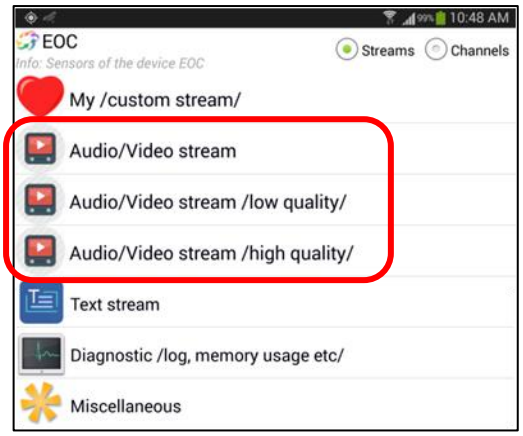
At the top of the list is a user created “custom stream” option. This is called “My /custom stream/” and it can be a pre-configured data stream that includes channels of the user’s choosing.

Details on setting up the custom stream will be provided in **Section 15.2** of this User Guide.

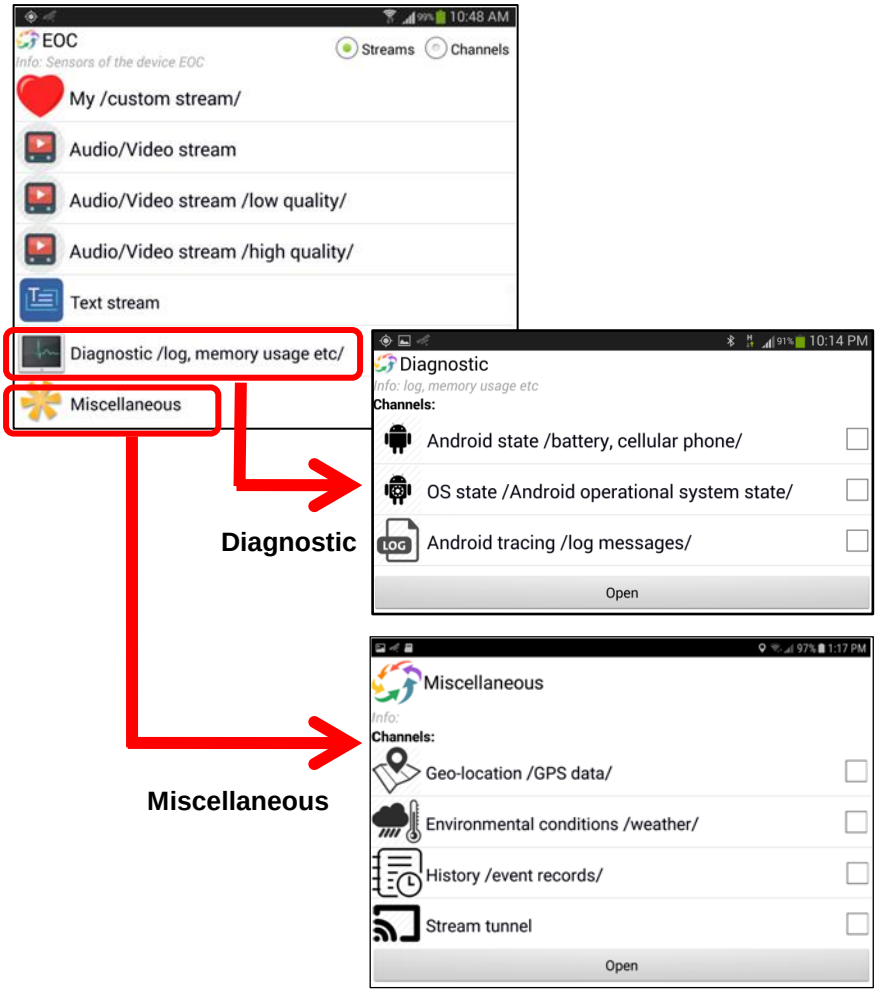


Example of a “Custom Stream” where we are monitoring a live video, following the GPS location on a map, and monitoring environmental variables of the remote user.

Additional pre-configured menu options are also available. These can include “lower quality” video, in the event insufficient network bandwidth is available, or “high quality” if bandwidth is not an issue. These options are shown below:

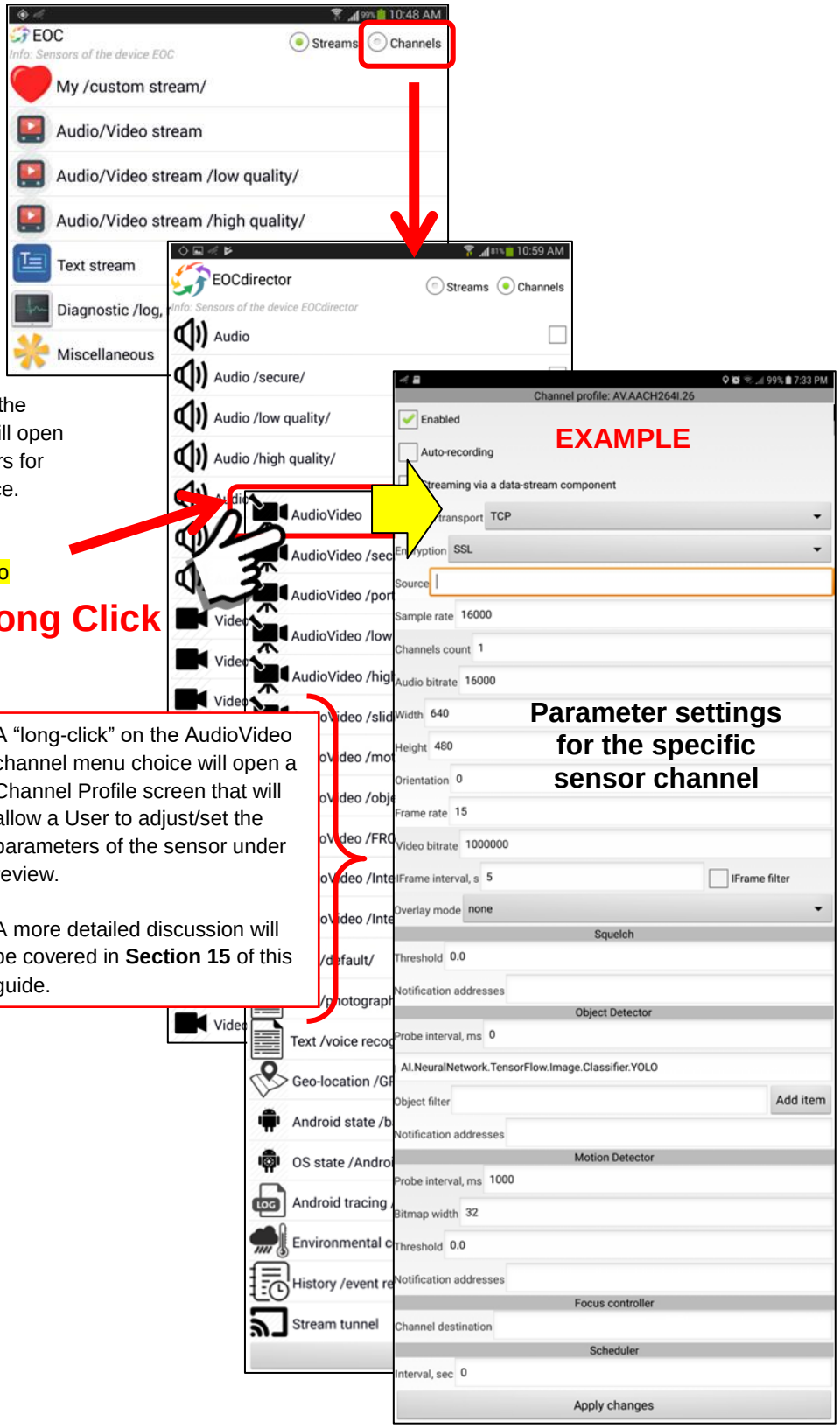


In addition to audio-video data, the system can provide information on the “state of operation” of a remote device. Things that can be monitored are battery health, cellular signal strength, device memory usage and more. All of the sensor data may be monitored and/or recorded for future analysis.



3. *Review of the Channels option.*

The “Channels” option allows a user to select, view and change the settings of the sensor parameters for all aspects of the mobile device.



A “long-click” on any of the sensor menu choices will open a screen with parameters for that specific menu choice.

In this example, we are selecting the AudioVideo choice.

Long Click

A “long-click” on the AudioVideo channel menu choice will open a Channel Profile screen that will allow a User to adjust/set the parameters of the sensor under review.

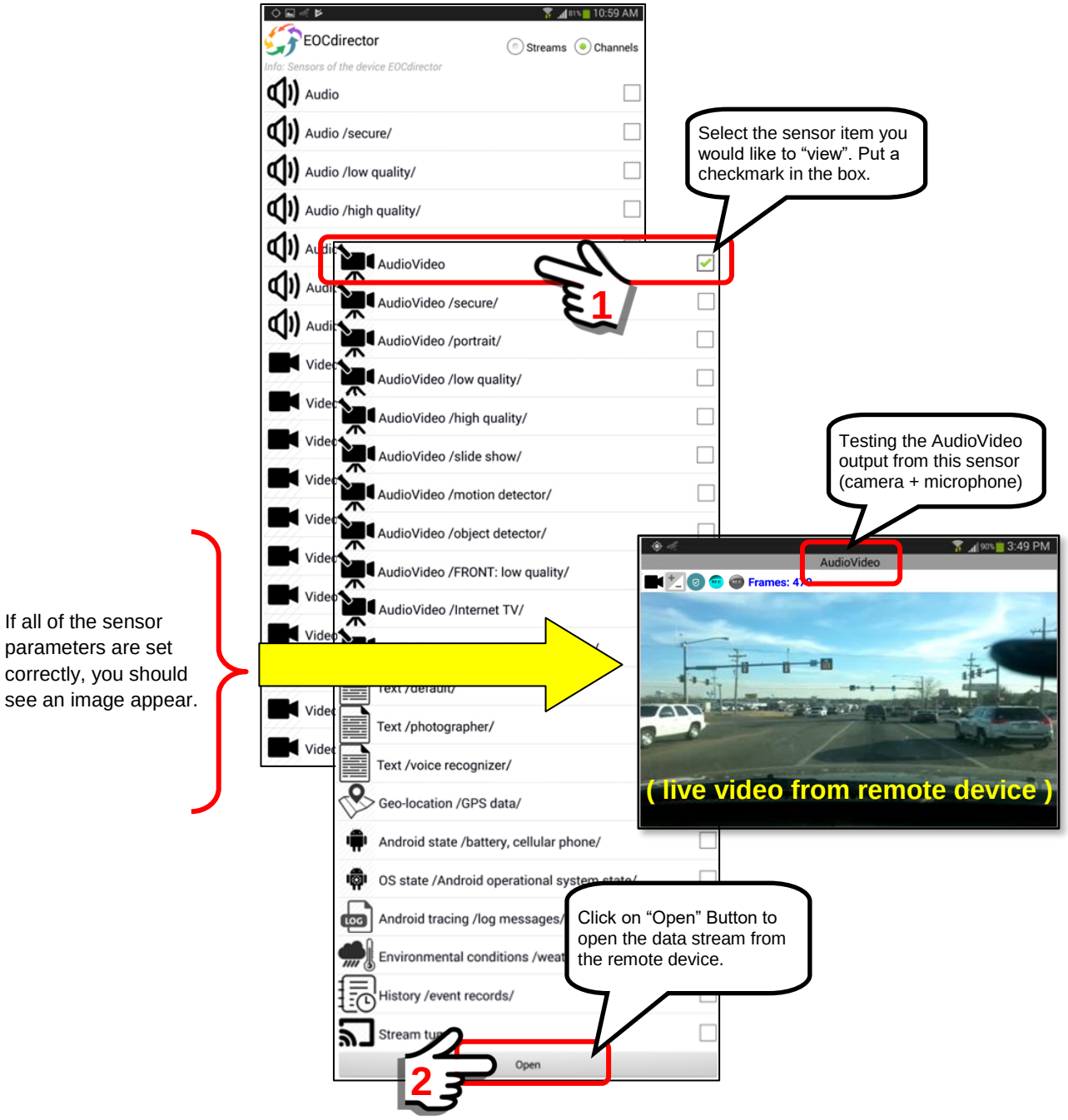
A more detailed discussion will be covered in **Section 15** of this guide.

Parameter settings for the specific sensor channel

In addition to setting parameters for a particular sensor, a User may “test” the sensor and view the data transmitted (audio, video, environmental sensors, etc.) in order to verify everything is set correctly. This section allows a User to manually access the sensors on another user’s mobile device.

The procedure is shown below.

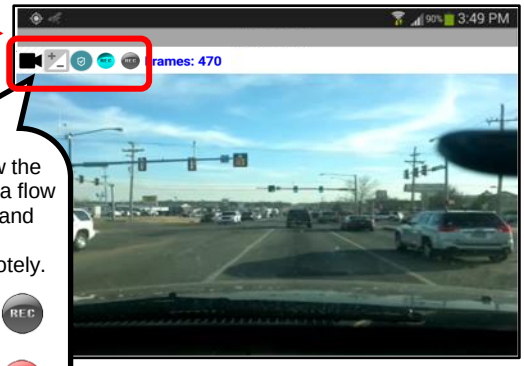
For our example, we will use the same AudioVideo menu choice as previously.



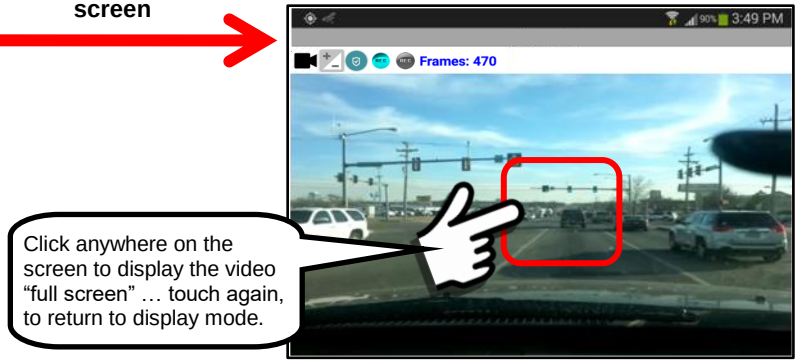
Additional features are now available once the audio-video screen is displayed. Other sections of this guide have a detailed description of these functions.

Record the Data

Pause the video



Show video full screen



We will now do an example of selecting two (2) sensor groups to be displayed at the same time.

Users have the option to display multiple sensors at the same time. The only limitation is that you may NOT request duplicate sensor data. For example, you may not request two video sensor channels or two audio sensor channels at the same time (you may do one of each).

Important Note for Audio-Video: Since each channel has different parameters (settings) but access the same camera on the remote mobile device, a duplicate request will confuse the program and cause an error.

10.19.2. Access to "Recorders" on the mobile device

Overview:

The "Recorders" button provides a user access to record data from individual sensors on the mobile device. Depending on the type of mobile device the recorders may gather data from the following sensors:

a. Audio (microphone sensor)
b. Video (2 camera sensors)
c. Geo-location (GPS / GLONASS Satellite sensor)
   i. Geo-Coordinates
   ii. Altitude (meters)
   iii. Speed (Km/hr)
d. Temperature (internal device temperature, C)
e. Barometric Pressure
f. Light Sensor
g. Acceleration
h. Magnetic Field
i. Gyroscope
j. Cellular Network Signal Strength
k. Battery Indicators (Voltage, Charging, % Charge remaining)

All of these sensors may be monitored and/or recorded either locally or remotely. Information may be collected and stored for future analysis.

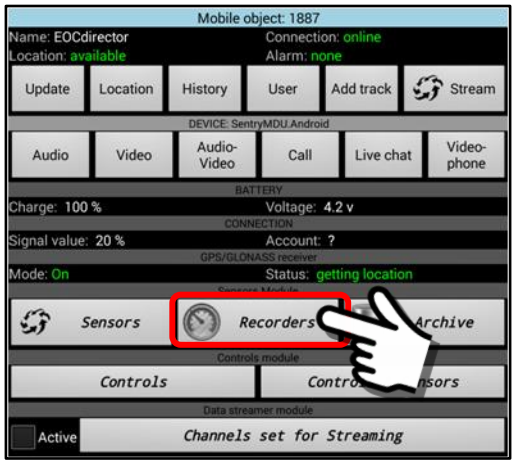
Mobile Object Panel – Recorders Button:

The "Recorders" Button is located on the middle-lower section of the Mobile Object Panel. This button will allow user access to the recorders for sensors on the local or remote mobile device.

Important Note #1: Access to the recorders (turning them on-off) do not provide notification on the remote device that another user(s) is accessing the device.

Important Note #2: All users have the option to TURN OFF the "Remote Access" option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the system will show that the "Remote Access" feature has been turned off. See Section 15.2 on how to turn off the Remote Access feature.

The "Recorders" Button may be bookmarked (Long Click) for rapid access to the Mobile Object panel of another user (assuming security credentials allow).



Description of the “Recorders” function and features:

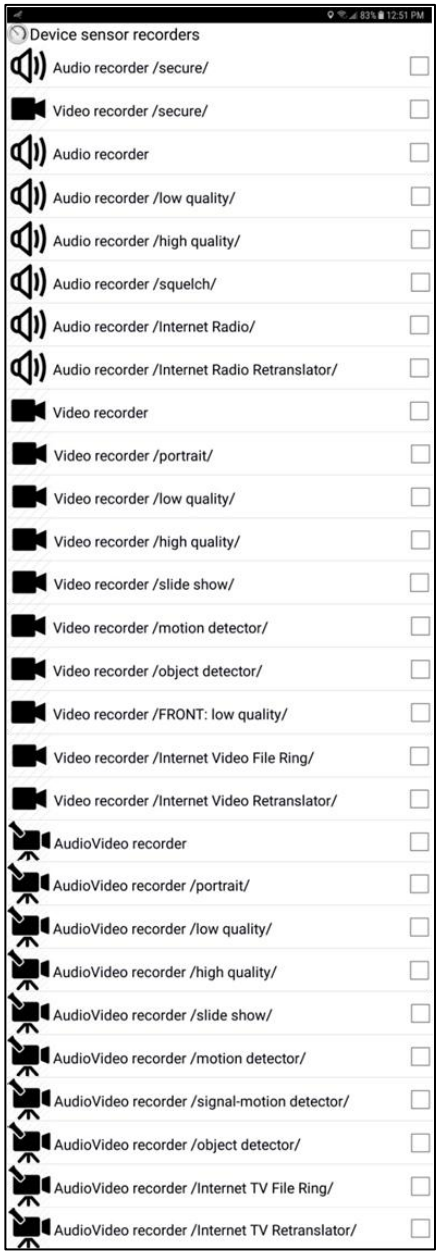
1. ***Parts of the “Recorders” Panel.***
   A click on the “Recorders” Button from the Mobile Object Panel opens a Recorders Panel. The “default” install of the SentryMDU App includes 47 pre-configured sensor recorder options. Users may also create custom recorder options.

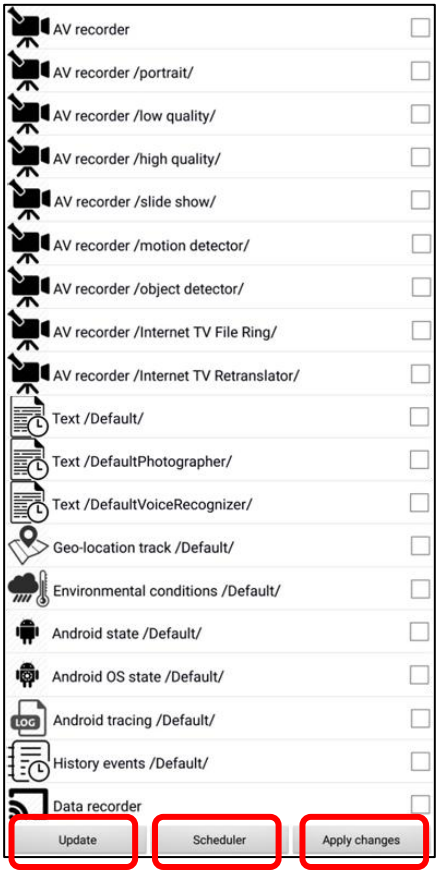
   The parts of the **Recorders Panel** are identified as follows.

A full list of the different Audio, Video, Audio-Video, and other pre-configured sensor recorders.

All recordings are stored in the “Archive” section of the device.

These recorders are installed with a set of “default” factory configuration settings. We recommend that these settings are reviewed and adjusted to meet the capability of your mobile device.



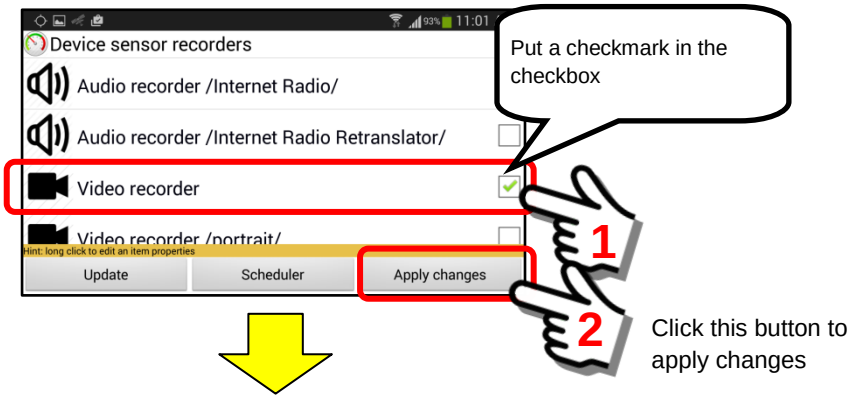


Click this button to apply changes

A scheduling feature to start-stop recording at a pre-determined time.

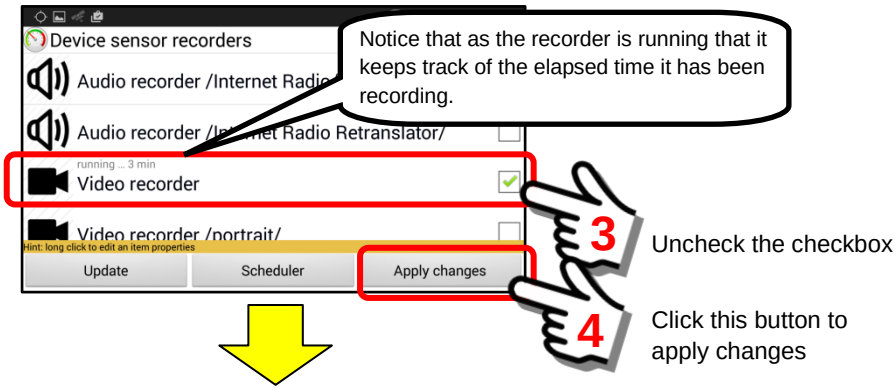
Updates the current states of the recorders in the event some of them are “active”.

2. ***Activating a recorder to capture data for future analysis.***
To activate a “recorder”, simply put a checkmark in the checkbox adjacent to the item and click “Apply changes”. The recorder will now continue to run until the checkmark is removed and the “Apply changes” button is clicked once again.

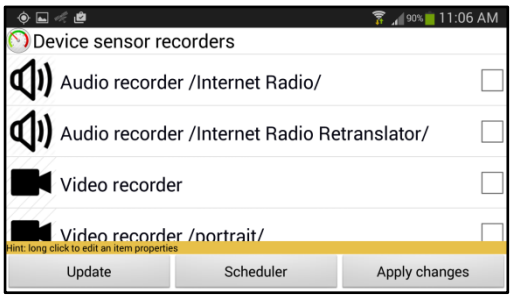


You may now do other things with the mobile device. The recording will continue until you turn it off (or someone with the correct security credentials turns the recorder off).

To turn “off” the recorder, visit the sensors recorder panel and “uncheck” the checkbox and click the “Apply changes” Button.

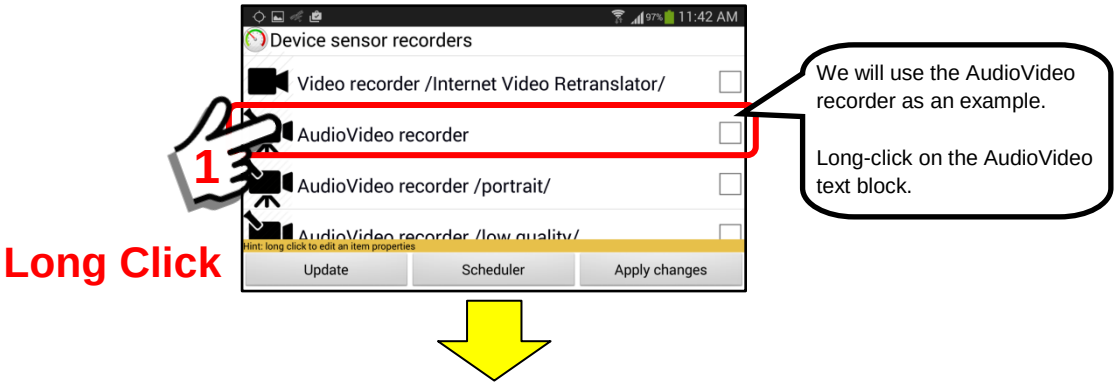


The recorder for the remote device has now stopped recording.

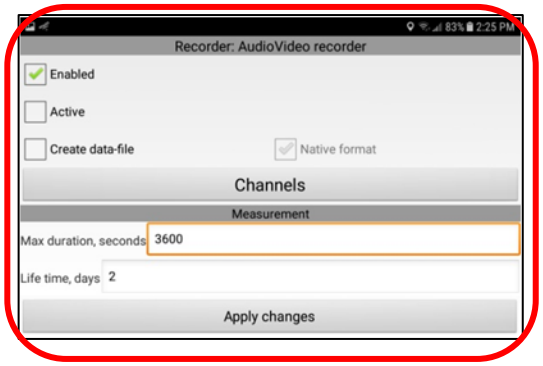


3. ***Review and change the recorder settings.***

During the installation of the Sentry MDU Application a set of default configuration settings are installed for all data recorders. These settings will work for most mobile devices. However, depending on your requirements, you may choose to modify these settings. This section describes how to make changes to the default settings.



Performing a “long-click” on the AudioVideo recorder text opens a configuration panel for the recorder. Depending on the type of sensor (ie audio, video, GPS, etc.) these configuration panels may be different.



The checkboxes and parameters are described as follows:

a. **Enabled checkbox**

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. **Active checkbox**

When “checked” this indicates that the recorder is currently “active” and recording data. When a user puts a checkmark in the box, the recorder will become “active” once the “Apply changes” button is clicked.

c. **Create data-file checkbox**

When “checked” this means that a recorded record will be automatically attached as a data file to the current user activity (see Content on User Information Panel). When active, this also allows the “Native format” checkbox to become available for user modification.

d. **Native format checkbox**

In the recording of audio-video, the recorded file uses the native Android AV format when saving the file. When “checked” this means there is no data conversion. When “unchecked” the application will convert the audio-video file to .mp4 format from the native AV format.

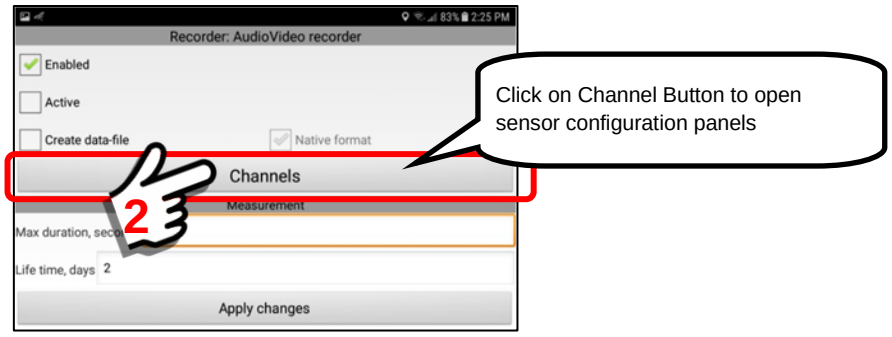
e. **Max duration in seconds**

This is the maximum length of a single data record in seconds. For example, the default is 3600 seconds (60 minutes). This means the application will record a single data file for a maximum of 60 minutes and then start a new file. If a recording is to last 3.5 hours, the resulting data files would be 3 files @ 60 minutes each and 1 file @ 30 minutes.

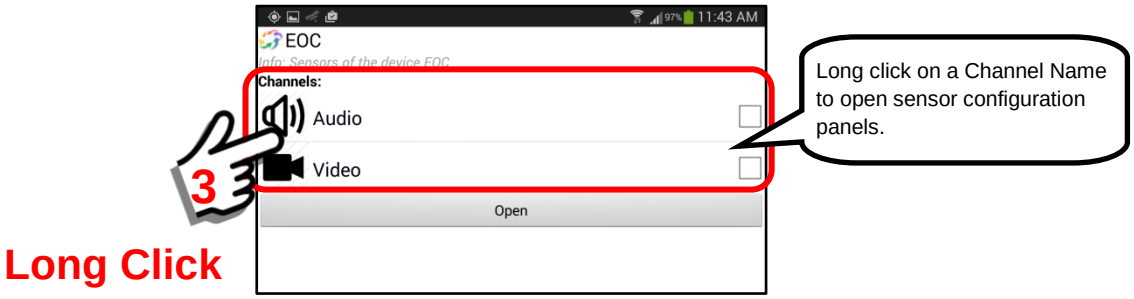
f. **Life time in days**

This is the “life time” of a recorded file on the mobile device before it is automatically removed. The Sentry MDU System has settings for the mobile device and the Data Server. They are set independently. This setting is for the mobile device and the default is 2 days. If a record is not saved to the Data Server it will be automatically removed after this time interval setting.

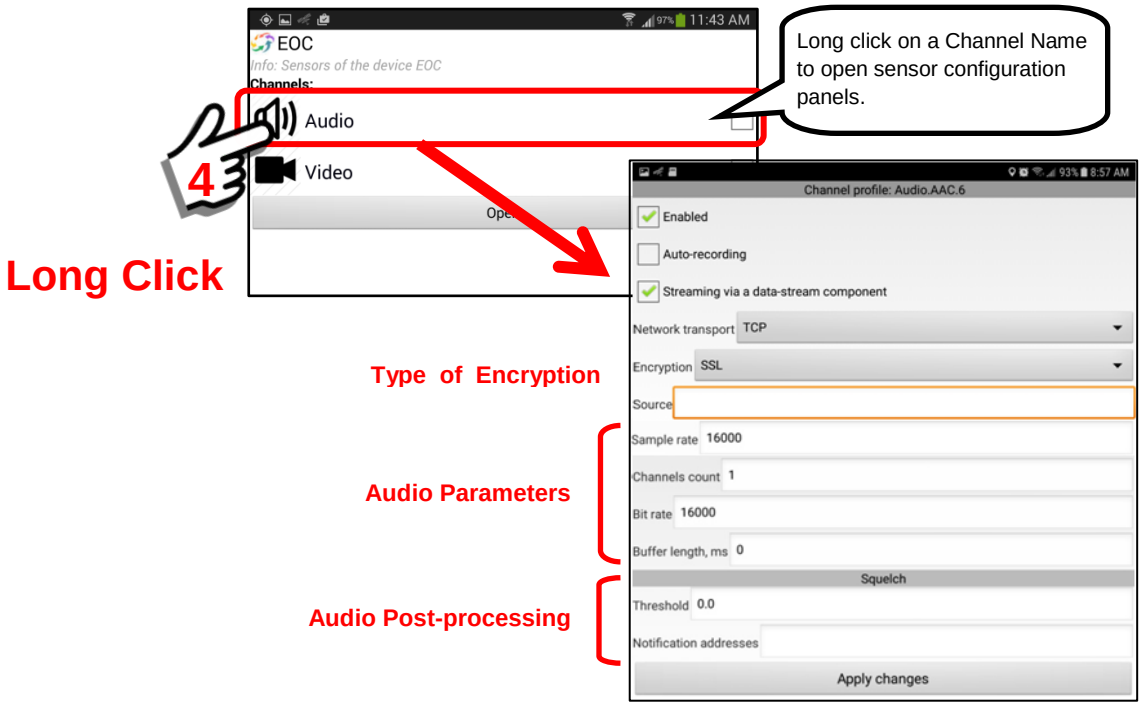
In addition to the recorder configuration options, the individual sensor elements (ie audio and video channels) have configuration settings as follows:



Clicking on the Channels Button will open the individual channels for the audio and video configuration. Select the sensor to be reviewed and perform a “Long Click” on the text name to open the panel.



In our example of an AudioVideo Recorder, we will first review the Audio Channel profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

TCP is the default network transport protocol that is used for most Sentry MDU features. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

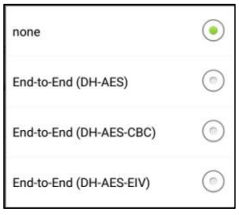
See **Section 5.6** for details.

e. Encryption

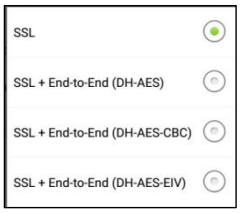
The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

The “Source” data entry location is for specifying a data source for the channel. In our example of the Audio channel recorder, when the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications.

h. Channels count

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications.

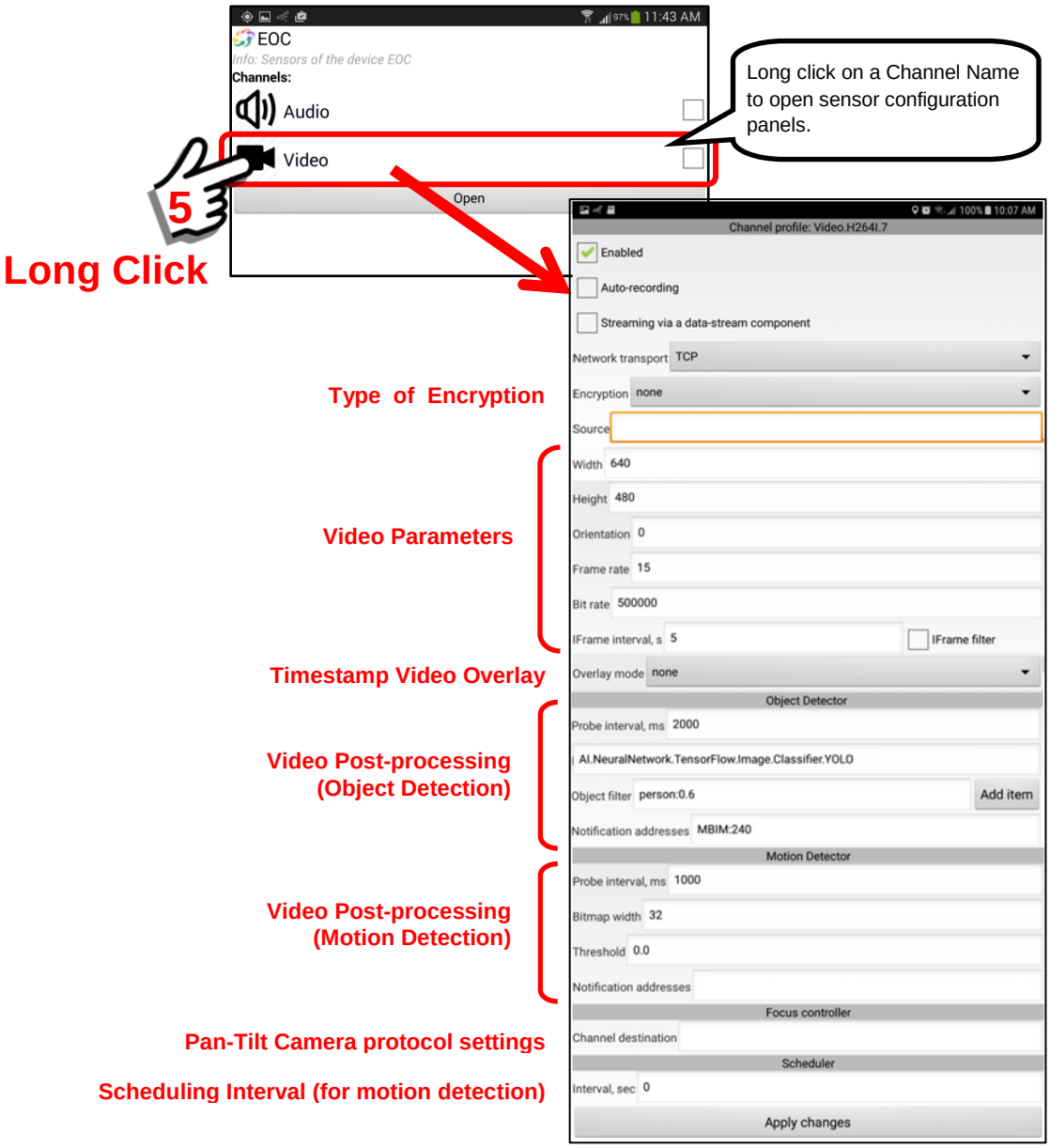
j. Squelch - Threshold

The squelch feature is an attempt to mute the audio output in the absence of sufficient audio amplitude in the transmission. As used in the SentryMDU System, we remove pauses and periods of silence from the data stream in an effort to reduce buffering and lag time. A sound artifact must exceed a set threshold before it will be output by the mobile device. The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

k. Squelch - Notification Addresses

The notification feature allows a User to send other Users a “message notification” when a trigger event occurs. In the case of the Audio “squelch” parameter, if a sound signal exceeds the set threshold, a message notification can be sent. This feature will be discussed in detail in **Section 15.2**.

In our review of the AudioVideo Recorder, we will now review the Video Channel.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

TCP is the default network transport protocol that is used for most Sentry MDU features. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

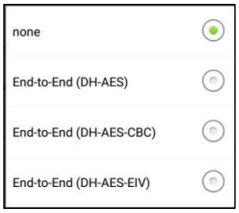
See **Section 5.6** for details.

e. Encryption

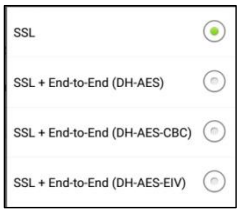
The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

The “Source” data entry location is for specifying a data source for the channel. In our example of the Video channel recorder, when the “Source” is empty (default) this indicates that the camera on the mobile device will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie

640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

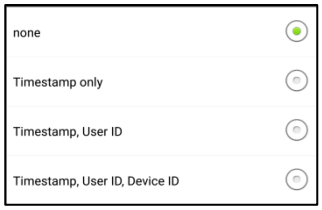
m. iFrame filter

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that means the filter selection criteria.

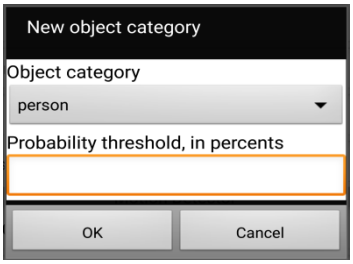
p. Object Detector – AI.NeuralNetwork.TensorFlow ….

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text unless you really know what you are doing.

q. Object Detector – Object Filter

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for.

The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

t. Motion Detector - Bitmap width

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent. See **Section 15.5** for an example configuration.

w. Focus Controller – Channel Designation

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler – Interval sec

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

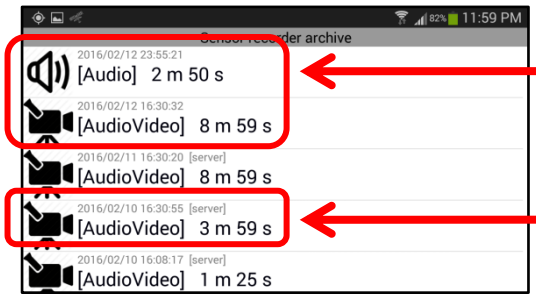
4. Recording multiple channels at the same time.

It is possible to run multiple data recorders at the same time. For example, you may choose to record audio, video, GPS location and accelerometer readings … all at the same time. However, remember that you may NOT record two video or two audio channels at the same time since each may have different parameter settings. This would cause an error.

5. ***Accessing the recorded material.***

Recordings will initially be stored on the local device from which the recording was made (ie remote device). They can be accessed in the device "Archive" Section and transferred to the Sentry Data Server or to your mobile device as required.

Recordings stored in the Archive Section of the local device.



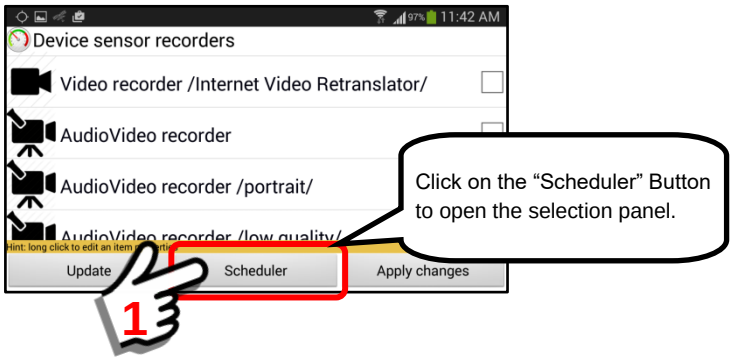
Notice two different types of recordings stored on the local device. Audio and AudioVideo.

This AudioVideo recording is stored on the "server". See the [server] indicator.

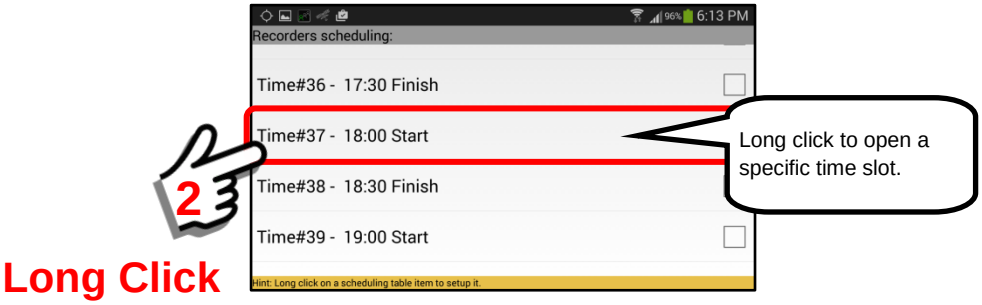
6. ***Setting up a recording schedule.***

The "Scheduler" Button feature allows a User to schedule the recording of any of the available recorders. The following steps should be followed:

Select the "Scheduler" Button to access the scheduling feature.



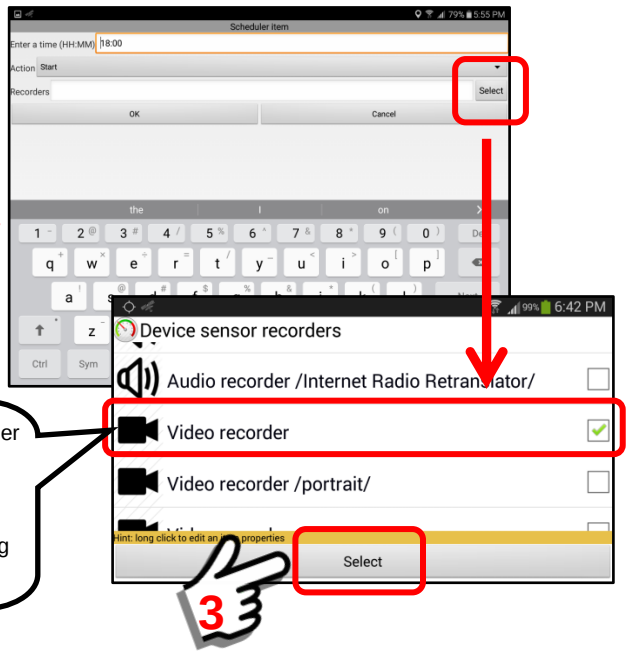
The scheduling feature provides 46 time slots during which various sensor recorders may be started and stopped. Select the time slots you wish to use. Perform a "Long click" to open a specific time slot scheduler configuration panel.



Select a sensor recorder (ie Video Recorder) for the Start Time.

Use the existing periodic time slot, or enter your own time. Note the format HH:MM using a 24 hour clock.

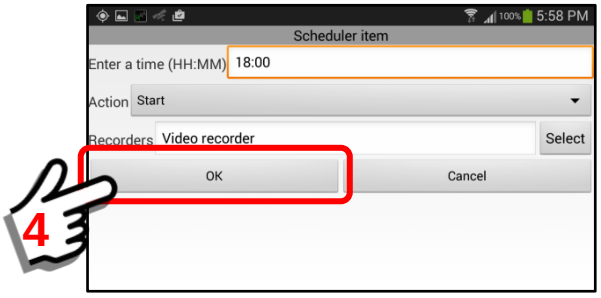
Verify if the desired “Action” is a “Start” or “Finish” time using the drop-down box.



Select the device sensor recorder of your choice and put a “checkmark” in the checkbox.

In our example, we are selecting the Video recorder.

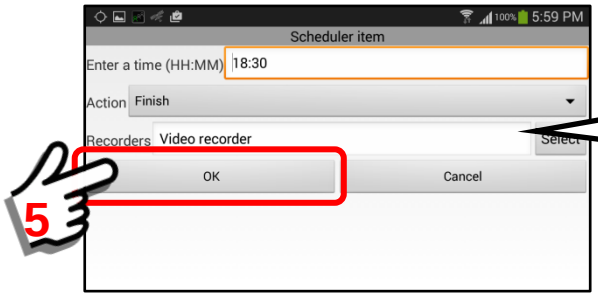
Once you have completed the “Start” time selection for the Video Recorder, your screen will look similar to the following:



You now have the time, action and video recorder specified.

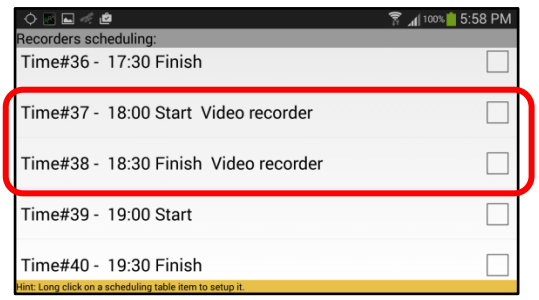
Click on the “OK” button to save the schedule settings.

Repeat the same procedure to establish a “Finish” time for the schedule. Click on the “OK” button to save the schedule.



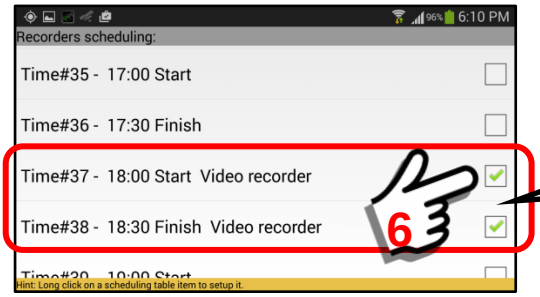
We have now established a “Finish” time and the recorder that will be used.

You will be returned to the Scheduler Panel. The start and finish times should be displayed adjacent to a time slot and the type of recorder should be indicated.



The schedule has now been specified for the Video Recorder.

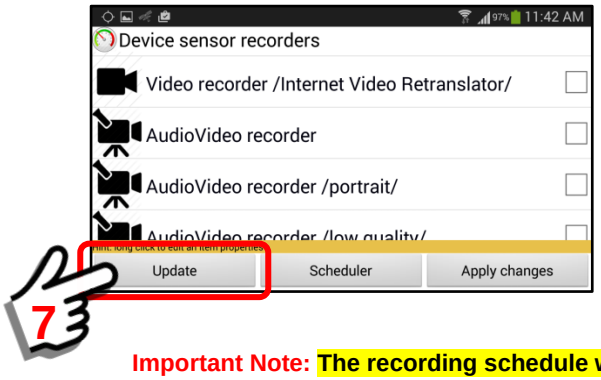
To activate the schedule, simply “click” and put a checkmark in the “Start” checkbox and the “Finish” checkbox.



The recording schedule is now active.

The schedule is now active. The recording will be triggered at the selected times. The schedule will stay active until it is turned off.

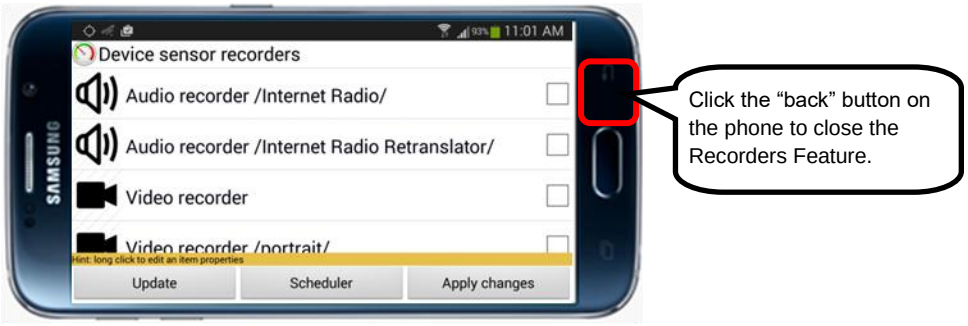
In the event changes have been made to the sensors panel while you were setting up the schedule, it is always a good idea to click on the “Update” Button to ensure all changes are saved.



Important Note: The recording schedule will remain active until it is removed or turned off. Pay special attention because it is easy to

"forget" that you have an active schedule. Also remember, that depending on the Security Settings of your account, other users MAY have access to create a recording schedule on your device.

Click on the "Back" button on the phone to return to the Mobile Object Panel.



10.19.3. Access to the data "Archive" on the mobile device

Overview:

The "Archive" Button provides a User access to the data that has been recorded by the local device. Some of the data may actually be "stored" on the file system of the local device and some of the data may be shown on the local device but actually stored on the Sentry MDU Data Server but available to the local device.

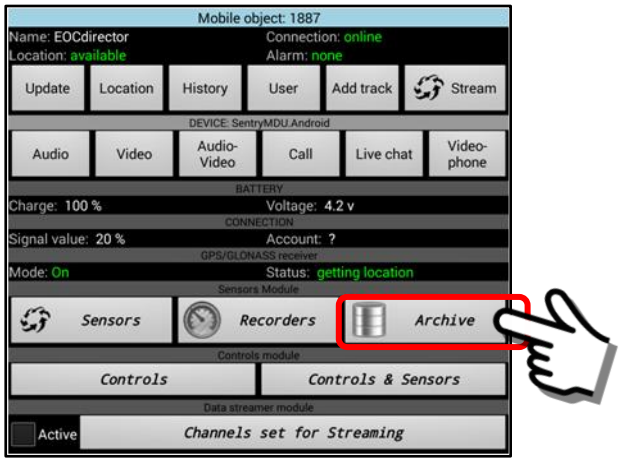
This section will describe the features of the data archive.

Mobile Object Panel – Archive Button:

The "Archive" Button is located on the right-lower section of the Mobile Object Panel. This button will allow user access to the recorded data on the local or remote mobile device.

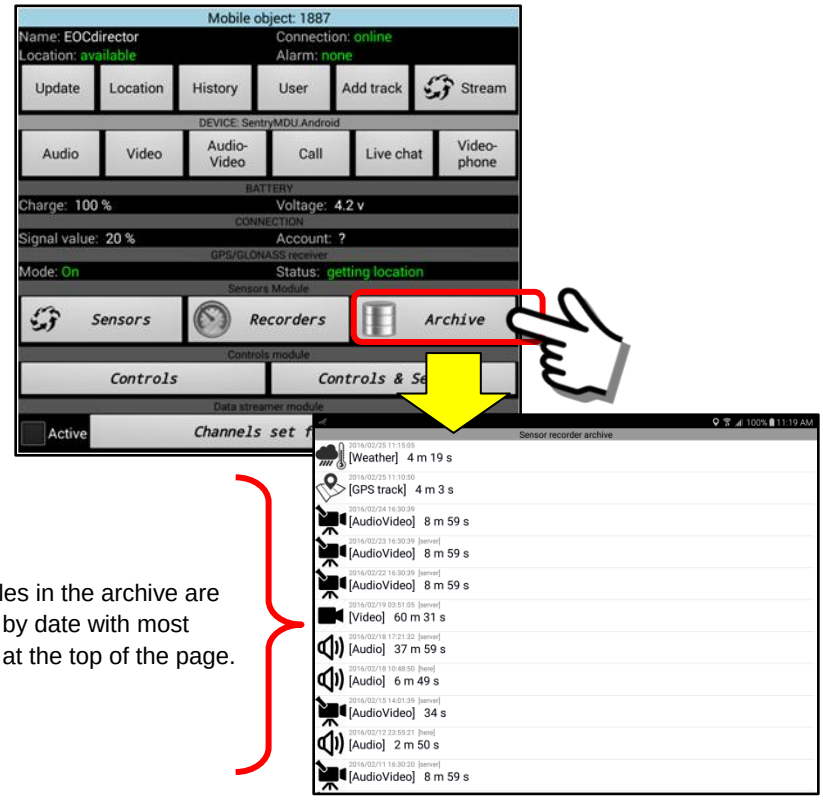
> **Important Note #1: Access to the archive data on a remote device does not provide notification on the remote device that another user(s) is accessing the data archive.**
>
> **Important Note #2: All users have the option to TURN OFF the "Remote Access" option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the system will show that the "Remote Access" feature has been turned off. See Section 15.2 on how to turn off the Remote Access feature.**

The "Archive" Button may be bookmarked (Long Click) for rapid access to the Mobile Object panel of another user (assuming security credentials allow).



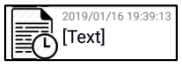
Description of the “Archive” function and features:

1. ***How data is organized in the Archive.***
   Data in the archive is organized by the “timestamp” date of the file when it was created. The most recently created files are at the top of the page.



Data files in the archive are sorted by date with most recent at the top of the page.

The Archive stores the data files under a variety of headings depending on the type of data. The following icons and titles which correspond to the sensor groups are used to display the data.

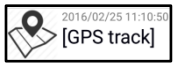


Text recordings of text, photography and speech-to-text conversions.

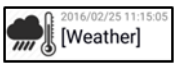
Audio recordings

Video recording (only video, no audio)

Audio & video recorded together

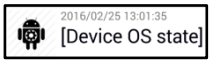


The GPS Track displayed on a map over a time period.

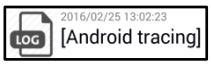


Environmental sensors including internal device temperature, barometric pressure, light sensor, accelerometer, etc.

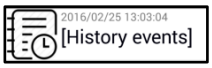
The device state sensors include readings for battery voltage, battery temperature, battery charge level and cellular signal strength.



Device operating system state includes data on available memory on the device, CPU usage and data storage space available.

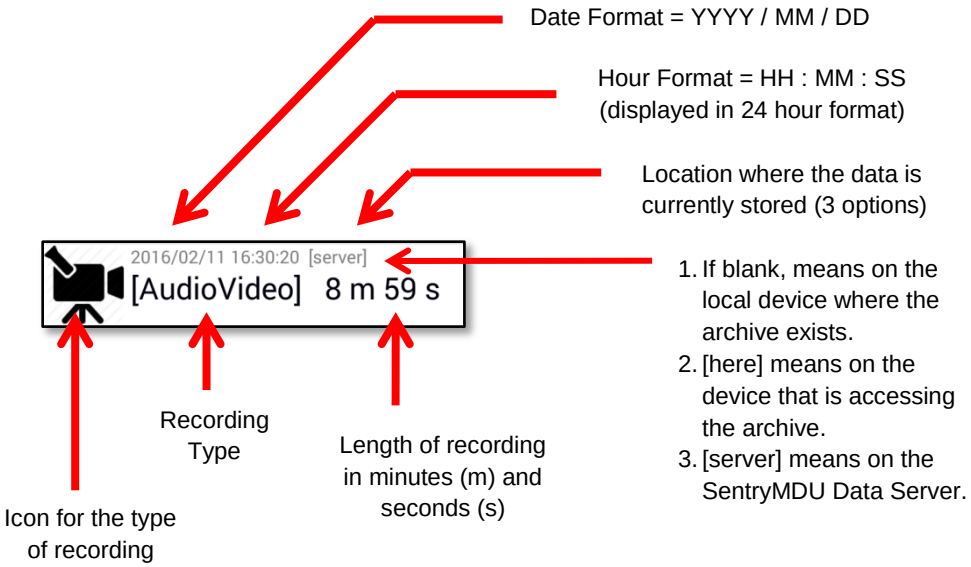


Android tracing is a series of log messages about device operation. Generally not used by Users.



History events provide a list of log messages about events on the device. This is a troubleshooting tool generally not used by Users.

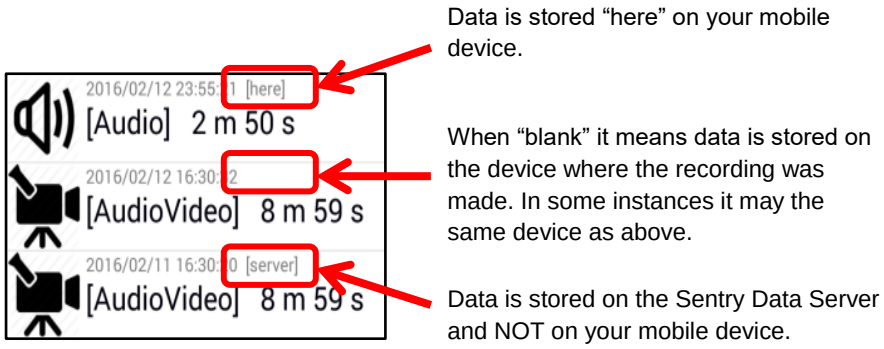
2. ***Reading the Archive display format.***
   The display format of the recordings stored in the archive are illustrated below.



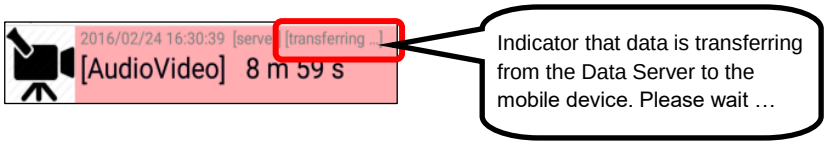
3. ***Archive data lifetime settings and transfer to the Data Server.*** Depending on the configuration settings, data in the Archive usually has a "lifetime" after which it is automatically removed from the local device. The "default" lifetime is 2 days (see **Section 10.19.2**). Data that is stored on the Sentry Data Server also has a "lifetime" which is independent of the mobile device. These settings are administered by the SentryMDU Manager Desktop client.

Files that have been removed from a mobile device (to free up memory space) may still be accessed by the mobile device and downloaded from the Data Server.

Typically, you will see three (3) indicators on the location of recordings.

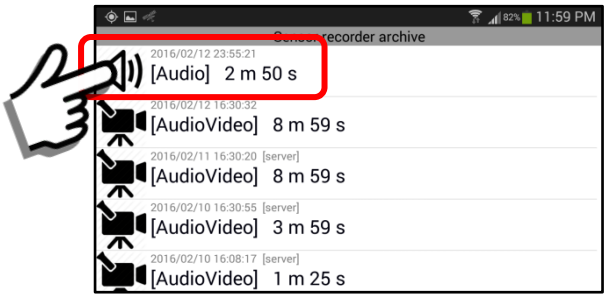


During the times when you click on a data file to view the audio-video, the data must be transferred from the Data Server to your mobile device. In those situations, you will see an indication of a data "transfer" taking place. See below for an example.

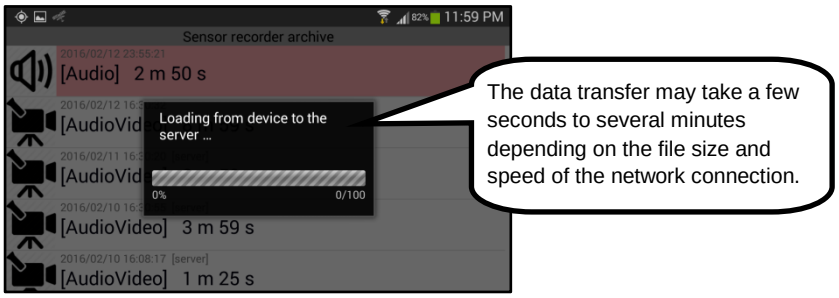


4. ***Viewing data files in the Archive (from another User's phone).*** To view a data file, simply "click" on a file name and the file will load and open.

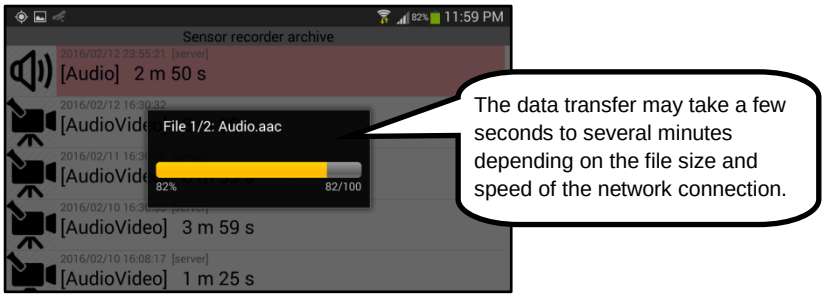
In this example, we are selecting an audio file that is stored on a remote mobile device (not our phone). Click on the audio file.



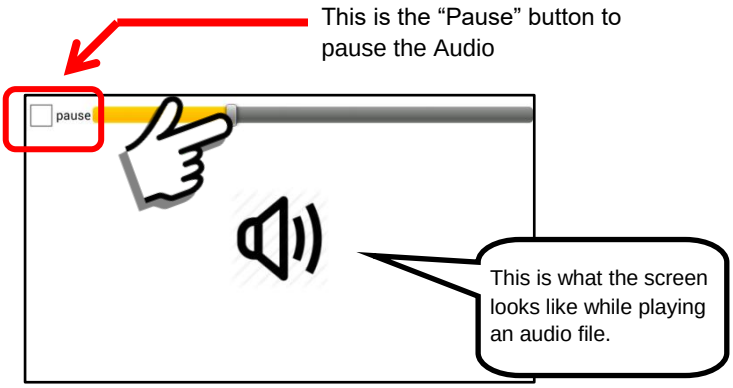
Clicking on the selected audio file will instruct the Sentry MDU System to transfer the audio from the “remote” mobile device to the Data Server.



Once the file has transferred from the remote device to the Data Server, it will be transferred to your mobile device.



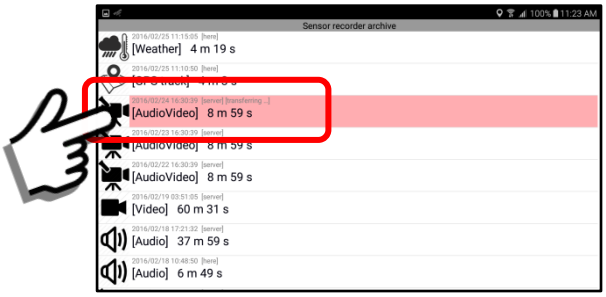
Once the audio file is loaded on your device, it will begin to play. The “slider” will allow a User to advance the audio quickly to a place of interest in the recording. In addition, a “pause” checkbox is available to pause the audio as necessary.



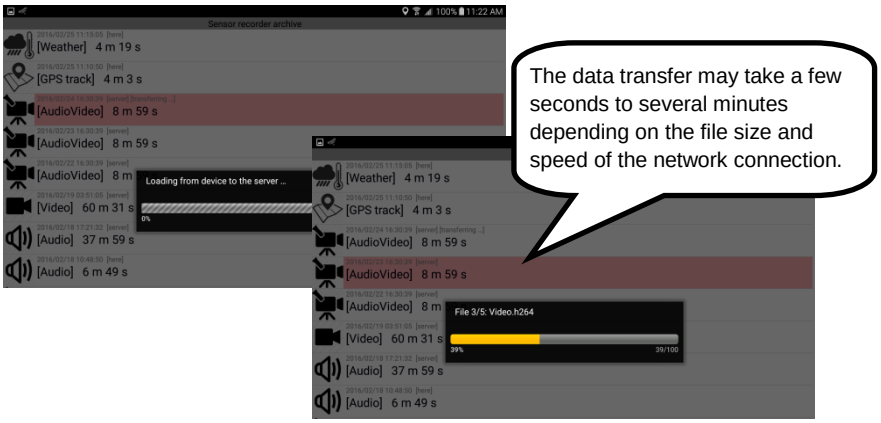
When finished, click the “back” button on the phone to return to the Archive Panel.

5. ***Viewing audio-video data files in the Archive.***
The procedure to view audio-video files that are contained in the archive follows the same procedure as above.

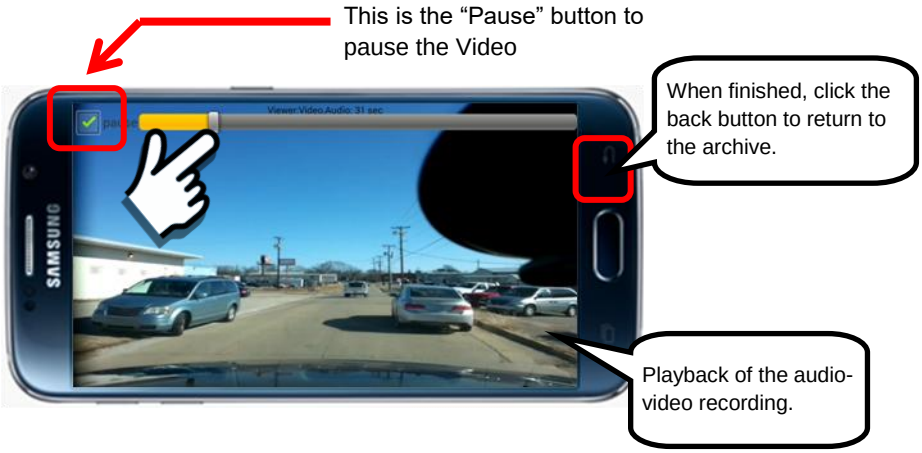
In this example, we will select and view an audio-video recording.



Clicking on the selected audio-video file will instruct the Sentry MDU System to transfer the audio-video from the “remote” mobile device to the Data Server and then transfer to your mobile device.



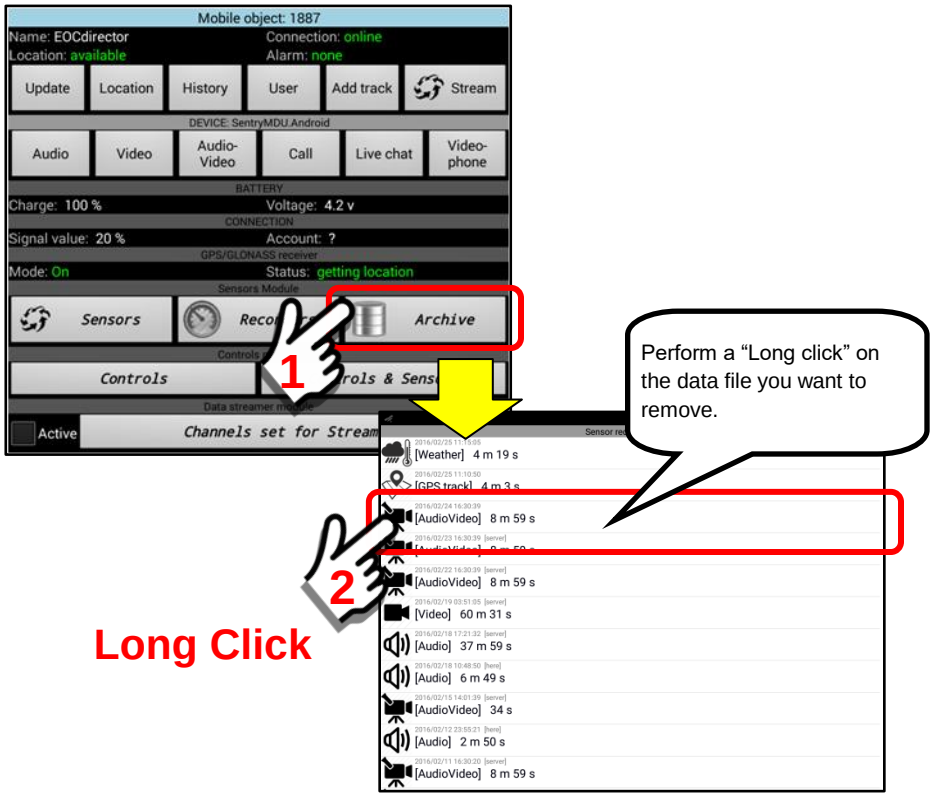
Once the audio-video file is loaded on your device, it will begin to play. The “slider” will allow a User to advance the video quickly to a place of interest in the recording. In addition, a “pause” checkbox is available to pause the video as necessary.



6. ***Removing data files from the Archive.***

Data that is stored in the "Archive" on the mobile device may be removed from the mobile device. Data that is stored on the server, may be removed from the server if the configuration (and User access privileges) allow.

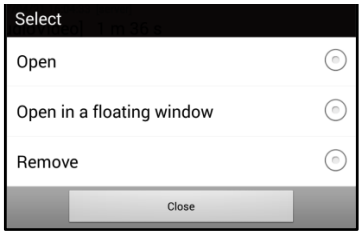
This example, will show how to remove data from the local archive.



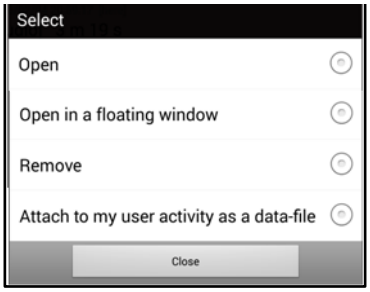
Performing a "Long click" will open a selection box with a variety of menu options. For your own "archive", by default, you have the access rights to remove any of your files. However, if you have sufficient access rights you may also have the ability to remove data files from OTHER users data archives.

The following menu options are available.

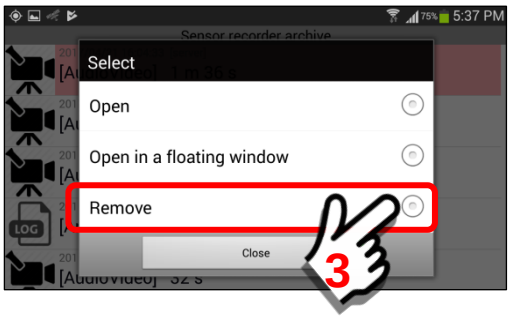
Access to the "Archive" via the Mobile Object Panel



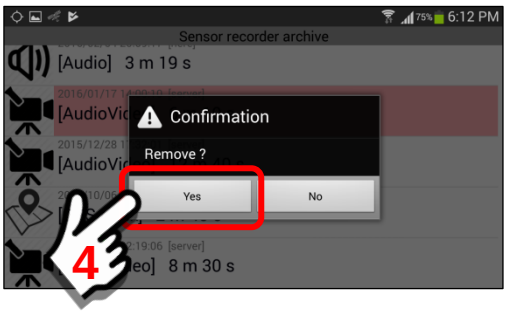
Access to the "Archive" via the Tracker Panel



To remove a data file, click on the “Remove” option.



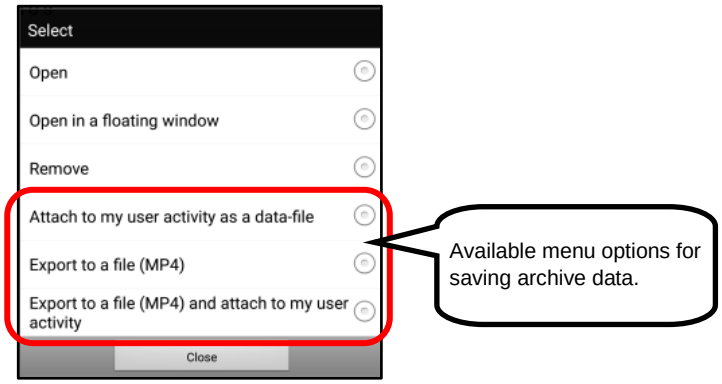
Confirm that you do want to permanently “remove” the data file.



The data file is now removed from the local device.

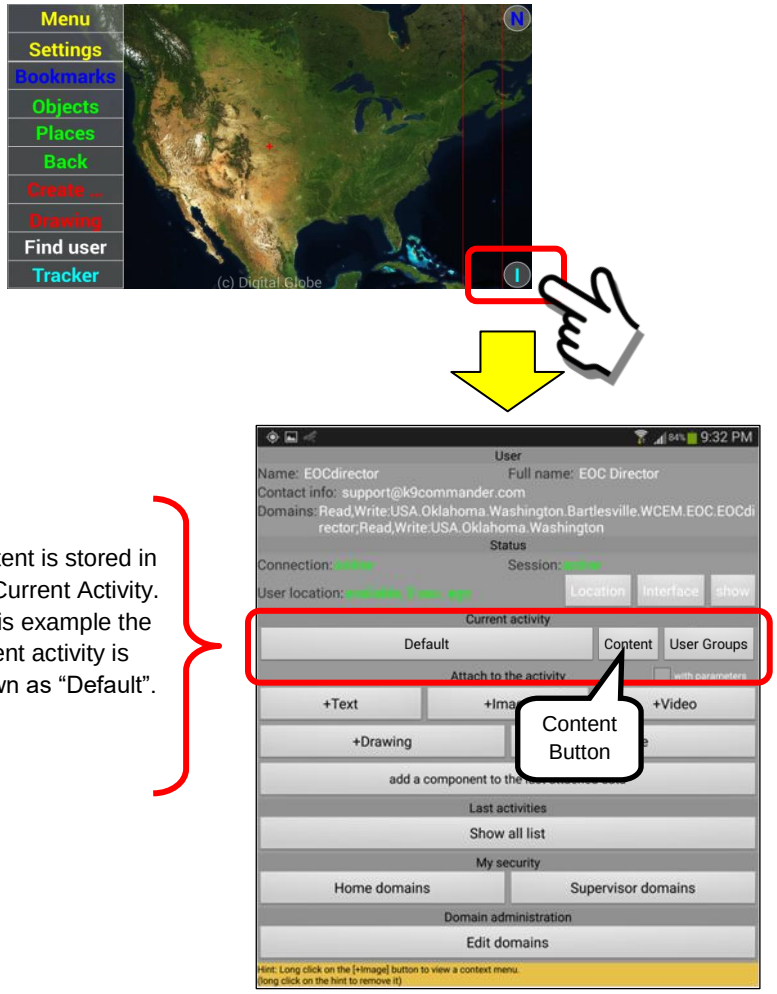
Important Note: The removal of archive data from the mobile device may or may not remove the same data from the SentryMDU Data Server if it is also stored there. This will depend on the specific configuration settings of your organization. See your *System Administrator* for your company policies.

7. ***Saving data files in the Archive.***
The SentryMDU System provides for several different methods of saving data that is stored in the archive. These methods are available for files stored on the “local” device (marked [here]).



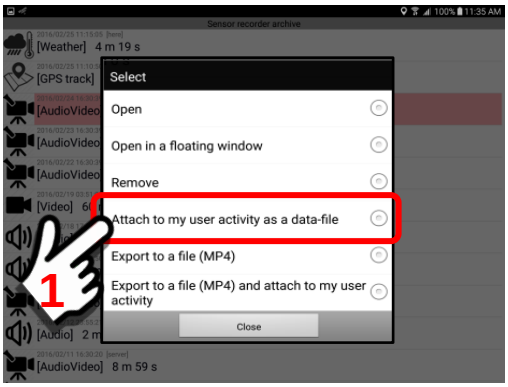
Attach to my user activity as a data-file

This option will store the data file in YOUR content folder. This content folder is located on the User Panel.

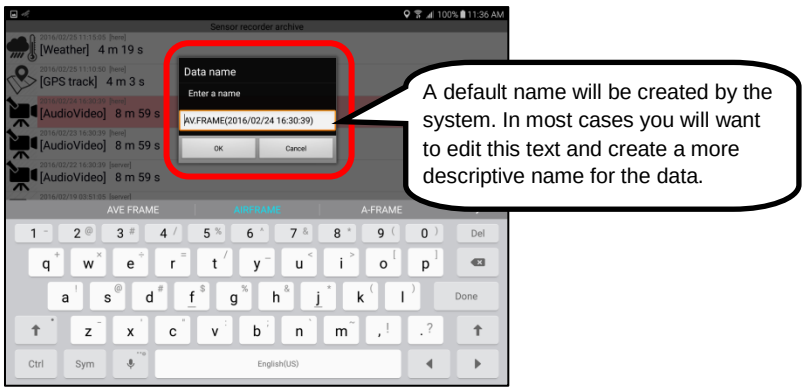


Content is stored in the Current Activity. In this example the current activity is shown as "Default".

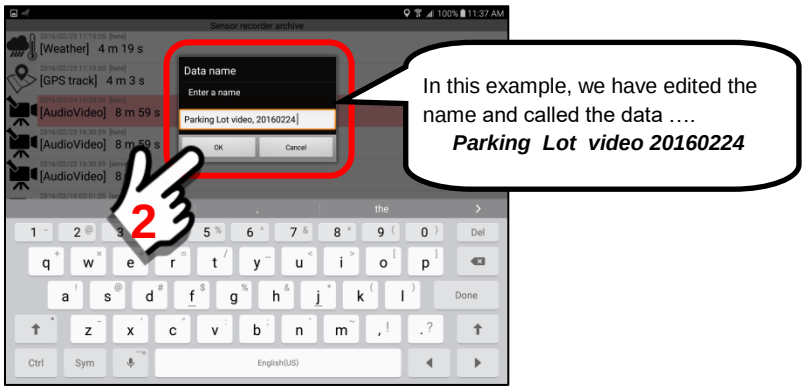
To attach the data file to the current activity folder, select the option from the Menu. These options will only be available if the file is on the local device [here].



The system will prompt you for a “name” that you want to store the data under. The name will default to a data “type” and a date as shown below.

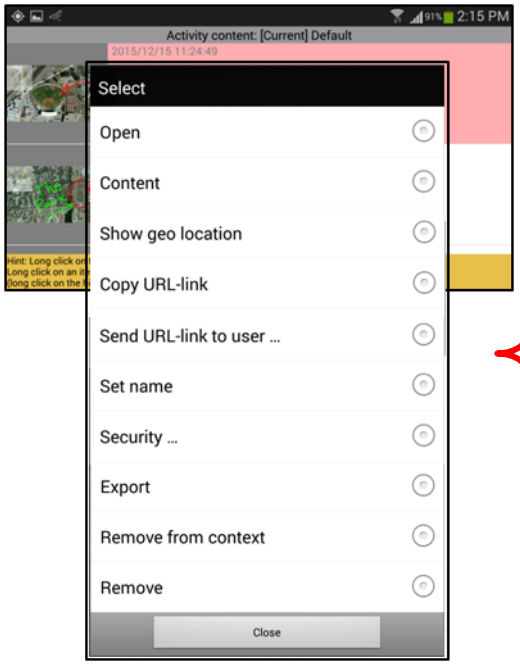


Edit the system generated name and create a more descriptive name for the data. When finished, click “OK” to continue.



The data file has now been copied to the Content Folder under your Current Activity topic area. A message will appear at the bottom of the page indicating the data transfer was successful.

Once the data file is installed in the “Content” Folder, a whole new series of menu options are available to the User. These options will be covered in other sections of the document, however we are showing the Menu Panel below for your review.

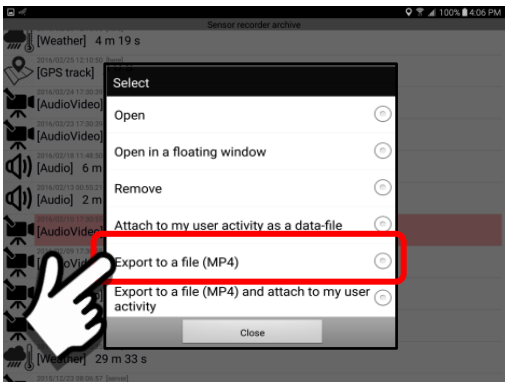


Additional menu options are available once the data file is transferred into the user content folder.

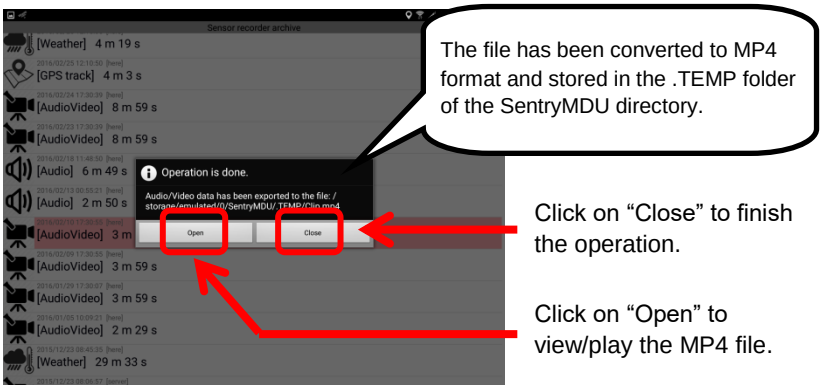
A “long click” on the file name will open the menu.

Export to a file (MP4)

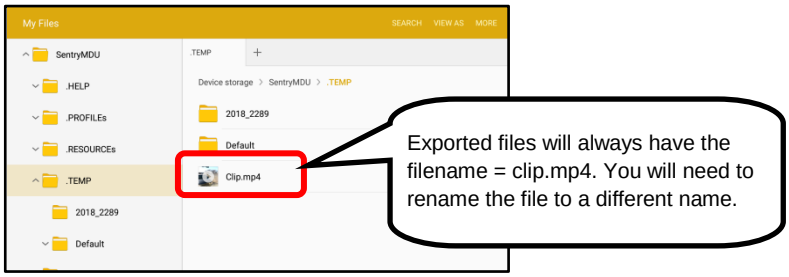
This option will export the data file to an MP4 data file. The MP4 file will be stored in a temporary folder (.TEMP) on the mobile device which can then be transferred/copied to other computer systems for offline storage or to be played on other video players.



The file is converted to MP4 during the “saving” process.



The saved file (clip.mp4) is stored in the .TEMP folder in the SentryMDU directory as shown below.



Export to a file (MP4) and attach to my user activity

This option is a combination of the previous two menu items. The system will “export” a file to the TEMP folder AND attach a copy to the Current Activity of the User.

10.20. The Controls Module, “Controls” Button

Overview:

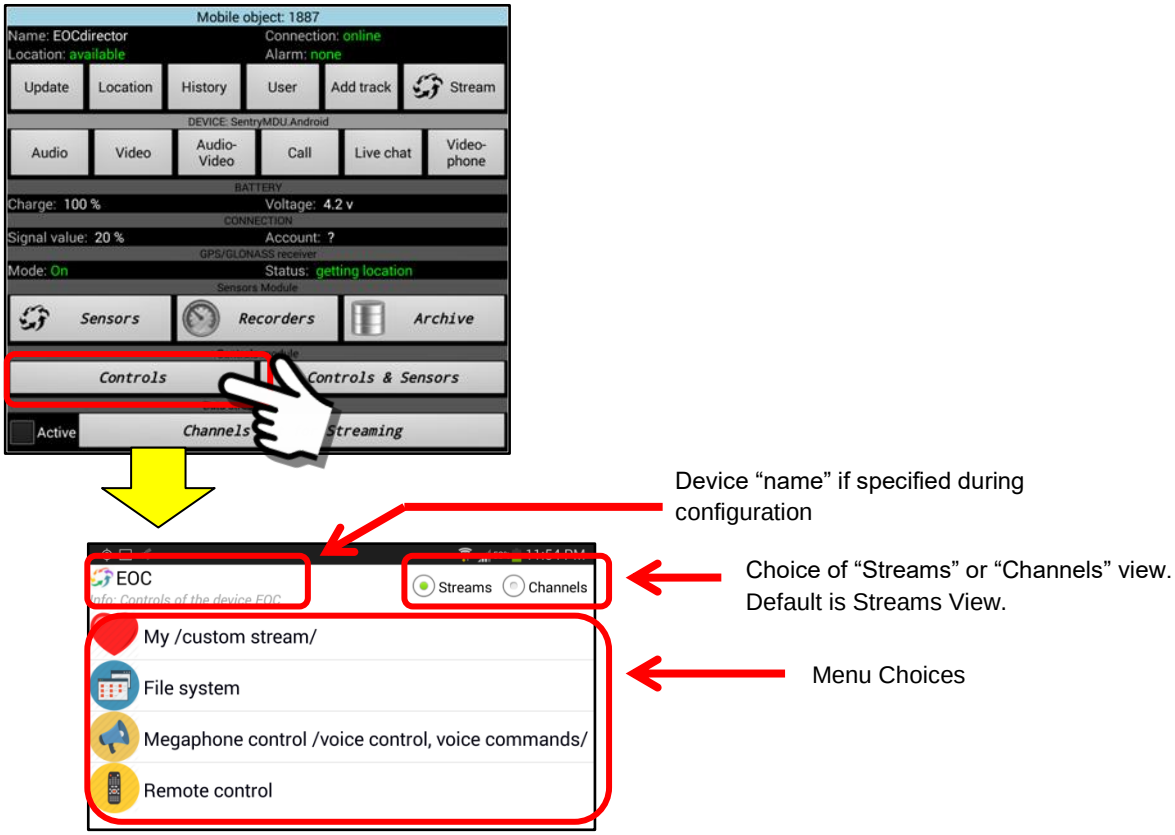
The “Controls” Button opens a panel that allows a User to issue voice commands remotely, use a remote device as an audio megaphone and to allow a “remote control” interface for PTZ (pan, tilt, zoom) platforms or mechanical actuators (future implementation).

This capability is only available if the User requesting access has the appropriate security credentials to control the remote device.

Mobile Object Panel – Controls Button:

The “Controls” Button is located on the lower left side of the Mobile Object Panel. This button will open a panel that will allow a selection of pre-configured streaming options or individual “channels” that may be accessed by the User.

Important Note: This feature does not provide notification on the remote device that another user(s) has access.

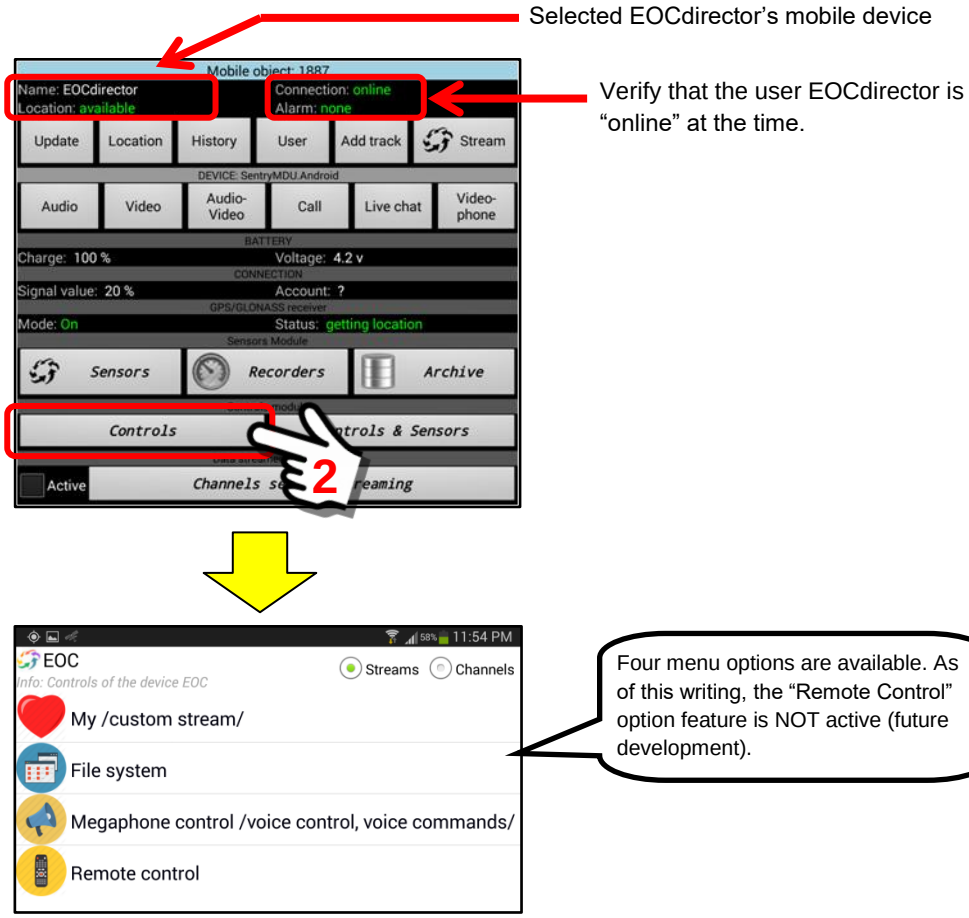


Steps for access to the Controls feature:

1. ***Select the User mobile device you want to access.***
   Using either the “My Objects” panel or the Object Markers displayed on the main map screen, select the user that you want to access.

2. ***Open the Controls Panel of the remote device.***
   In this illustration we are assuming we would like to access the Controls Section of the User Device = EOCdirector.

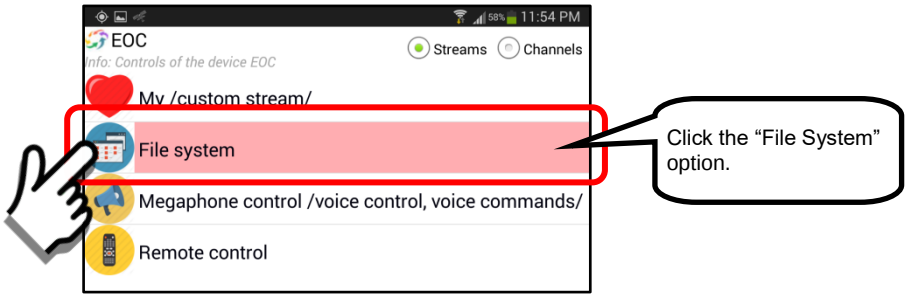
   Click on the "Controls" Button.



The next several sections will cover the available menu options.

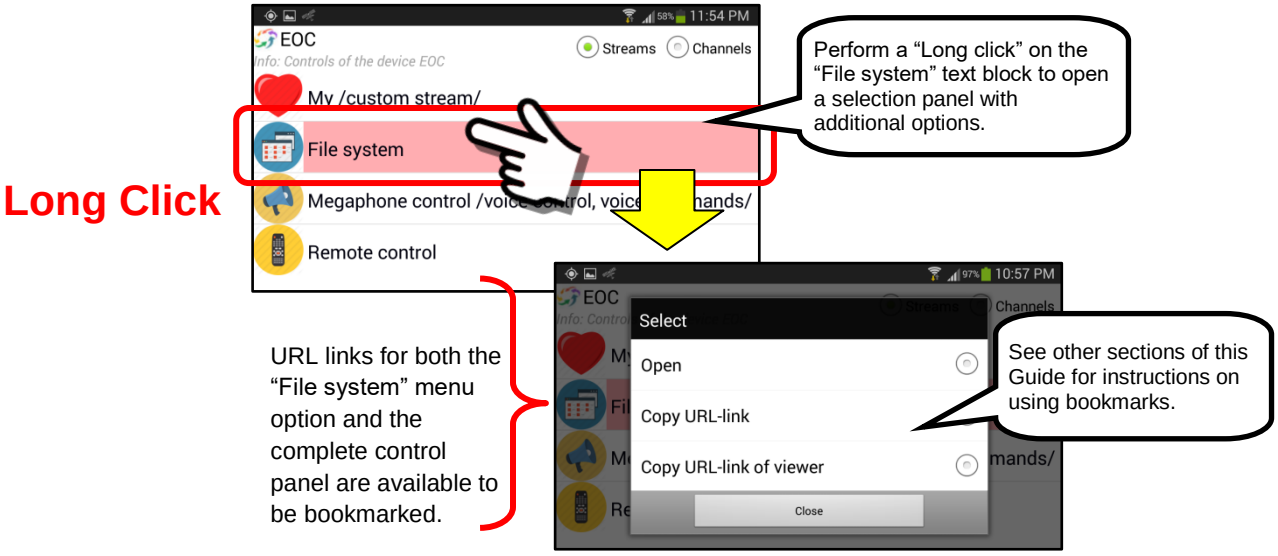
3. ***Select the "File system" choice***

This example, will review the "File system" option. This allows a user to view or export files/folders/URLs from either a local mobile device or a remote device.



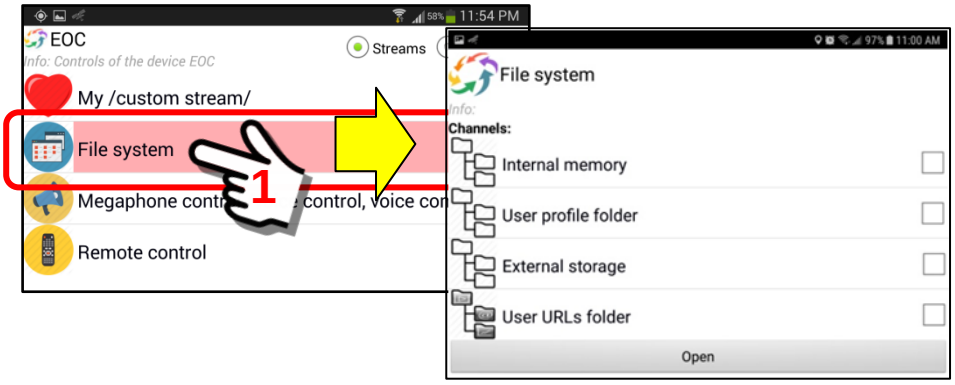
The "File system" menu option will accept both a long-click and a short-click. These two actions will provide different features.

<u>Long-click on the File system option</u>



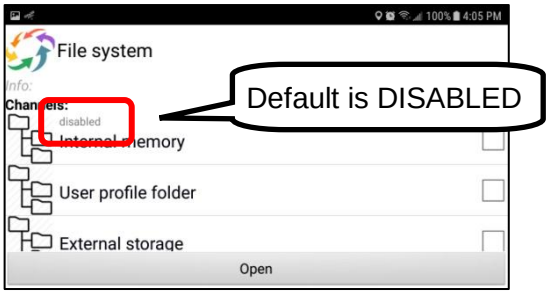
<u>Short-click on the File system option</u>

A short-click on the "File system" menu option opens another panel that provides for access to the SentryMDU App file system and stored URL folders.



a. Internal Memory

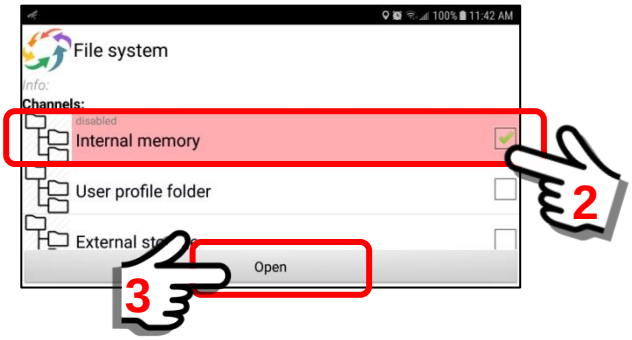
This menu choice allows a User to view the files and folders located in the file system on the mobile device. This feature will allow adding and removing files. In order to do peer-to-peer file transfers, both mobile devices (sending and receiving) must allow access to the file systems on the devices.



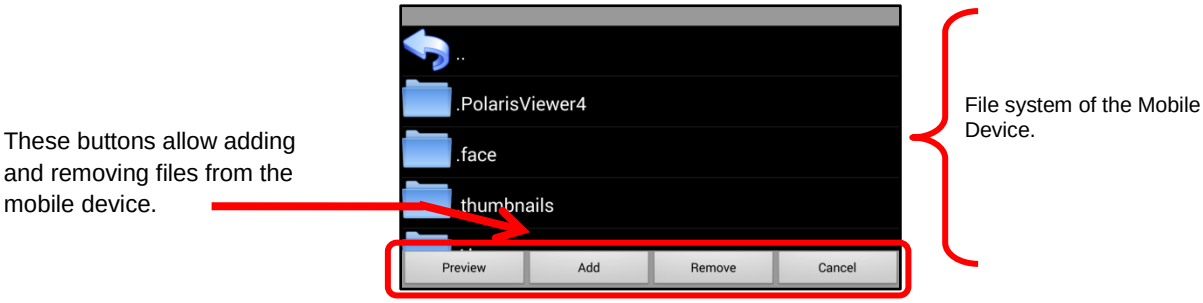
Important Notes:

a. This feature is turned "off" by default.
b. It must be explicitly turned "on" (Enabled) by the User of the mobile device since it allows access to the internal file system of the mobile device by others.
c. This feature **CANNOT** be changed by another user or by the system. Only the local user can adjust this setting.
d. For YOU to access this feature on another persons mobile device you must have security credentials that allow access.

The "Internal Memory" channel profile is the place where this configuration is made. See **Section 5.6** for configuration details.

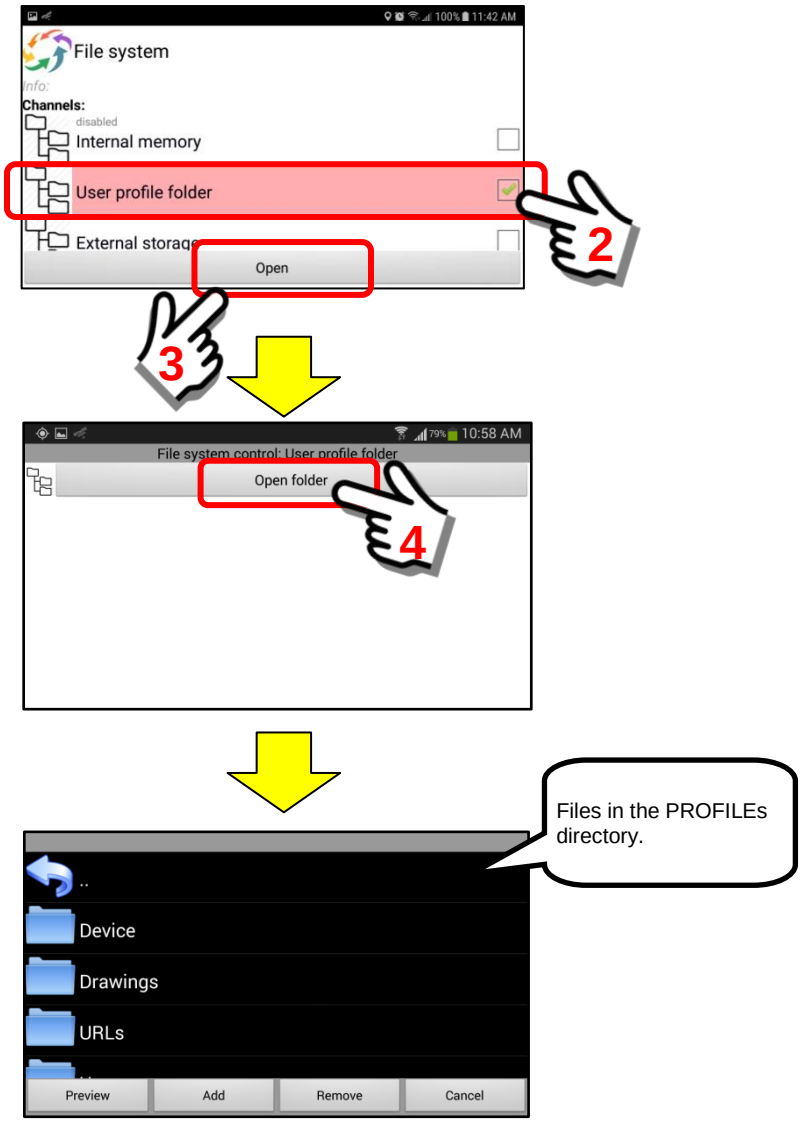


The file system on the mobile device.



b. User profile folder

This menu choice allows a User to view the files and folders located in the “PROFILEs” section of the SentryMDU App. Although we provide access for a User to these files we would caution about making changes to any of the files unless you really know what you are doing. This is for Developers and computer geeks.



c. External Storage (SD Card)

This menu choice allows a user to designate an SD Card (if one is installed) to be a storage device for the SentryMDU App. The “External Storage” channel profile is the place where these changes are to be made. See **Section 5.8** for details on SD Card configuration and use.

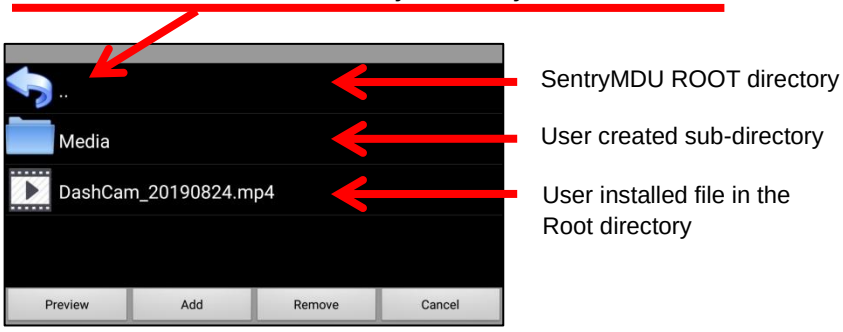
Important Notes:

a. This feature is turned “on” by default (SD Card can be used).
b. It must be explicitly turned “off” (disabled) by the User of the mobile device if you do not want others to have access to the SD Card on the mobile device. Do you trust them?
c. This feature CANNOT be changed by another user or by the system. Only the local user can adjust this setting.
d. For ANOTHER USER to access this feature on YOUR mobile device they must have security credentials that allow access.

Generally, the SD Card is used to store audio-video files when you have a device recording 24/7 and you are generating many GB of files and would exceed the capacity of your internal memory.

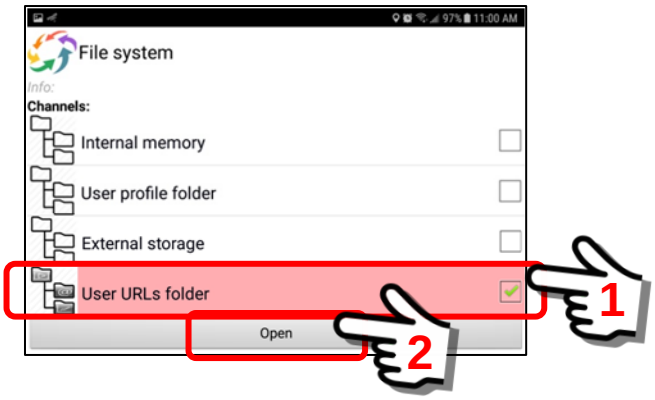
Stored files will be displayed relative to the User Defined ROOT directory. When you “open” the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card.

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /

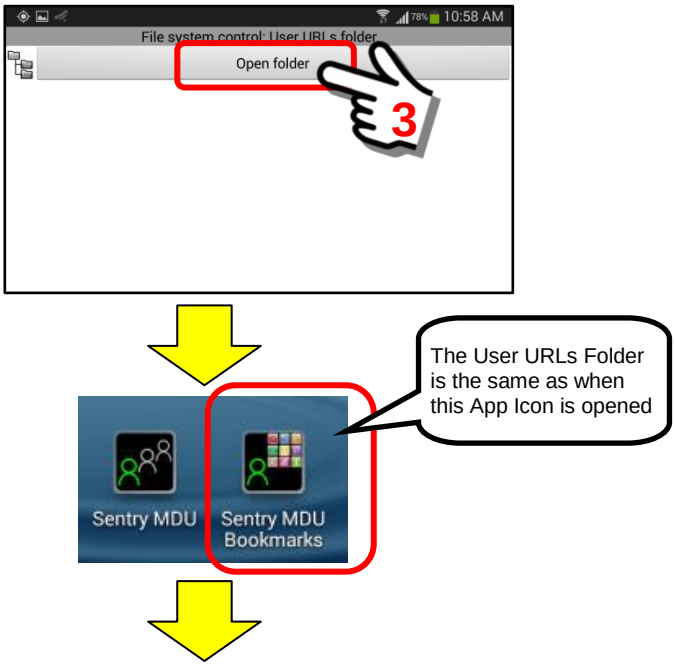


d. <u>User URLs folder (contents of SentryMDU Bookmarks Icon)</u>

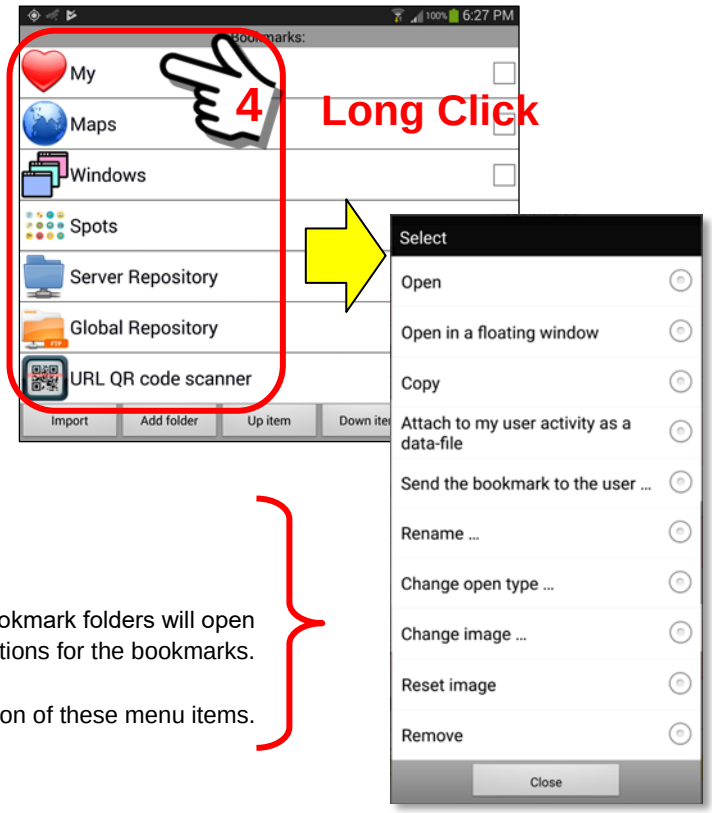
This menu choice allows a User to view the URL folders and files that have been created in the Bookmarks section. This capability will allow a user to transfer a complete bookmark folder to another user if desired (saves on configuration time for large organizations).



Open the folder to have access to Bookmark URLs.



Will display the Bookmark Folders that are stored in the Icon Folder on the mobile device.



A “long-click” on any of the bookmark folders will open another panel of options for the bookmarks.

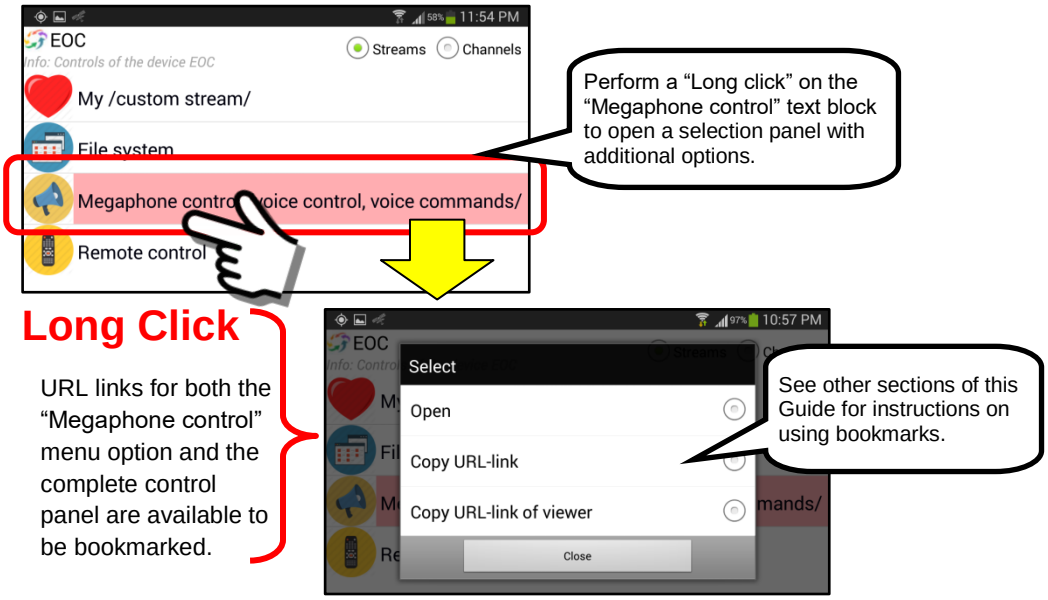
See **Section 9.3** for a discussion of these menu items.

4. ***Select the "Megaphone control" choice***

In this example, we will review the "Megaphone/Voice commands" option. The Audio Megaphone allows a User to speak into a local mobile device … and the remote device will broadcast their voice over the remote device speaker as a "Megaphone". The Voice Commands option will allow pre-recorded voice commands (can be in any language) to be initiated from a local mobile device and played over the loudspeaker of a "remote" mobile device.

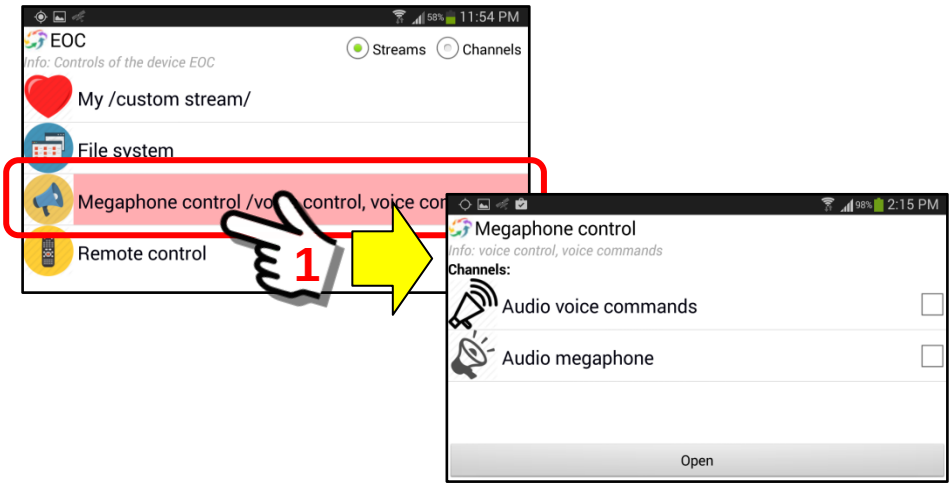
The "Megaphone control" menu option will accept both a long-click and a short-click. These two actions will provide different features.

Long-click on the Megaphone control option



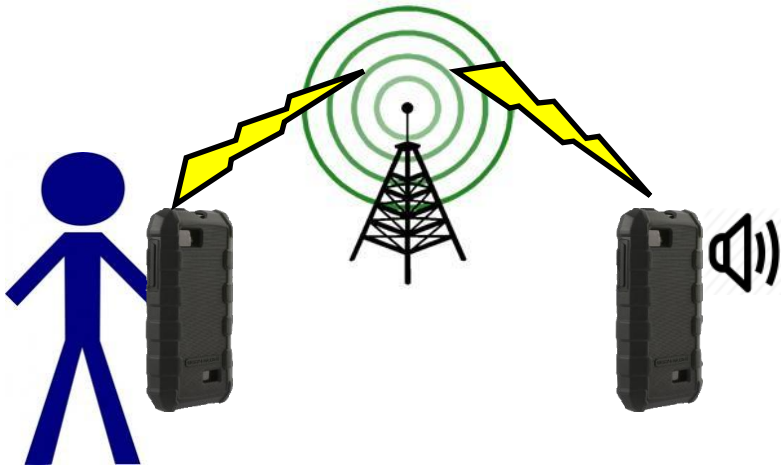
Short-click on the Megaphone control option

A short-click on the "Megaphone control" menu option opens another panel that provides for access to the sending of pre-recorded voice commands and the using of a "remote" device as a megaphone loudspeaker.

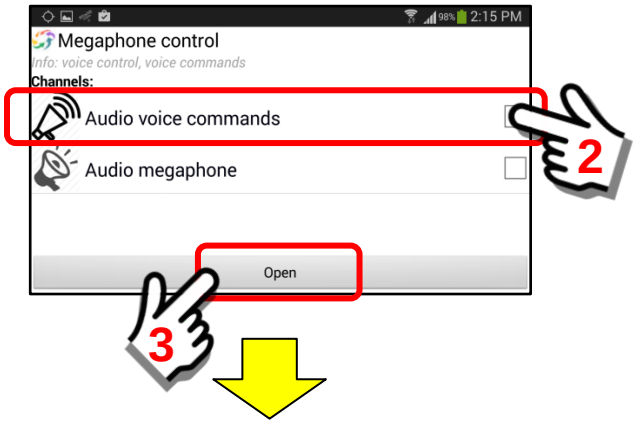


a. Audio voice commands

The “Audio voice commands” option allows a user to send pre-recorded messages/commands to a remote mobile device and play them on the loudspeaker.



To engage this feature, click on the “Audio voice commands” channel on the Megaphone control panel.



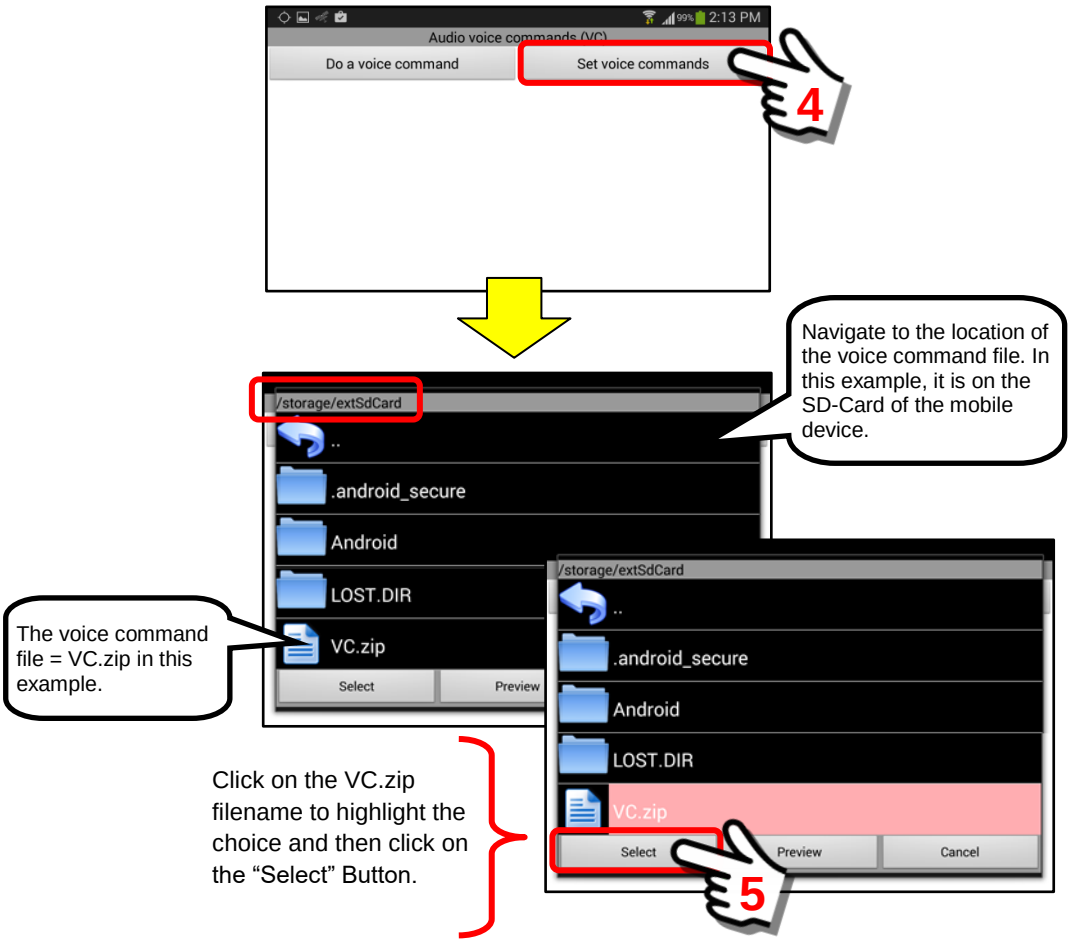
To send another mobile device “voice commands” (pre-recorded voice file) it is required that the voice files be installed on the receiving mobile device (if they are not already installed). The “sending” device simply sends the other phone a “code” indicating which voice command file to play. See the document repository on the DLT Website for information of how to create voice command files for the SentryMDU System.

The process is as follows:

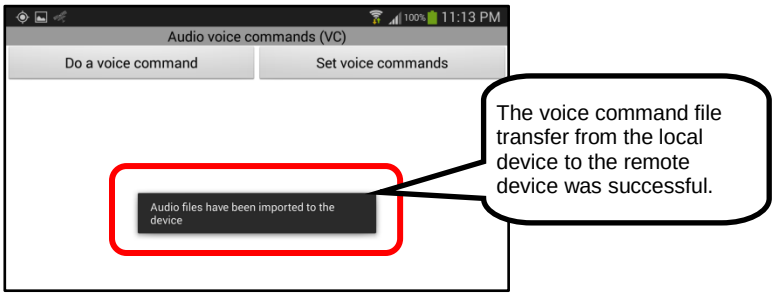
1. In this example we assume the voice command file has not been installed on the remote device yet.

2. Click on the “set voice commands” button, navigate to the folder location of the voice command file. Typically, a voice command file will be a .zip file containing a group (10 – 20) of voice commands.
3. Select the voice command file and install.
4. Since you are accessing the Mobile Object panel of the remote device, the voice commands file that you locate on YOUR local device will be copied to the remote device.
5. If the transfer is successful, a message will appear. The voice command files are now installed on the remote device.
6. To execute a voice command click on the “Do a voice command” button, fill in the ID number of the voice command and click “OK”.
7. The remote device will now play the voice command audio file with the ID Number you have selected.

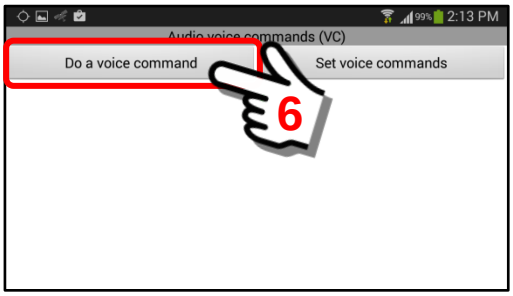
Install the files with the voice commands on the remote device.



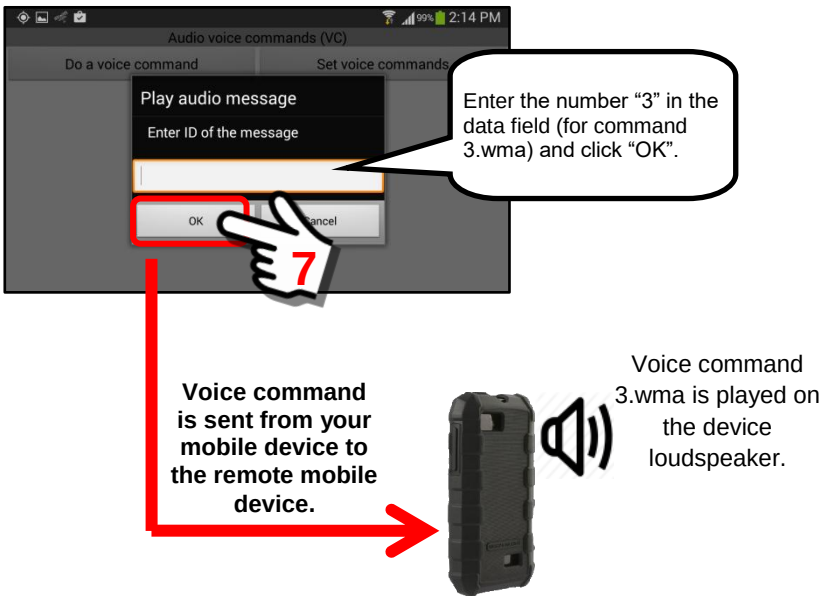
If the file transfer is successful the following message will appear.



The system is now ready to send a “Voice command” from your device to the remote device.

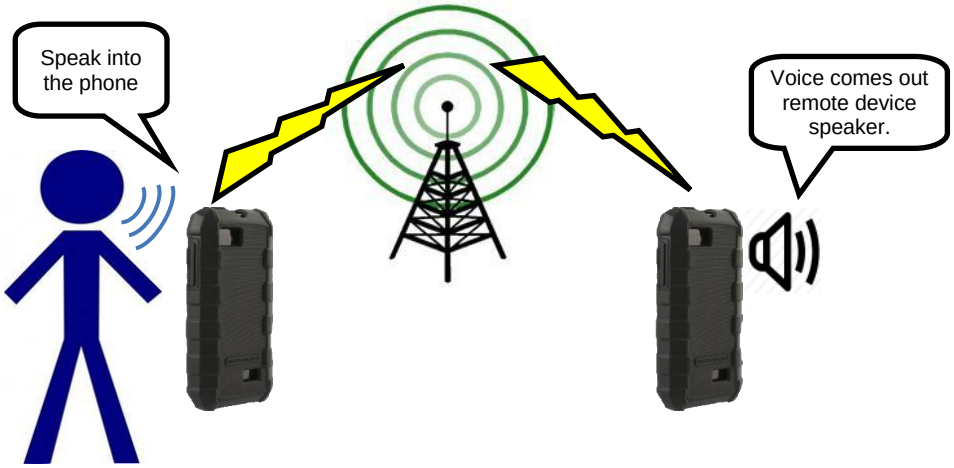


The system will now ask for the ID number of the voice command message. Typically, voice commands have filenames such as 1.wma, 2.wma, 3.wma ….. 20.wma. Voice commands may be in many different audio formats. This example is using .wma audio files.

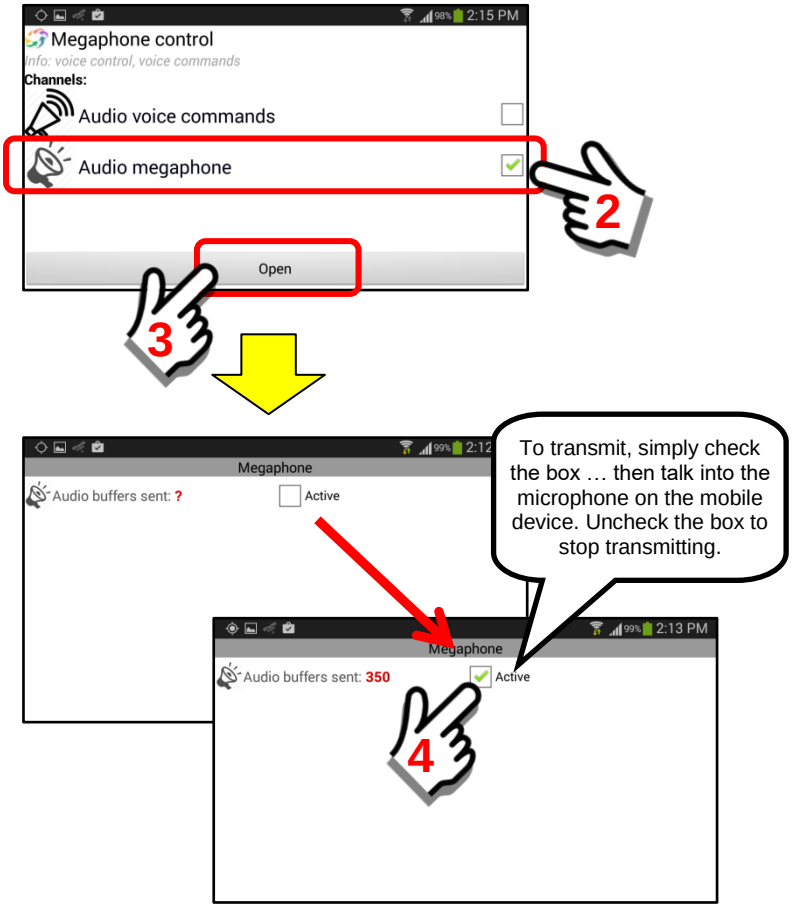


b. Audio megaphone

The Audio Megaphone allows a User to speak into a local mobile device … and the remote device will broadcast their voice over the remote device speaker as a “Megaphone”. This feature is most often used when the remote device is coupled via a Bluetooth external speaker. This will allow sufficient volume.



To engage this feature, click on the “Audio megaphone” channel on the Megaphone control panel.

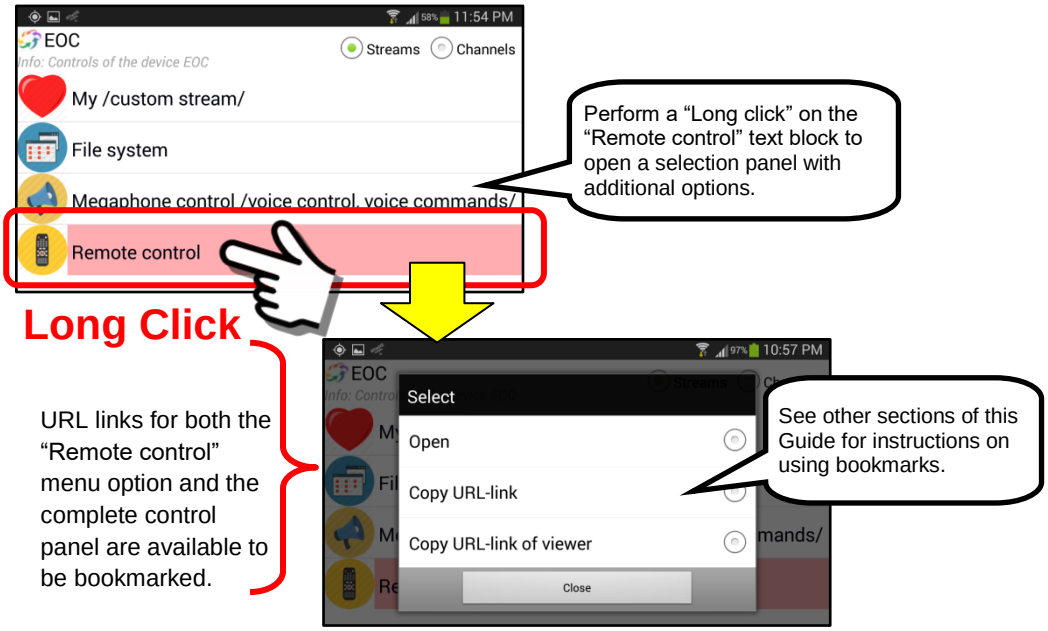


5. ***Select the "Remote control" choice***

In this example, we will review the "Remote Control" option. As of this writing, the Remote Control menu item is not active. In the future, the remote control option will allow a user to control a "real-world" interface such as Pan-Tilt-Zoom (PTZ) camera controllers, relay boards and other devices.

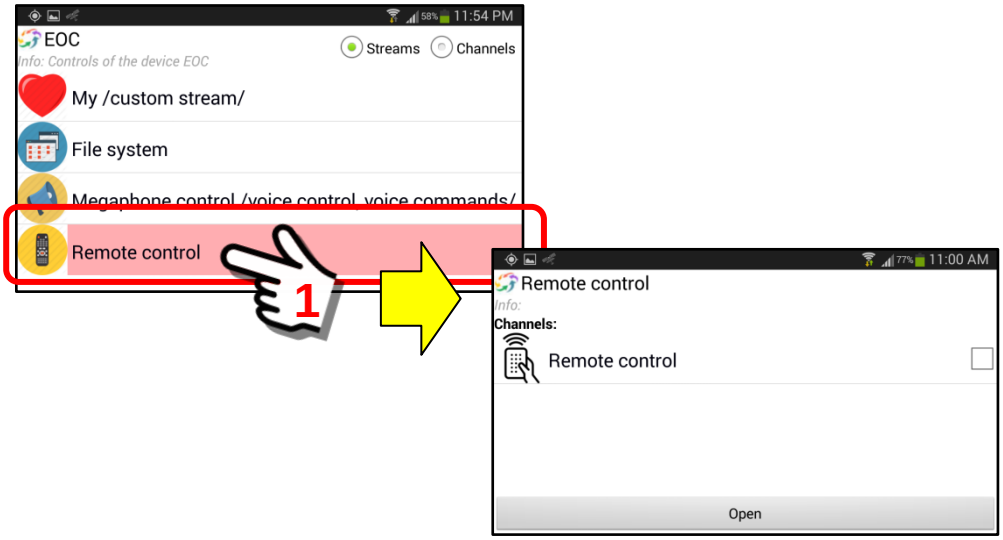
The "Remote control" menu option will accept both a long-click and a short-click. These two actions will provide different features.

Long-click on the Remote control option

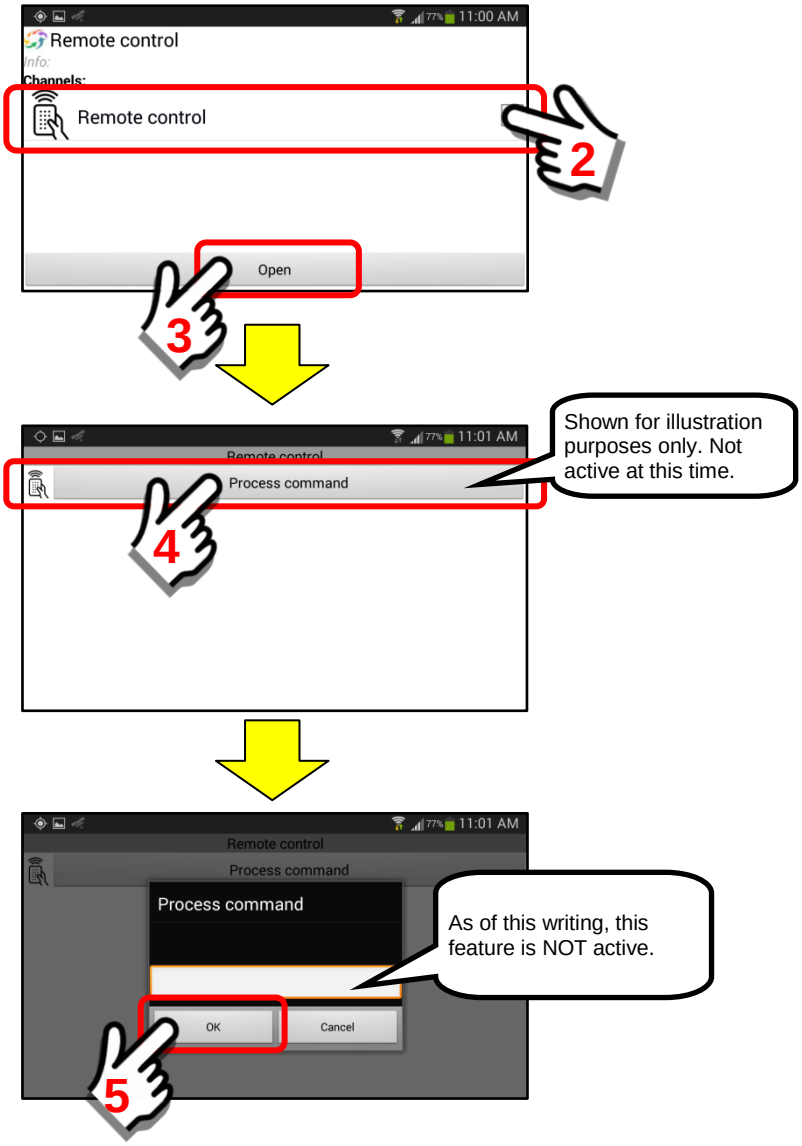


Short-click on the Remote control option

A short-click on the "Remote control" menu option opens another panel that provides for access to the sending of a "process" command string (future implementation). Currently, no actions will take place.

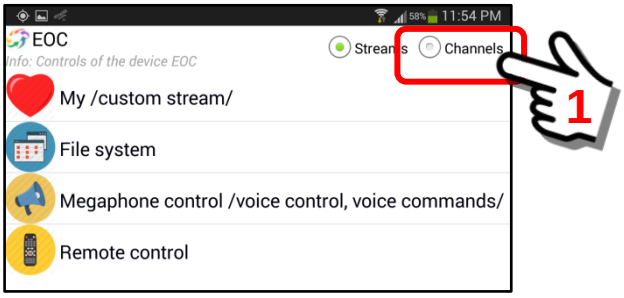


Although these following menus are available, no actions will take place. The following screens are for informational purposes only.

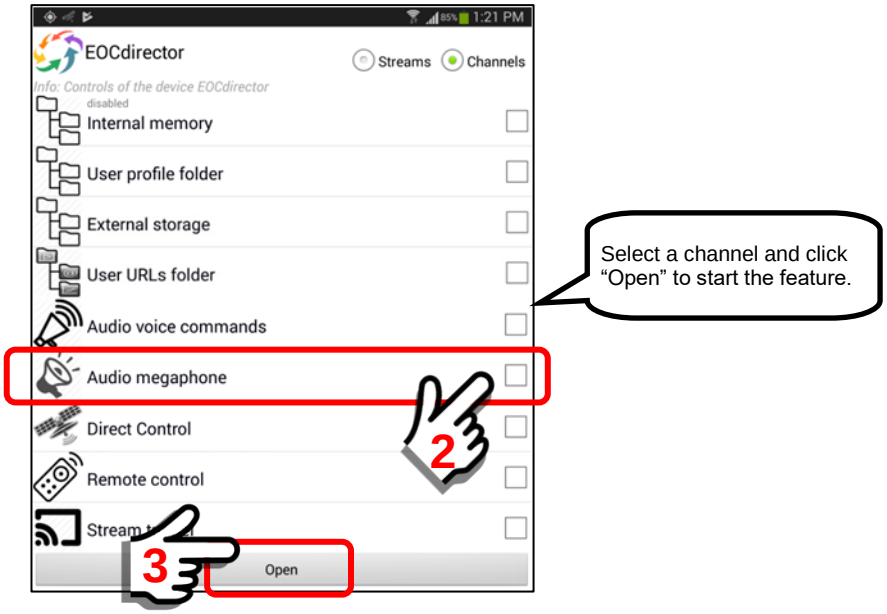


6. ***Controls Button – Channels View feature.***

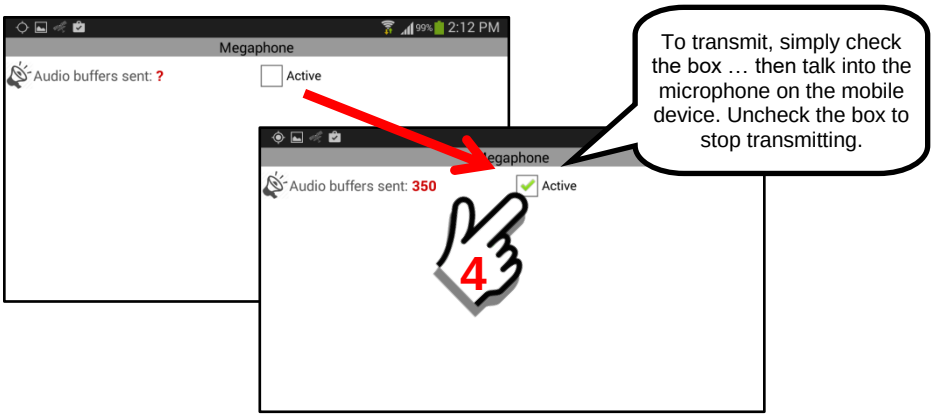
In the previous examples we have been reviewing the “Streams” View of the Controls Button features. As we navigated through menu levels we accessed the individual “channels” that make up the data streams. It is possible to access and execute the channel options directly through the “Channels View” feature.



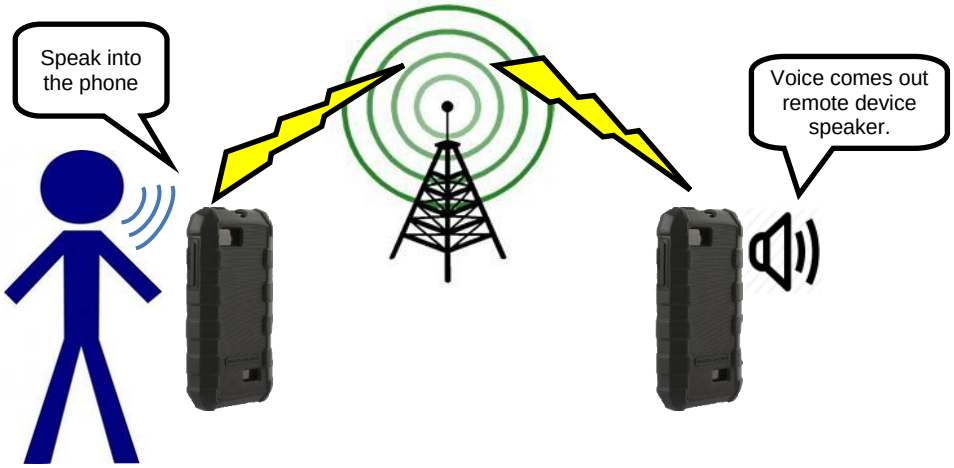
The channels view simply provides all channels in a list. A user may “select” and open the following channels.



In this example, we have selected the Audio Megaphone channel to launch.



A typical Audio Megaphone scenario is shown below.



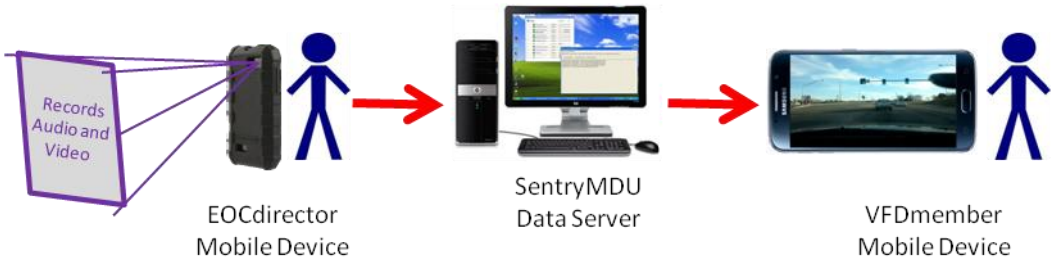
10.21. Example – Creating a "Direct Control" peer-to-peer UDP link

Overview:

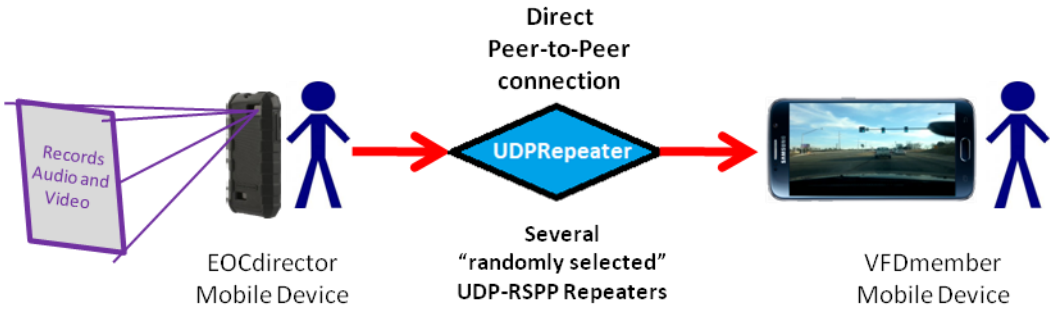
The SentryMDU System allows Users to send out and receive multiple streams of sensor data (ie audio-video, GPS, accelerometer, gyroscopic, etc.). Depending on the network bandwidth (Cellular, WiFi) this can increase server load and network latency. In order to improve overall system performance the SentryMDU system offer users the option of shifting TCP data transfers to the UDP protocol and route the data transfers to UDP Repeater Applications that do the bandwidth intensive work. These UDP Repeater applications may be running on standalone servers at various worldwide locations.

In the "Direct Control" scenario, system loads are shifted from the Data Server to the individual Client Devices and the distributed UDP Repeaters. All control traffic will be tunneled through a peer-to-peer UDP connection via the distributed UDP Repeaters. This "Direct Control" channel is based on the SentryMDU "UDP-RSPP" protocol.

The SentryMDU System typically uses the SentryMDU Data Server as the connecting device between two communicating Client Devices.



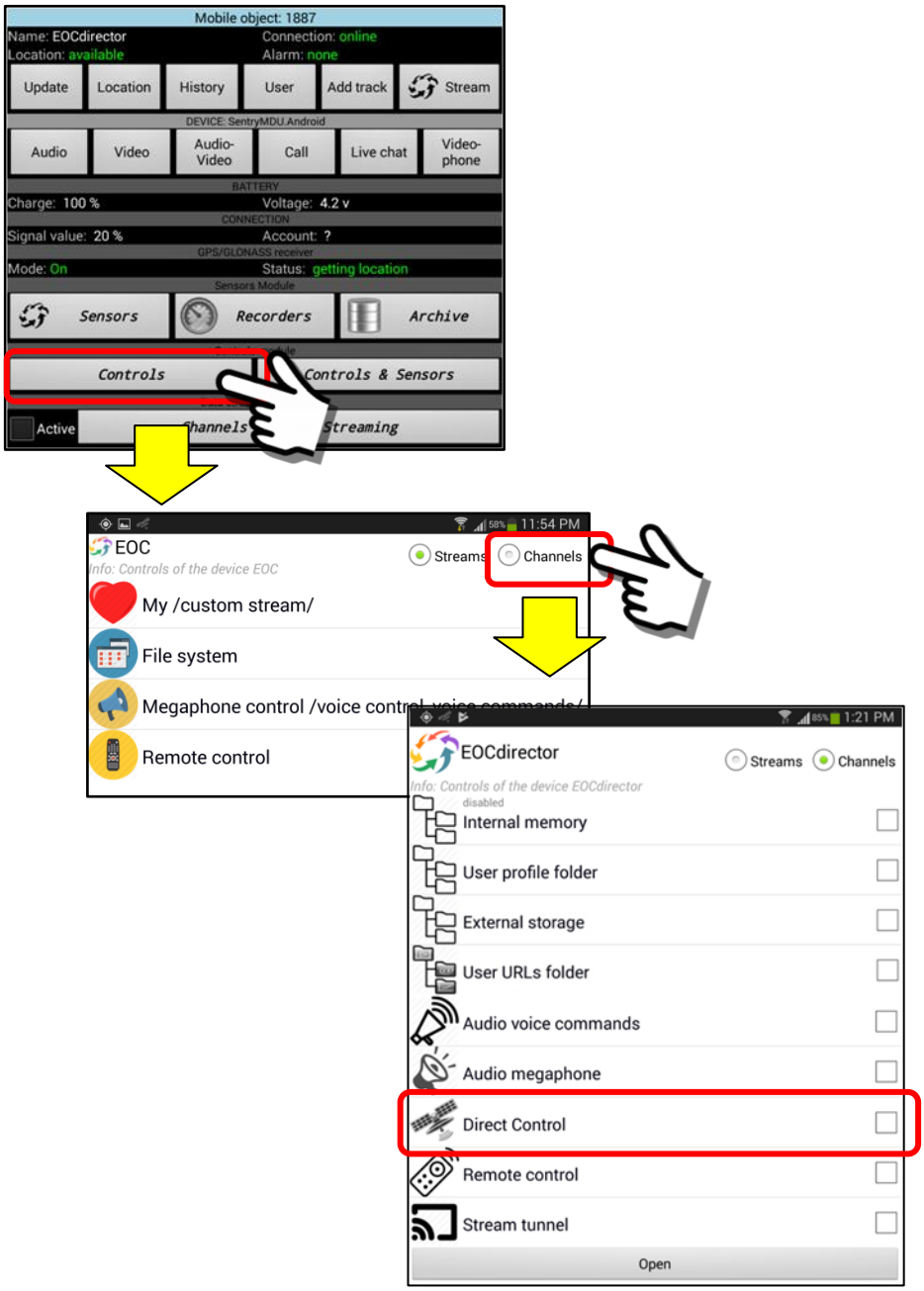
The "Direct Control" feature uses a direct connection between the two client devices (peer-to-peer). Traffic is routed through the UDP Repeaters. This not only makes things "faster" but increases the security of a "Client-to-Device" link since it is practically impossible to know (as a Man-in-the-Middle) which operations a Client Device is using and at which time they are accessing their device.



Access to the "Direct Control" Feature is available from the Mobile Object Panel of any device.

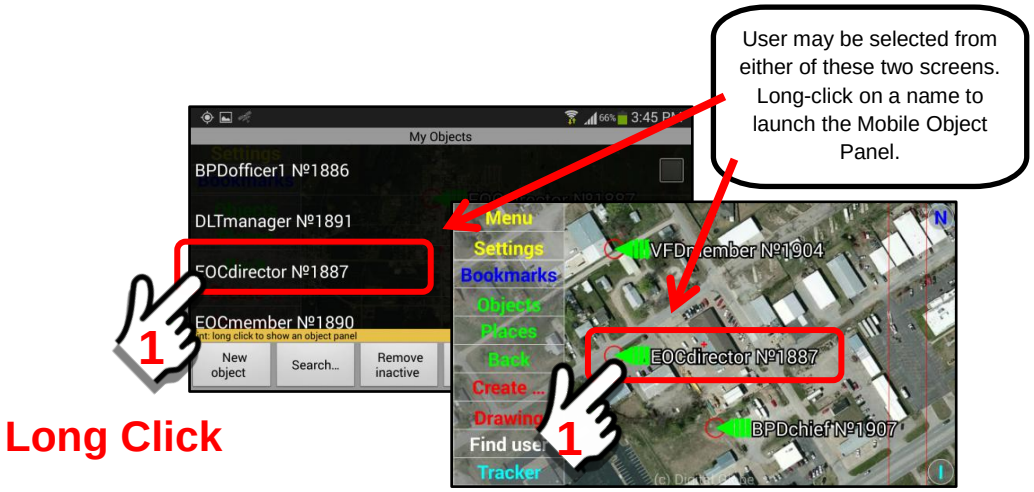
Mobile Object Panel – Accessing the "Direct Control" feature:

The Direct Control feature is on a sub-menu of the "Controls" Button which is located on the lower left side of the Mobile Object Panel. This button will open a panel that will allow a selection of pre-configured streaming options or individual "channels" that may be accessed by the User. The "Direct Control" feature is one of those options.



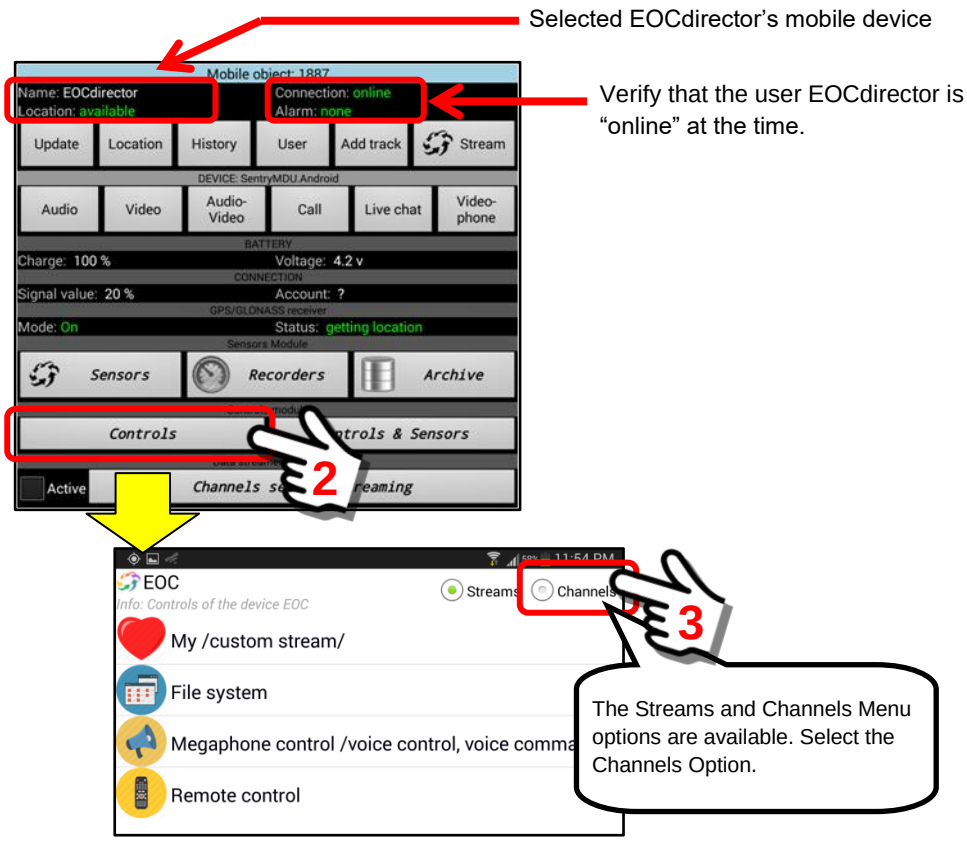
Steps for access to the “Direct Control” feature:

1. ***Select the User mobile device you want to access.***
   Using either the “My Objects” panel or the Object Markers displayed on the main map screen, select the user that you want to access.



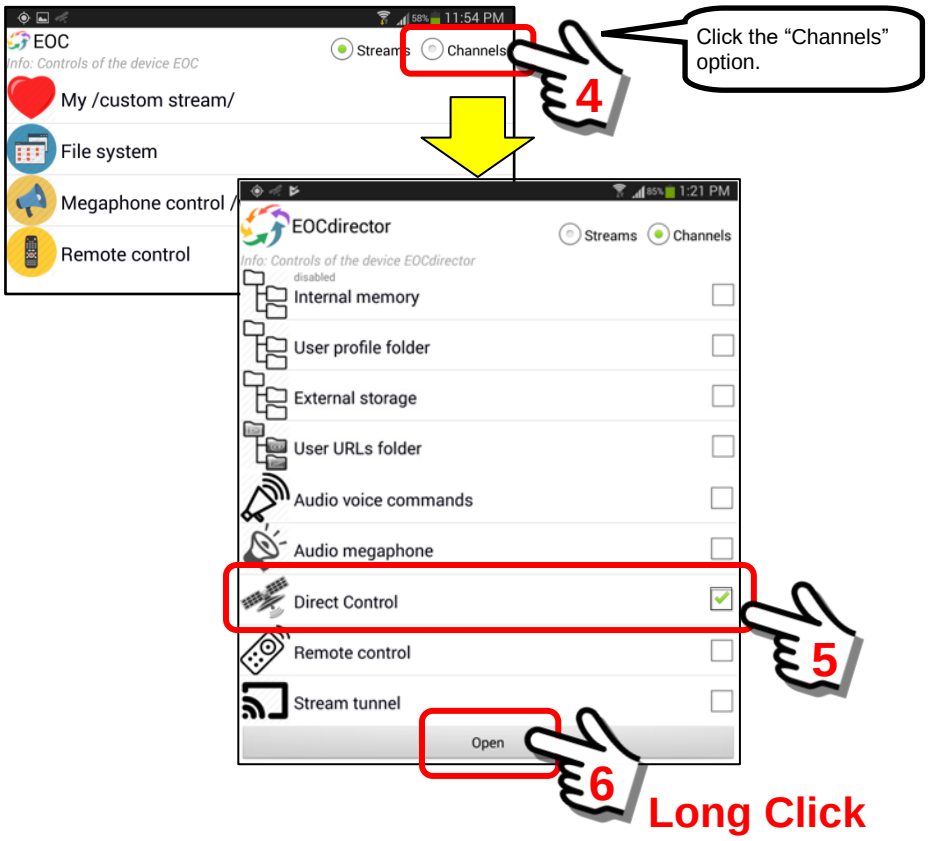
2. ***Open the Controls Panel of the remote device.***
   In this illustration we are assuming we would like to access the Controls Section of the User Device = EOCdirector.

   Click on the “Controls” Button.



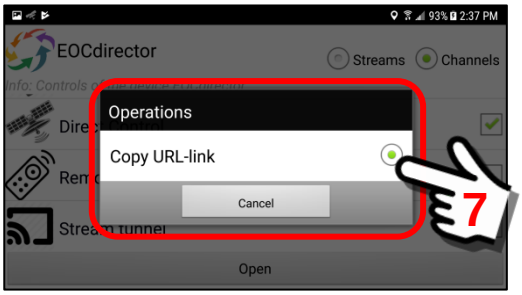
3. ***Select the "Direct Control" menu choice.***
At the Controls Panel, select the "Channels" Option. This will open a sub-panel with 8 choices. The Direct Control choice is option #6.

Put a "checkmark" in the checkbox and perform a "Long click" the **Open Button** at the bottom of the panel.



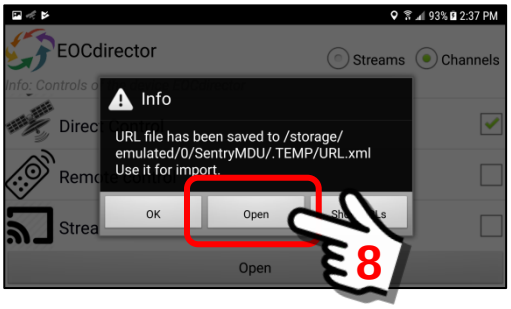
4. ***Create a "Direct Control" URL link for the connection.***
Performing a "Long click" on the Open Button will open a "Copy URL-link" pop-up menu box. This is the first step in specifying the URL link for the peer-to-peer UDP-RSPP connection.

Click on the "Copy URL-link" Button.

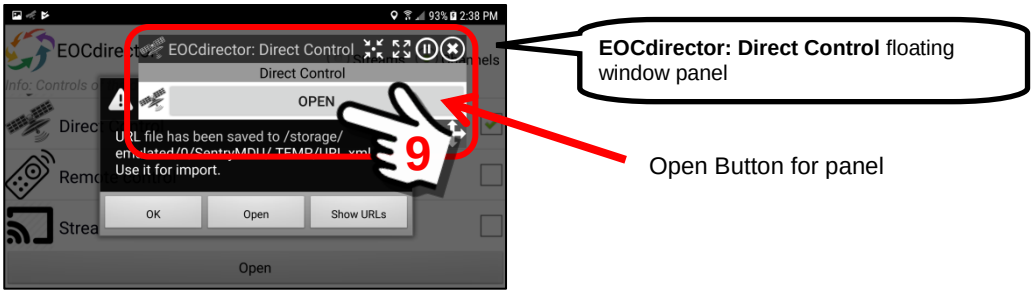


A pop-up dialog box will appear with the standard 3 options for the URL-link that has been copied/saved. We now need to “open” the URL-link in a floating window. This will initiate the UDP connection and make the Mobile Object Panel of the Remote User available for selecting audio-video sensors.

Click on the “Open Button” on the Info Panel.

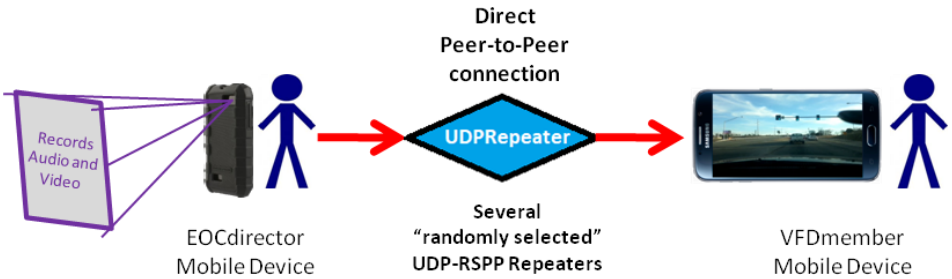


A floating window panel will appear at the top of the page. In this panel will be “another” OPEN Button. Click on this “Open Button” to launch the Mobile Object Panel for the remote device.



5. ***Establish the UDP-RSPP Direct Connect UDP Repeater connection.***
As the “**EOCdirector: Direct Control**” floating window is opened, the UDP-RSPP encrypted connection is initialized through the UDP Repeater server network. As long as the floating window remains “open”, all control traffic will be tunneled through a peer-to-peer UDP connection via UDP Repeaters.

All traffic now is routed as follows:



6. ***Open the Mobile Object Panel and access sensors of remote user.***
A click on the "OPEN" Button on the "**EOCdirector: Direct Control**" floating window will launch the Mobile Object Panel for this user. The mobile object panel will reside BEHIND the floating window.

When the **Direct Control EOCdirector** mobile object panel is displayed, the EOCdirector NAME is replaced with the Mobile Object ID (ie #1887)

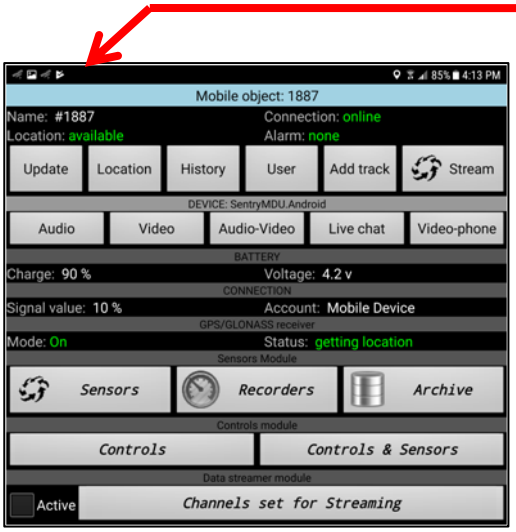
EOCdirector: Direct Control floating window panel

Mobile Object Panel for user = EOCdirector

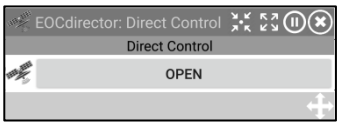
To access the features of the Mobile Object Panel, we will minimize the Floating Window to the Notification Bar.

Click on the Minimize Button.

The Mobile Object Panel for the remote device (ie EOCdirector) is now fully visible.



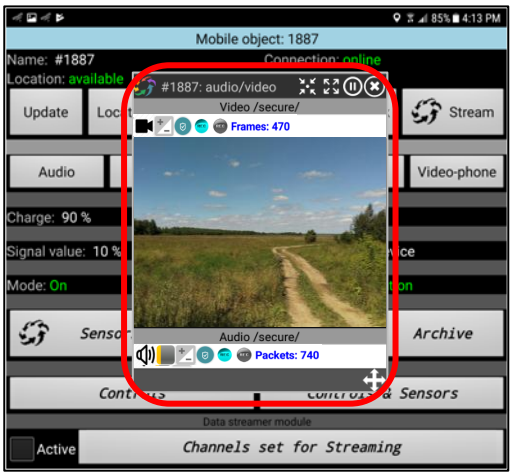
EOCdirector: Direct Control floating window panel minimized to the Notification Bar.



All data transferred between your device and THIS device (EOCdirector) will be tunneled through a peer-to-peer UDP Repeater connection.

7. ***Test the UDP-RSPP "Direct control" channel connection.***
At the Mobile Object Panel for the desired User, select the Audio-Video Button.

A Floating Window Panel for the Audio-Video transmission from user EOCdirector will now be created as an overlay on the screen.



All audio-video data transferred between your device and THIS device (EOCdirector) will be tunneled through a peer-to-peer UDP Repeater connection.

8. ***Close "Direct Control" UDP Repeater Channel and exit.***
When finished, make sure to close the #1887 floating window, the "**EOCdirector: Direct Control**" floating window, the Mobile Object Panel and return to the Main Map Screen. It is easy to "forget" you are 4 layers deep in overlay windows.

10.22. The Controls Module, “Controls & Sensors” Button

Overview:

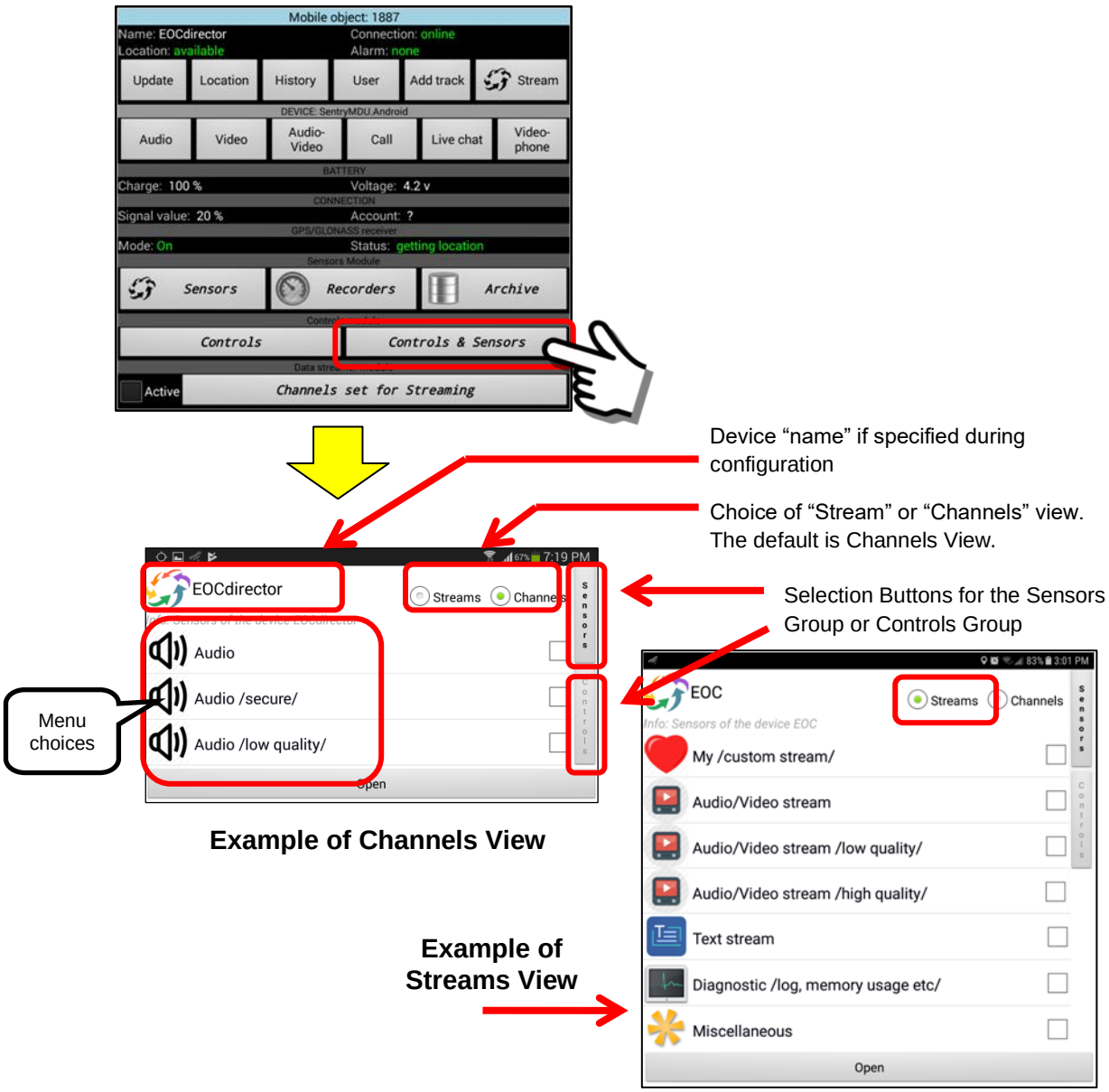
The “Controls & Sensors” Button opens a panel that is a combination of the Sensors button and the Controls button (as the name implies).

This capability is only available if the User requesting access has the appropriate security credentials to control the remote device.

Mobile Object Panel – Controls & Sensors Button:

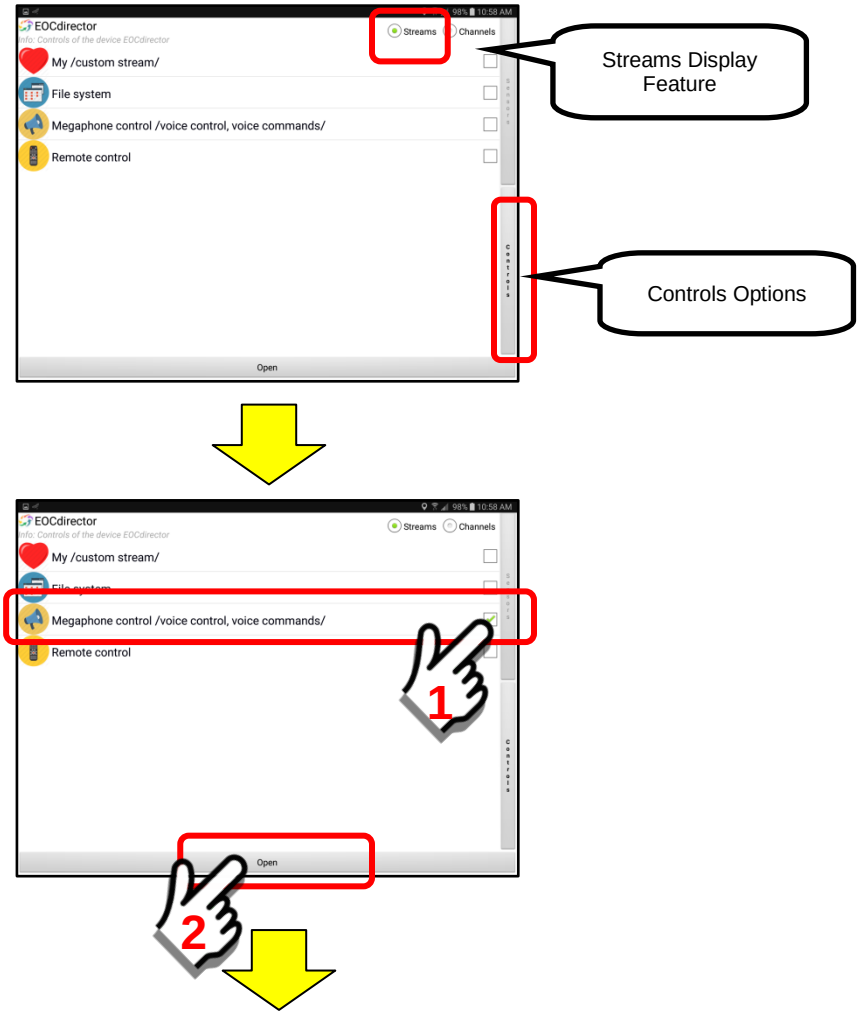
The “Controls & Sensors” Button is located on the lower right side of the Mobile Object Panel. This button will open a panel that is a combination of both the Sensors and Controls feature set.

Important Note: This feature does not provide notification on the remote device that another user(s) has access.



Display options available with the “Controls & Sensors” feature:

1. ***Streams selection with “Controls” options displayed.***
   In this example we have selected the “Streams” feature and the “Controls” display option.

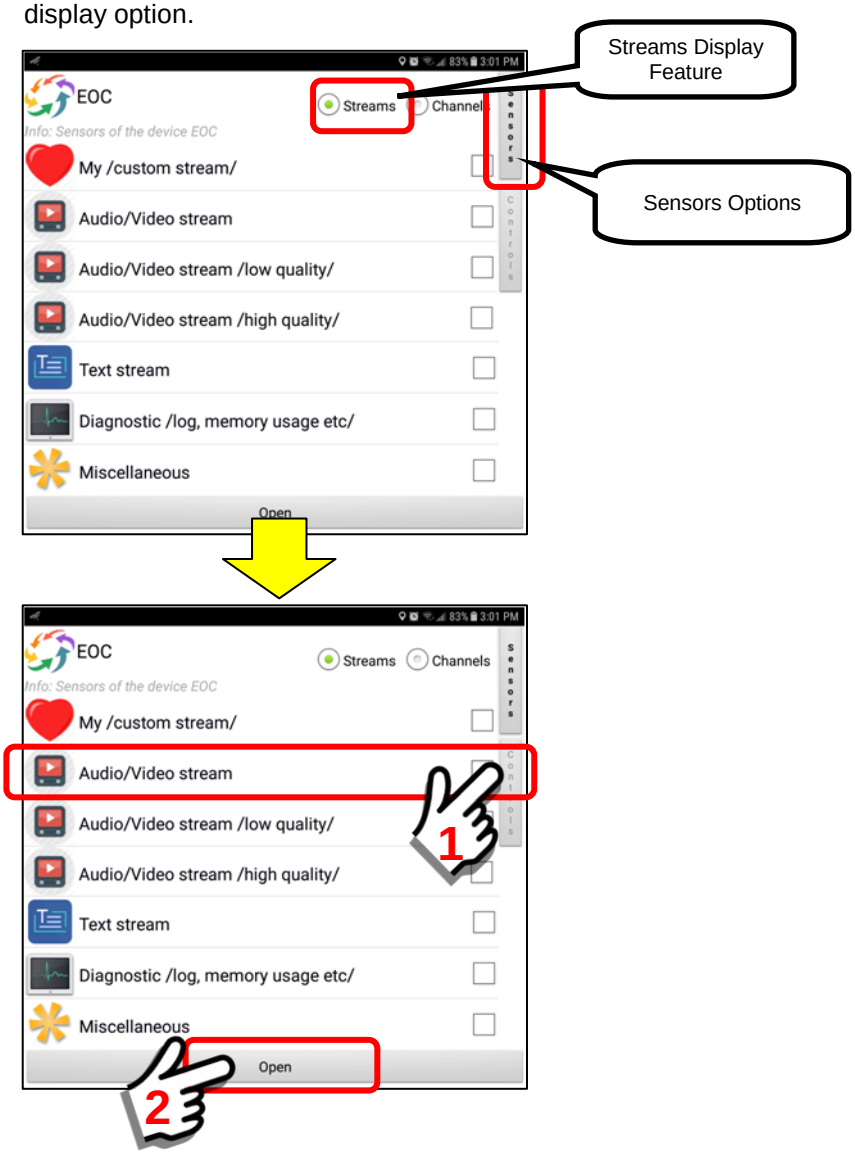


In this example, since we have selected the “Streams” with the Controls Option, the resulting panel has 2 channels that are active as follows:

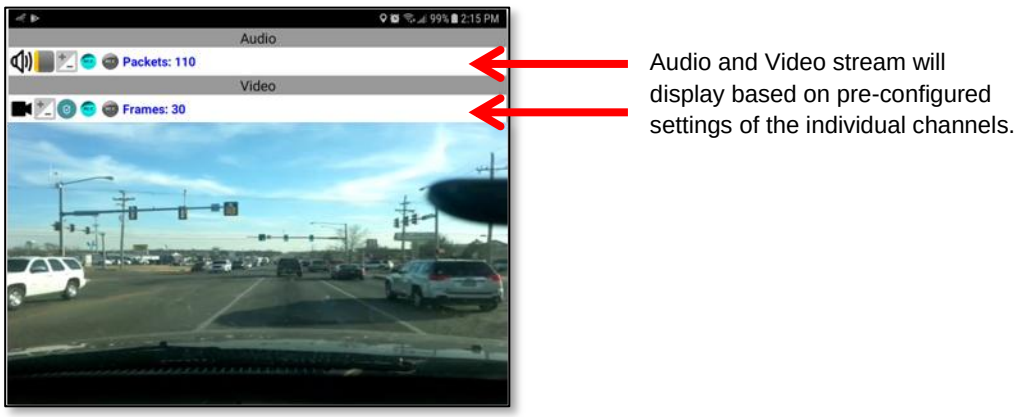
a. Voice Commands Channel
b. Megaphone Channel

2. ***Streams selection with "Sensors" options displayed.***

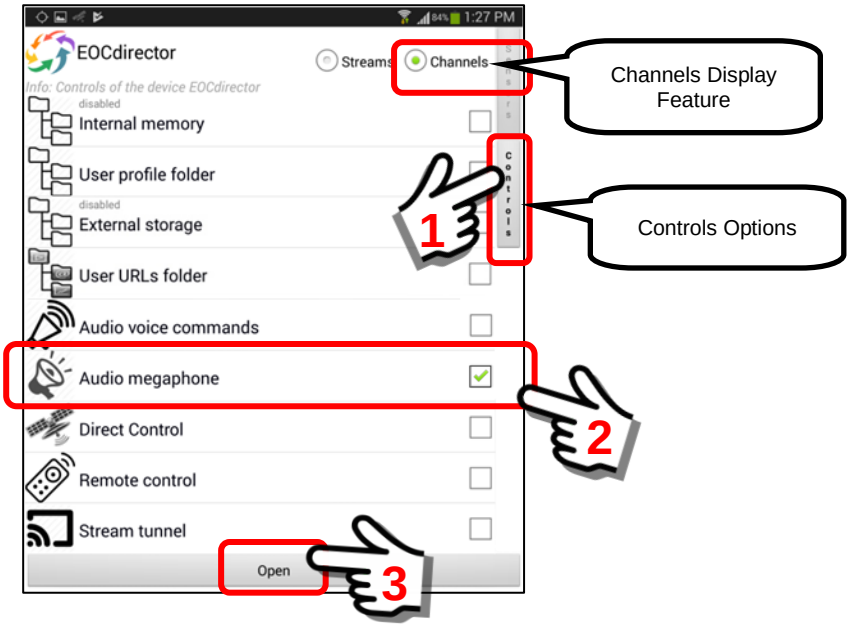
In this example, we have selected the "Streams" feature and the Sensors display option.



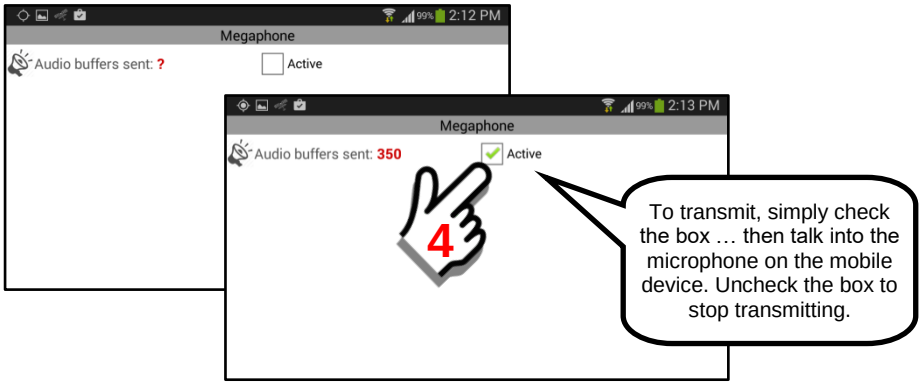
In this example we have selected the Audio/Video stream. This is a pre-configured stream that includes an audio and video channel as shown below.



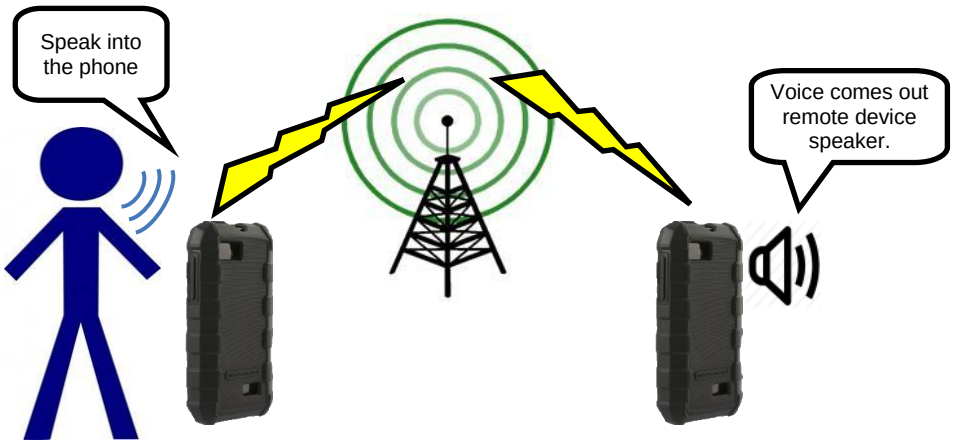
3. ***Channels selection with "Controls" options displayed.***
In this example, we have selected the "Channels" feature and the Controls display option. Put a "checkmark" in the Audio Megaphone selection box and click the "Open" Button.



In this example, we have selected the Audio Megaphone channel to launch.



A typical Audio Megaphone scenario is shown below.



4. ***Channels selection with "Sensors" options displayed.***
In this example, we have selected the "Channels" feature and the Sensors display option. Note that we have selected 4 sensor channels to display.

10.23. The Data Streamer Module, “Channels set for Streaming”

Overview:

This section will describe how to set up and use the Data Streaming feature of the SentryMDU System.

The data streamer module allows a user to select and set up a sensor (or group of sensors) that will stream the data to the Sentry Data Server and multiple other mobile devices. Typically this data stream is an audio/video stream, but it could be any number of sensors that have been configured to stream the data.

The advantage of “streaming” is that one device may stream data to many other mobile devices without placing a high load on the originating device.

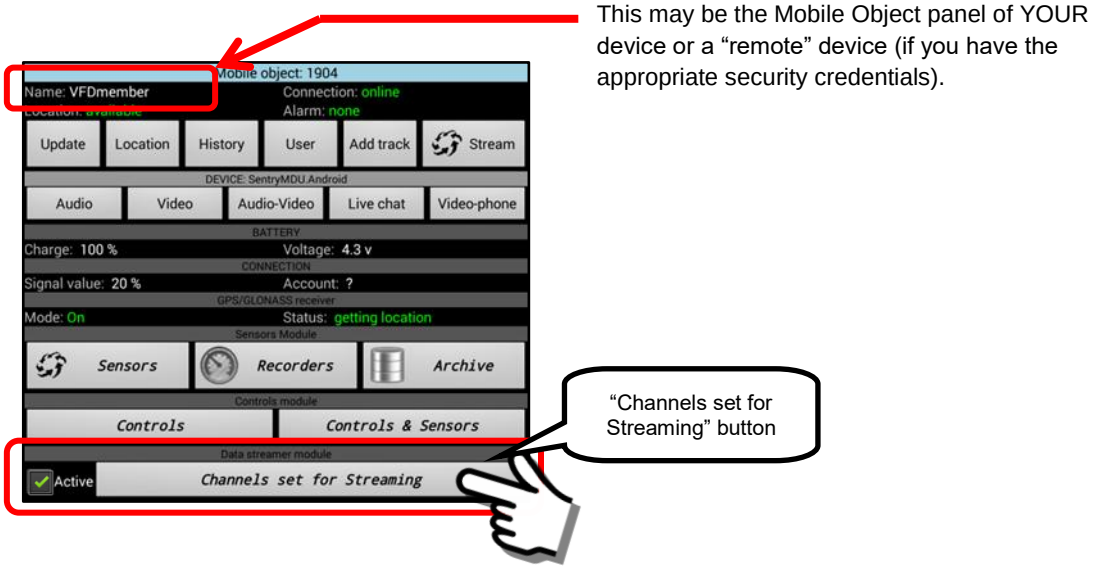
> **Important Note: The originator of the data streaming MUST configure their device for data streaming. All users wanting to “view” the data stream must have adequate security access to monitor the streaming.**

Mobile Object Panel – “Channels set for Streaming” button:

The “Channels set for Streaming” Button is located on the bottom of the Mobile Object Panel. This button (and the associated “Active” checkbox) will open a panel that allows the selection and configuration of the streaming sensors/parameters.

> **Important Note: This feature does not provide notification on the remote device that another user(s) has access.**

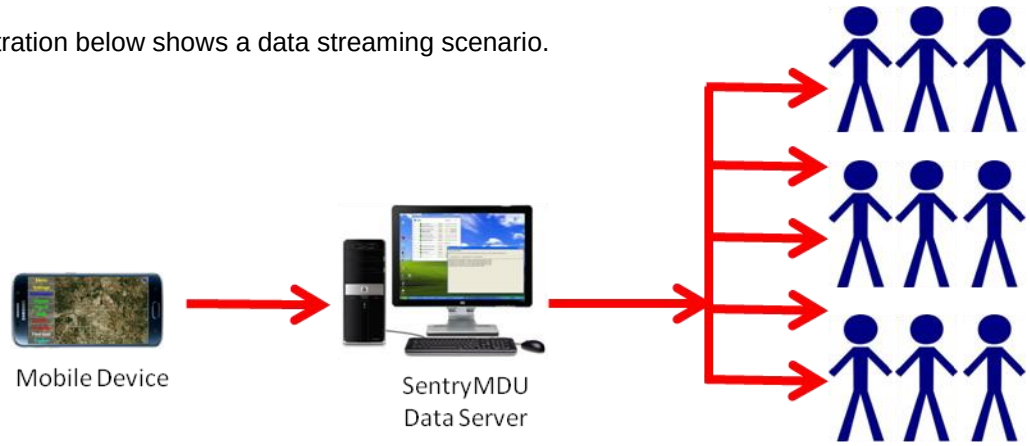
The “Channels set for Streaming” button is located as follows:



The “Data Streaming” method can theoretically process hundreds of thousands of simultaneous connections. In practical terms, a system will be limited by the available

internet bandwidth and the type of data being transmitted (ie bitrate and framerate of video transmissions).

The illustration below shows a data streaming scenario.



Description of how data streaming works:

In order to know when to use data "streaming" and when to use "direct connections" between mobile devices, it will be important for the user to understand how these two methods are used in the Sentry MDU System.

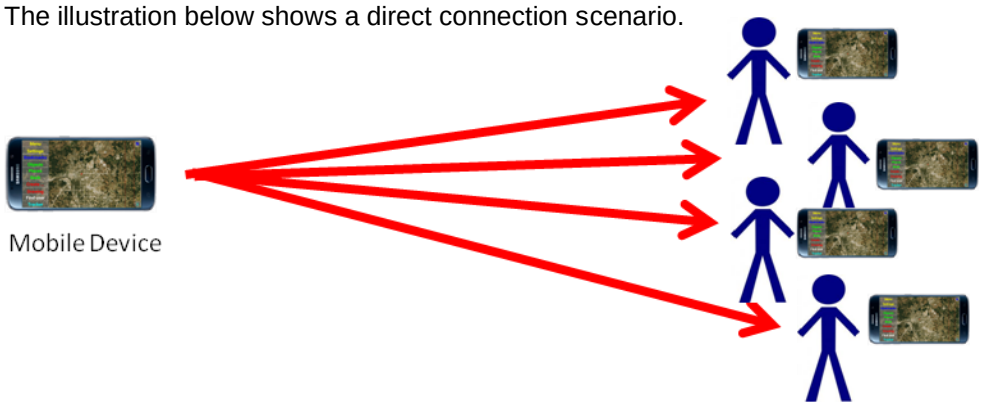
<u>Direct Connection</u>

The "direct connection" method is where one mobile device connects directly with another mobile device WITHOUT routing through the Sentry Data Server. The direct connection method may be limited by the available bandwidth (WiFi or Cellular) or the hardware itself (amount of memory and processing ability of the mobile device). Typically, a high quality mobile device will become overloaded with more than 8-10 direct connected devices.

In the direct connection method, as each new remote user connects to the originating mobile device, a "new" socket connection is created on the mobile device to handle the data flow. As more and more connections are made, eventually, this affects the performance of the originating mobile device and connections become unstable as data processing becomes overloaded.

Typically, you may assume that 1-5 direct connections will work fine and you should not have any issues. If you expect more than 5 users monitoring your data feed (audio-video) we would suggest you use the streaming method.

The illustration below shows a direct connection scenario.



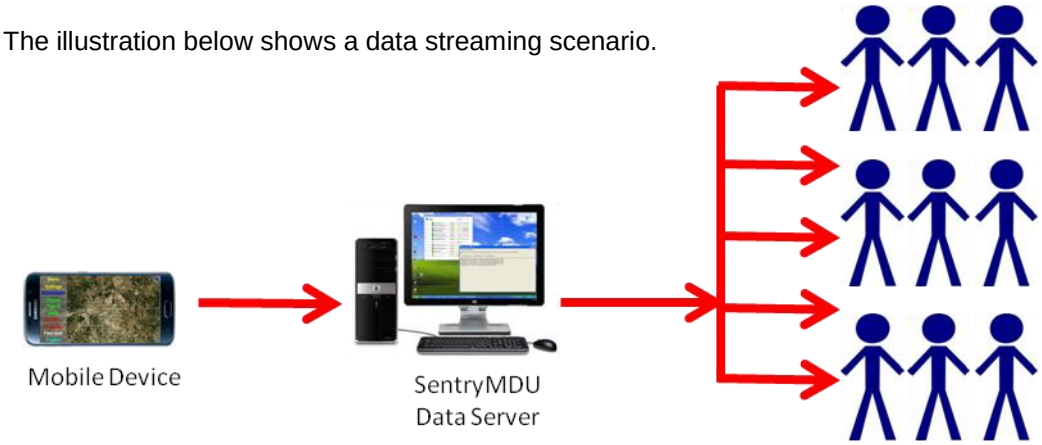
Data Streaming Method

The “data streaming” method is where one mobile device connects to the SentryMDU Data Server, which in turn connects to many remote mobile devices. The advantage of the Streaming Method is that the SentryMDU Data Server handles all of the bandwidth, processing and data streaming overhead. Since the Data Server is typically a high performance computer, it has the ability to provide hundreds of simultaneous streaming connections to remote mobile devices.

In this method the originating mobile device only sends a single data stream to the SentryMDU Data Server. Other remote mobile devices, in order to view the audio-video stream, simply click on the “Streaming” Button in the originators Mobile Object Panel. By doing this, they are actually connecting to the SentryMDU Data Server to receive the audio-video stream and therefore do not load the originating device.

The “Data Streaming” method can theoretically process hundreds of thousands of simultaneous connections. In practical terms, a system will be limited by the available internet bandwidth and the type of data being transmitted (ie bitrate and framerate of video transmissions).

The illustration below shows a data streaming scenario.



The following sections will describe how to configure a mobile device for data streaming.

Configuration of the Data Streaming feature:

The Data Streaming feature will require configuration steps to be taken on the “originating” device (the device that will be streaming the data). This section will describe the steps necessary.

The following process will be covered:

1. Select the mobile device that will be streaming the data (originating device).
2. Determine if existing sensors have been configured for data streaming.
3. Identify which sensors (ie Audio/Video) you would like to stream to other devices.
4. Configure selected sensors for data streaming.
5. Test data streaming feature to verify correct configuration settings.

The sections below will explore each of these topics in detail. Please note that in order to perform these configuration functions a User must have adequate security credentials and access. If you receive error messages that say “Access denied” then you do not have adequate security settings to make the necessary changes.

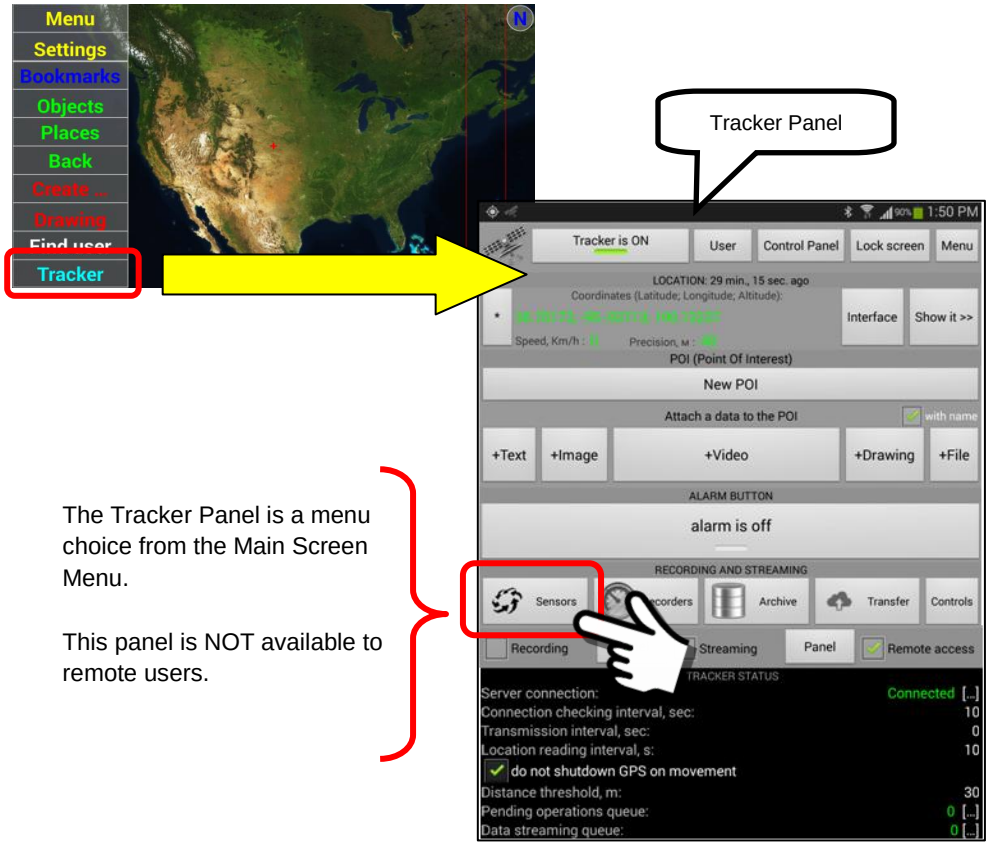
1. ***Select the mobile device that will be streaming the data.***
   In most cases, each user of a mobile device will configure THEIR own device for the data streaming sensors they want (ie Audio/Video). However, depending on the security settings of a User, they may also configure a “remote” device (mobile device belonging to another person). The process is exactly the same.

   In this example, we will be configuring the data streaming for our own device. We will assume our device belongs to User = EOCdirector.

   The configuration process starts by reviewing the configuration of the “Sensors” on the device. Access to the sensors can be found in two locations if you are on your own device and one location if you are attempting to configure a “remote” device.

   <u>Location of “Sensors” parameters on your own device</u>

   <u>Tracker Panel – Sensors Button</u>

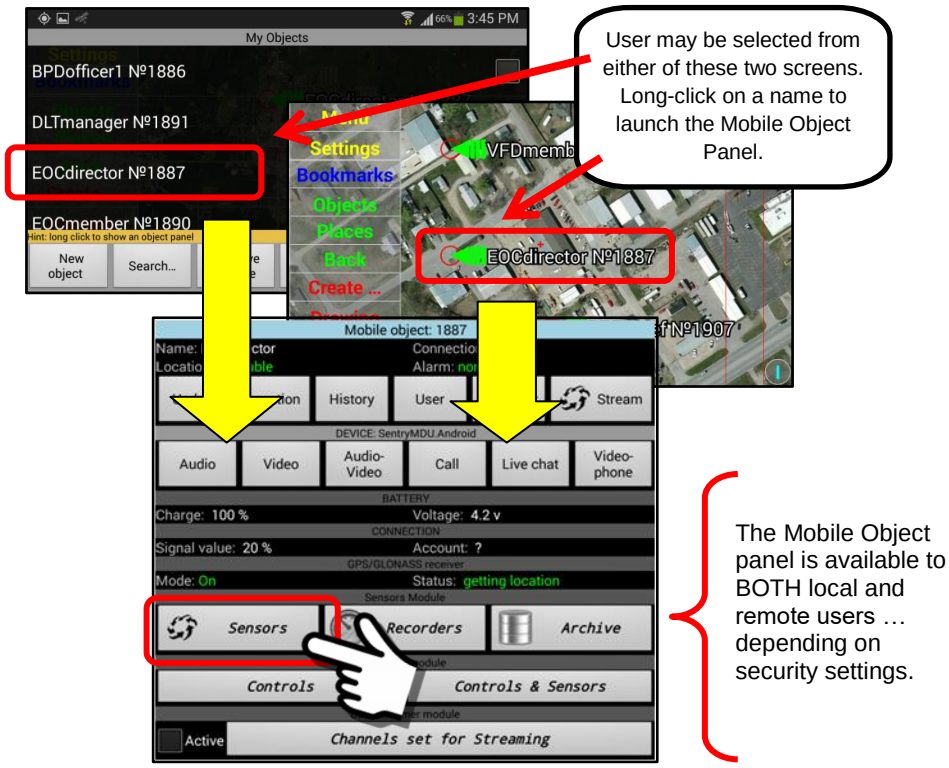


The Tracker Panel is a menu choice from the Main Screen Menu.

This panel is NOT available to remote users.

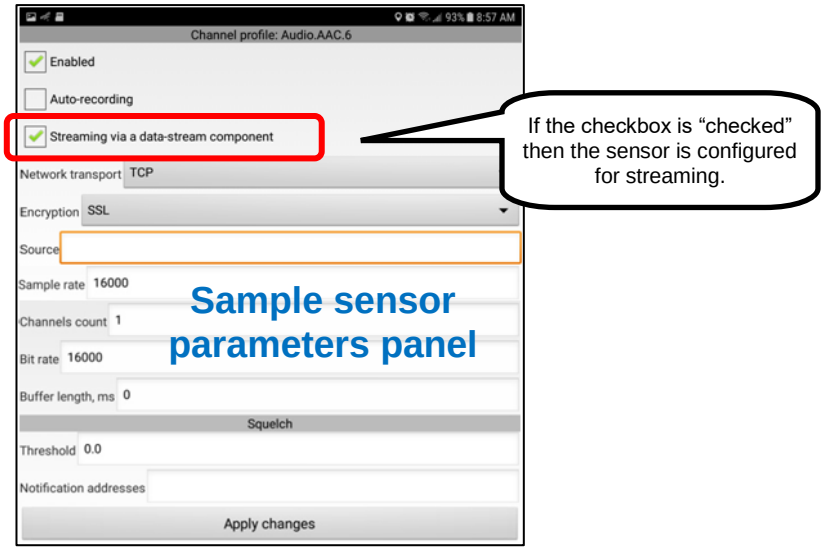
Location of "Sensors" parameters on BOTH your device and a "remote" device

Mobile Object Panel – Sensors Button



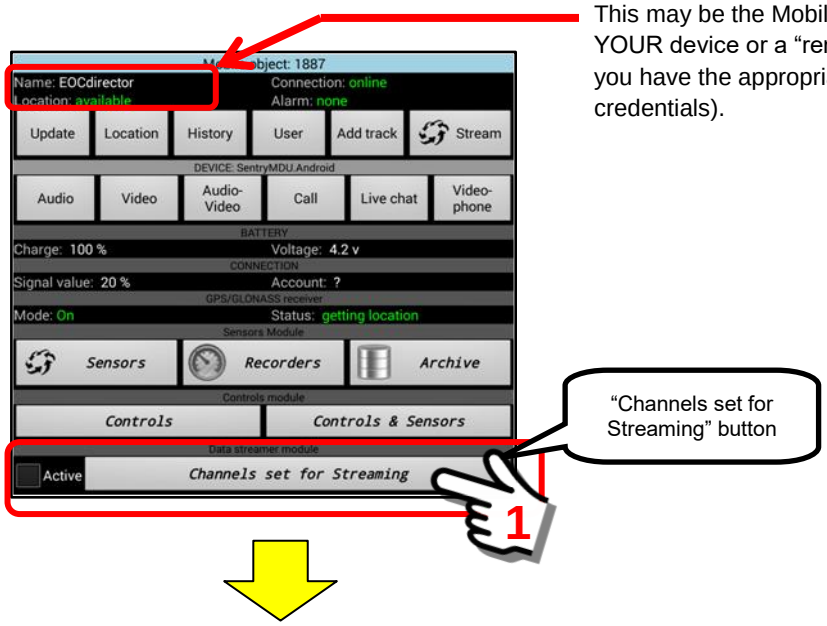
2. ***Determine if existing sensors have been configured.***
The first step is to determine if the mobile device has sensors that are configured for "streaming" data. All sensors will have a "checkbox" with the heading "*Streaming via a data-stream component*". If this box is "checked" then it means that this sensor is configured for data streaming and when streaming is activated, this sensor's data will be streamed.

We are looking to see which sensors are currently configured.

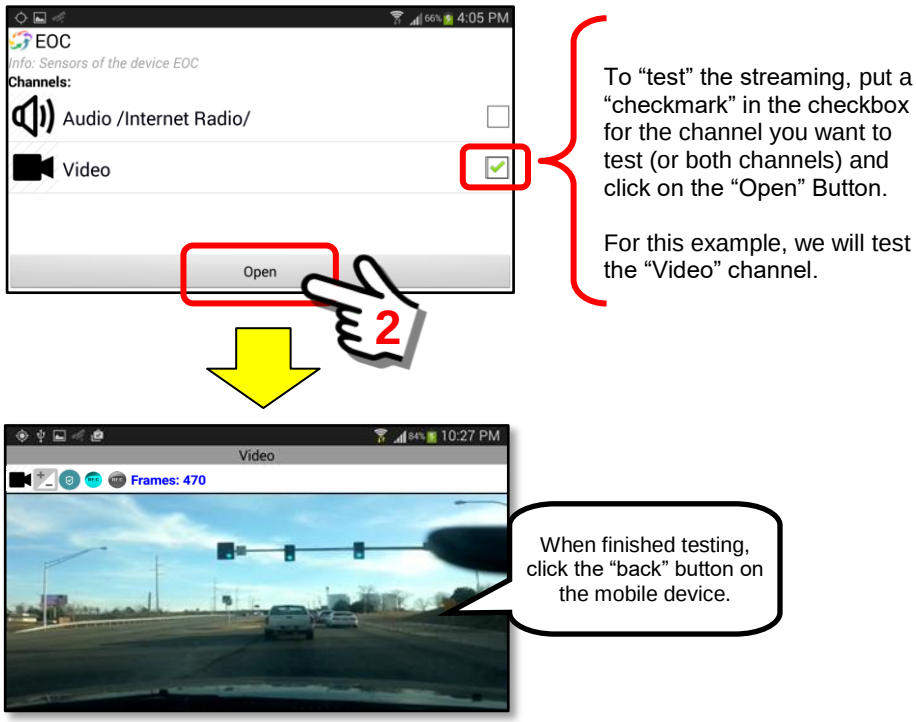


Important Note: Do not select duplicate sensors for streaming. For example, do not select multiple video sensors to stream data since each would have different parameters for the same camera device. This would result in an error.

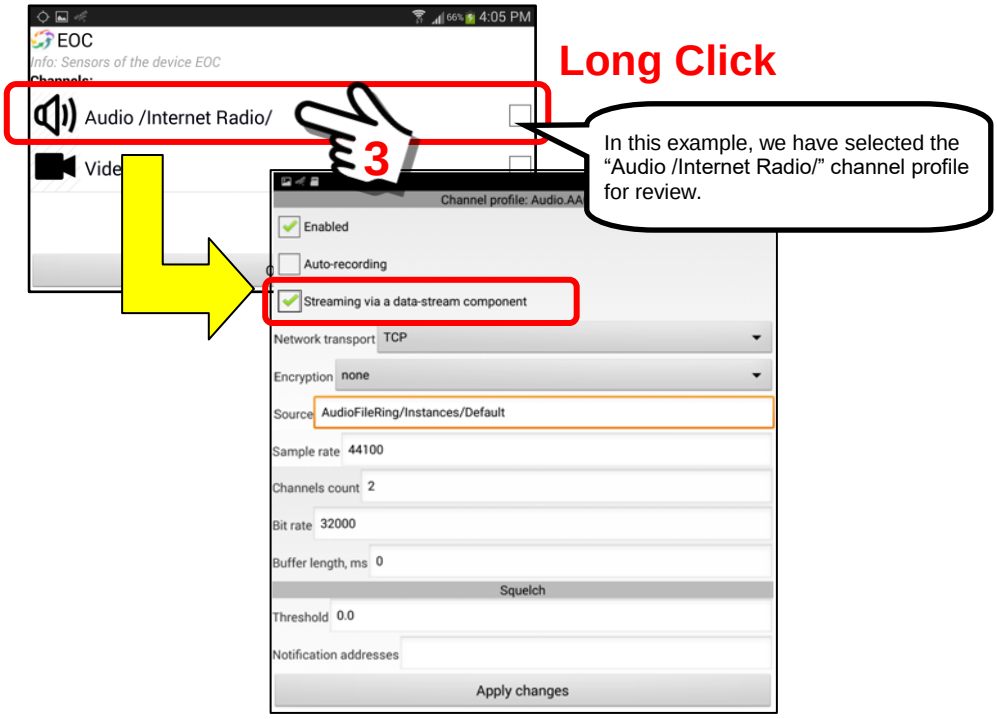
To determine which sensors are currently selected for ‘Streaming”, click on the “Channels set for Streaming” Button located on the bottom of the Mobile Object Panel.



In this example, we notice that 2 channels have been set as “streaming” channels. If you wish to “test” the data stream, follow the instructions below.

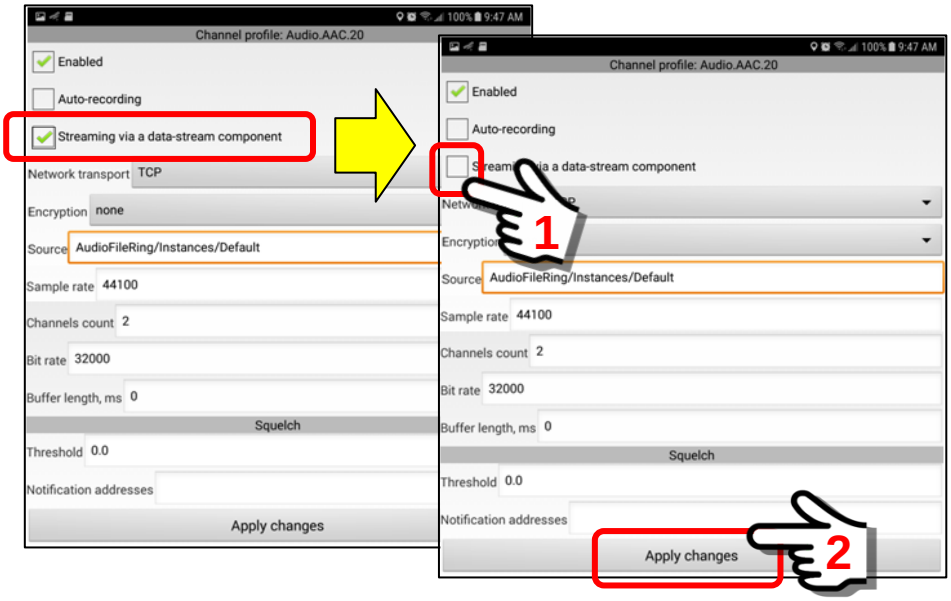


To review the channel profile (parameter settings) perform a “Long click” on the channel name and the “Channel Profile” panel for the sensor will appear. As you can see, the “streaming” checkbox is checked (active).

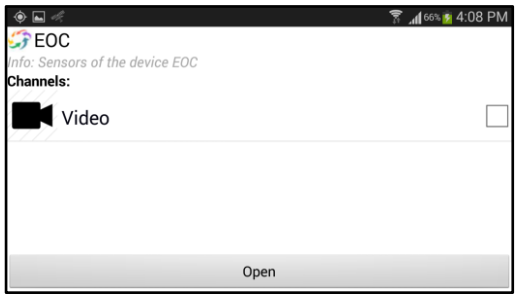


3. ***Identify which sensors are to be configured for streaming.***
In this example, we want to remove the “Audio /Internet Radio/” channel and replace it with a single “Audio” channel. The objective is to stream an audio and video channel.

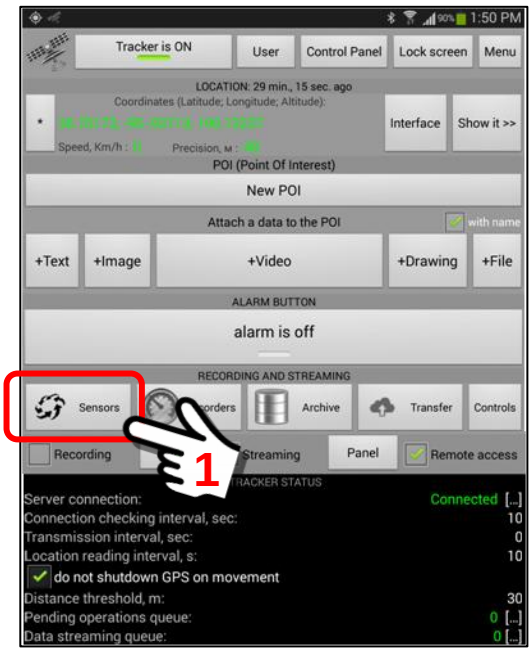
To remove the “Audio /Internet Radio/” channel, open the channel profile panel, uncheck the streaming checkbox and then “Apply changes” to save the new settings.



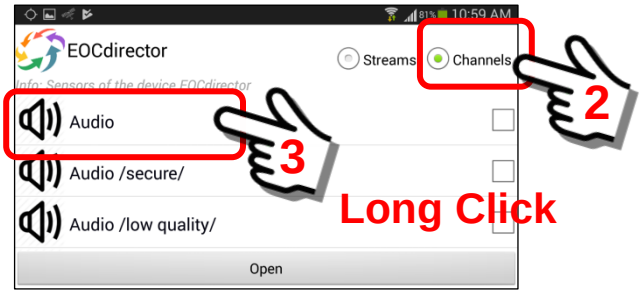
Now that we have removed the “Audio /Internet radio/” channel, we are left with only the Video channel that is configured for streaming.



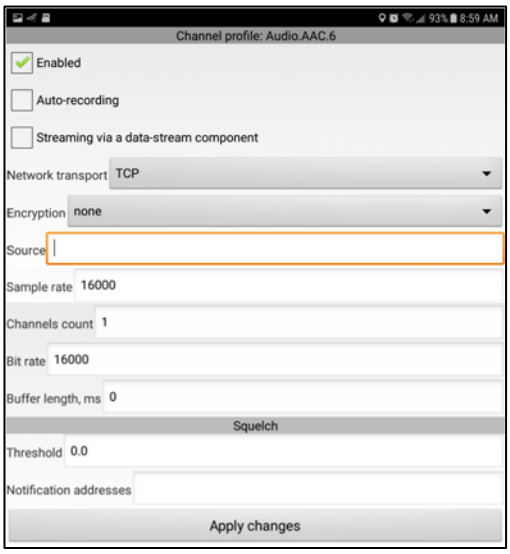
4. ***Configure selected sensors for data streaming.***
The next step is to add an Audio channel from the sensors list to the channels we want for streaming. Navigate to the Tracker Panel and select the “Sensors” Button.



Select the “Channels” display option and then select the “Audio” sensor channel.

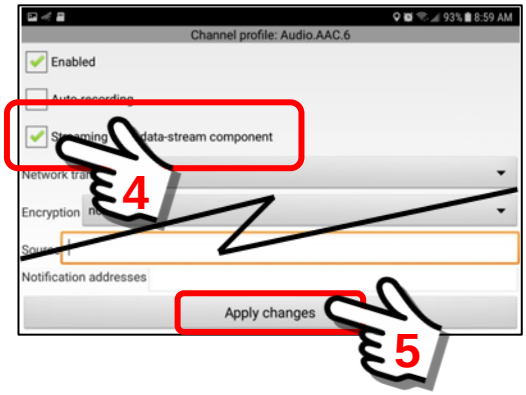


Perform a “Long click” on the Audio menu choice. This will open a Channel Profile Panel that will show the audio parameters for the particular audio sensor (device microphone).

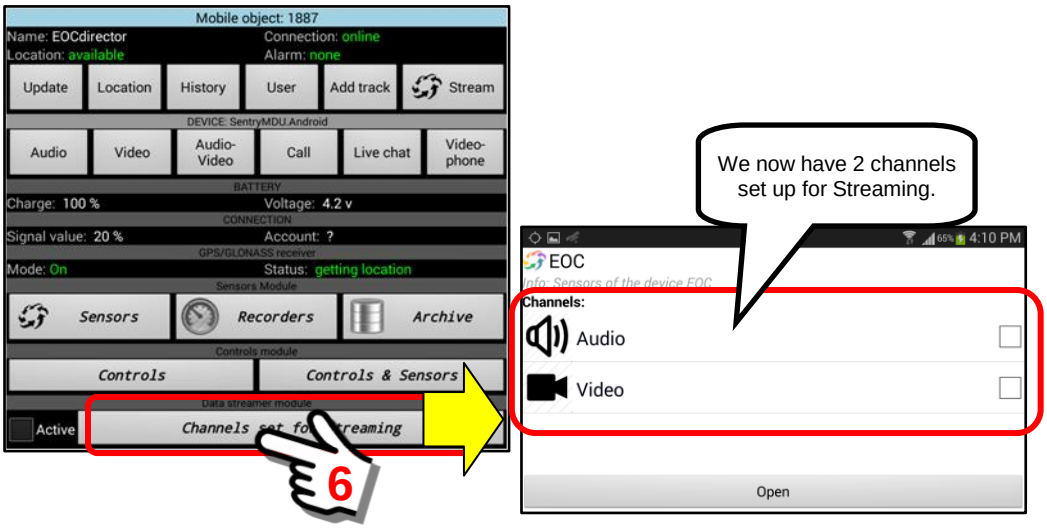


In most cases, the default settings are sufficient. However, the audio sample rate and bit rate may be adjusted to match the capabilities of the mobile device and available bandwidth.

Put a “checkmark” in the checkbox to make the streaming “active” for this sensor and then click the “Apply changes” button to save the new settings.

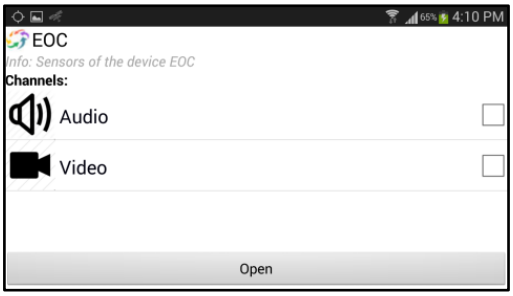


Now when you click on the “Channels set for Streaming” button, you will see both the Audio and Video channels displayed.

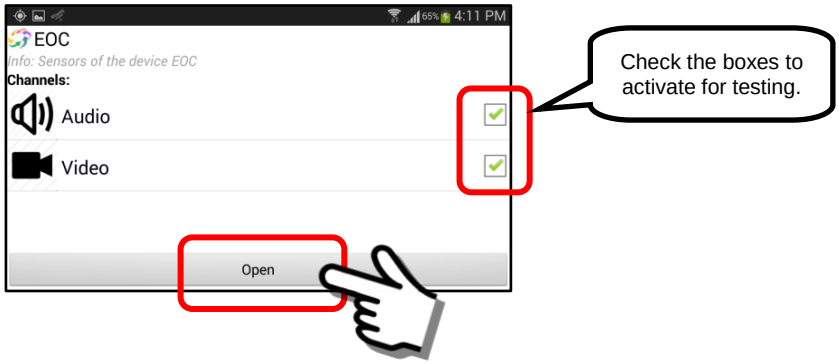


5. ***Test data streaming feature to verify correct configuration settings.***
The first time that data streaming channels are set up it is recommended to "test" the data streaming to make sure things work as desired. This section will describe how to test the streaming.

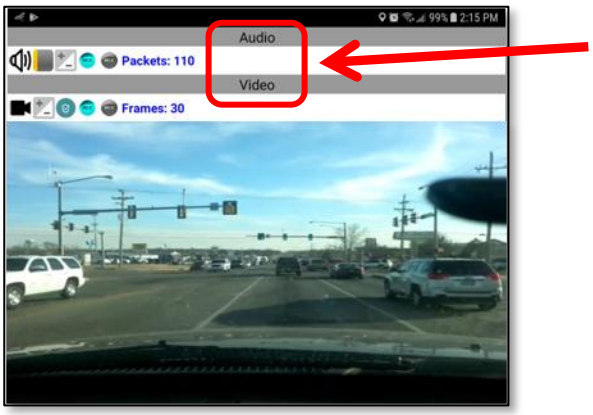
Click on the "Channels set for Streaming" Button and open the panel showing the channels.



Select the channels you wish to test. In this example, we wish to test both the audio and video channels. Put checkmarks in the checkboxes.



Clicking on the "Open" Button will launch the streaming display as shown below. When the streaming is activated for the test, the device will display audio/video from the on-board camera and microphone. Hold your device and point around you to view the scene. When finished, click the "back" button on your device to close the audio/video display.



In this example, both channels are streaming data from the mobile device.

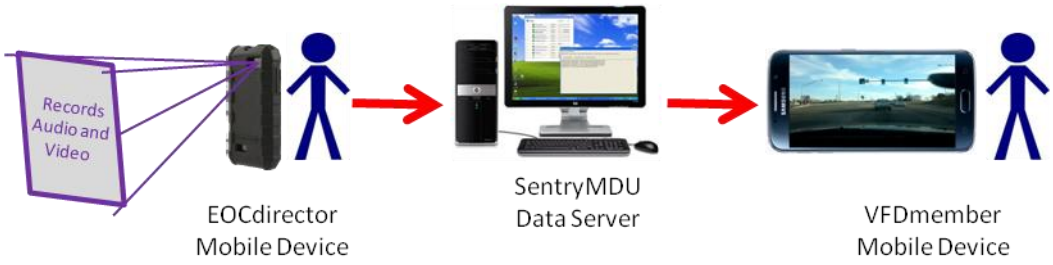
The test is successful.

6. ***Activate streaming on the originating device.***
At this point in our example, we have set up the sensor channels that we want to use for data streaming (ie Audio/Video) and we have tested that they work. The next step is to set our device to activate the “streaming” feature and then view the data stream on ANOTHER mobile device. This test requires two mobile devices.

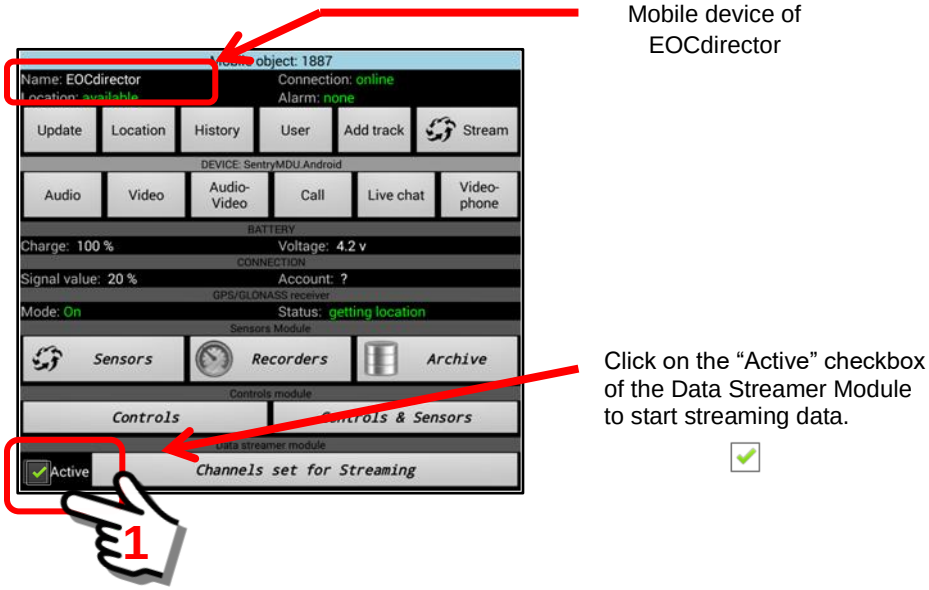
We will perform the following steps:

a. Activate the “Streaming” feature on the EOCdirector device.
b. Review the data stream on device User = VFDmember.

The following illustration shows an arrangement where EOCdirector’s mobile device is “streaming” audio/video to VFDmember’s mobile device. As explained earlier, since this is data streaming where many people may receive the data stream, the data is sent to the SentryMDU Data Server first and then on to the User population.



To begin, activate the “Streaming” feature on the EOCdirector device. A typical example would be using the device as a “dash cam” in a car and transmitting the audio/video to Central Dispatch or other Users.

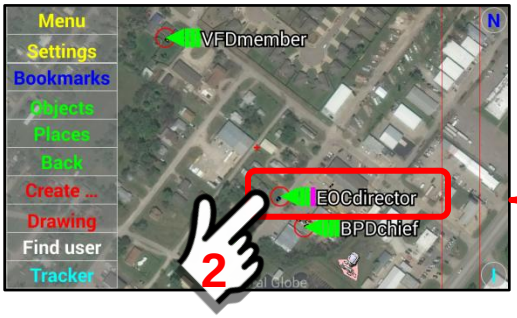


Streaming has now started and will continue as long as the “Active” checkbox is checked.

> **Important Note: In this example, the EOCdirector user has started the data streaming. However, ANY USER with sufficient security access may also start-stop the data streaming function. All users wanting to “view” the data stream must have adequate security access to monitor the streaming.**

A remote User may monitor the data stream from the EOCdirector mobile device by taking the following steps (assuming security credentials allow). In these next steps, we are using the mobile device of VFDmember.

VFDmember Mobile Device



In this example, we assume user **EOCdirector** is streaming audio/video from a vehicle “Dash cam” and we want to monitor the video stream on user **VFDmember** mobile device.

Note that when EITHER a direct connection or streaming method of video transfer is turned “on” a Mobile Object marker will have a “fushia” colored block in the marker.

Click on the EOCdirector “object marker” from the Main Map Screen. The Mobile Object panel for the User = EOCdirector will appear on the VFDmember mobile device.

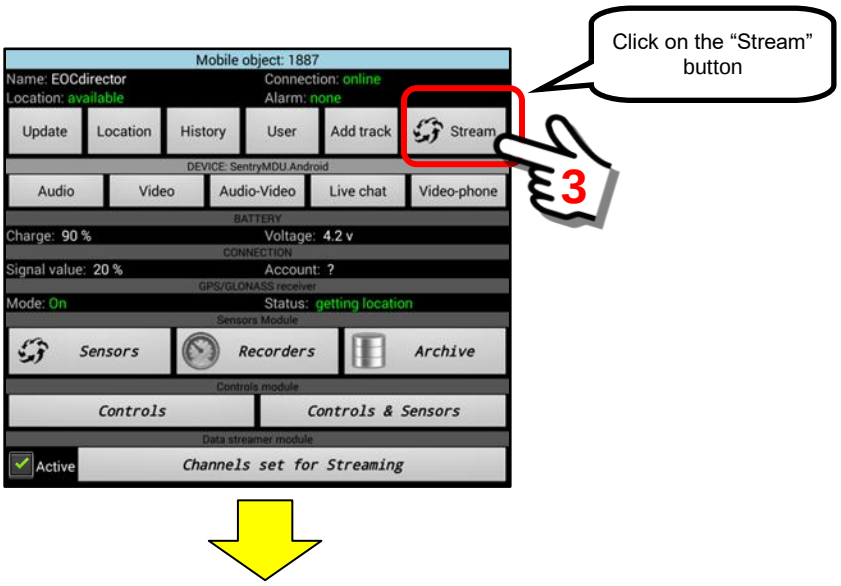
We are viewing the EOCdirector mobile object panel on the VFDmember mobile device.

Observe that the “Active” box is checked on the EOCdirector mobile object panel. This indicates that the “Streaming” feature is currently ACTIVE and transmitting.

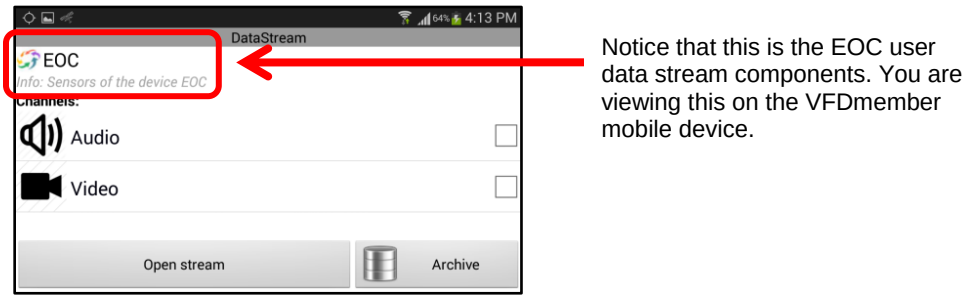
Take no action, only observe.

After verification that the EOCdirector mobile device is transmitting a data stream (Active box checked), we want to access the data stream from the VFDmember mobile device.

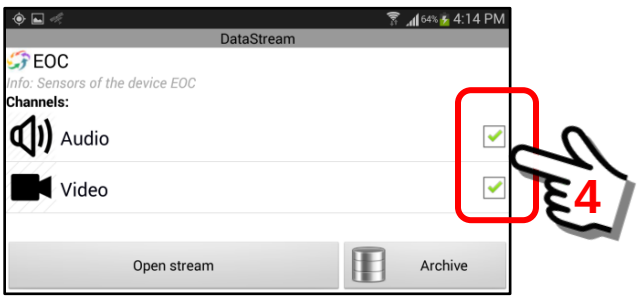
Take the following steps.



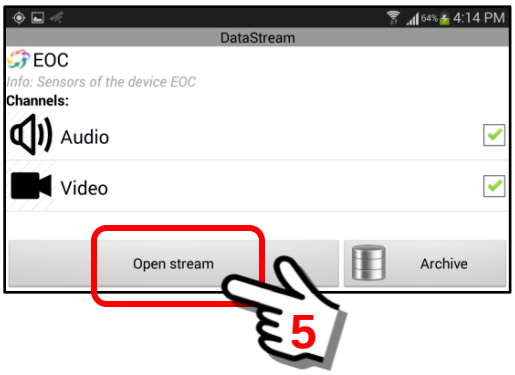
A click on the "Stream" Button will open a DataStream Panel for the EOCdirector user.



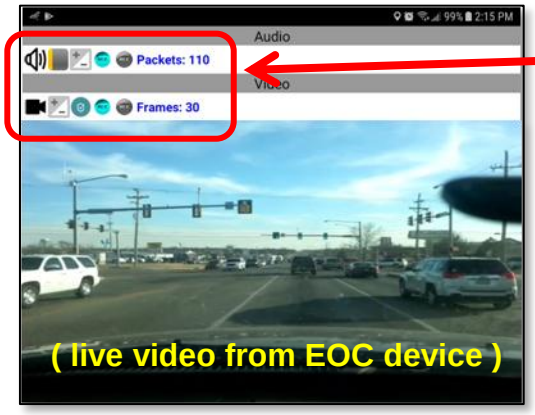
A user may now select the "streaming" channels that they want to monitor. In our example, the VFDmember user will select both the audio and video channels.



Once the streaming channels are selected, click the “Open stream” Button to launch the Audio/Video transmission.

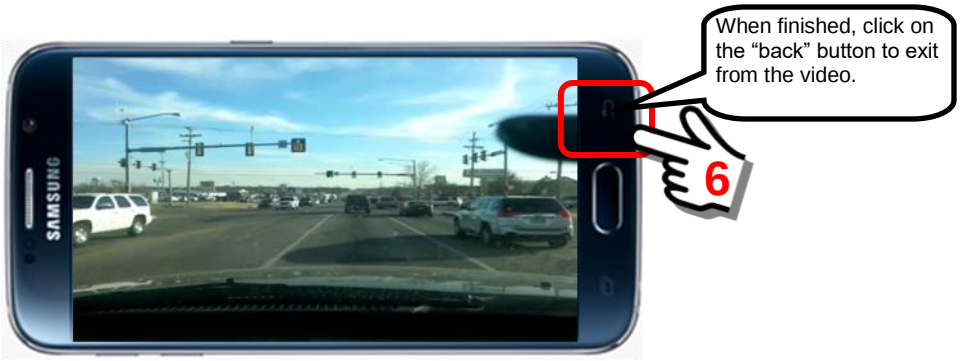


The audio/video stream from the EOCdirector device will now display on the VFDmember device.



These icons can allow the video to be paused, data flow control to be optimized and the audio-video to be recorded locally.

Another view of the streaming audio/video with the title bars hidden from view (swipe finger “up” to hide title bars).



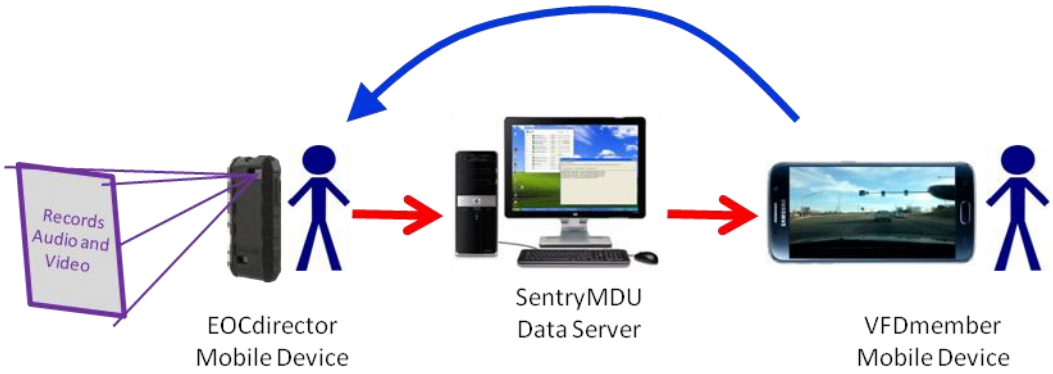
7. ***Activate streaming on a REMOTE device and monitor.***

In this example we will activate the “streaming” feature on a REMOTE device and then view the data stream. This test requires two mobile devices.

We will perform the following steps:

a. Remotely activate the “Streaming” feature on the EOCdirector device (using the VFDmember device).
b. Review the data stream on device User = VFDmember.

The following illustration shows an arrangement where EOCdirector’s mobile device will be activated remotely by VFDmember’s mobile device. As explained earlier, since this is data streaming where many people may receive the data stream, the data is sent to the SentryMDU Data Server first and then on to the User population.



VFDmember to remotely turn on video streaming of the EOCdirector mobile device

To activate the “Streaming” feature on the EOCdirector device the VFDmember would simply bring up the Mobile Object panel of the EOCdirector (on the VFDmember device) and activate the “Active” checkbox.

VFDmember Mobile Device

Mobile Object panel of EOCdirector on the VFDmember device.

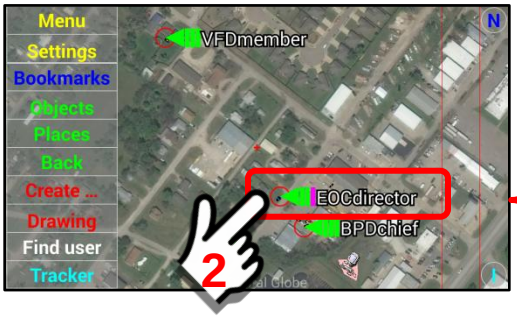
Click on the “Active” checkbox of the Data Streamer Module to start streaming data.

Streaming has now started and will continue as long as the “Active” checkbox is checked.

> **Important Note: In this example, the VFDmember user has started the data streaming. However, ANY USER with sufficient security access may also start-stop the data streaming function. All users wanting to “view” the data stream must have adequate security access to monitor the streaming.**

Any remote User may monitor the data stream from the EOCdirector mobile device by taking the following steps (assuming security credentials allow). In these next steps, we are using the mobile device of VFDmember.

VFDmember Mobile Device



In this example, we assume user **EOCdirector** is streaming audio/video from a vehicle “Dash cam” and we want to monitor the video stream on user **VFDmember** mobile device.

Note that when EITHER a direct connection or streaming method of video transfer is turned “on” a Mobile Object marker will have a “fushia” colored block in the marker.

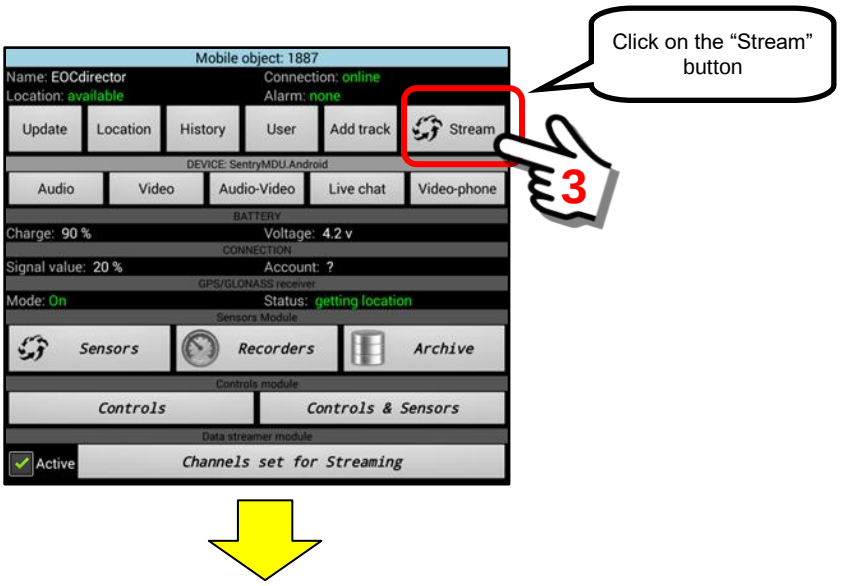
Click on the EOCdirector “object marker” from the Main Map Screen. The Mobile Object panel for the User = EOCdirector will appear on the VFDmember mobile device.

We are viewing the EOCdirector mobile object panel on the VFDmember mobile device.

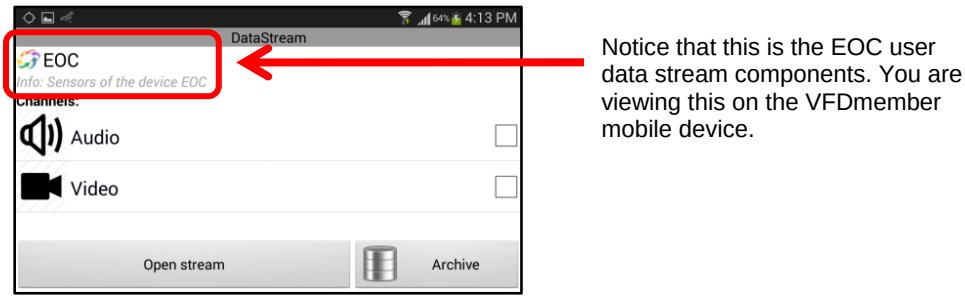
Observe that the “Active” box is checked on the EOCdirector mobile object panel. This indicates that the “Streaming” feature is currently ACTIVE and transmitting.

After verification that the EOCdirector mobile device is transmitting a data stream (Active box checked), we want to access the data stream from the VFDmember mobile device.

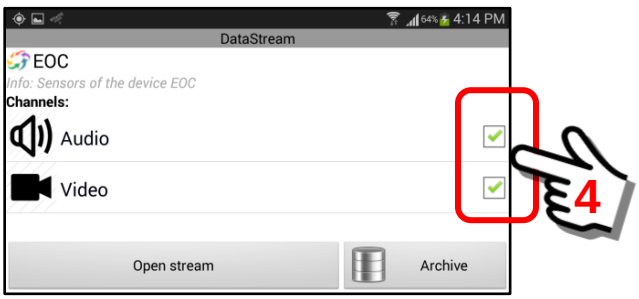
Take the following steps.



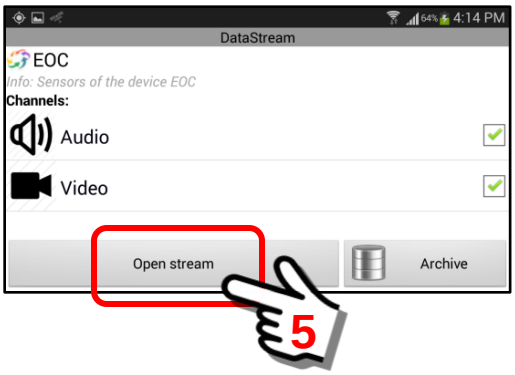
A click on the "Stream" Button will open a DataStream Panel for the EOCdirector user.



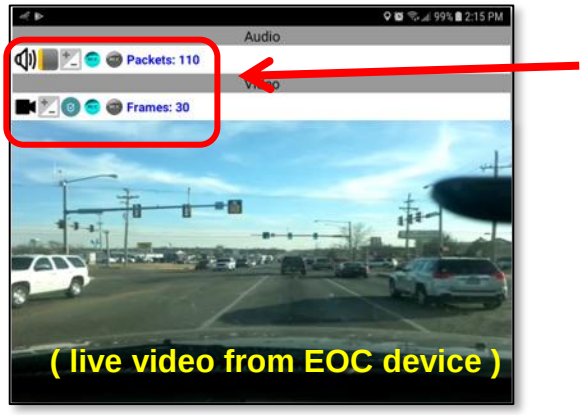
A user may now select the "streaming" channels that they want to monitor. In our example, the VFDmember user will select both the audio and video channels.



Once the streaming channels are selected, click the “Open stream” Button to launch the Audio/Video transmission.

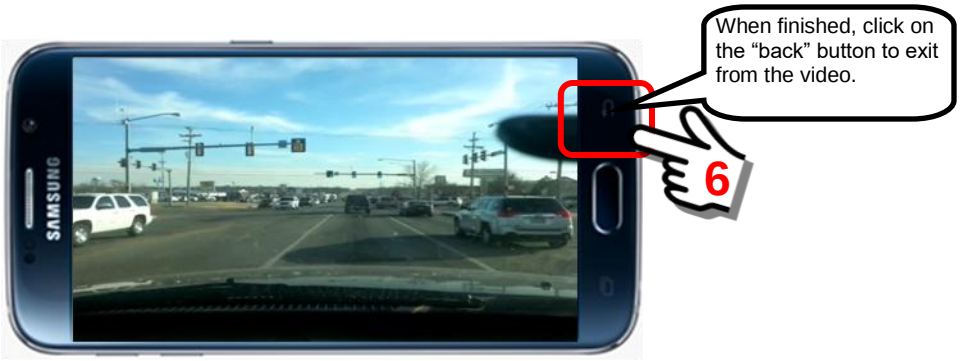


The audio/video stream from the EOCdirector device will now display on the VFDmember device.



These icons can allow the video to be paused, data flow control to be optimized and the audio-video to be recorded locally.

Another view of the streaming audio/video with the title bars hidden from view (swipe finger “up” to hide title bars).



10.24. Example – The Video-Phone feature as a remote terminal

Overview:

This section will describe how to set up and use the Video-Phone feature of the SentryMDU System as an "unattended" remote audio-video terminal. We will be using the video-phone "auto answer" option found on the *Device Configuration Panel* under the **Tracker Section**. In addition, in this example we assume you are using the SentryMDU App for FREE (do not have a Server License or a Subscription) and therefore the screens will display road maps and not satellite images (no reason your grandmother would need satellite imagery on her device).

The "auto answer" option would typically be used if a remote user does not have sufficient dexterity or computer skills to navigate the App Menus and initiate a remote video-phone session on their own. This can allow friends and family members to initiate and control remote video-phone sessions with people that are developmentally disabled, bed-bound, technically challenged or have dementia/memory issues.

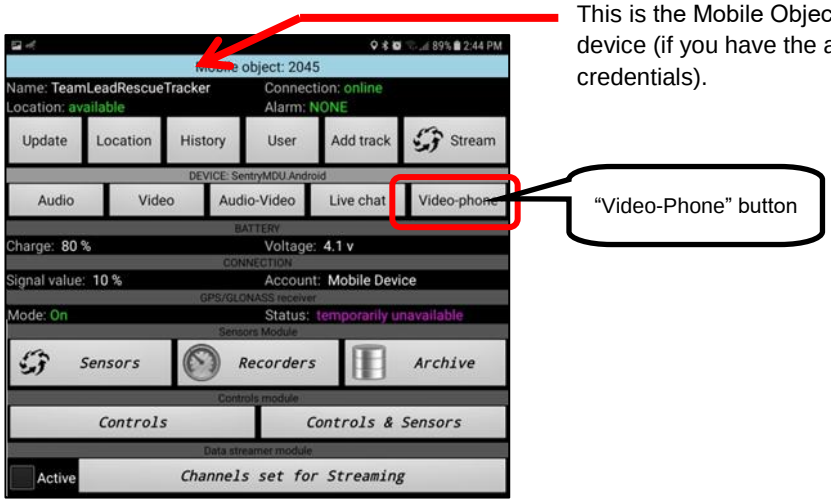
> **Important Note: If the "*Video-Phone Auto Answer*" option is activated, it will allow a remote device to initiate a two-way audio/video channel automatically with no action required on the part of the receiving device.**

Mobile Object Panel – "Video-Phone" button:

The "Video-Phone" Button is located on the right side of the Mobile Object Panel. This button will open a panel that allows the selection of audio-video settings that will be used during the video phone session. See **Section 10.18** for using the default configuration.

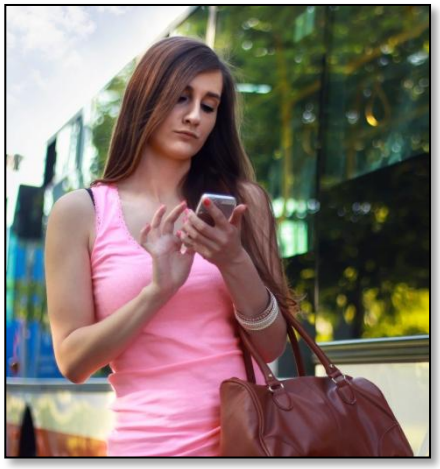
> **Important Note: In a "default" configuration, the Video-Phone feature will notify the remote device that a "call" is coming in. The remote user must then choose to accept the call or not. In this example, we will illustrate how to activate an "auto answer" feature such that the remote User is NOT required to take any action. The two-way audio/video link can be initialized by the calling device (with previous configuration steps on the remote device). This feature will provide an audio "ring tone" on the called device that another user has called and initiated a two-way session.**

The "Video-Phone" button is located as follows:



Scenario Example: Grandmother in an Assisted Living home

In this example we will assume you have an elderly grandmother that does not do "computers", has some memory issues where she can not remember the steps necessary to do a video-call session on a mobile device App (such as Apple FaceTime, Google Duo, Skype and others) and is located in an Assisted Living facility. You would like to keep in touch with her several times each day.



Equipment Needed

1. You will need two mobile devices (Smartphones or Tablets). One for you and one for your Grandmother. Both devices must be Android based devices with an Android Operating System "version" of at least 5.1+ (most any device from the last several years should work). See **Section 3.1** for system requirements.
2. In order to reach the internet each device must be able to connect to the internet via WiFi or Cellular networks.
    a. Note that some Facilities (Assisted Living Facilities, Nursing Homes, Hospitals, etc) may have free WiFi that you can use (Guest Account).
    b. However, in some of these facilities, the WiFi network may NOT have sufficient bandwidth to support video calls, especially during times of the day when the network is in high use.
    c. In addition, WiFi Networks in some facilities will "block" specific internet "ports". If this happens, video calls may be blocked and not work. If you are using WiFi and are unable to connect, this could be the reason.
    d. If the Smartphone/Tablet that your Grandmother will be using has a SIM Card (has Cellular service) it is important to "test" the device in the location where she will be using it (ie. in her room). In most cases it should work, however some facilities with concrete walls or steel roofs may cause cell phones to have problems with reception. Testing is important to ensure you will have a good user experience.
    e. If you plan to use a device on a Cellular network (recommended), in addition to "Talk & Text" you must also have a "data" plan. Video calls are transferred as "digital data" over the cellular network.
3. We recommend that the device used by your Grandmother is a cellular enabled mobile device that has "Talk, Text & Data" (Tablets will just have "data"). If your

budget allows, this will simplify use and allow the device to be used almost anywhere (assuming there is cellular service in the area).

4. We recommend that your Grandmother use a Tablet. Tablets have large screens and better speakers than phones, are generally “cheaper” than phones and can more easily be mounted in a cradle that will allow easy viewing. In addition, tablets can also run “slideshow” Apps that can display family pictures much like a Photoframe (more about this later) when not being used for the video-phone call.

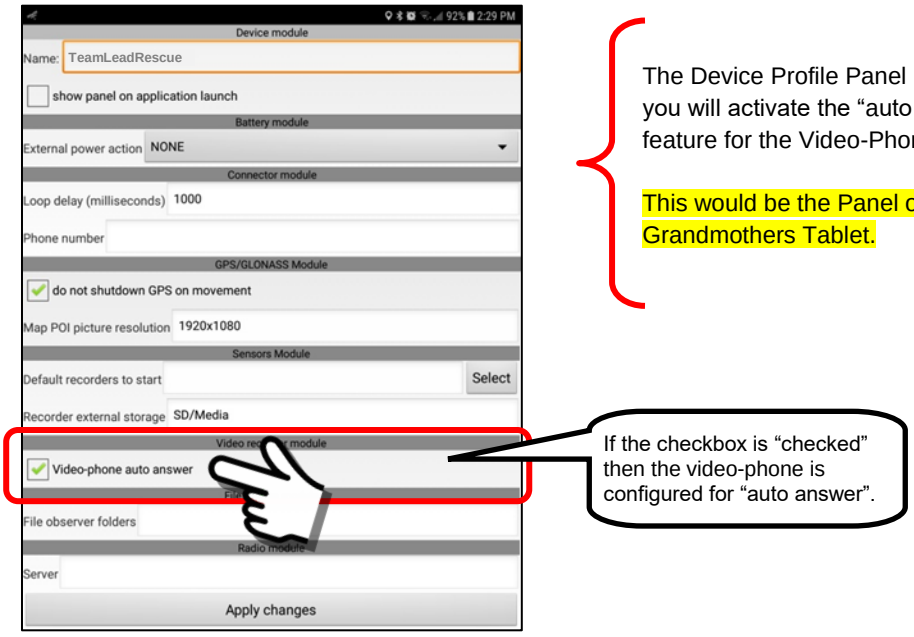
Software & Configuration Needed

1. The only software needed is the SentryMDU App installed on both devices.
2. Each device will need to register and get a Username/Password for the SentryMDU App in order to create security credentials. Grandmother will not need to know the Username/Password to use the App, you can do it for her. It is FREE to register and use. See **Sections 3.5 & 3.6**.
3. You will need to create a “Security Domain” Group for you and your Grandmother (and other family members if they also want access). See **Sections 6.4 – 6.7** on creating personal security domains.
4. You will need to do some general configuration of BOTH mobile devices. Review other sections of this guide for general configuration options that will provide a good user experience.
5. This example assumes that you have completed the General Configuration steps on BOTH devices and your grandmother’s Mobile Object (GPS Icon) is displayed on your mobile device. See **Section 6.6** for instructions.

Description of how the Video-Phone "auto answer" works:

The "auto answer" feature allows your mobile device to "call" the mobile device of your Grandmother … and her device will "ring" for a few seconds and then automatically "answer" and establish a two-way video-phone link that will enable you both to see and hear each other. Your grandmother does not need to do anything, no buttons to press, nothing to remember to do.

To activate the "auto answer" feature, you will need to change a configuration setting on your grandmother's device that "allows" for the "auto answer" to work. You do NOT need to activate the "auto answer" feature on YOUR mobile device.



Configuration of the Video-Phone "auto answer" feature:

In order to allow another device to accept a Video-Phone "auto answer" request, you must have physical access to that device and set some configuration parameters that will allow the "auto answer". You cannot set the "auto answer" parameters remotely.

We assume you have two devices (your phone and your Grandmothers tablet), you have downloaded and installed the SentryMDU App on both devices, and you have done a general registration and configuration of the devices. For this example will assume the following Usernames.

Your Smartphone device Username = **DashCamRescue**
Grandmothers Tablet device Username = **TeamLeadRescue**

You have also created a Security Domain Group that includes you and your Grandmother (and any other family members that would need access). See **Sections 6.4 – 6.7** for details on creating these personal security domains.

This section will describe how to enable the "auto answer" video-phone feature.

The following steps will be covered:

1. Get both of the mobile devices you will be using.
2. Test the “default” video-phone feature to verify it works.
3. Adjust the configuration setting to enble the “auto answer” video phone feature.
4. Test the “auto answer” video phone feature to ensure it works.
5. Test the “auto answer” video phone feature with Grandmother.
6. Option #1 – Set up the Tablet to display a Photoframe Slideshow.
7. Option #2 – Use the Tracker Panel “Show panel on application launch” feature.
8. Option #3 – Use the Tracker Panel “Lock Screen” Button to dim the screen.

The sections below will explore each of these topics in detail. Please note that in order to perform these configuration functions a User must have adequate security credentials and access. If you receive error messages that say “Access denied” then you do not have adequate security settings to make the necessary changes.

1. ***Get BOTH mobile devices (yours and your grandmothers)***
   In this example, you will be using a Smartphone and your grandmother will be using a Tablet, as shown below.

Android Smartphone that you will use
(Example Username = DashCamRescue)

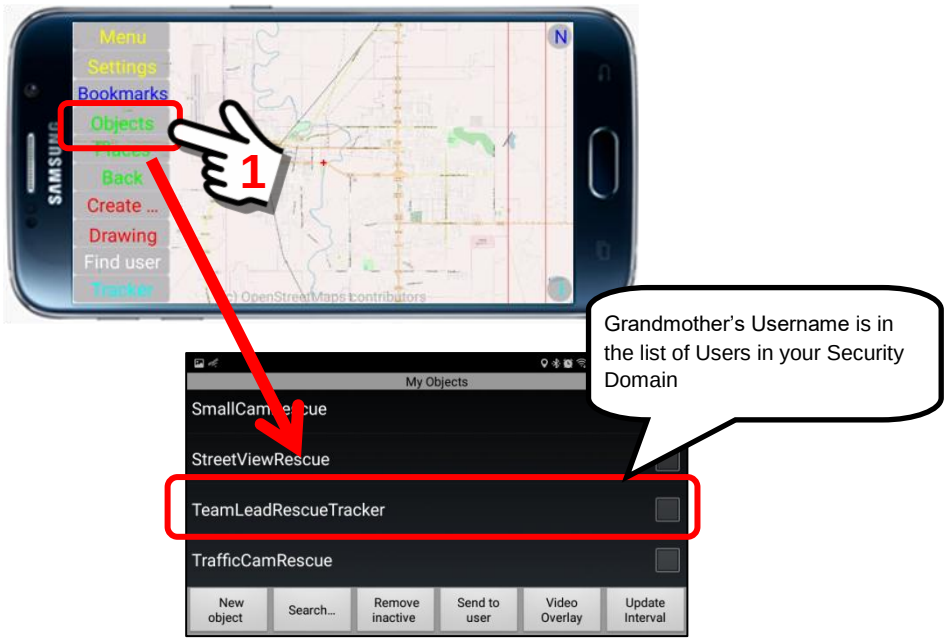
10” Android Tablet that your Grandmother will use
(Example Username = TeamLeadRescue)

2. ***Test the "default" video-phone feature to verify it works.***
In most cases, each user of a mobile device will configure THEIR own device for the user experience they want (**Section 3.14**). However, in this example you will ALSO be configuring your Grandmother's mobile device.

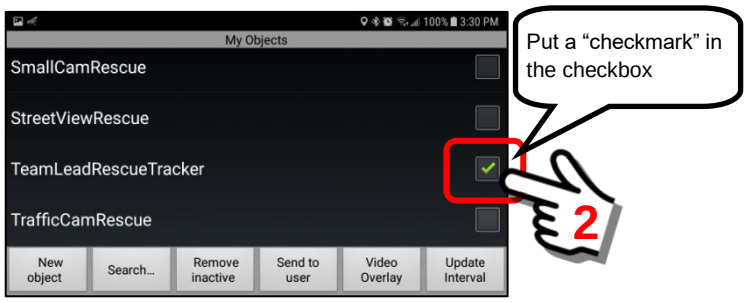
Once you have completed any General Configuration steps you will need to verify that the "default" video-phone feature is working and that the Security Domain credentials are sufficient to establish remote sessions.

<u>Navigate to the Objects Panel and locate Grandmother's Tablet</u>

Locate Grandmother's Username (**TeamLeadRescue**) from the list of Users in your Security Domain.



Put a "checkmark" in the checkbox so the Mobile Object Icon (GPS location) will display on the Main Map Screen.

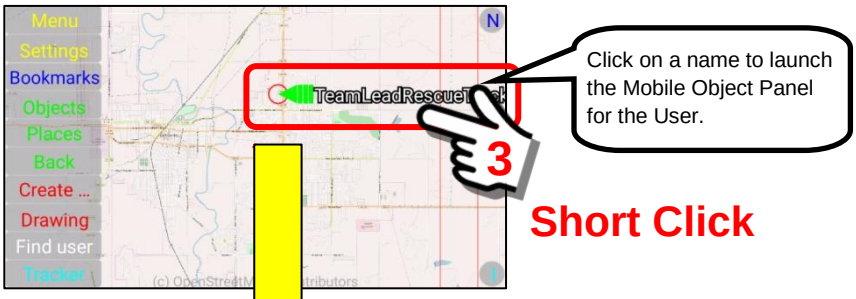


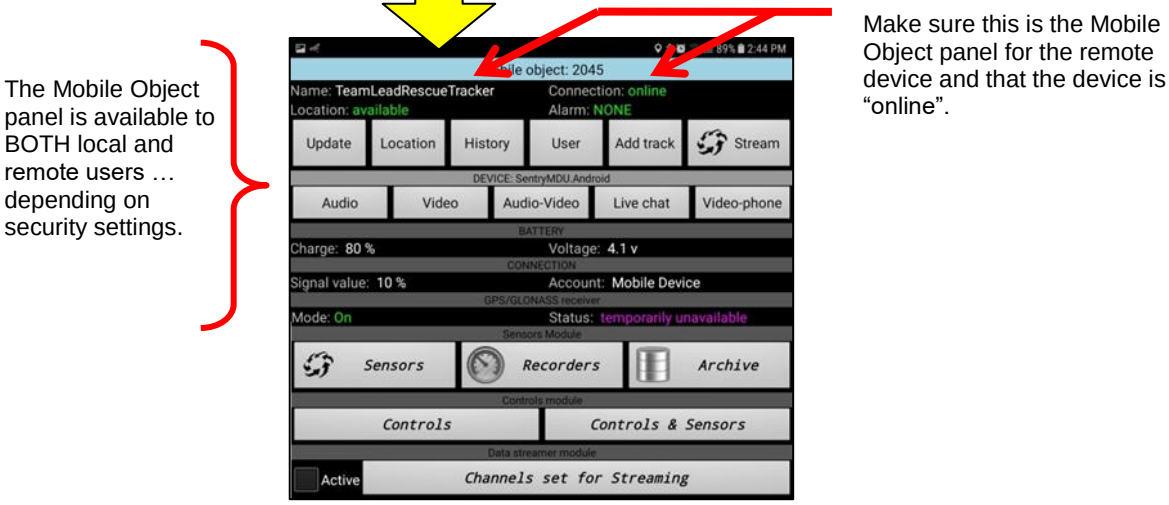
Return to the Main Map Screen.

Navigate to the Mobile Object Panel of Grandmother's Device

Once you have "enabled" the mobile object of your grandmother, her Mobile Object Icon (GPS location) will display on the Main Map Screen.

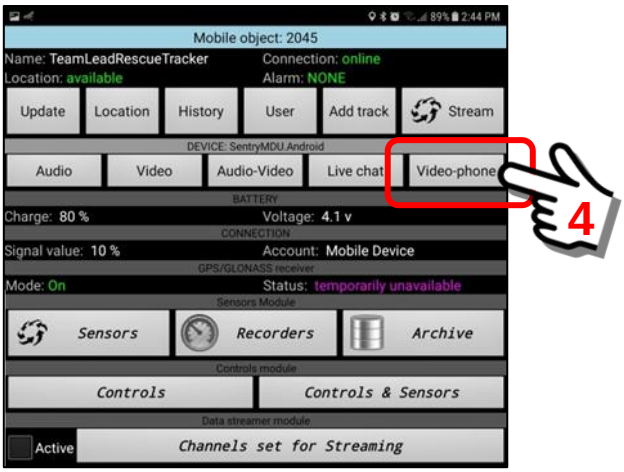
Perform a "click" on the **TeamLeadRescue** name to open the Mobile Object Panel.



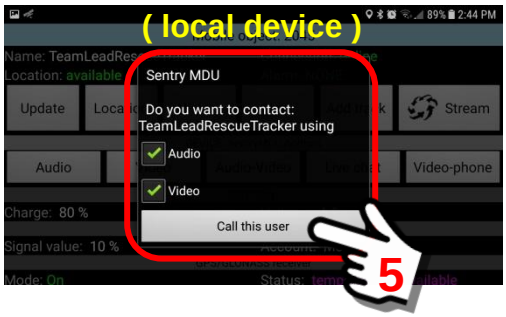


Launch the video-phone feature on Grandmother's Device

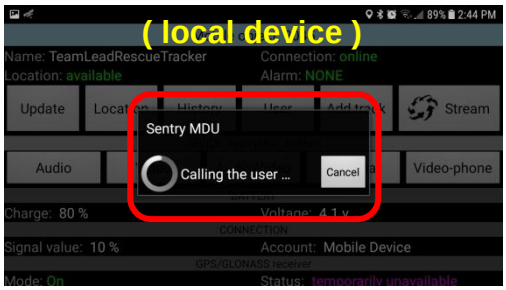
At the Mobile Object Panel of Grandmother's Device (TeamLeadRescue) click on the "Video-Phone" Button to launch the video calling feature.



When launched, the Video-Phone Feature opens a “Calling Box” panel with 2 choices for the user that is originating the call. They may select video, audio or both for the call. When selected, click on the “Call this user” button.

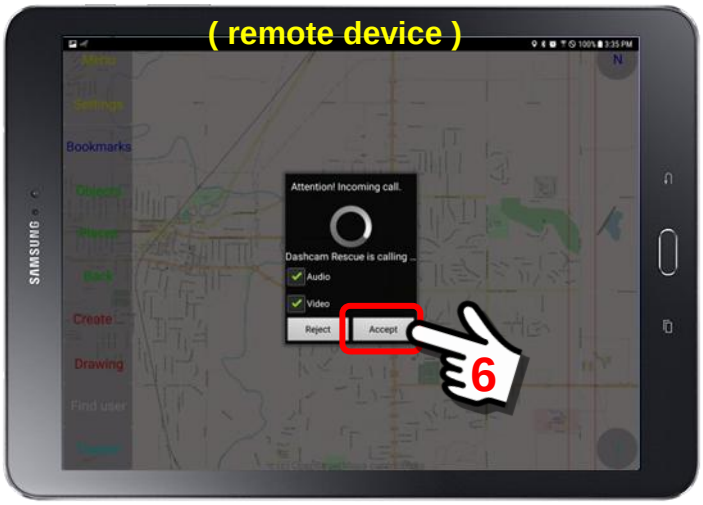


When calling a remote User, you should see an animated call panel similar to the screen shown below. The phone is ringing.



Ringtone

The device RECEIVING the video call (Grandmothers Tablet) will get a pop-up notification box indicating that a video-phone call is waiting. In addition, you will hear a “ringtone” announcing that a call is coming in. The user may decide to accept the call or not and whether or not to allow audio, video or both.

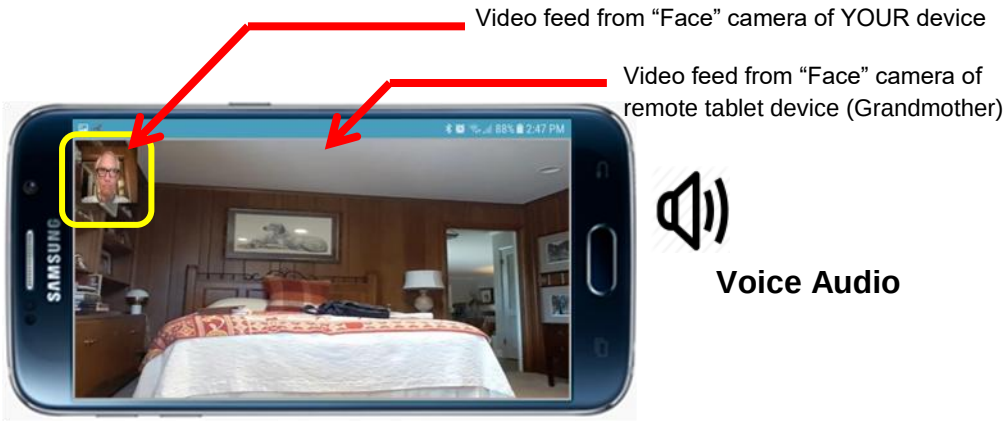


Ringtone

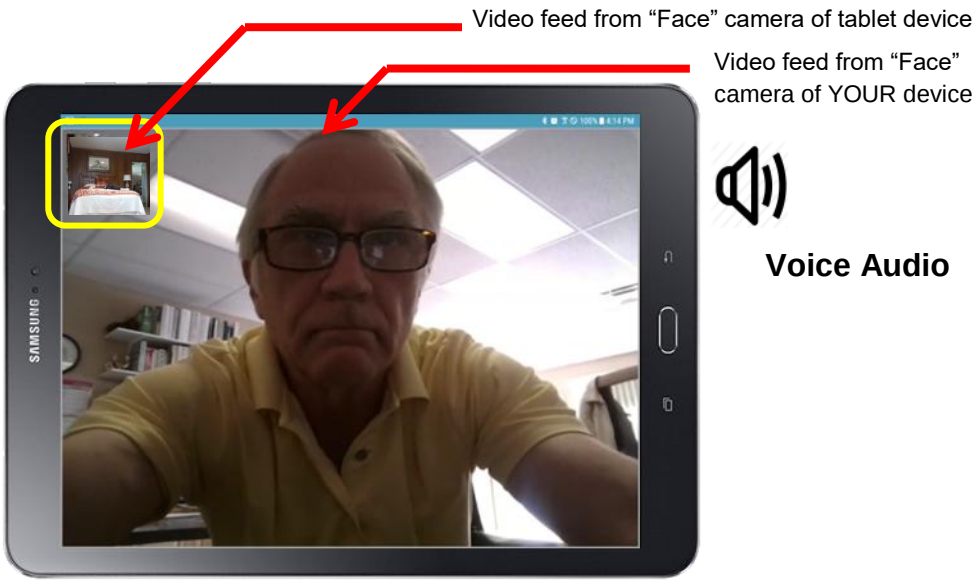
As the remote device “Accepts” the video call, a picture-in-picture screen display will appear. In the upper, left hand corner will be the video from the face camera of the local device and the remainder of the screen will be the video feed from the remote device.

In this “testing example” the smartphone is held by YOU (the tester) and the tablet device is set up on a table facing the inside of a room.

Android Smartphone that you are holding



Android Tablet that your grandmother will use



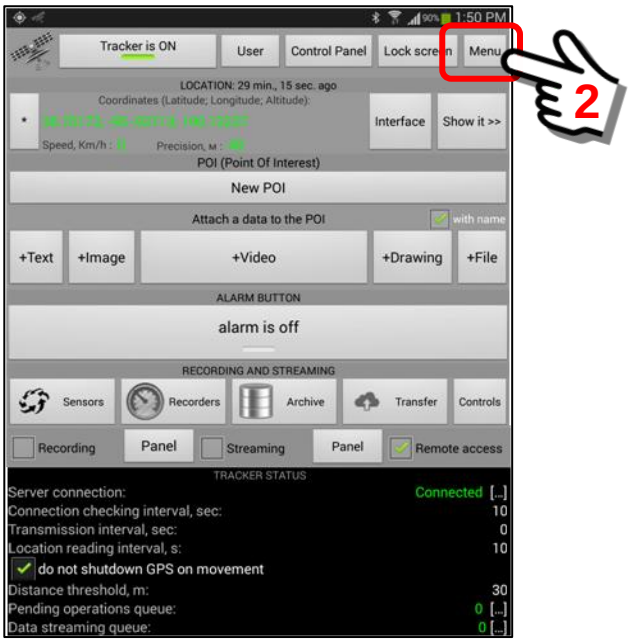
During “testing” if both devices are in close proximity (next to each other), you may experience acoustic feedback via the microphones/speakers. Reduce the volume setting to test without feedback. Also note that your WiFi/Cellular network bandwidth can affect the audio-video characteristics of the video call.

3. ***Adjust the configuration setting for the "auto answer" feature.***
This section will show how to navigate to the Device Profile Panel where the "auto answer" video-phone configuration option is located. This only needs to be done on Grandmother's Tablet device … not on YOUR device.

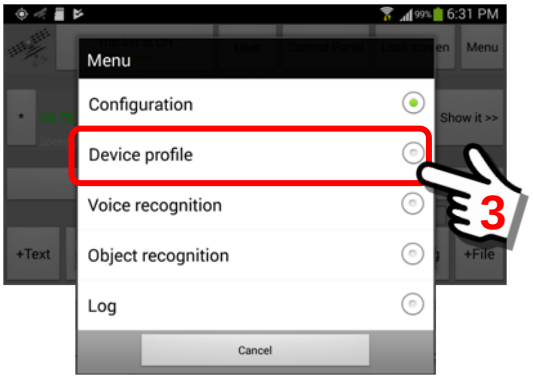
The "auto answer" feature allows your mobile device to "call" the mobile device of your Grandmother … and her device will "ring" for a few seconds and then automatically "answer" and establish a two-way video-phone link that will enable you both to see and hear each other. Your grandmother does not need to do anything, no buttons to press, nothing to remember to do.

On the Tablet Device, click on the "Tracker" Button menu item.

Once the **Tracker Panel** is displayed, click on the Menu Button located on the upper right hand corner of the Tracker Panel.



The Menu Button opens a pop-up menu with 5 choices.
Select the **Device Profile** menu option.

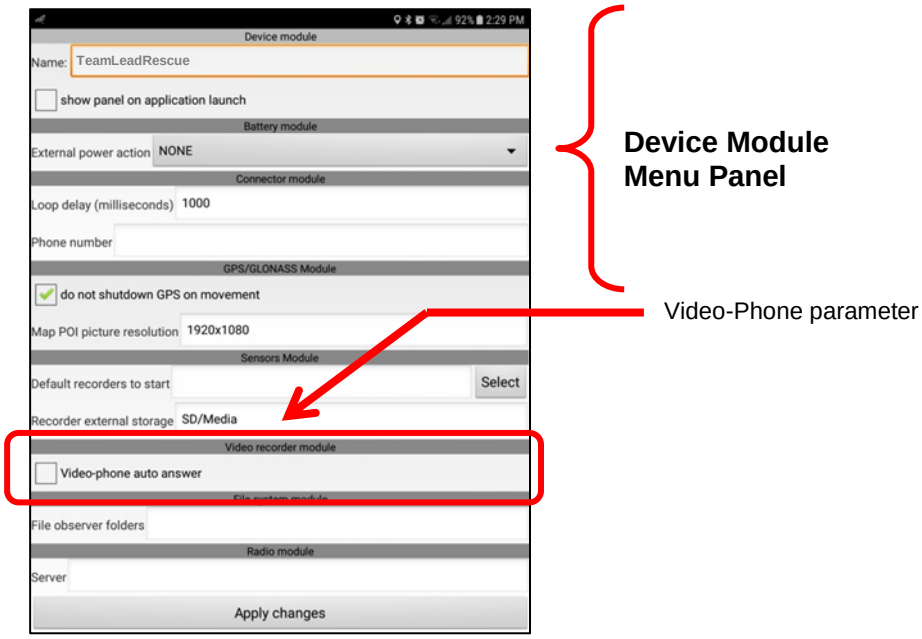


The “Device Profile” menu option allows a user to set/change some of the parameters that are normally set on the SentryMDU Data Server. User settings for the “auto answer” Video-Phone feature are included in this Panel.

Important Note: If the “*Video-Phone Auto Answer*” option is activated, it will allow a remote device to initiate a two-way audio/video channel automatically with no action required on the part of the receiving device.

The “Video-phone auto answer” configuration option is located about 3/4 down the page.

Device Profile parameters panel



The following item describes the “Video-phone auto answer” feature.

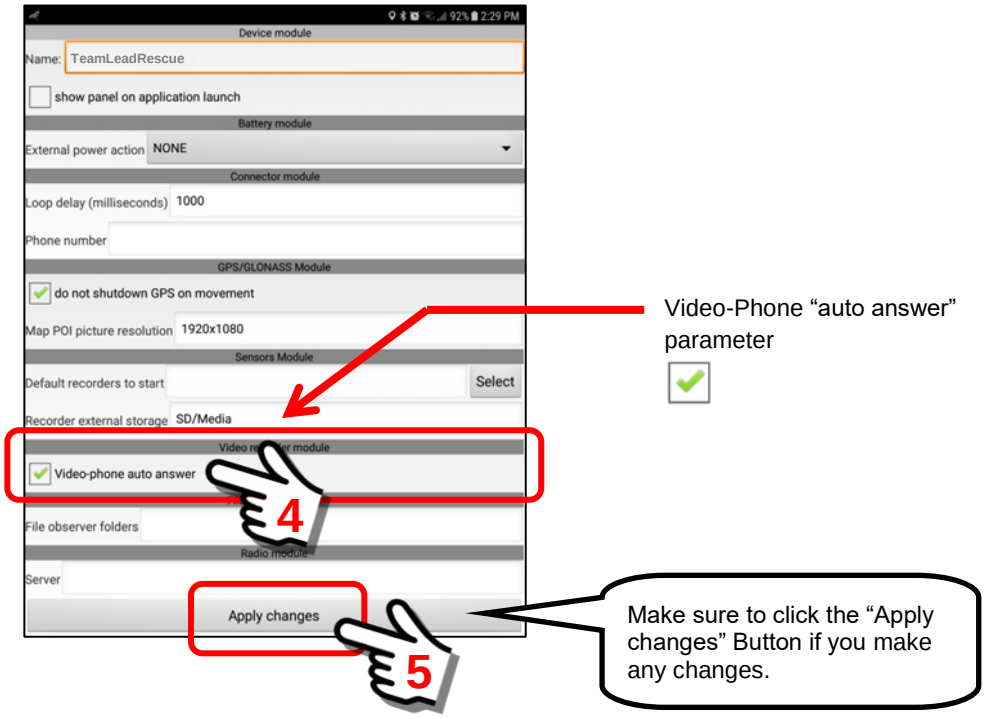
☑ Video-phone auto answer

This “checkbox” is unchecked by default. In normal operation a User **does NOT want** the video-phone on their mobile device to be answered “automatically”.

This option would typically be used if a remote user does not have sufficient dexterity or computer skills to initiate a remote video-phone session on their own. This can allow friends and family members to initiate and control remote video-phone sessions with people that are bed-bound, developmentally disabled, technologically challenged or have dementia/memory issues.

This would be “checked” on the receiving device.

Put a “checkmark” in the checkbox of the “Video-phone auto answer” configuration option, as shown below. Save your changes.

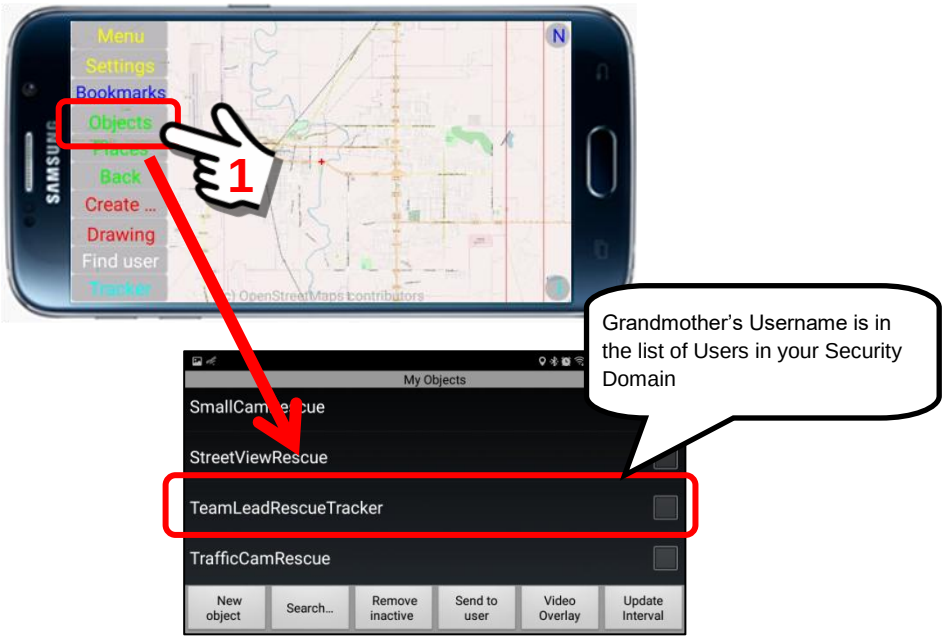


You have COMPLETED the necessary changes to enable the “auto answer” feature for the video-phone. The next step will be to test that it works.

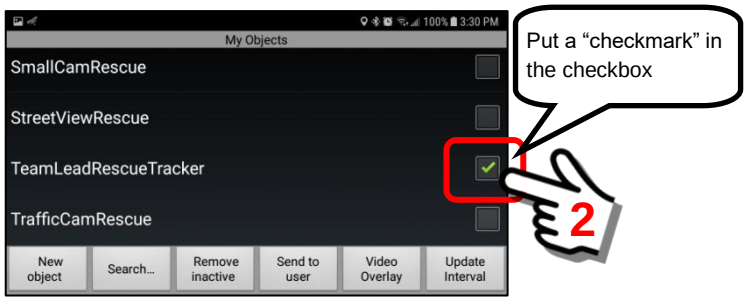
4. ***Test the "auto answer" feature to ensure it works properly.***
We will now "test" the auto-answer feature to ensure it works, before we give it to Grandmother. This will also allow us to adjust the volume settings if necessary. Many of the elderly may need the volume set "high" so they can hear it well.

<u>Navigate to the Objects Panel and locate Grandmother's Tablet</u>

Locate Grandmother's Username (**TeamLeadRescue**) from the list of Users in your Security Domain.



Put a "checkmark" in the checkbox so the Mobile Object Icon (GPS location) will display on the Main Map Screen.

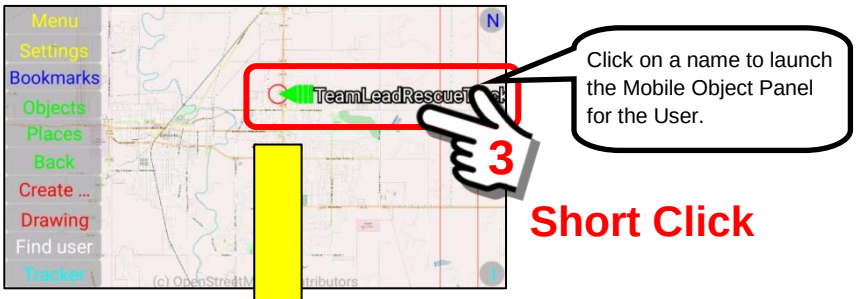


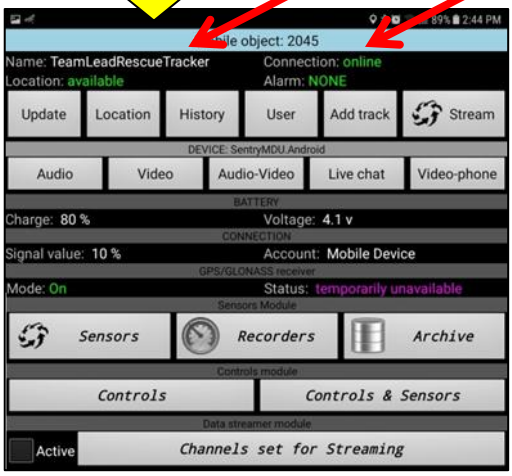
Return to the Main Map Screen.

Navigate to the Mobile Object Panel of Grandmother's Device

Once you have "enabled" the mobile object of your grandmother, her Mobile Object Icon (GPS location) will display on the Main Map Screen.

Perform a "click" on the **TeamLeadRescue** name to open the Mobile Object Panel.



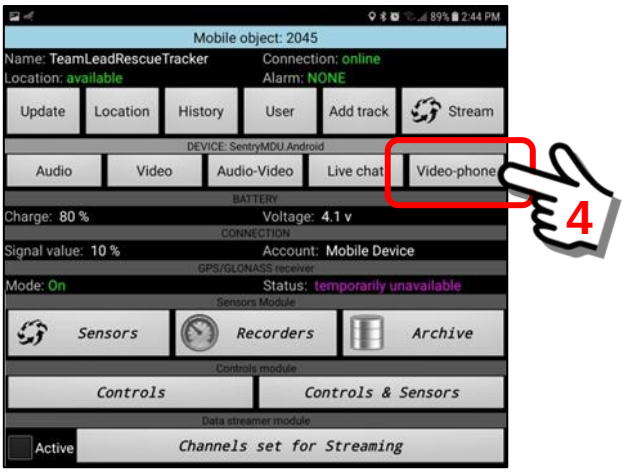


The Mobile Object panel is available to BOTH local and remote users … depending on security settings.

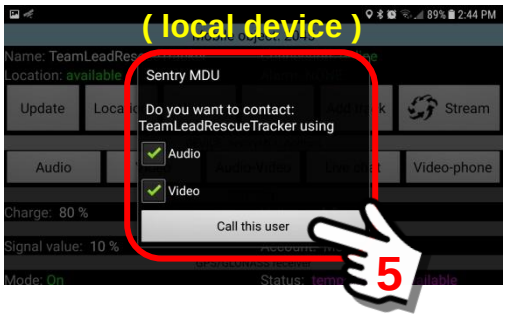
Make sure this is the Mobile Object panel for the remote device and that the device is "online".

Launch the video-phone feature on Grandmother's Device

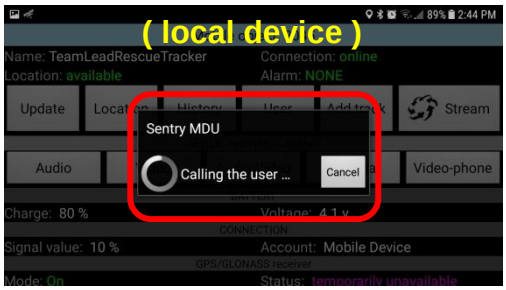
At the Mobile Object Panel of Grandmother's Device (TeamLeadRescue) click on the "Video-Phone" Button to launch the video calling feature.



When launched, the Video-Phone Feature opens a “Calling Box” panel with 2 choices for the user that is originating the call. They may select video, audio or both for the call. When selected, click on the “Call this user” button.

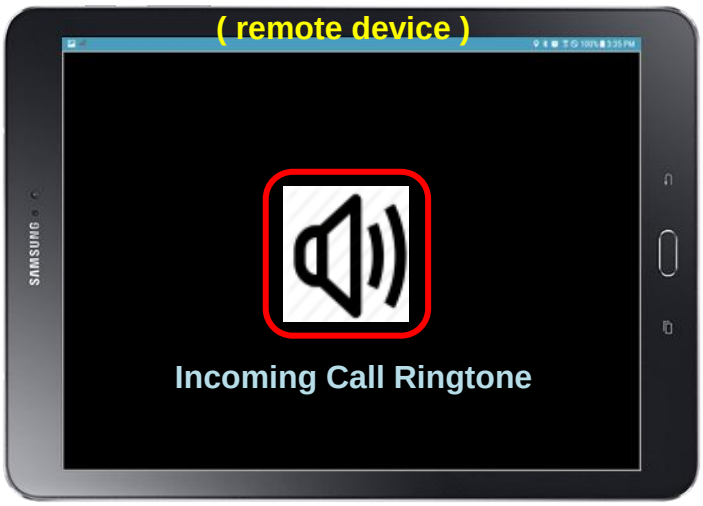


When calling a remote User, you should see an animated call panel similar to the screen shown below.



Ringtone

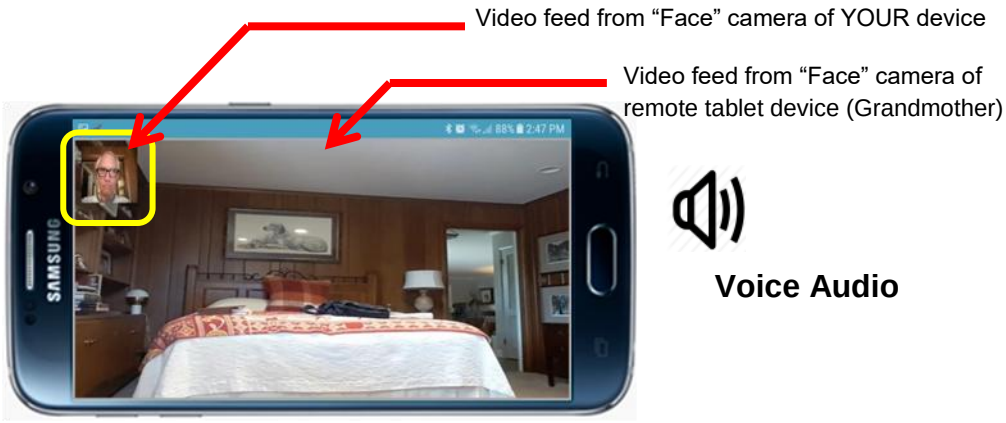
Since we have now enabled the “auto answer” feature on Grandmother’s tablet … instead of getting a pop-up notification box indicating that a video-phone call is waiting … you will simply hear a “ringtone” announcing that a call is coming in. After a few seconds, the device will initialize and the video-phone panel will be displayed automatically.



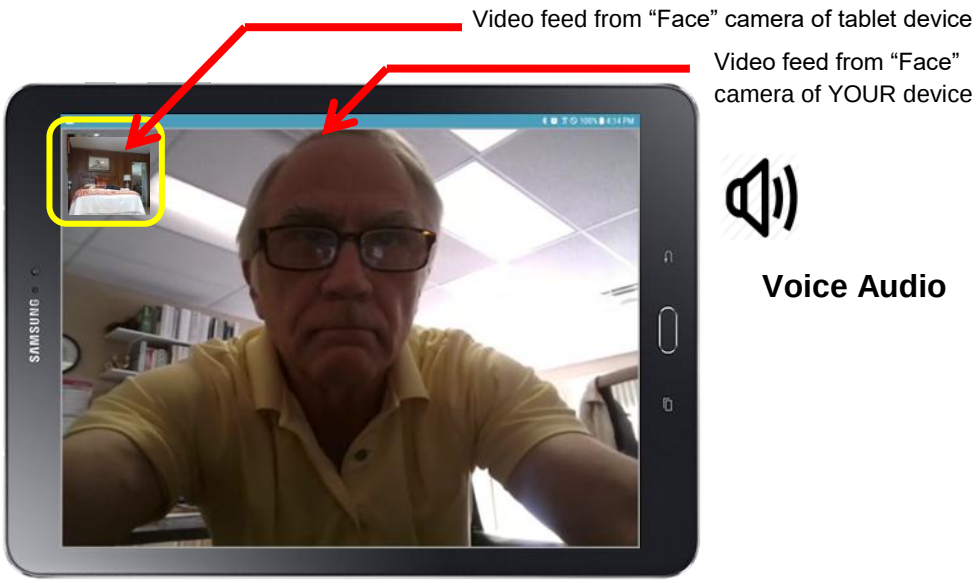
As the remote device “Accepts” the video call, a picture-in-picture screen display will appear. In the upper, left hand corner will be the video from the face camera of the local device and the remainder of the screen will be the video feed from the remote device.

In this “testing example” the smartphone is held by YOU (the tester) and the tablet device is set up on a table facing the inside of a room.

Android Smartphone that you are holding



Android Tablet that your grandmother will use



During “testing” if both devices are in close proximity (next to each other), you may experience acoustic feedback via the microphones/speakers. Reduce the volume setting to test without feedback. Also note that your WiFi/Cellular network bandwidth can affect the audio-video characteristics of the video call.

5. ***Test the "auto answer" feature with Grandmother.***

We will now "test" the auto-answer feature with Grandmother. This will also allow us to adjust the volume settings if necessary. We may need to adjust the volume setting so she can hear it well.

The plan is to set up a Tablet for Grandmother in her kitchen at the Assisted Living Home. The tablet will be set in a cradle mount next to a wall outlet so that it will have "power" 24/7. The SentryMDU App is installed, configured and running, with the video-phone "auto answer" feature enabled.

Follow the same steps as in the previous section, but this time WITH grandmother and verify that all works as planned.

Android Device screen timeout, standby and hibernation issue

The Android operating system is designed to "blank" the screen and/or go into "standby mode" if it is not being used for an extended period of time (User settings can control some of this behavior). This is done to conserve the battery on mobile devices.

In our situation, where we want to be able to remotely "turn on" a device on Grandmother's kitchen countertop or next to a hospital bed … this can create a problem. The Android system is designed to require "User Interaction" in order to turn on the screen once it has gone into "standby mode".

We have developed three (3) "workarounds" (options) that will address this issue. Please review the following sections (**Sections 6, 7 & 8**).

Option #1 – Set up the Tablet to display a Photoframe Slideshow.

Option #2 – Use the Tracker Panel "Show panel on application launch" feature.

Option #3 – Use the Tracker Panel "Lock Screen" Button feature.

6. ***Option #1 - Set up the Tablet to display a Photoframe Slideshow.***
The Android operating system is designed to “blank” the screen and/or go into “standby mode” if it is not being used for an extended period of time (User settings can control some of this behavior). This is done to conserve the battery on mobile devices.

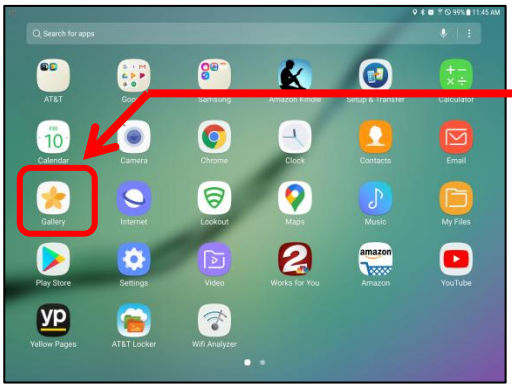
In our situation, where we want to be able to remotely “turn on” a device on Grandmother’s kitchen countertop or next to a hospital bed … this can create a problem. To address this issue, we must keep the screen “on” and active 24/7 so the Android Operating System will not put the device “to sleep” or into “standby mode”.

To do this, we will configure the tablet to display a “Slideshow” of pictures similar to a PhotoFrame Device. Most mobile devices come with pre-installed picture display Apps that will display pictures that are taken with the camera. This section will illustrate how to configure your device to function as a Picture PhotoFrame device.

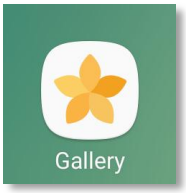
Android Tablet configured as a PhotoFrame Device

A group of pictures will cycle in 5 second intervals

In this example, we are using a Samsung 10” Tablet with a pre-installed “Gallery” App that will display pictures taken with the Camera. The Gallery App includes a built-in Slideshow Feature. If your device does NOT have a slideshow feature, you can download one of the many Apps in the Google Play Store that do.



Example of a pre-installed App that includes a Slideshow Feature

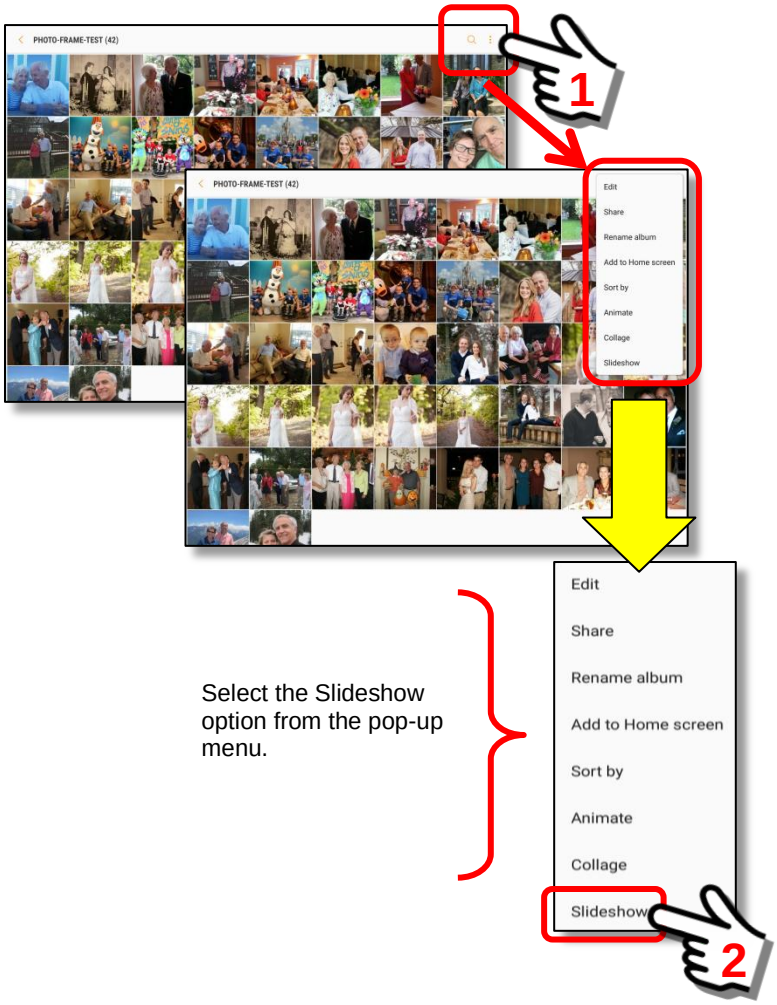


Create an "album" to store the pictures to use in a slideshow

Upload the pictures you want to use in your slideshow onto the tablet. Group these pictures into an "album". An example is shown below.

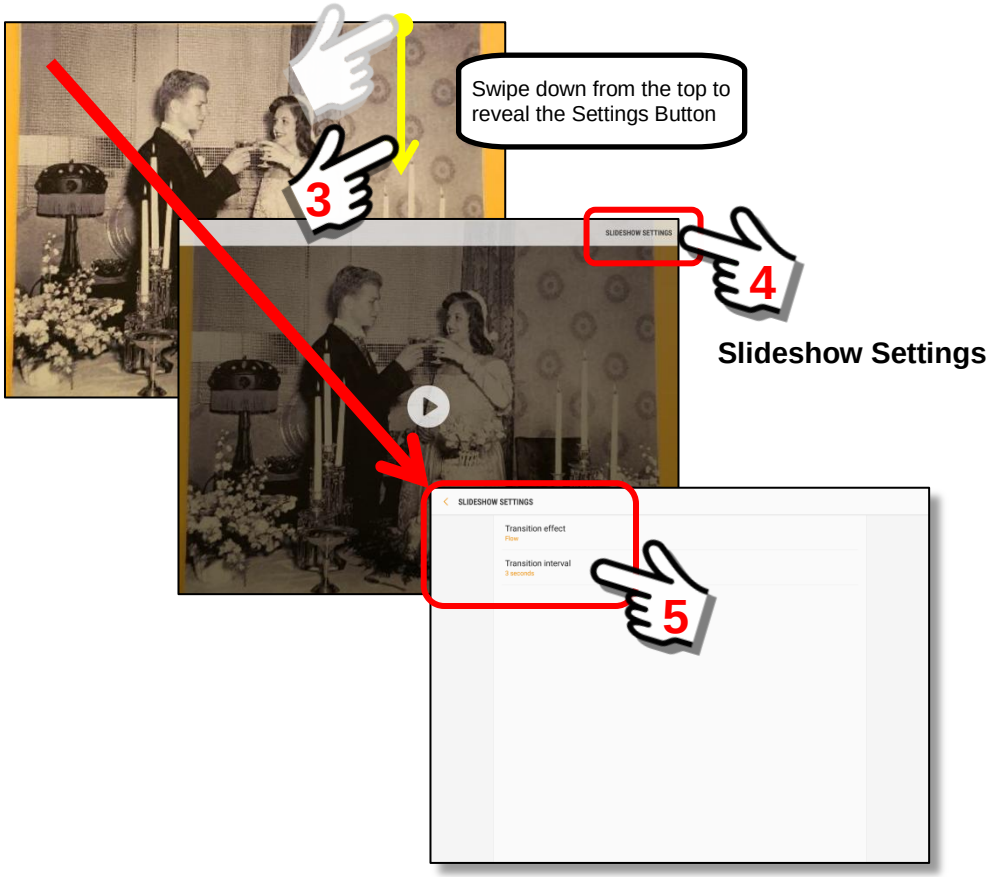
Open the Album and select the slideshow option

Open the Album, select the App Menu and navigate to the Slideshow option. Click on the Slideshow option.



<u>The slideshow will begin to play and cycle through the pictures</u>

When you click on the “Slideshow” Option in the drop down Menu, the slideshow pictures will begin to play. To adjust picture transition effects and display “interval” … swipe the screen down from the top. The slideshow will stop and a ***Slideshow Settings*** Button will appear in the upper right hand corner. Make any changes you want here.



Restart the slideshow to use the “new” settings.

When a video-phone call is received the slideshow will be paused

When the slideshow is playing, the screen will remain “on” 24/7. This way, when a video call is received, the slideshow will be “paused” and the video call will now be displayed. When the video call is finished, the slideshow will resume playing.

We illustrate that concept below.

The slideshow is playing continuously, 24/7

If a video-phone call comes in, the slideshow is paused

Voice Audio

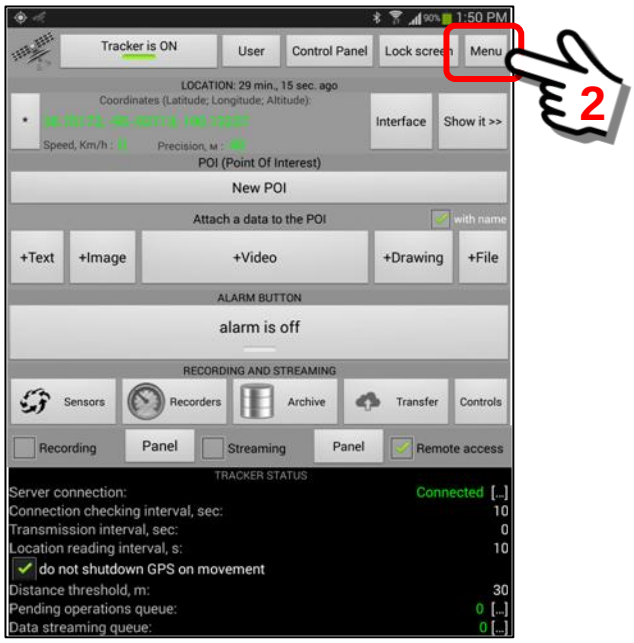
When the video call is FINISHED, the slideshow resumes

7. ***Option #2 – Use the Tracker Panel "Show panel on application launch" feature.*** Another option is to make the mobile device appear as if it is turned "off", with the display screen "dark". This method can be used if the device is put into a bedroom or other area where you may not want a screen to be "on" 24/7.

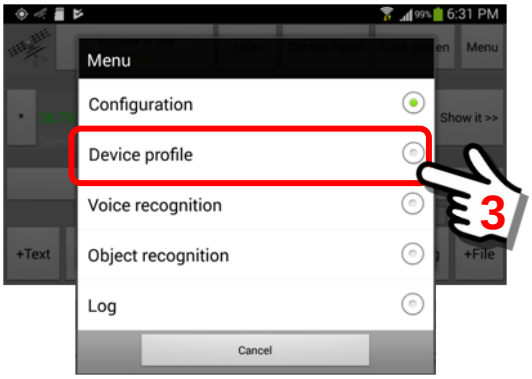
The Tracker Panel "**Show panel on application launch**" feature will force the SentryMDU App to open the Tracker Panel whenever the App is started. Since the Tracker Panel will automatically "dim" the screen after two minutes, this will enable the device display to be darkened whenever the video-phone feature is not used. This section will describe how to use the "Show panel on application launch" feature with the video-phone "auto answer" feature.

On the Tablet Device, click on the "Tracker" Button menu item.

Once the **Tracker Panel** is displayed, click on the Menu Button located on the upper right hand corner of the Tracker Panel.



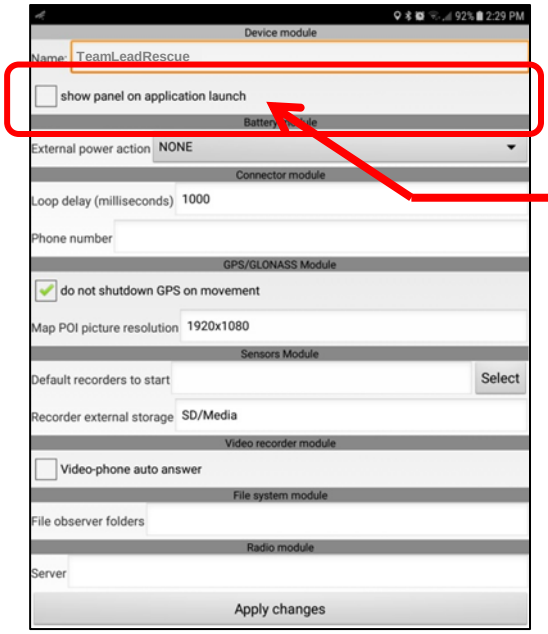
The Menu Button opens a pop-up menu with 5 choices.
Select the **Device Profile** menu option.



The “Device Profile” menu option allows a user to set/change some of the parameters that are normally set on the SentryMDU Data Server. User settings for the “Show panel on application launch” feature and “Video-phone auto answer” feature are included in this Panel.

The “Show panel on application launch” configuration option is located at the top of the Panel.

Device Profile parameters panel



This checkbox will force the **Tracker Panel** to be launched when the App is started.

Device Module Menu Panel

The following item describes the “Show panel on application launch” feature.

☑ Show panel on application launch

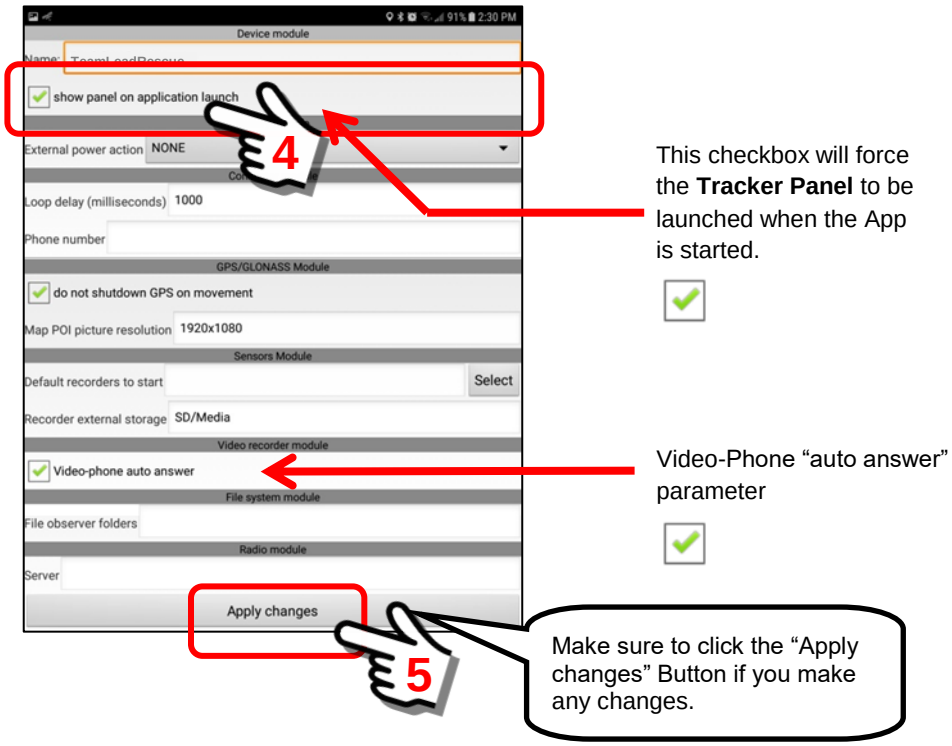
This “checkbox” is unchecked by default. This feature is typically only used with the Video-Phone feature when it is desired to establish a two-way audio/video session with an unattended remote mobile device and you would like the display to be “blank” when not in use.

When active, this will automatically display the **Tracker Panel** when the App is launched. By design, the Tracker Panel screen will automatically “dim” after one minute. This allows the device to be left “on” 24/7, but with the screen darkened. When a video-phone call is initiated from another device, the screen will come to life.

This feature can allow friends and family members to initiate and control video-phone sessions with people that are developmentally disabled, bed-bound, have dementia/memory issues or are technically challenged.

This would be “checked” on the receiving device.

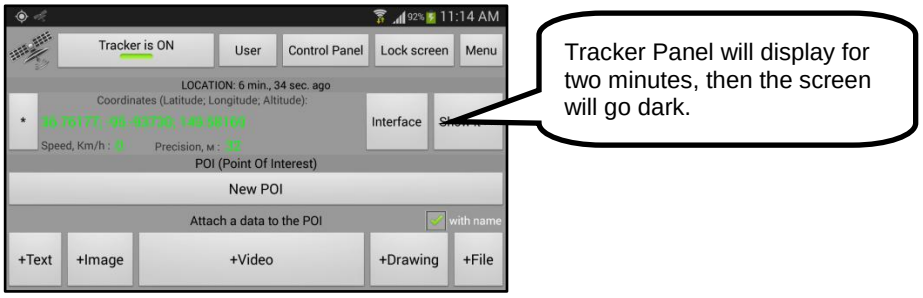
Put a “checkmark” in the checkbox of the “**Show panel on application launch**” configuration option, as shown below. Save your changes.



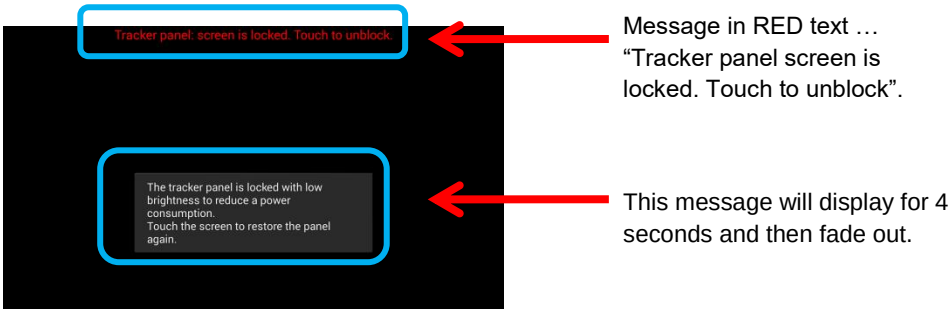
You have COMPLETED the necessary changes to enable the “auto answer” feature and the “Show panel on application launch” configuration option for the video-phone.

Now that the configuration is completed … whenever the SentryMDU App is launched from the Tablet Icon, the **Tracker Panel** will be opened … then timeout after two minutes … and the screen will go dark.

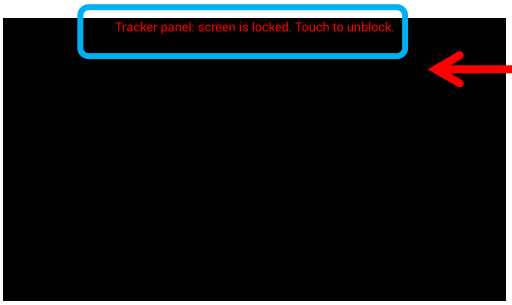
As the SentryMDU App is launched, the **Tracker Panel** is displayed.



The screen will reduce brightness and “dim” as shown below. A message will appear indicating that the screen is at a reduced brightness phase.



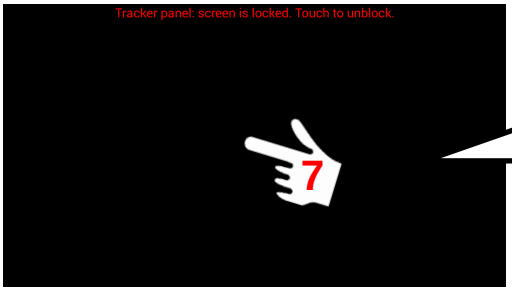
When the screen has gone “dark”, the red text will remain as a reminder that this is an active panel that is in a state of reduced brightness.



Message in RED text … “Tracker panel screen is locked. Touch to unblock”.

This is a reminder that the Tracker Panel is active.

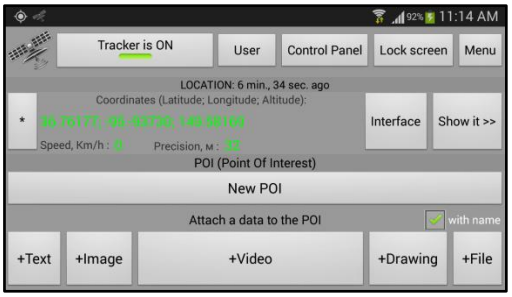
Touch the screen anywhere to unlock the Tracker Panel. Click “Yes” on the Confirmation box to re-open the Tracker Panel.



Click anywhere on the screen to unlock the Tracker Panel.

After clicking on the display screen to unlock the Tracker Panel, the confirmation box will display for 10 seconds. If the user has not made a selection within 10 seconds, the screen will go dark again.

Once the Tracker Panel has been re-established, it will go “dark” again if no actions take place for 2 minutes.



In this example, we are using the “Show panel on application launch” feature of the Tracker Panel to keep the tablet display screen “darkened” when not in use by the video phone calling feature. We illustrate as follows.

We start with a “dark” screen (SentryMDU App running in the background).

When a video call comes in, the tablet screen will automatically activate to display the picture-in-picture video-phone display. No action is required on the part of the User.

Voice Audio

When the video call is finished, the screen will revert back to the darkened Tracker Panel.

Note: ***Situations where the "dimmed" screen does not fully restore.***
Depending on the device manufacturer, some mobile devices (and Tablets) do not fully restore the screen brightness after a timeout event. It appears that the screen is only restored to half-brightness. This has something to do with the auto-dimming features of the mobile device that are in conflict with the SentryMDU dimming feature. If this situation occurs, simply use the "back" button on the device to navigate to another SentryMDU screen and the desired screen brightness will return.

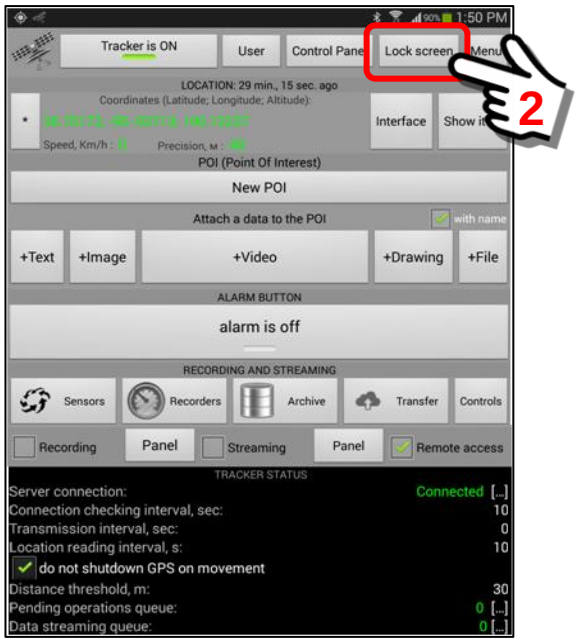
8. ***Option #3 – Use the Tracker Panel "Lock Screen" Button.***
Similar to Option #2, this option can also make the mobile device appear as if it is turned "off", with the display screen "dark". This method can be used if the device is put into a bedroom or other area where you may not want a screen to be "on" 24/7.

To do this, we will use a feature of the SentryMDU Tracker Panel that automatically "dims" the screen … yet the display is still active.

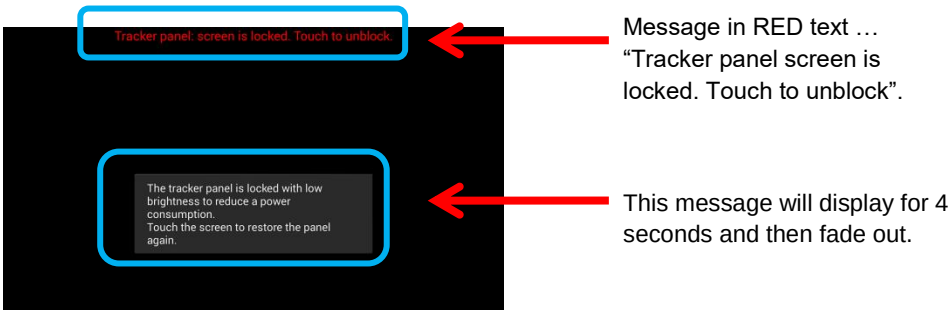
The "Lock Screen" feature of the Tracker Panel dims the Tracker Panel display to conserve battery life and to make sure that buttons on the Tracker Panel are not inadvertently clicked. This section will describe how to use the "Lock Screen" feature with the video-phone "auto answer" feature.

On the Tablet Device, click on the “Tracker” Button menu item.

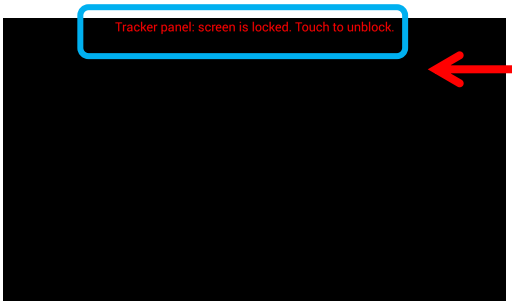
Once the **Tracker Panel** is displayed, click on the Lock Screen Button located on the upper right hand corner of the Tracker Panel.



The screen will reduce brightness and “dim” as shown below. A message will appear indicating that the screen is at a reduced brightness phase.



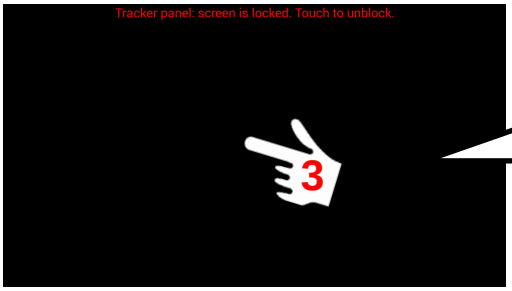
When the screen has gone “dark”, the red text will remain as a reminder that this is an active panel that is in a state of reduced brightness.



Message in RED text … “Tracker panel screen is locked. Touch to unblock”.

This is a reminder that the Tracker Panel is active.

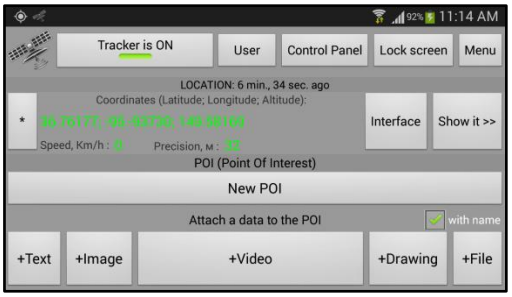
Touch the screen anywhere to unlock the Tracker Panel. Click “Yes” on the Confirmation box to re-open the Tracker Panel.



Click anywhere on the screen to unlock the Tracker Panel.

After clicking on the display screen to unlock the Tracker Panel, the confirmation box will display for 10 seconds. If the user has not made a selection within 10 seconds, the screen will go dark again.

Once the Tracker Panel has been re-established, it will go “dark” again if no actions take place for two minutes.



In this example, we are using the “Lock Screen” feature of the Tracker Panel to keep the tablet display screen “darkened” when not in use by the video phone calling feature. We illustrate as follows.

We start with a “dark” screen (SentryMDU App running in the background).

When a video call comes in, the tablet screen will automatically activate to display the picture-in-picture video-phone display. No action is required on the part of the User.

Voice Audio

When the video call is finished, the screen will revert back to the darkened Tracker Panel “Lock Screen”.

Note: ***Situations where the “dimmed” screen does not fully restore.***

Depending on the device manufacturer, some mobile devices (and Tablets) do not fully restore the screen brightness after a timeout event. It appears that the screen is only restored to half-brightness. This has something to do with the auto-dimming features of the mobile device that are in conflict with the SentryMDU dimming feature. If this situation occurs, simply use the “back” button on the device to navigate to another SentryMDU screen and the desired screen brightness will return.

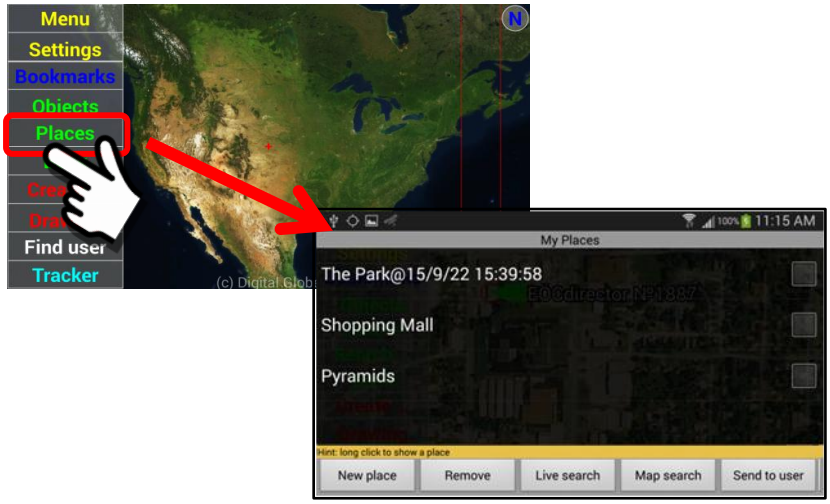
11. The “Places” Button features

11.1. Overview of the Places feature

Overview:

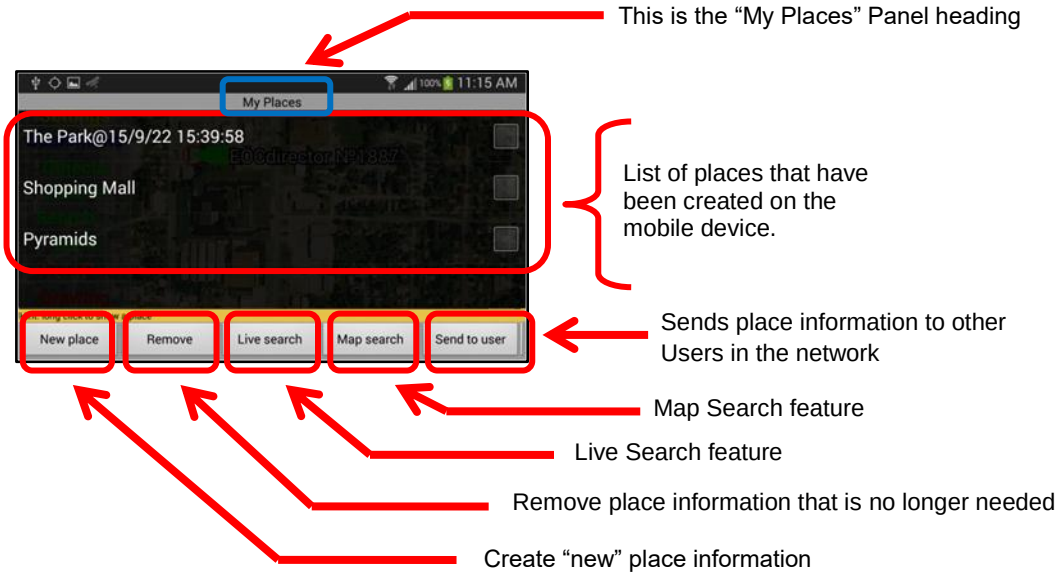
The “Places” Feature allows a user to designate places and points-of-interest on maps and save these locations for future “quick” retrieval. In addition to map views, users can draw on the map locations (to point out specific features) and add icons and symbols to the designated places.

This section will describe the steps required to add new “places”, send placemarks to other users, remove obsolete places and more.



General layout of the “My Places” Panel:

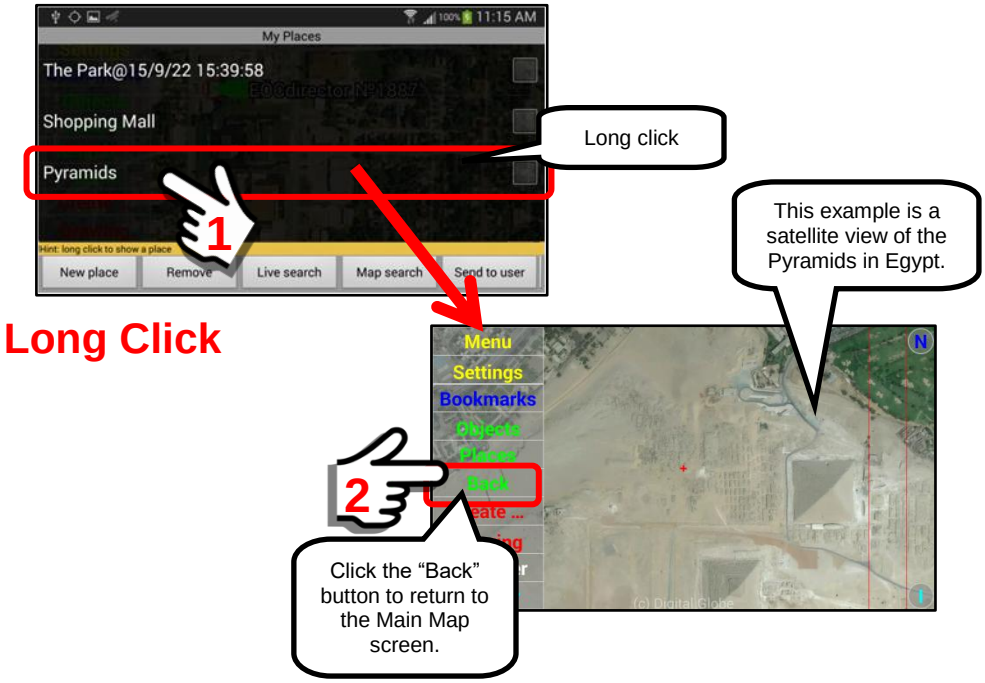
The “My Places” panel provides a list of places and a group of 5 buttons across the bottom.



Description of the button functions and features:

1. ***Selecting a "Place" to display***

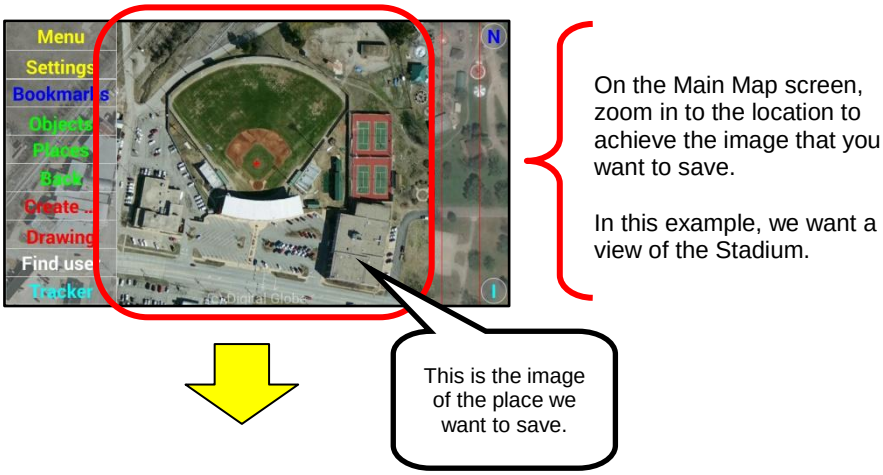
   Display a "Place" on the list by performing a "Long click" on the place name.



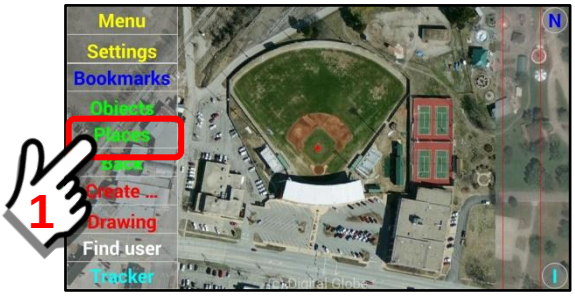
2. ***"New place" Button***

   The "New place" button will allow a User to create additional places to add to the list. The procedure to create a new place is as follows:

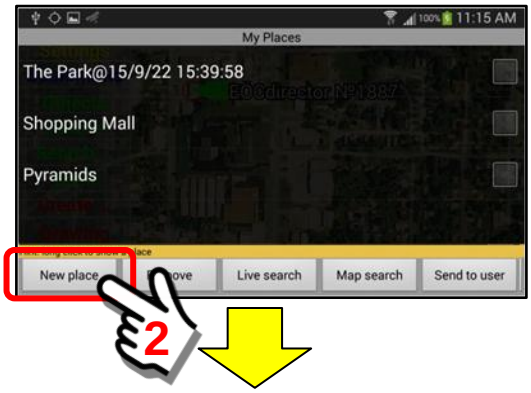
   a. Locate the "place" on the Main Map screen of the location that you want to capture.
   b. Click on the "Places" Menu Choice.
   c. Click on the "New place" Button.
   d. Enter a "name" for the new place.
   e. Click on the "Add new place" button.



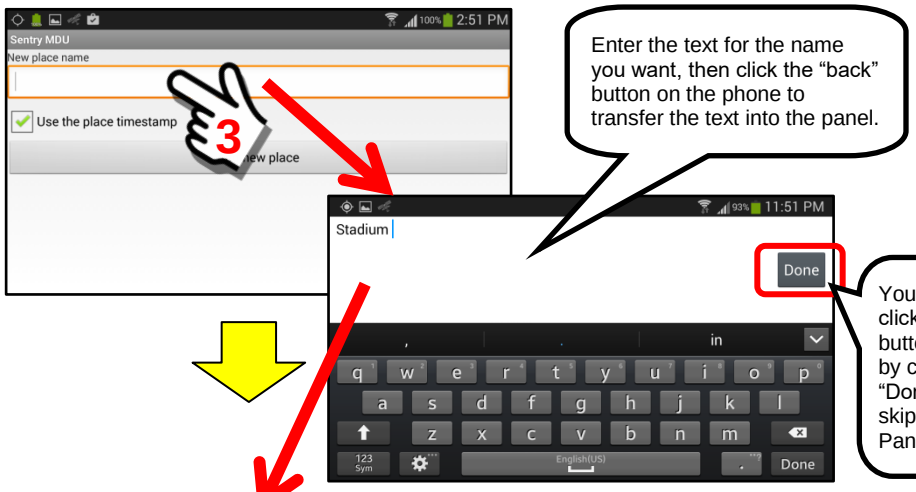
Click on the “Places” menu choice.

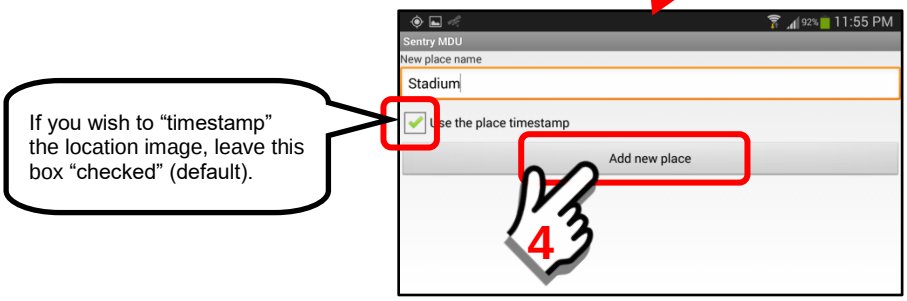


The “My Places” panel opens. Click on the “New place” button.

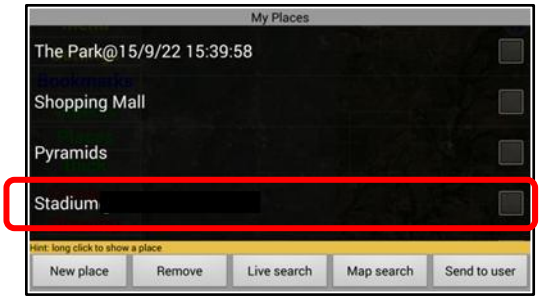


A panel opens asking for a “name” for the place that you wish to save.



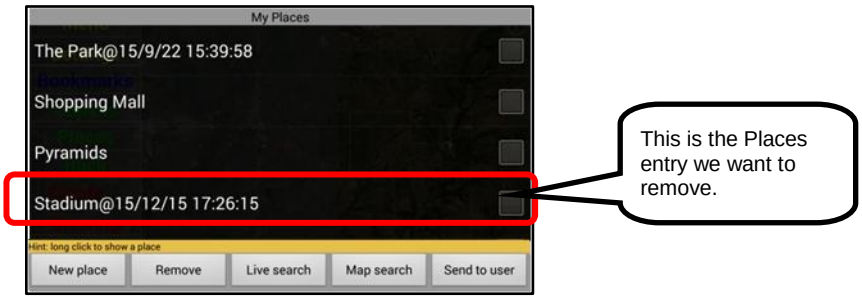


The “new” place has now been created and stored in the Places database.

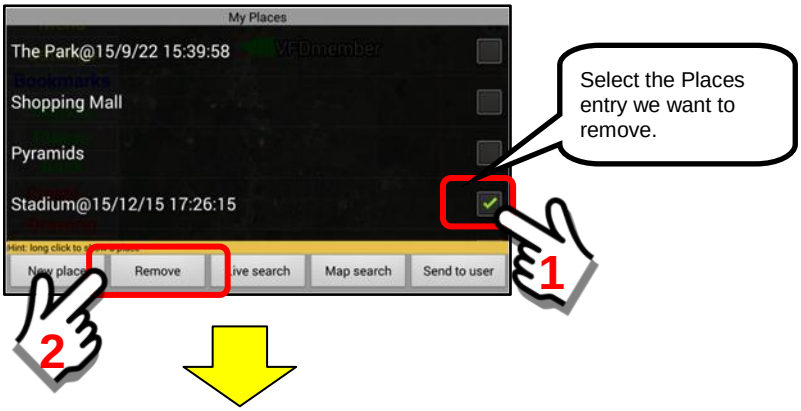


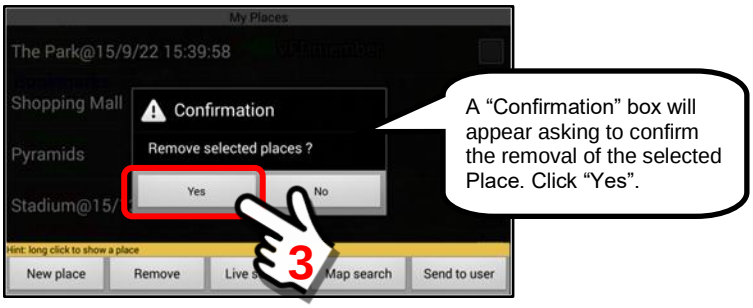
3. *“Remove selected” Button*

The “Remove selected” button will allow a User to select and remove places from the list that are no longer needed. In this example we will remove the Place = “Stadium@15/12/15 17:26:15” from the places list.



Click on the “checkbox” adjacent to the text name to select the entry to be removed. Then click on the “Remove selected” button.



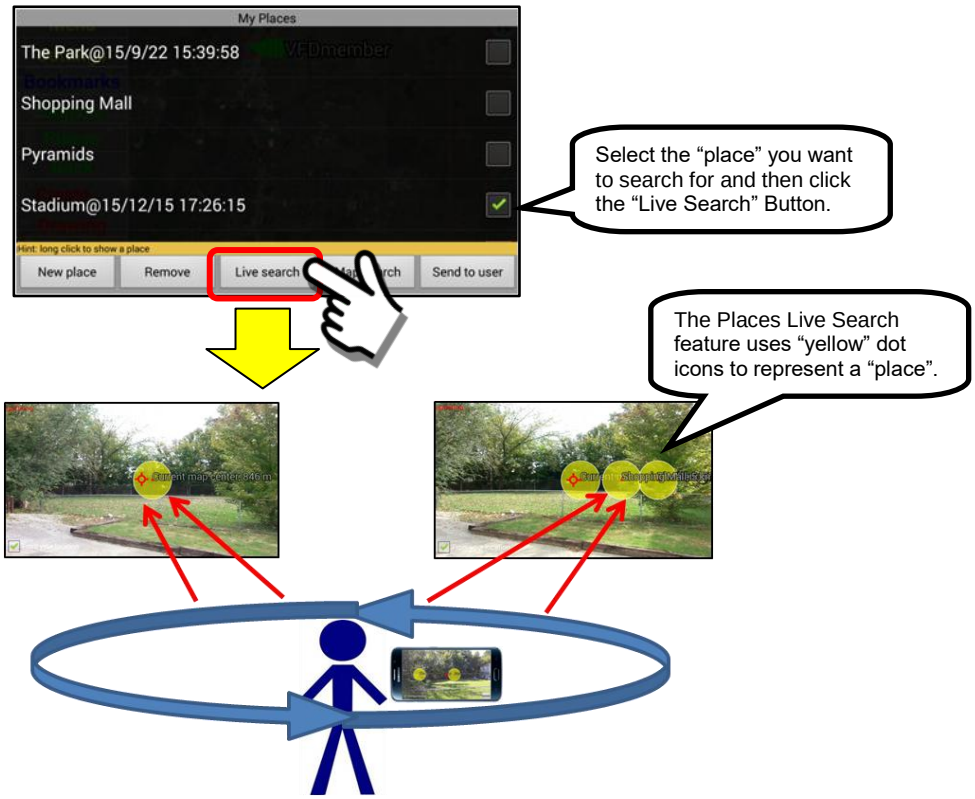


The place entry for “Stadium@15/12/15 17:26:15” has now been removed from the places list.

4. *Live Search feature*

The Places “Live” Search feature will allow a user to search for “places” on the system by simply pointing your phone in the direction of the places. As the phone is rotated around, a yellow icon with the Place Name will come into view when you are pointed in the direction of the place(s). In addition, the distance from your location (or another reference point) will be displayed.

> **Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, the Live Search feature will NOT work.**



This option will be discussed in further detail in **Section 11.2.**

5. ***Map Search feature***

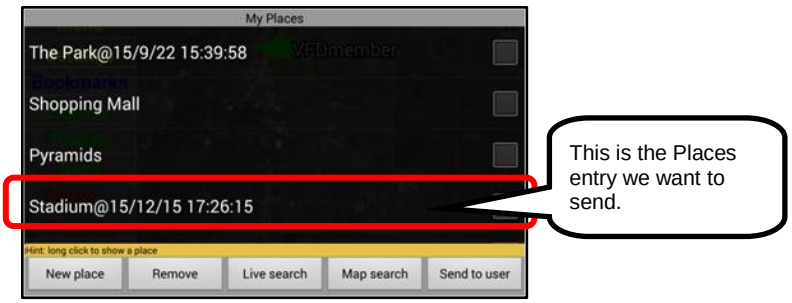
The Places "Map Search" feature will allow a user to search for "places" on the system and display them on a Map Overlay. The Map View will provide a distance measurement from a reference point (User location or Map Center) to the places displayed on the Map.

This option will be discussed in further detail in **Section 11.3**.

6. ***"Send to user" Button***

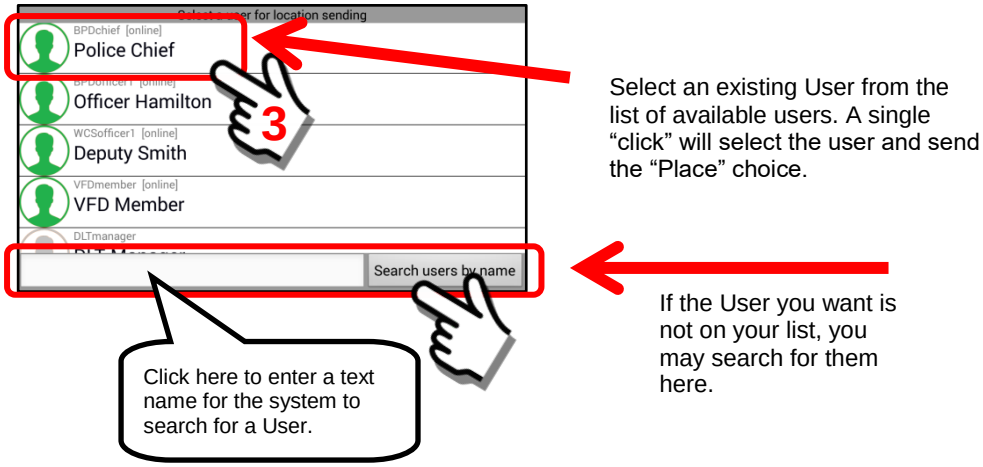
The "Send to user" button will allow a User to select and send a place reference to another User on the network. In this manner, a "place" or multiple places may be distributed around the system rapidly.

In this example, we will send the place entry for "Stadium@15/12/15 17:26:15" to another User on the network.



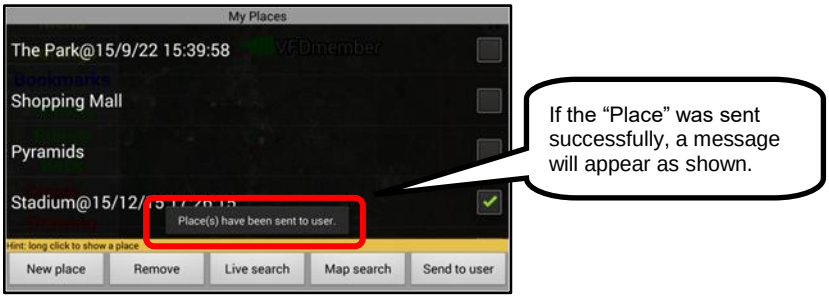
Click on the “checkbox” adjacent to the text name to select the entry to be sent. Then click on the “Send to user” button.

A list of Users will now appear on the screen. Scroll through the list until you find the User that you want to send the “place” to. If the user is NOT in the available listing, enter a name (part of a name) in the blank at the bottom of the screen and click on the “Search for users by name” button.



Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.

If the transfer of the “place” location was successful, a message will appear on the screen. You are now finished.



The “Place” location has now been sent to the user you have selected. A “pop-up” message will appear on the other user’s Main Map screen describing what is being sent and who is sending it. The other user has the option to accept or reject the “new” Place that is being sent to them.

This confirmation screen will appear on other users mobile device.

To accept the new “Place” file, the User receiving the new place location must click the “Yes” button. The new “Place” will now be immediately displayed on the Users Main Map screen and also stored in the users “My Places” database.

The “place” will be displayed with a message indicating it has been added to the user’s list of places on file.

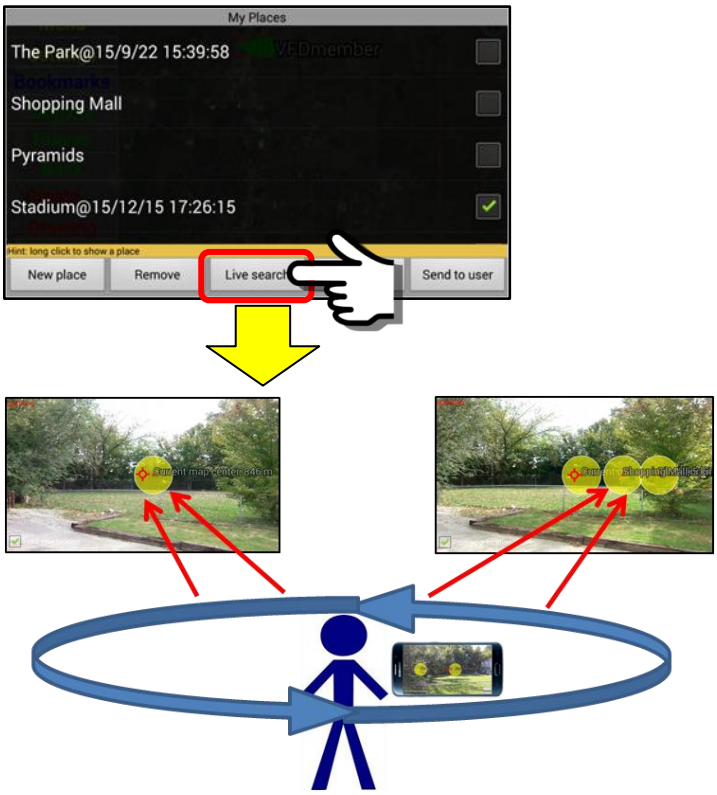
After reviewing the “new” place location, the User may click the “Back” button of the Main Menu screen to return to the regular screen display.

11.2 Place "Live" Search feature

Overview:

The "Place" Live Search option will allow a user to search for Places on the system by simply pointing your phone in the direction of the selected places. As the phone is rotated around, a yellow icon with the Place Name and distance will come into view when you are pointed in the direction of the selected place(s).

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, the Live Search feature will NOT work.



The available features are as follows:

a. Only selected items (checkmarked) from the Places Listing will be displayed. The system will search for Places within a maximum 1000 km radius.
b. The location of the current Map View centerpoint (red + sign) will also be displayed on the Live View screen as a reference point.
c. The selected "place" location(s) will display as a yellow icon with a name of the place and distance shown.
d. The GPS location of the place will be the GPS location that was saved when the "place" entry was created. If a Mobile Object was saved as a "place" then this is not necessarily the current location.
e. Clicking on the displayed place icon will open the Map Panel for that place location.
f. The places Live Search Feature is automatically updated/refreshed once every 5 seconds.

Parts of the Place Live Search Panel:

When the system is searching for users, red “updating …” text will be displayed here.

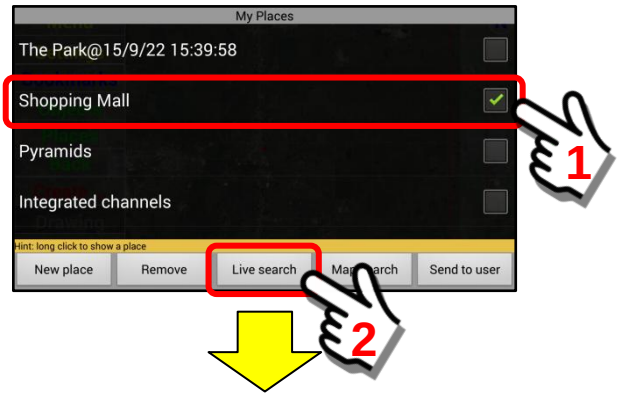
Scope crosshairs used to direct the camera view

Yellow circles of Map Center and selected places. Distance from the reference point (your location or map center) to the Place.

“From your location” checkbox. When checked, all measurements are from YOUR current location and not the screen center.

<u>Example of Live Search for 1 place</u>

Select the “place” from the list. In this example, we are selecting the “Shopping Mall” as our place location.



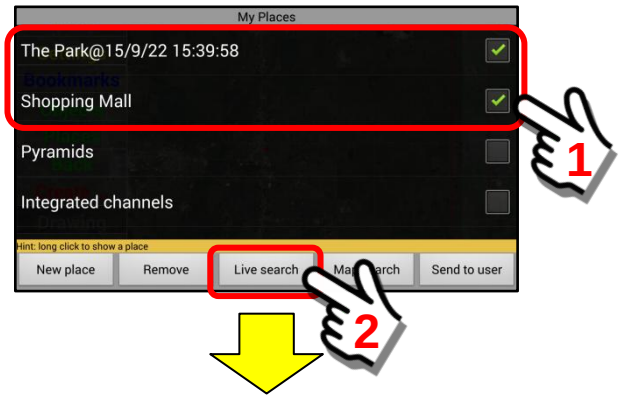
Yellow circle of Map Center and selected “Shopping Mall”.

Distance shows we are 5 km, 50m from the Shopping Mall.

Click on name to display the Place.

Example of Live Search for 2 places

Select two places from the list. In this example, we are selecting both the Park and the Shopping Mall.



Yellow circle of Map Center and both selected items (The Park and Shopping Mall).

Click on a name to display the Place. We can select either the Park or the Shopping Mall.

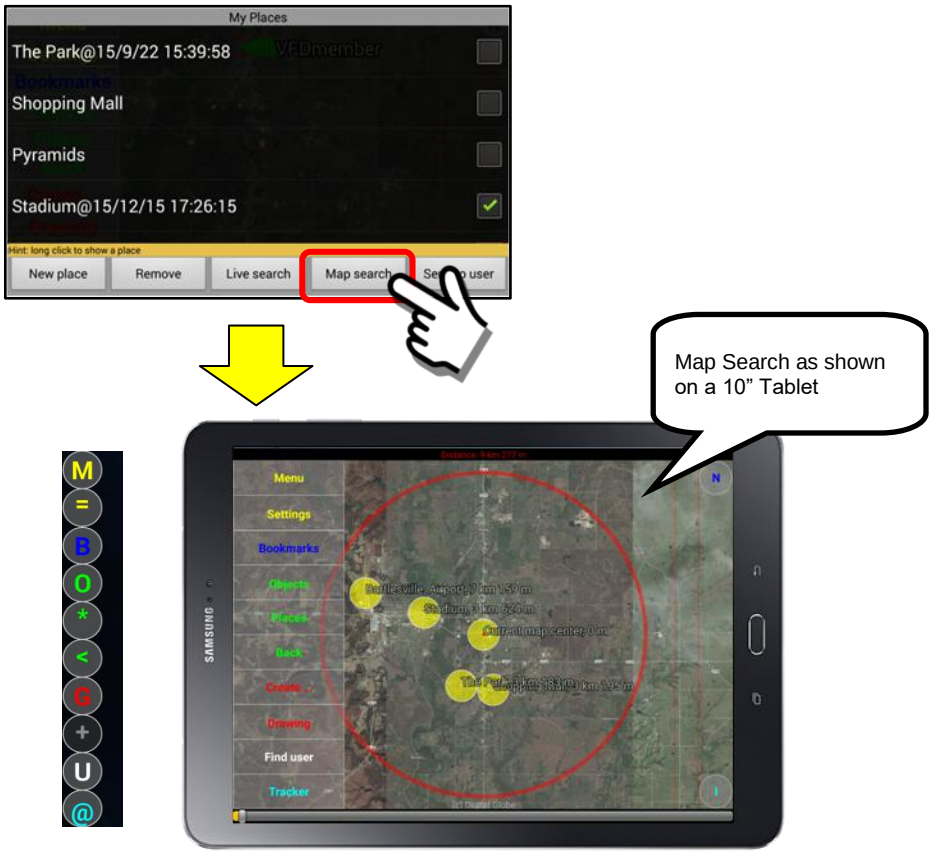
The Park

Shopping Mall

11.3 Place "Map" Search feature

Overview:

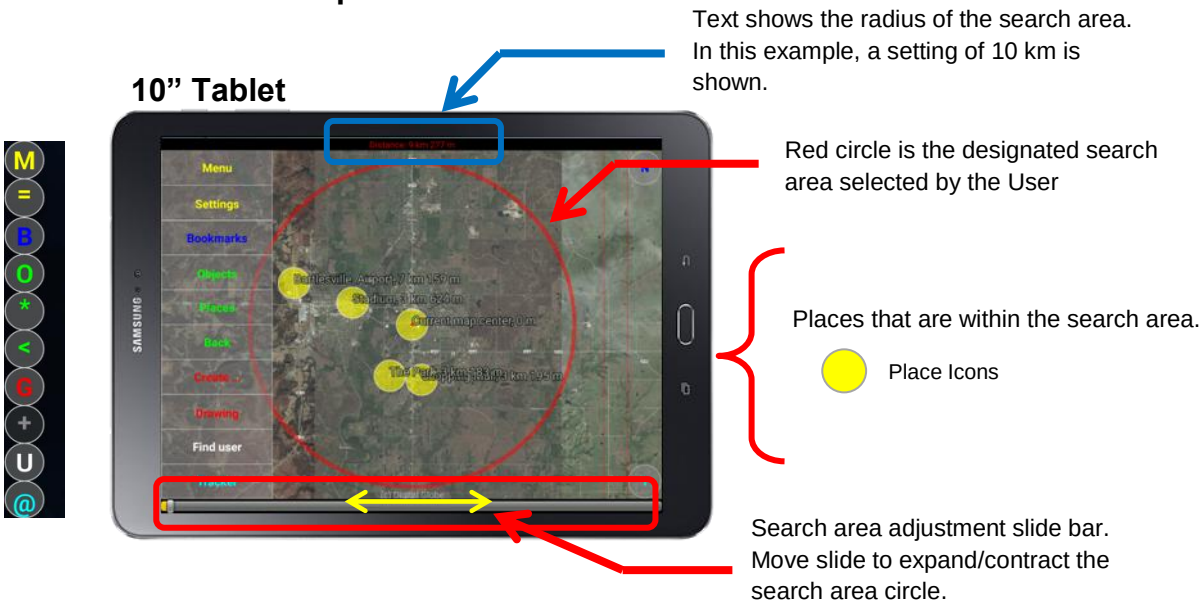
The "Place" Map Search option will allow a user to search for Places on the system and display them on a Map Overlay. The user may set a circle radius within which to search for places. The default setting is 100 km but a search radius may be between 5 – 1000 km. A yellow icon with the Place Name and distance will be displayed of the selected place(s).



The available features are as follows:

a. When first opened, the default search radius is 100 km.
b. The search radius can be between 5 km and 1000 km.
c. A yellow "Map Center" icon will be displayed at the map center.
d. As the search radius is changed, places will appear and disappear from the display.
e. Places will display as a yellow icon.
f. The GPS location of places will be the GPS location that was saved in the Sentry MDU System of that place.
g. Clicking on the displayed place icon will open the map image of the place.
h. The Map is a real-time view of the current location of all places relative to the map center reference point selected.

Parts of the Place Map Search Panel:



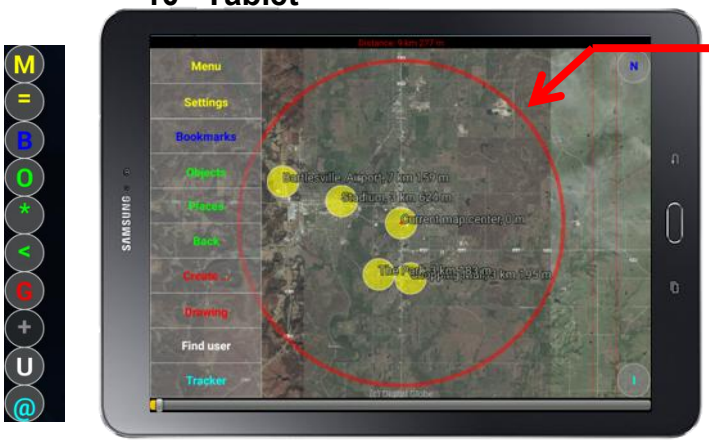
Example of Map Search for 1 place

Select the “place” from the list. In this example, we are selecting the “Shopping Mall” as our place location.

Example of Map Search using a reduced search circle

In this example, we are going to start with selecting a search circle of 10 km (the default is 100 km) and then reduce to 5 km. This will illustrate that a “place” that is outside of the search circle will be dropped from the display.

10” Tablet



Red circle is the designated search area selected by the User (10 km).

In this illustration we show four (4) Places and the Map Center that are inside of the red search circle.

To reduce the search area, we move the slider on the bottom of the screen, to the left. We will reduce it to about 5 km.

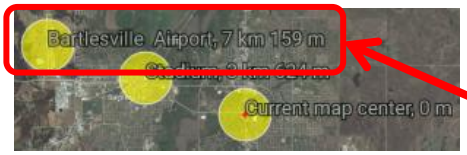
Text shows the radius of the search area. In this example, we have adjusted to about 5 km (actual shown = 4 km, 883m)

10” Tablet

Red circle is the “new” reduced search area selected by the User (~ 5 km radius)

Move slider to the left to get approximately 5 km.

You will notice that we now have 3 places shown (and the Map Center). The Place = Bartlesville Airport is no longer shown on the display.



As you can see, the Bartlesville Airport was sitting at 7 km, 159m … more than the 5 km threshold. Therefore, it was excluded from the reduced display.

11.4. Showing a “place” that has been saved

Selecting a “Place” to display:

Display a “Place” on the list by performing a “Long click” on the place name.

11.5. Creating a new “place” to store on the mobile device

The “New place” Button:

The “New place” button will allow a User to create additional places to add to the list. The procedure to create a new place is as follows:

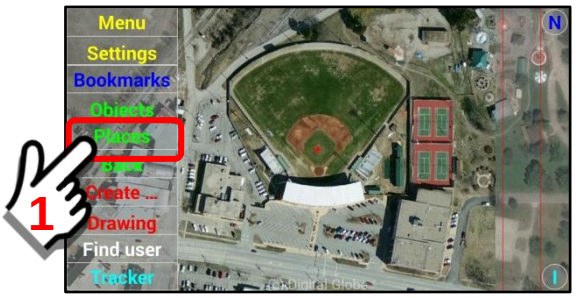
a. Locate the “place” on the Main Map screen of the location that you want to capture.
b. Click on the “Places” Menu Choice.
c. Click on the “New place” Button.
d. Enter a “name” for the new place.
e. Click on the “Add new place” button.

On the Main Map screen, zoom in to the location to achieve the image that you want to save.

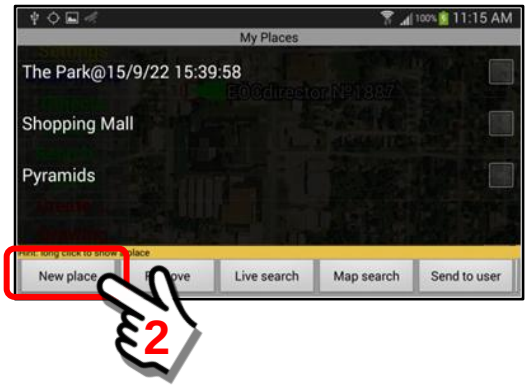
In this example, we want a view of the Stadium.

This is the image of the place we want to save.

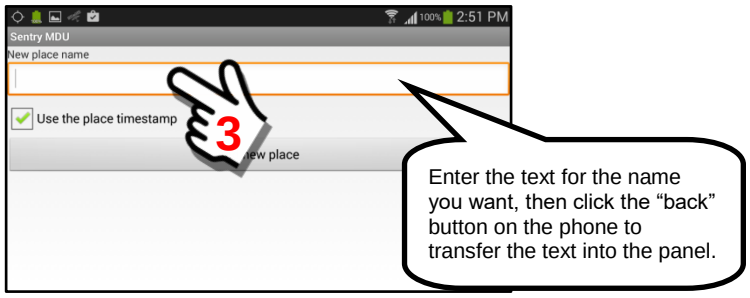
Click on the “Places” menu choice.



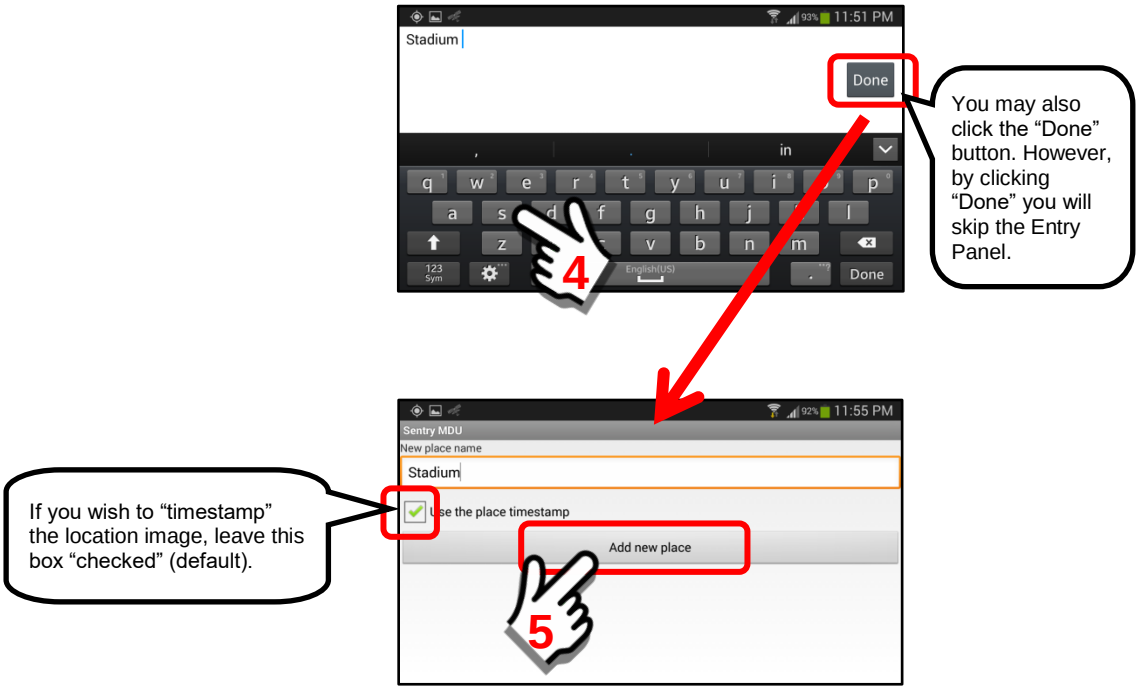
The “My Places” panel opens. Click on the “New place” button.



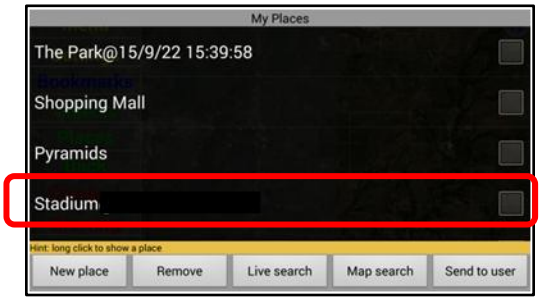
A panel opens asking for a “name” for the place that you wish to save.



Enter the text description. In this example, we are entering the word “Stadium”.



The “new” place has now been created and stored in the Places database.

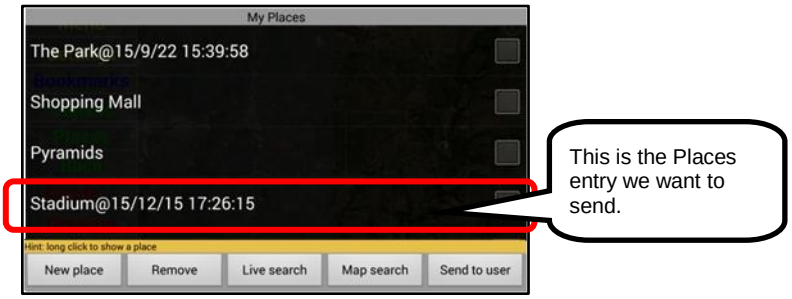


11.6. Sending a “place” to another user

Sending to another user:

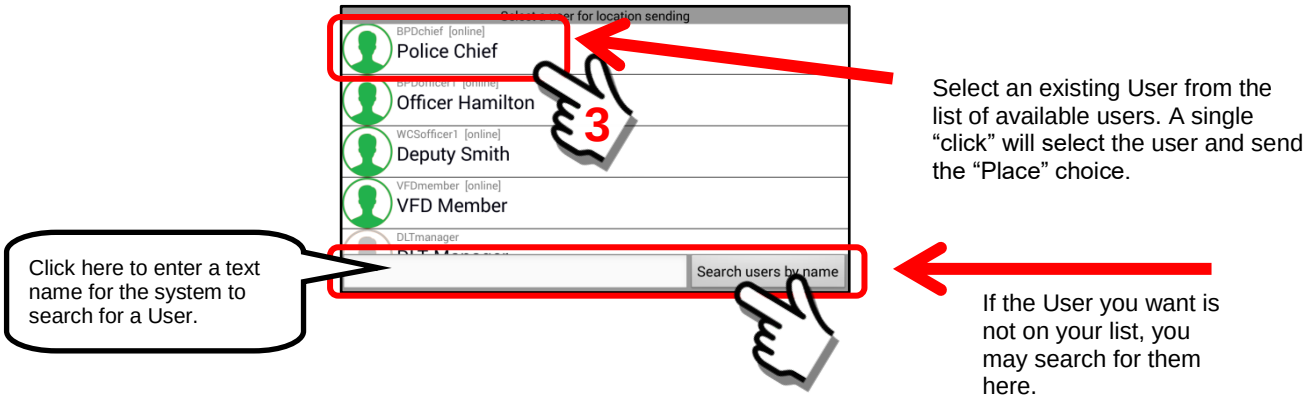
The “Send to user” button will allow a User to select and send a place reference to another User on the network. In this manner, a “place” or multiple places may be distributed around the SentryMDU System rapidly.

In this example, we will send the place entry for “Stadium@15/12/15 17:26:15” to another User on the network.



Click on the “checkbox” adjacent to the text name to select the entry to be sent. Then click on the “Send to user” button.

A list of Users will now appear on the screen. Scroll through the list until you find the User that you want to send the “place” to. If the user is NOT in the available listing, enter a name (part of a name) in the blank at the bottom of the screen and click on the “Search for users by name” button.



Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.

If the transfer of the "place" location was successful, a message will appear on the screen. You are now finished.

The "Place" location has now been sent to the user you have selected. A "pop-up" message will appear on the other user's Main Map screen describing what is being sent and who is sending it. The other user has the option to accept or reject the "new" Place that is being sent to them.

To accept the new "Place" file, the User receiving the new place location must click the "Yes" button. The new "Place" will now be immediately displayed on the Users Main Map screen and also stored in the users "My Places" database.

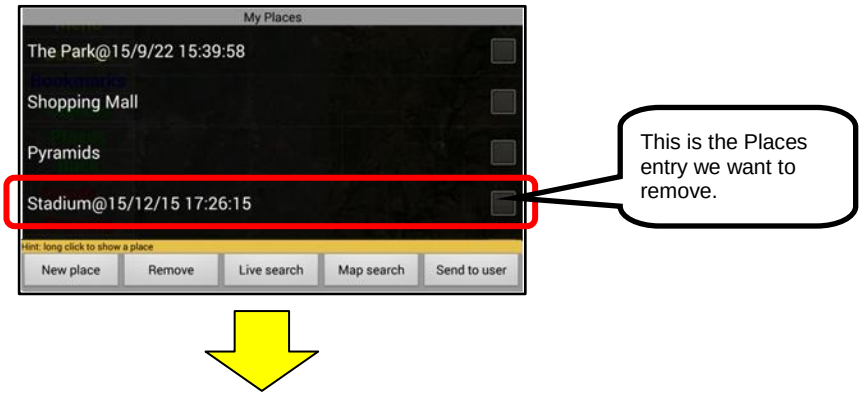
The “place” will be displayed with a message indicating it has been added to the user’s list of places on file.

After reviewing the “new” place location, the User may click the “Back” button of the Main Menu screen to return to the regular screen display.

11.7. Removing a “place” that is no longer needed

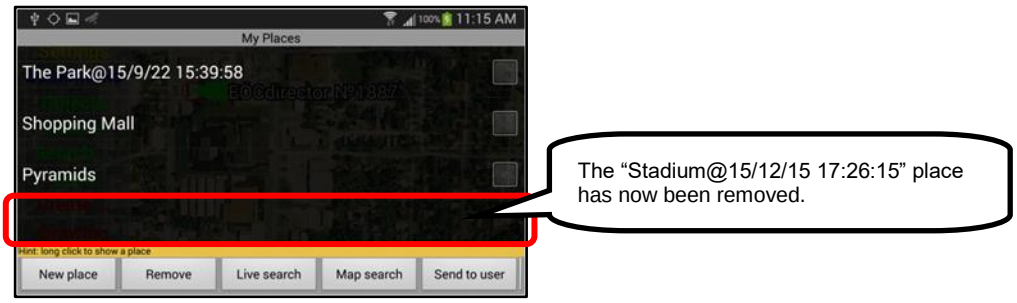
Removing a “Place”:

The “Remove selected” button will allow a User to select and remove places from the list that are no longer needed.
In this example we will remove the Place = “Stadium@15/12/15 17:26:15” from the list.



Click on the “checkbox” adjacent to the text name to select the entry to be removed. Then click on the “Remove selected” button.

The place entry for “Stadium@15/12/15 17:26:15” has now been removed from the places list.



11.8. Adding “drawing objects” to a Place Location

Overview:

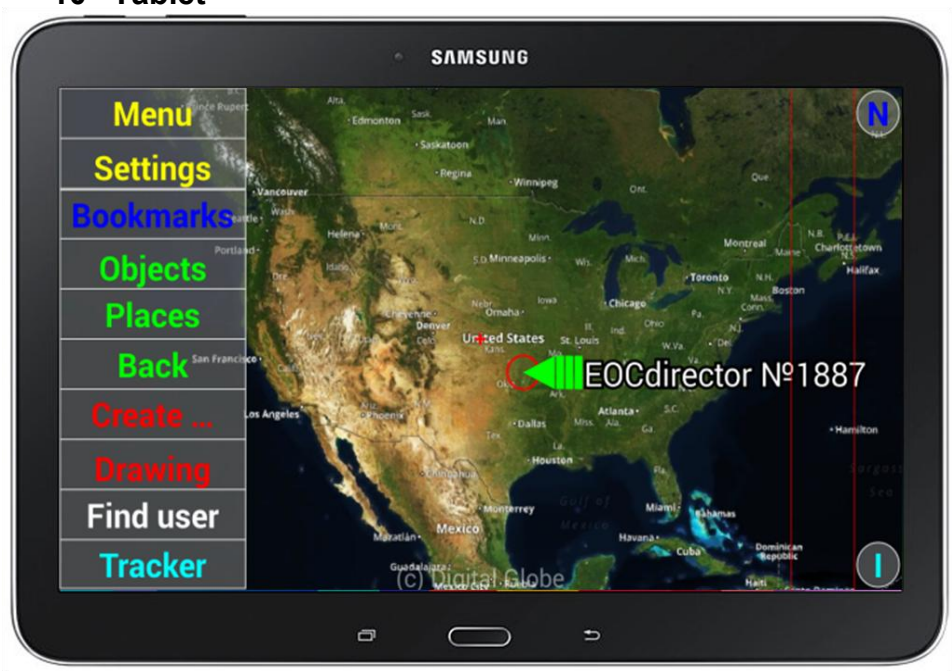
The “Place” feature can combine map images and user “drawing” features into a single image. This allows a user to “draw” on a map image and highlight specific features, landmarks and locations. An example of a combined “place” image is shown below.

Adding text and drawing objects to a “Place”:

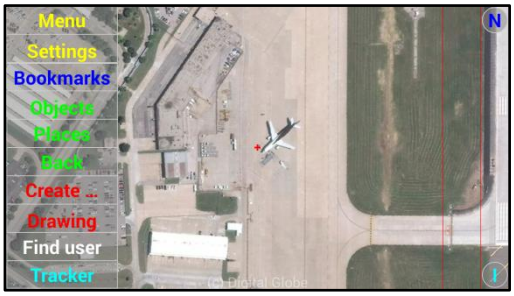
In this example, we will create “place” location and edit the map screen to include user supplied drawing features. We will be using features in the “Drawing” Section (covered in later sections of this User Guide) to add the user notations.

We start the process at the Main Map Menu, in this example, we will zoom in on the satellite image to the International Airport at the city of Tulsa, Oklahoma, USA. The picture below is a typical screen view as shown on a 10” Tablet.

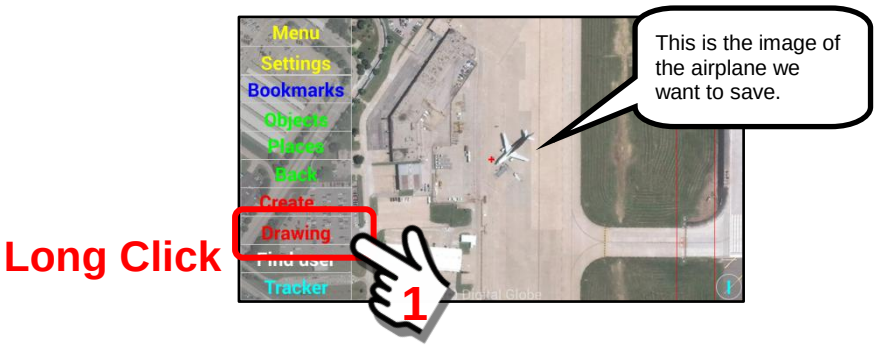
10” Tablet



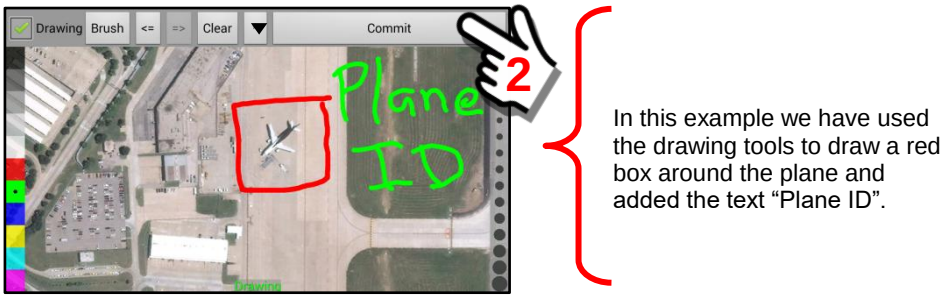
Using the map navigation features, zoom in to the International Airport until we locate the image of the airplane sitting on the runway. The image is shown below.



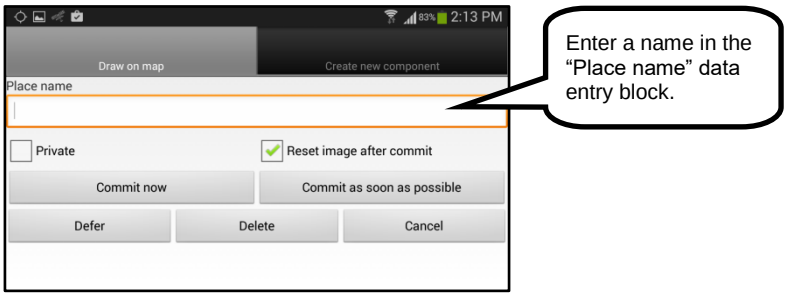
Once we have arrived at the screen we want to “save” as a place, perform a “Long click” on the “Drawing” Menu item to open the Drawing Feature set.



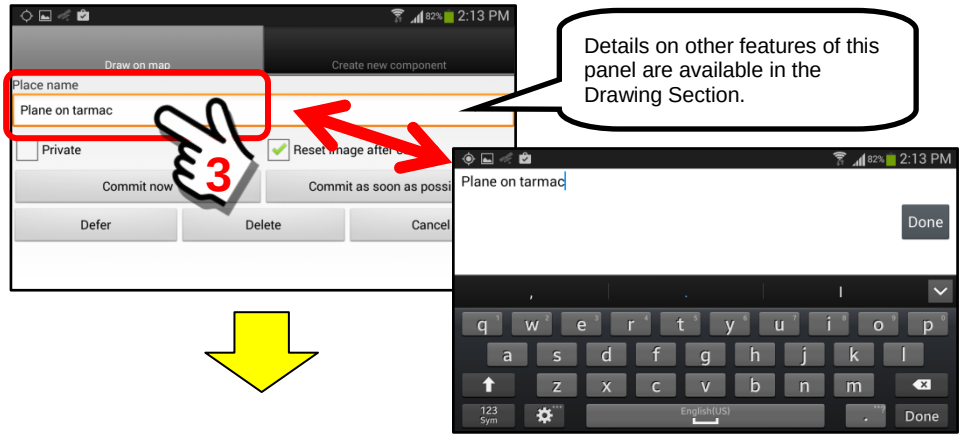
Upon opening the “Drawing Section” our image is now available for editing, making notations, adding pictures and more (see later sections in this guide for details on the Drawing Section). When finished with the image, click the “Commit” Button.



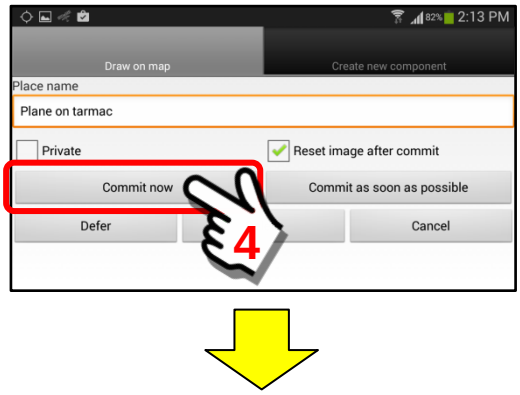
A click on the “Commit” button will open a panel that will allow a User to provide a “name” for the place. A detailed discussion of the features on this panel will be covered in the Drawing Section.



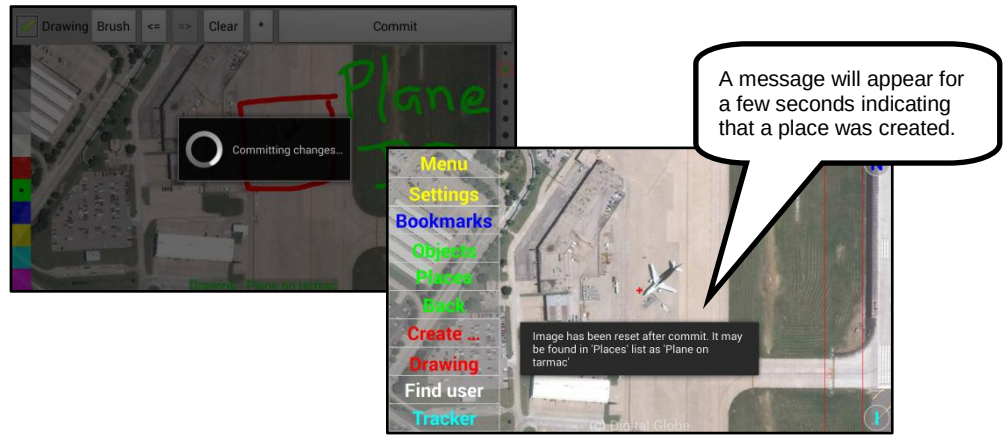
Click on the “Place name” data entry location and a on-screen keyboard will appear to allow data entry. In this example, we will name our Place = “Plane on tarmac”.



Once the text is entered for the name, click the “Commit now” button to save this information. The name will be saved with a timestamp appended to the name.



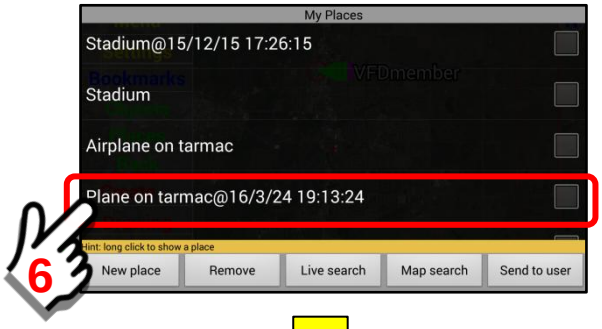
Once committed, the image and associated drawing edits will be stored in the “My Places” section under the name heading = “Plane on tarmac@16/3/24 19:13:24”. The map screen will return to the zoom position it was in before the image was saved.



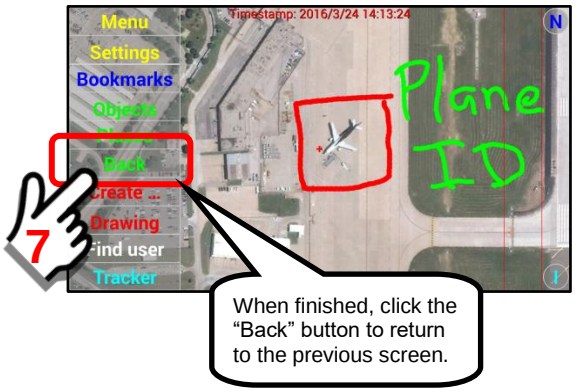
A message will appear on the screen indicating that a “Place” was created and stored in the database.

To view the “new” place that was created, open the Places Panel and select the “Plane on tarmac@16/3/24 19:13:24” listing as follows.

To select the “Plane on tarmac@16/3/24 19:13:24” listing, perform a “Long click” on the text name.



The screen should immediately go to the place image “Plane on tarmac@16/3/24 19:13:24”. Notice that the timestamp for the image is shown at the top of the screen.



12. The “Create …” Button features

12.1. Overview of the New Object Gallery panel

Overview:

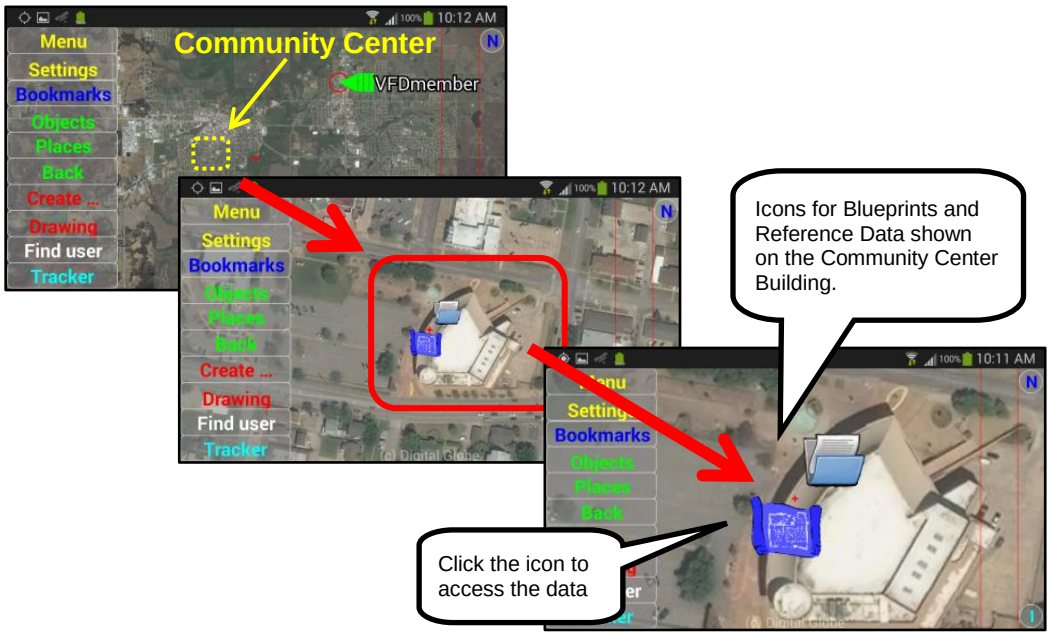
The “Create …” feature allows a user to create regions on the map where information can be stored. This data can include pictures, video files, audio files, reference information, etc The stored reference information may be shared among other devices on the network (Default) or it may the designated as “Private” (only the user that created it can see it). In the default configuration, one person may create a reference document (shown by an icon on the map) and other users will see this same icon reference on their device (assuming security credentials allow).

The supported file formats are as follows:

1. txt
2. mp3
3. mp4
4. 3gp
5. aac
6. wma
7. xml
8. pdf (assuming a PDF viewer is installed on the mobile device)
9. … and other formats native to the Android OS

Screen example of reference data overlay on Main Map Screen:

This example shows the results of using the “Create …” Button and the “New Object Gallery” Panel to place reference data (Blueprints and Security Contact lists) about a building structure as an overlay on the Main Map Screen. This data will be made available to other users on the SentryMDU Network. In this illustration, we show a Community Center building.



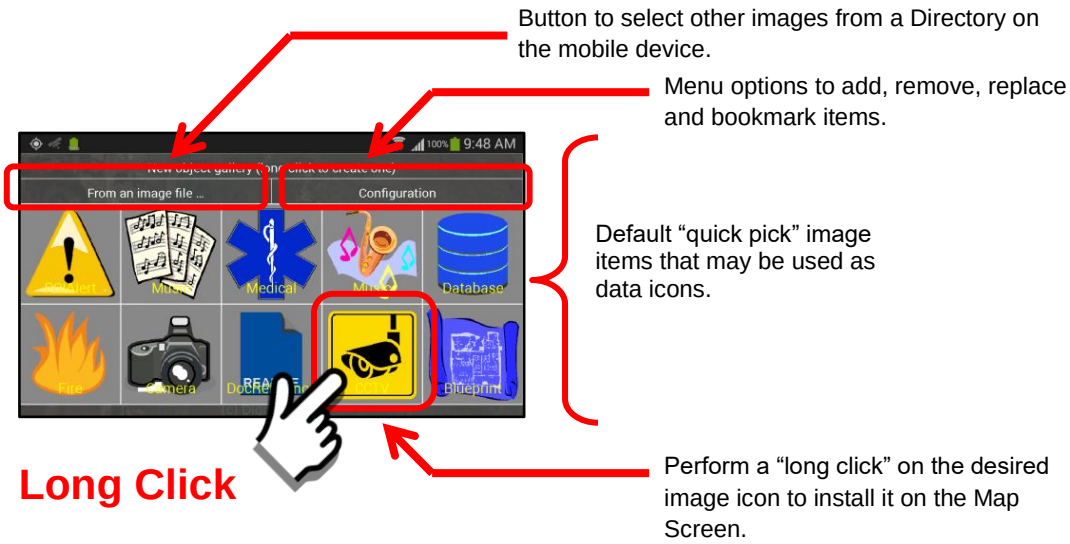
Sentry MDU "New Object Gallery" Panel:

The "New Object Gallery" Panel is shown below. Click on the "Create …" Button to launch the ***New Object Gallery*** panel.

Description of the New Object Gallery buttons and features:

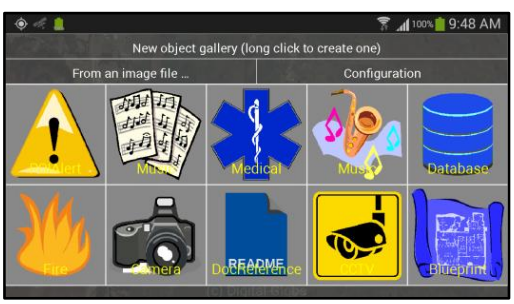
1. ***Parts of the New Object Gallery Panel***

   This section will describe the screen layout and parts of the Panel.



2. ***Review of the "quick pick" panel items***

The default configuration of the New Object Gallery panel shows ten (10) "quick pick" image items. These images (subject categories) should cover the requirements for most users. For those customers that have licensed a SentryMDU Data Server instance, these "quick pick" items may use custom images of your choosing and you may have as many as you like. Please contact your DLT Account Representative if you need additional information.



Default "quick pick" image items that may be used as data icons.

3. ***Additional panel items installed by default***

In addition to the default "quick pick" images, the SentryMDU system allows a user to select images from any directory on the mobile device. We have installed several dozen images that will cover most of the data requirements that would be used by First Responders. User created images (png format) may also be installed into this directory.

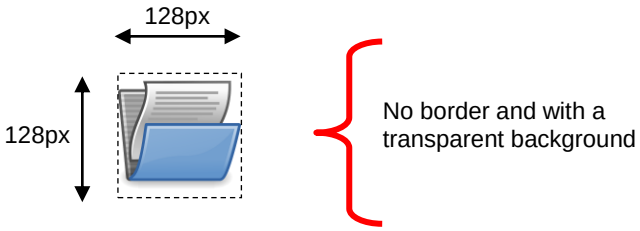
Directory: *SentryMDU/.RESOURCEs/Default/Images*

Click on the "From an image file …" Button to see a review of the additional panel items that are installed by default.

4. ***Specifications for "User Installed" graphic items***

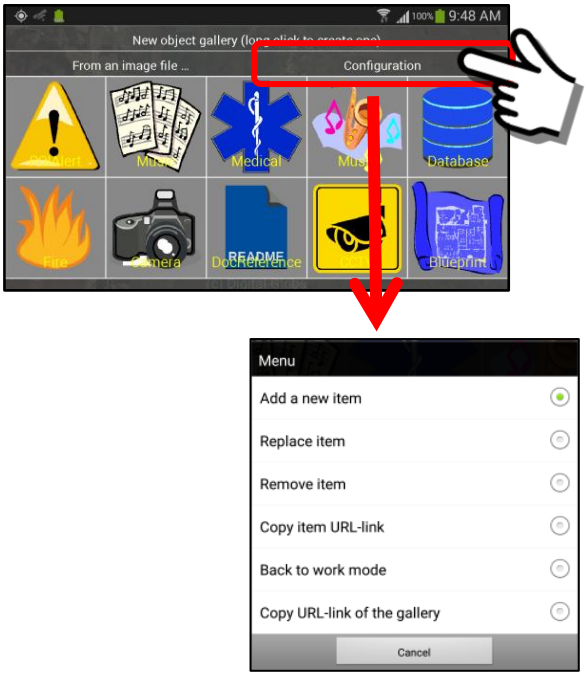
For best results, any user installed graphic items (icons) should have the following size and format specifications.

1. PNG file format
2. Background transparency
3. 128x128 pixels in size
4. Resolution of 200 – 300dpi



5. ***Configuration Menu***

The "New Object Gallery" Panel has a Configuration Button which opens a pop-up menu with

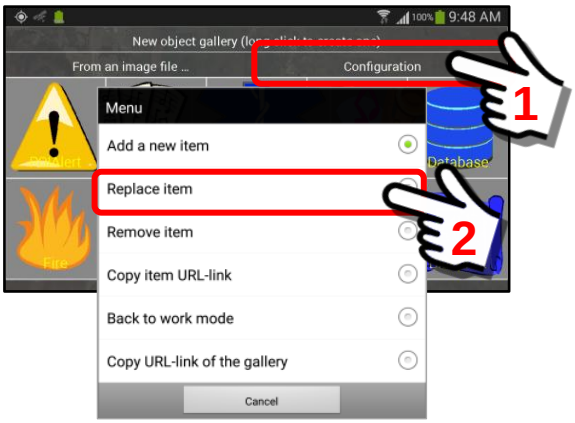


<u>Add a new Item</u>

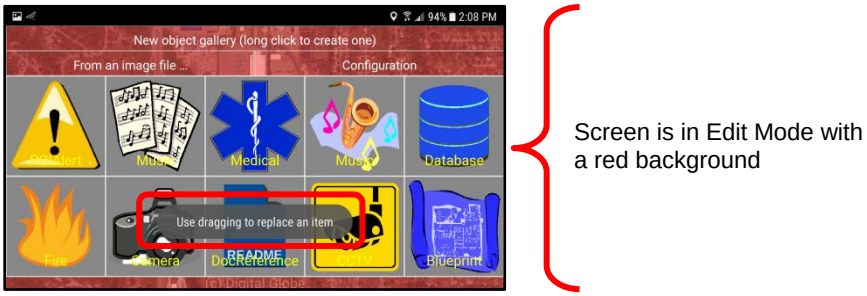
This menu item allows a user to "add" a new "quick pick" image category to the listing. This feature would be used by Developers and IT Admin Personnel that have access to the SentryMDU Data Server instance. DLT Technical Support will provide instructions for the correct "TypeID" codes to use in configuration.

Replace Item

The “Replace Item” Menu option allows a user to move the gallery images and reorder the list. In our screen example, we show 10 gallery images. When the *Replace Item* option is selected, the screen reverts to “edit mode” (red background) and a brief message is displayed that instructs the user to “drag” the desired image to a new location in the gallery grid.

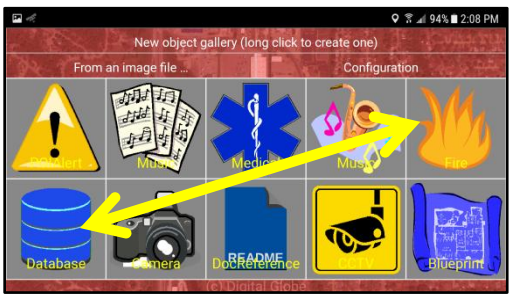


Selecting the “Replace Item” option puts the screen into Edit Mode (red color).



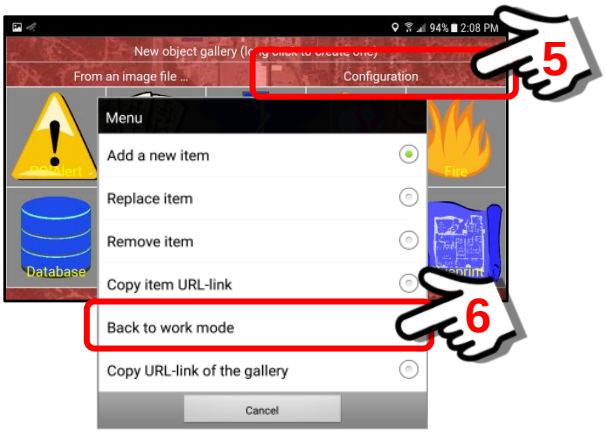
Click on the object to be moved and drag it to a new location in the Gallery Grid.

The two objects will now trade places as shown below.



Screen is in Edit Mode with a red background

To exit the ***Edit Mode***, use the Back Button (on the device) or open the Configuration Options menu and select the "Back to work mode" option.



Remove Item

This menu item allows a user to "remove" one of the ten (10) default image topic icons from the New Object Gallery panel.

Copy item URL-link

This menu item allows a user to "copy" a specific image icon URL-link to the clipboard (.TEMP file) for further processing. This link may then be imported as a Bookmark, installed on a Foreground Layer or sent to other Users.

Back to work mode

This option "exits" from the Edit Mode (red background) and returns to the Gallery Panel.

Copy URL-link of the Gallery

This menu item allows a user to "copy" the URL-link for the *New Object Gallery Panel* to the clipboard (.TEMP file) for further processing. This link may then be imported as a Bookmark, installed on a Foreground Layer or sent to other Users.

12.2. Creating a new Gallery Object from the Gallery Panel

Overview:

This section will describe how to install a New Gallery Object icon, attach data to the icon, and access the data on the Main Map Screen. In this example, we will create one object from the default “quick pick” image icons on the New Object Gallery panel.

To access the New Object Gallery feature:

Click on the “Create …” Button on the Main Map Screen. The New Object Gallery panel will open showing ten (10) default image icons.

Steps to create a new Object using the New Object Gallery feature:

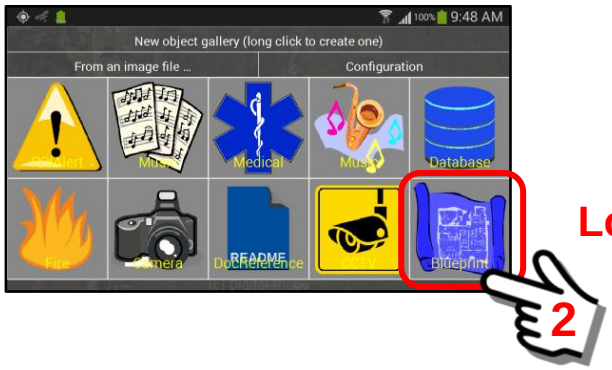
1. ***Navigate to the desired location on the map and zoom in.***
   In this example, we will locate a Community Center Building. The objective is to attach to the satellite map location of the building a set of architectural drawings (blueprints) that will show the building layout, entrances and exits that would be needed by First Responders (Police/Fire/Rescue) in the event of an emergency.

Zoom in to the building location on the Main Map Screen.

Set the desired zoom level to give you the view you want.

2. ***Select a data icon from the gallery of images.***
In this example, we desire to attach architectural blueprints for the Community Center to the location of the Community Center that we selected above.

Perform a "Long click" on the Blueprints Icon shown on the lower right hand side of the New Object Gallery panel.



Long Click

A "Long click" on the gallery icon will install the selected image as an overlay on the Main Map Screen. The New Object Gallery feature will put the panel and selected image into "edit mode" as shown below.

When you are satisfied with the location, size and position of the image icon, click "OK" to save the changes and exit the Edit Mode.

Selected gallery icon is installed on the screen.

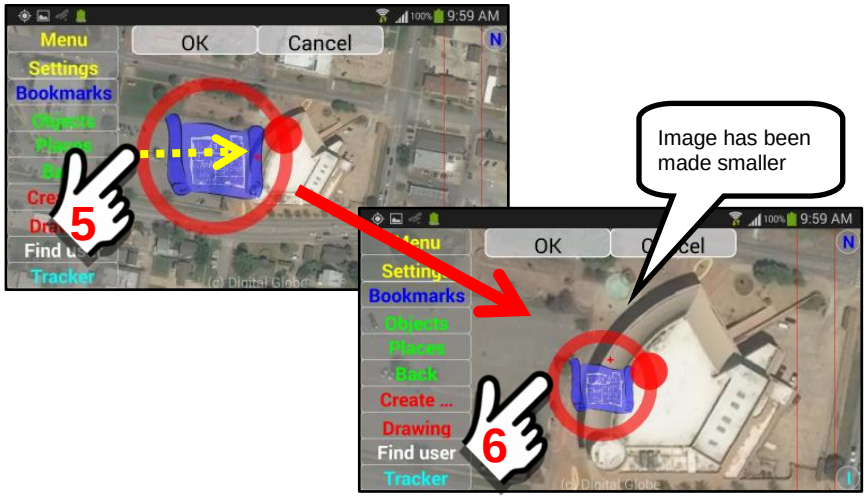
The red ring around the icon indicates Edit Mode.

3. ***Size the icon image to match the desired satellite view.***
The image icon representing “Blueprints” is now installed on the screen. We now want to re-size the image and move it so it will overlay the Community Center building on the satellite image.

Touch anywhere inside the red circle and “drag” the image over to the Community Center building.

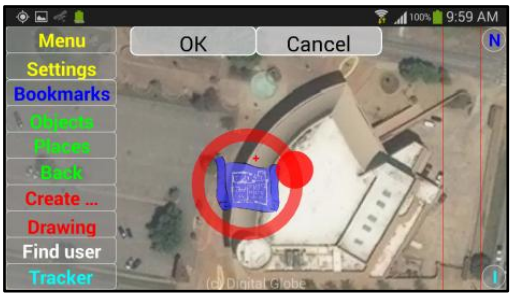
When you have reached the desired point on the map screen, lift your finger and the icon will stay in that place.

Now that we have positioned the Blueprints Icon, we notice that the image is too big. We need to resize the icon so it is more in proportion to the Community Center building.



To re-size the Blueprints Icon, click on the edge of the red ring surrounding the image and drag towards the center of the circle … the image will get smaller. Lift your finger when finished.

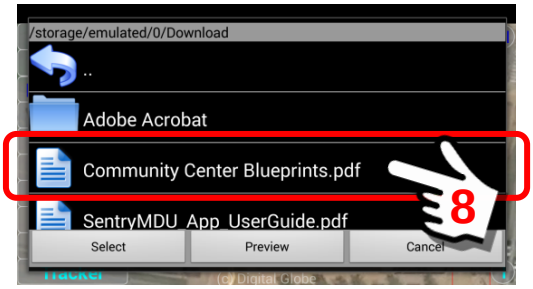
The Blueprints Icon is now positioned where we want it relative to the Community Center building.



4. ***Attach reference material to the selected icon image.***
The next step is to attach reference documents (data) to this icon. Data may be in the form of videos, audio files, text documents, pictures and more. In this example, we will attach a PDF (Portable Document Format) file of the architectural blueprints of the Community Center building.

Click the “OK” Button.

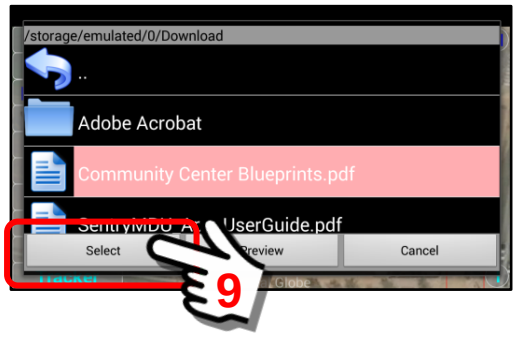
Clicking the “OK” Button will open the file system on the mobile device. Navigate the file system and select the data file to be attached to the icon you have created. In this example, we are selecting a PDF file of the blueprints for the Community Center building.



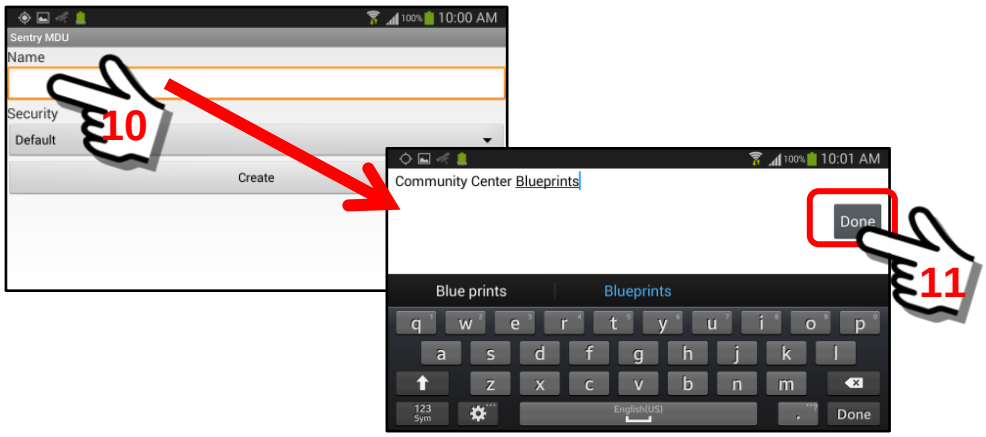
Click on the file name (*Community Center Blueprints.pdf*) to highlight the desired choice. At this stage you have 3 options.

1. Select … Select this file as the one you want.
2. Preview … Preview the file to make sure it is the one you want before you finalize your choice.
3. Cancel … Cancel the file selection operation.

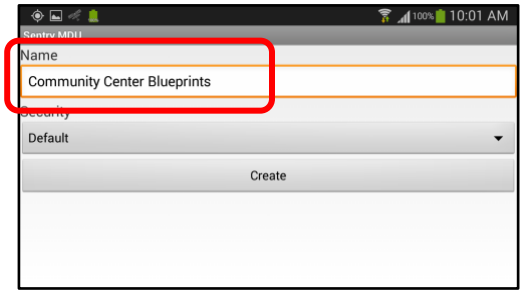
In this example, click the Select Button to select the highlighted file.



When a file is selected to be attached to the image icon, a panel opens to enter a name for the Icon Attachment and to set the security access for the data.

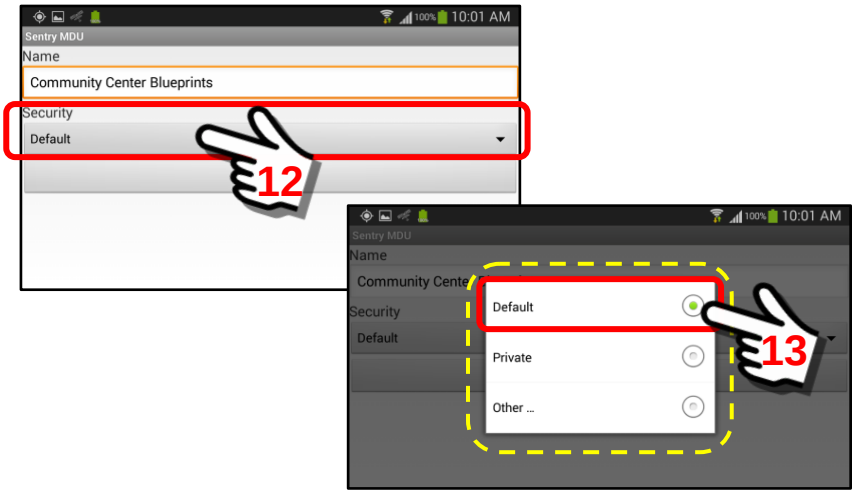


Click “Done” when finished entering a name. The name will be transferred from the on-screen keyboard panel back to the Name Panel.



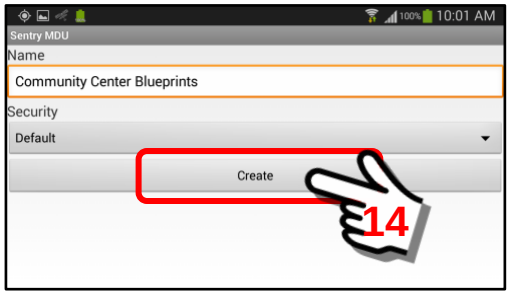
The next step to to select the “Security” attributes of the data. Do you want the data to be “Private” (only for you) or do you want to share this reference data with others on the network?

Click on the Security Button to access the drop-down box for security options.



In this example, we will keep the “Default” security settings which will allow others on the network to view the Architectural Blueprint reference data for the Community Center.

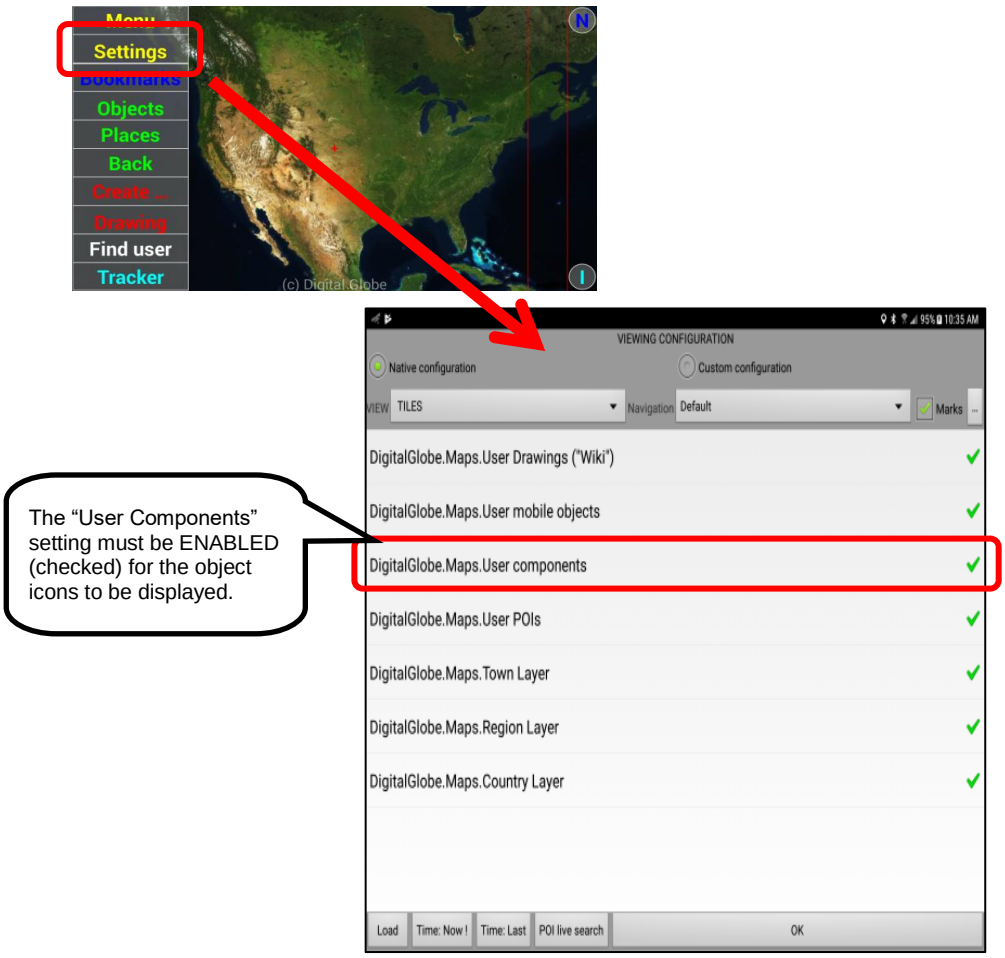
To SAVE the name and create the data attachment, click on the “Create Button”.



If the attachment operation is successful, a message will appear indicating that a new object has been created and a file has been attached.

5. ***Verify that the "User Components" feature is ENABLED on the Settings Panel. This is required for the Data Icon to be displayed.***
In this example, we have created a "Blueprints" data icon as an overlay on the satellite image of the Community Center. To this icon we have attached blueprint drawings in PDF file format.

For data icons created using the New Object Gallery feature to be displayed on the Main Map Screen, the User Components checkbox located on the Setting Panel must be activated (default setting).



12.3. Creating a new Gallery Object from an image file

Overview:

This section will describe how to install a New Gallery Object icon using the “From an image file ...” feature located on the New Object Gallery panel. The process to create and attach data will be identical to the previous section ... the only difference will be the location of the icon image file.

Using image icons “From an image file …”:

In addition to the default “quick pick” images, the SentryMDU system allows a user to select images from any directory on the mobile device. We have installed several dozen images that will cover most of the data requirements that would be used by First Responders. User created images (png format) may also be installed into this directory.

Directory: *SentryMDU/.RESOURCEs/Default/Images*

Click on the “From an image file …” Button to see a list of available icons that are installed by default. Select the desired image.

Select an image icon from the list and then follow Steps 3 – 5 from the previous section.

12.4. Using the New Object Gallery features on a mobile device

Overview:

This section will describe how to use the image icons installed with the New Objects Gallery panel.

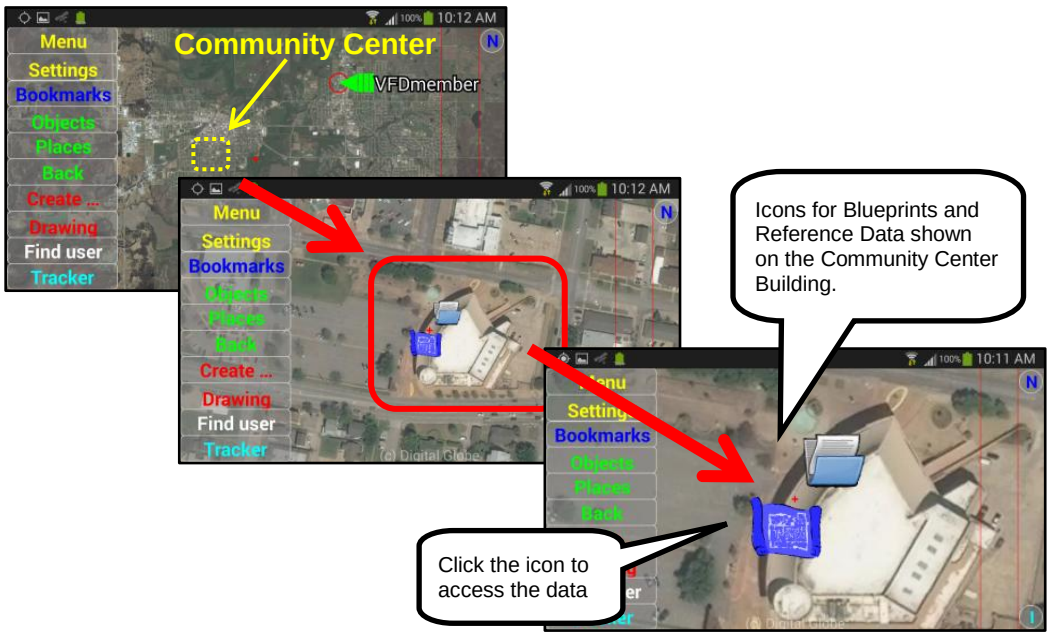
<u>These will include the following:</u>

1. Retrieving the attached data from an icon.
2. Removing the image icon and associated data from the system.

Display of Gallery Image Icons:

When objects are created with the New Object Gallery feature, the icons may be placed on the map at almost any size the user desires. We recommend that the icons are proportional in size to the landmark/building for which the reference data is being provided. In the case of the Community Center blueprints example, we do not want to clutter the screen with icons that cover up parts of the satellite image.

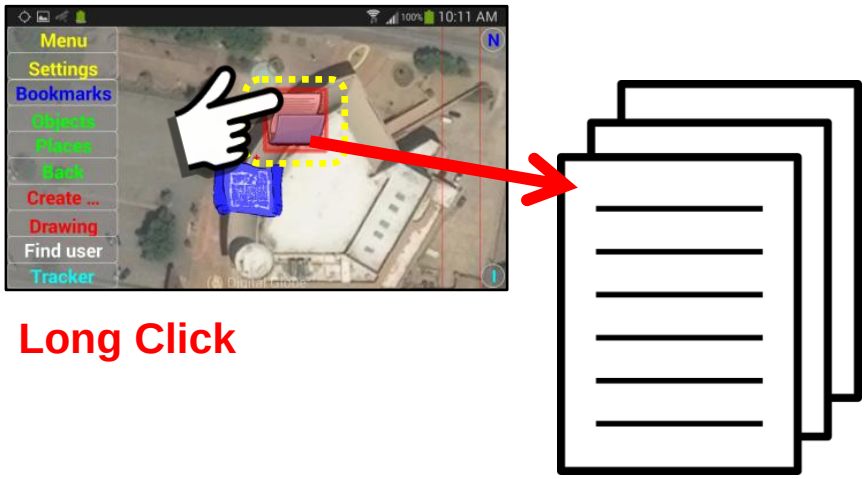
In the Map Screen shown below, notice that the Object Icons are small enough that they are not readily noticeable until the map is at a zoom level where the Community Center detail is in view. This is the preferred method for sizing Gallery Objects.



Using the Gallery Objects feature:

1. ***Retrieving the attached data from an Object Icon***
   The data that is attached to a Gallery Object Icon is available by performing a "Long click" on the icon image. When selected, the object will be highlighted in "red". Depending on the data type, a new panel will open to display the data (audio, video, picture, text document, pdf file, etc.).

An example of a selected Object Icon is shown below.

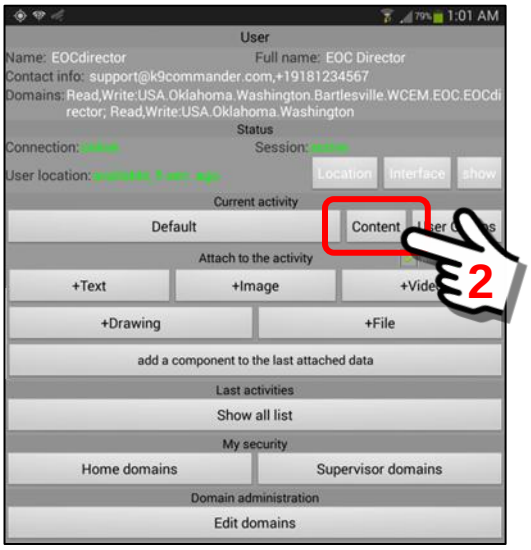


2. ***Remove an object Data File (and Icon) from the system.***
Since the Gallery Object Icons will display on ALL devices on the network (unless marked as Private) there will be times when you may want to remove an "Icon" and attached data from the system. To do this**, the items must be removed from the Content Folder of the device that created the data**.

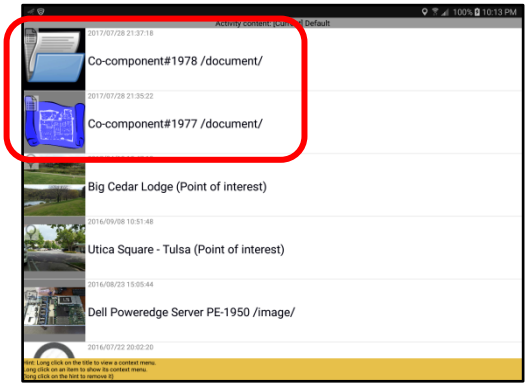
> **Important Note: It is recommended that policies and procedures be put in place to manage the installation of Object Icons and Reference Data for large organizations. This will ensure that relevant and current data is available and obsolete data is removed in an efficient manner.**

The object data (and Icon) are stored in the Content Folder as shown below.

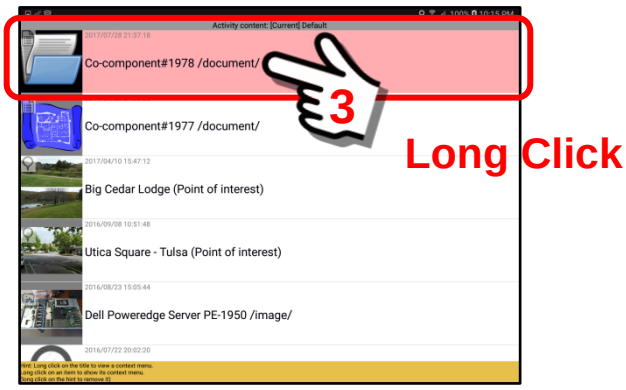
Click the “Content Button” to open the Content Folder.



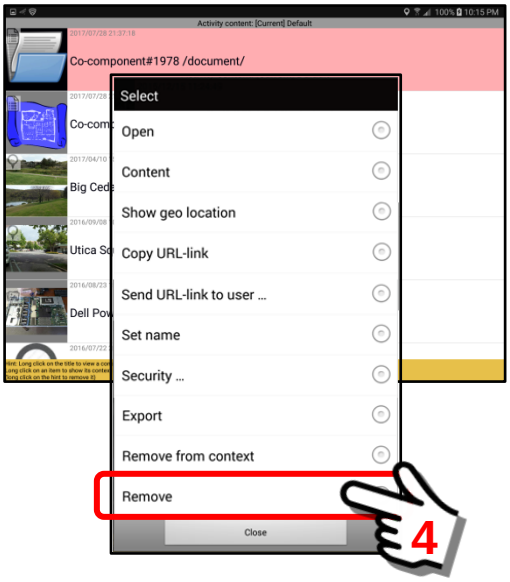
As the content is listed, notice that the two entries at the top are the Object Icon markers we used in our example.



To remove one of the Object Icons, perform a “Long click” on the document listing.



A pop-up options menu will appear. Scroll down to the bottom of the menu and select the “remove” option.



This will remove the Gallery Object Icon and associated data from the system.

13. The “Drawing” Button features

13.1. Two functions of the Drawing Button

Overview – Short Click and Long Click feature:

This section will highlight the difference between the Short Click and Long Click action.

The Short Click option

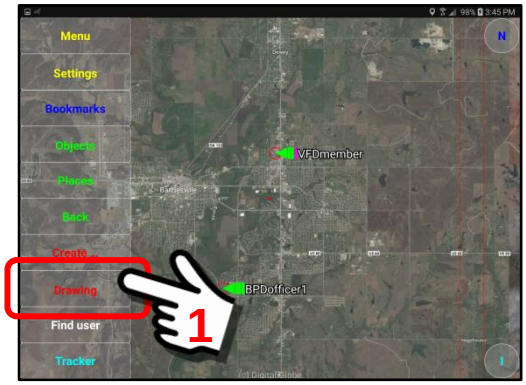
Will create a duplicate custom layer of the Main Map Screen with an overlay of the Drawing Tools. This option will copy the map screen WITH the Object Markers showing (if they are activated) and the Main Menu Headings. Will also provide an additional 13 sub-menu options for building custom maps.

The Long Click option

Will make a static copy (picture) of the current map screen WITHOUT showing any Object Markers (blank map) and provide an additional 6 sub-menu options.

Drawing Button – Short Click feature:

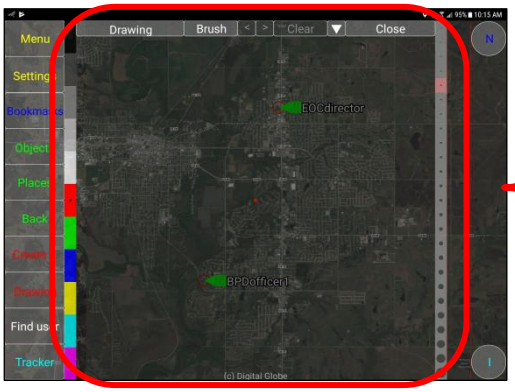
The Drawing Button on the Main Map Screen has both a “Short click” and “Long click” action. This section shall describe what happens when a user performs a “Short click” on the Drawing Button.



Short Click

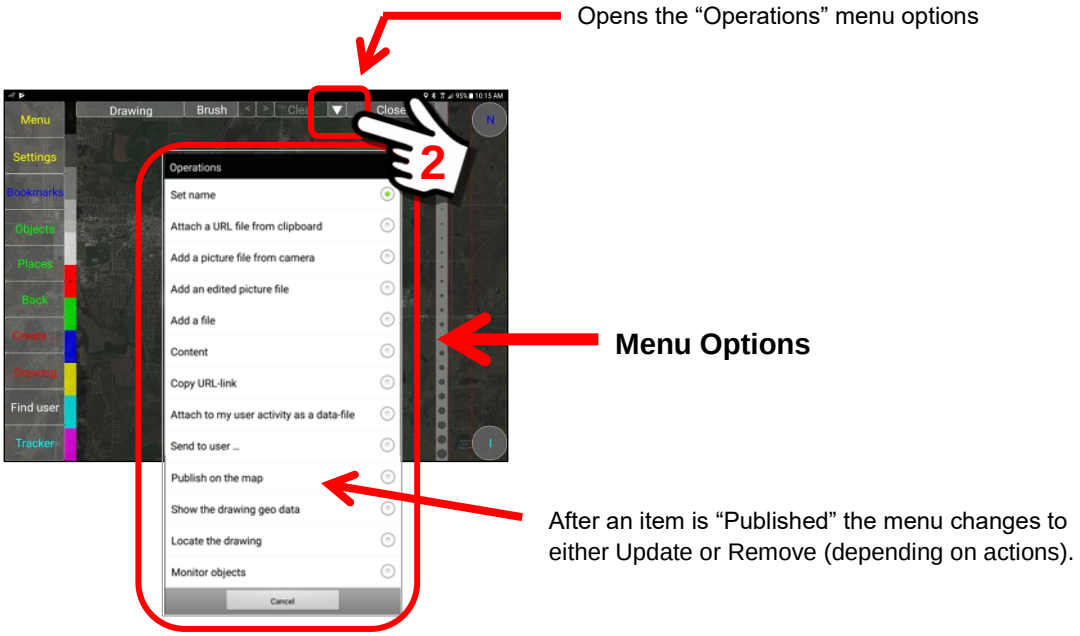
Main Map Screen showing the Object Markers of two Users.

By performing a “Short Click” the Drawing Module will launch and display the Drawing Tool Set as an overlay on the Main Menu Screen.



The Drawing Module tool set.

To open the available menu options, click on the Operations Button (▽). An Operations Menu with 13 options will appear.



The following section will briefly describe the 13 available menu options.

Set name

Provides ability to enter a name (rename) for a Drawing Object.

Attach a URL file from clipboard

A URL that has been temporarily stored on the “clipboard” (.TEMP directory) may be attached to the Drawing Object.

Add a picture file from camera

The camera on the mobile device may be used to take a picture that will be attached to the drawing data file.

Add an edited picture file

The camera on the mobile device may be used to take a picture that may then be edited with Drawing Tools. In addition, existing image files may be retrieved and edited. This edited picture will be attached to the drawing data file.

Add a file

A user may add/attach a “file” (reference data, documents, etc.) to the Drawing Data Set. When stored as Content, these reference files are available to the User (or all Users, depending on Security Credentials).

Content

Content associated with the Drawing Object is available for review.

Copy URL - link

The URL link for the Drawing (and associated data) may be copied, saved, imported and/or sent to other users.

Attach to my user activity as a data-file

The Drawing and associated data may be attached to the Current Activity of the User, as Content.

Send to user …

The Drawing Object URL may be sent to other users on the network.

Publish on the map (also “Update on the map” and “Remove from the map”)

This feature is used to display drawing marks and URL links on the map screen. If you have large attachments, do not use the “Publish” option. A drawing that is to be “published” on a map may only attach URL links and must not have attached data that exceeds 256kb or an error message will occur. The ***Update*** and ***Remove*** functions are made available after an item is “Published” and is in the Editing Mode.

Show the drawing geo data

This feature will allow a User to measure distances on the screen of a mobile device.

Locate the drawing

The “Locate the drawing” menu item is used to display a drawing file (such as a trail route) that has been stored in device memory. The User may then locate the drawing on the Map Screen so it may be compared to their current GPS location.

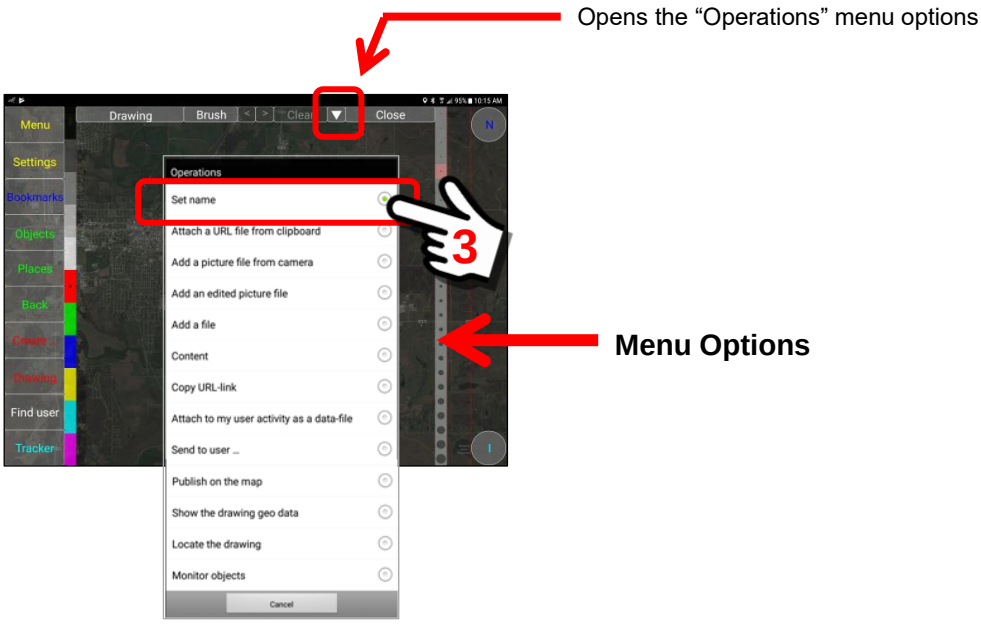
This feature (Locate the drawing) is most often used when the mobile device is “off-line” and not in contact with the SentryMDU Data Server. Typically, this would be in remote locations without cellular service.

Monitor objects

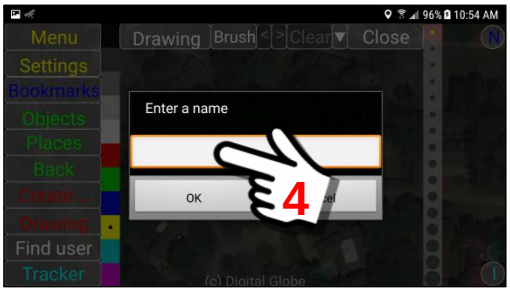
The “Monitor Objects” option is part of the Notification Alert feature that turns on geo-fence monitoring of remote devices. When activated, monitoring is turned on for the selected user devices. If any user crosses a geo-fence boundary (in or out) a notification alert signal will be sent to your mobile device.

In this example we will illustrate how to create a drawing and save it in our Current Activity folder. Since we want to “save” a Drawing File, we first need to select NAME for our file. We do this by selecting the “Set name” menu option from the list.

Open the Operations Menu (▽) and locate the “Set name” option.

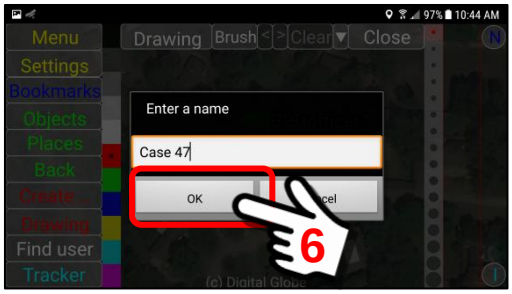


Clicking the “Set name” menu option will launch and display a data entry box asking for a “name” for the drawing. Click inside the box to open the on-screen keyboard panel.

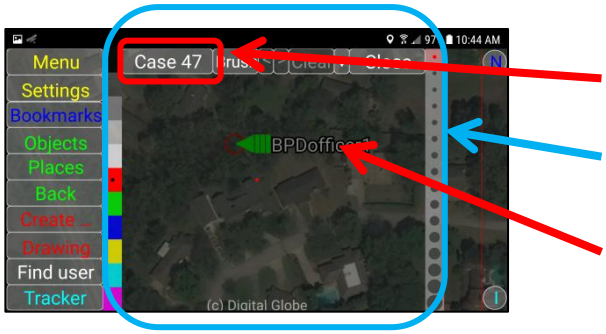


Enter a name for the Drawing File. In this example, we have entered “Case 47” as the name.

We may click on the Done Button … or the “back” button on the phone to return to the data entry box. Click the “OK” Button to save the filename.



We now have a Drawing Canvas showing on the screen which includes the Object Marker that we set as “active” (Case 47).



Drawing name = “Case 47”

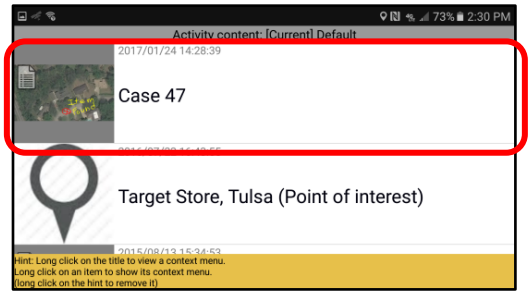
Drawing Canvas with pen colors and sizes shown.

Active Object Markers are displayed since we did a “Short Click”.

We may now edit/write on the screen and make notes, as shown below. See other sections of this guide for the Drawing Tools available and how to SAVE the file.

Main Map Screen showing the Object Marker of a User and the notes added to the screen.

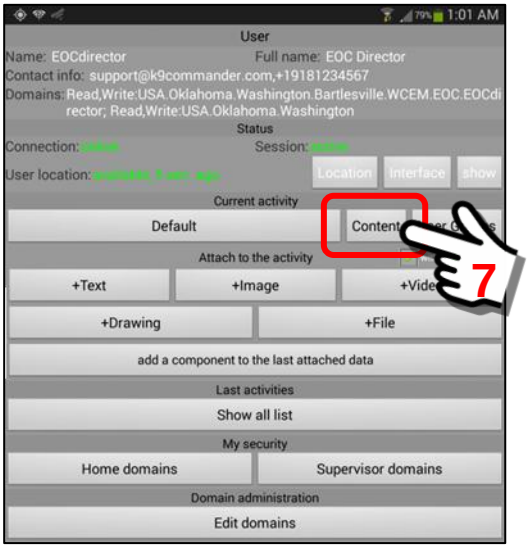
When the file (Case 47) is saved in the Current Activity content folder, it will be displayed as follows.



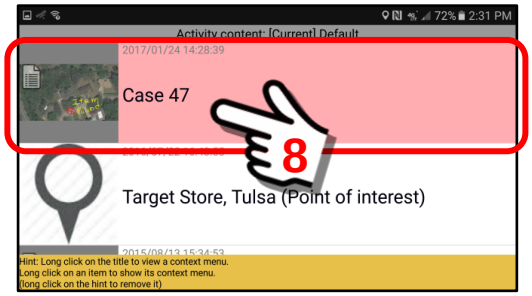
The Drawing File we created is now stored in the User Content Folder.

To retrieve the “Case 47” drawing file, navigate to the ***User Information Panel***. The file will be stored under the Current Activity (Default, in this case).

Click on the Content Button.



Clicking on the Content Button will result in a listing of all files in the Content Folder for this current activity. Select the “Case 47” File.



We now see the “Case 47” File Drawing displayed. When finished with the review, click on the Close Button to remove the drawing from the screen.

See other parts of this Drawing Section to see available menus for options of sending the file to others, changing security settings, removing the file, etc.

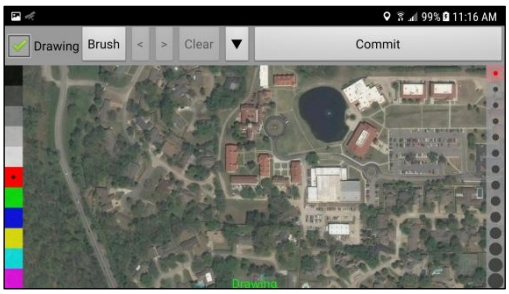
The Drawing Button – Long Click feature:

The Drawing Button on the Main Map Screen has both a “Short click” and “Long click” action. The following section, **Section 13.2**, will provide a detailed description of what happens when a user performs a “Long click” on the Drawing Button.

Long Click

Main Map Screen showing the Object Marker of a User.

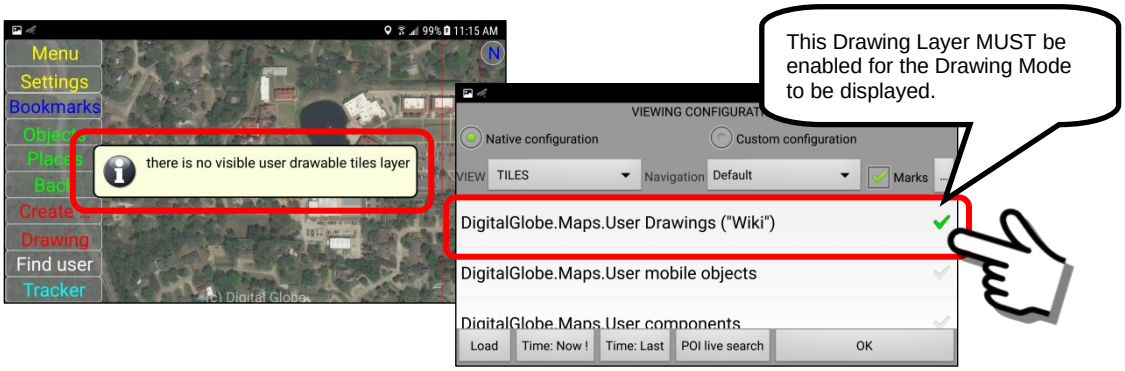
Performing a “Long click” will launch the Drawing Module WITHOUT the display of any Object Markers or menu headings. This would be the typical way a User would access and use the Drawing Module.



The following parts of the Drawing Section will focus on access to the Drawing Mode via a “Long click” action and a detailed review of the Drawing Tools.

<u>Reminder</u>

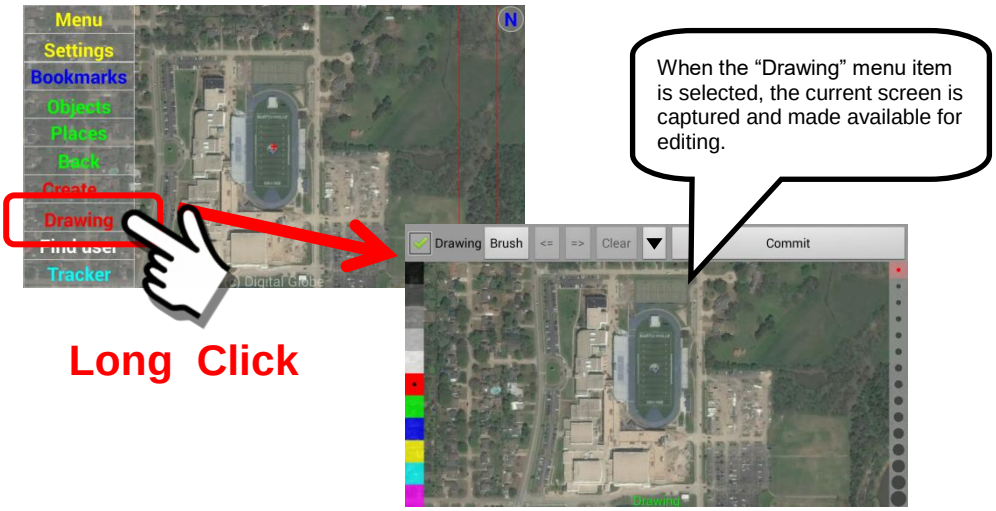
If you attempt to launch the Drawing Mode and get the following error message, this means you have “disabled” the Drawing Mode Layer on the mobile device.
Go to the Settings Tab and enable this option.



13.2. Overview of the Drawing features (Long Click mode)

Overview:

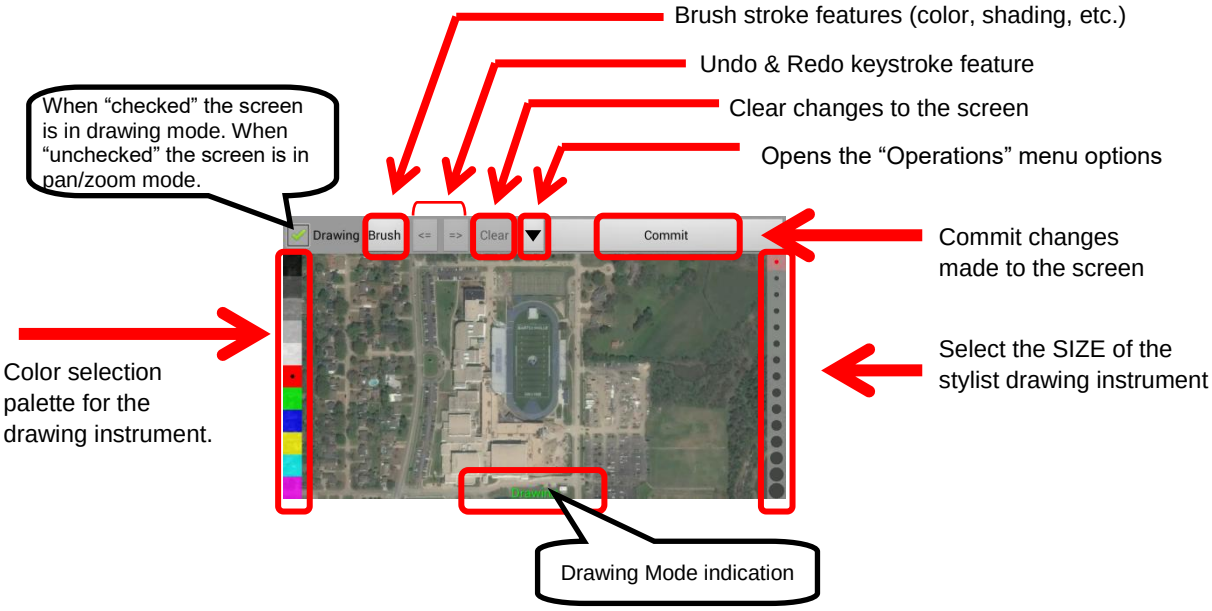
The Drawing feature set allows a user to “draw” on the map screen, add icons, text, pictures and audio/video into an image compilation and “save” it for future reference. This section will describe the general layout of the panel and the features available.



It is important to remember that a user should navigate to the screen location and zoom level of detail they desire BEFORE clicking on the “Drawing” Button. The Drawing menu item will capture whatever screen is currently being displayed at the time the Drawing Button is “Long clicked”.

General layout of the Drawing Panel:

The Drawing Panel has a set of buttons and editing features that are available to the User. These are detailed below.



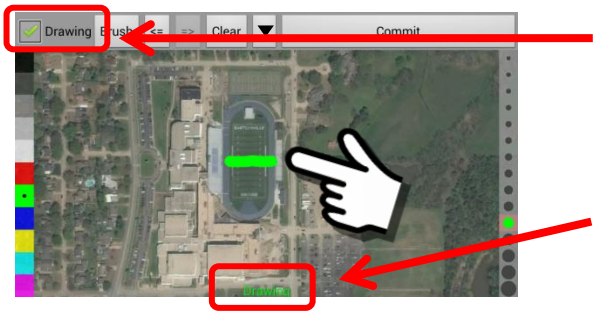
Description of the button functions and features:

1. ***"Drawing" checkbox***

   The default setting is for the "Drawing" checkbox to be checked. This means that the screen is active to the touch of a finger and any touch/movement on the screen will result in "marks" on the screen as shown below.

   In the "Moving" Mode (unchecked) the screen may be "moved" by dragging a user's finger around on the screen. This feature is useful to reposition the drawing surface to the precise spot desired.

   Drawing Mode (Drawing checkbox "checked")



The "Drawing" checkbox is checked, we are in drawing mode

Note at the bottom of the screen it indicates we are in the "Drawing" Mode.

   Moving Mode (Drawing checkbox "unchecked")

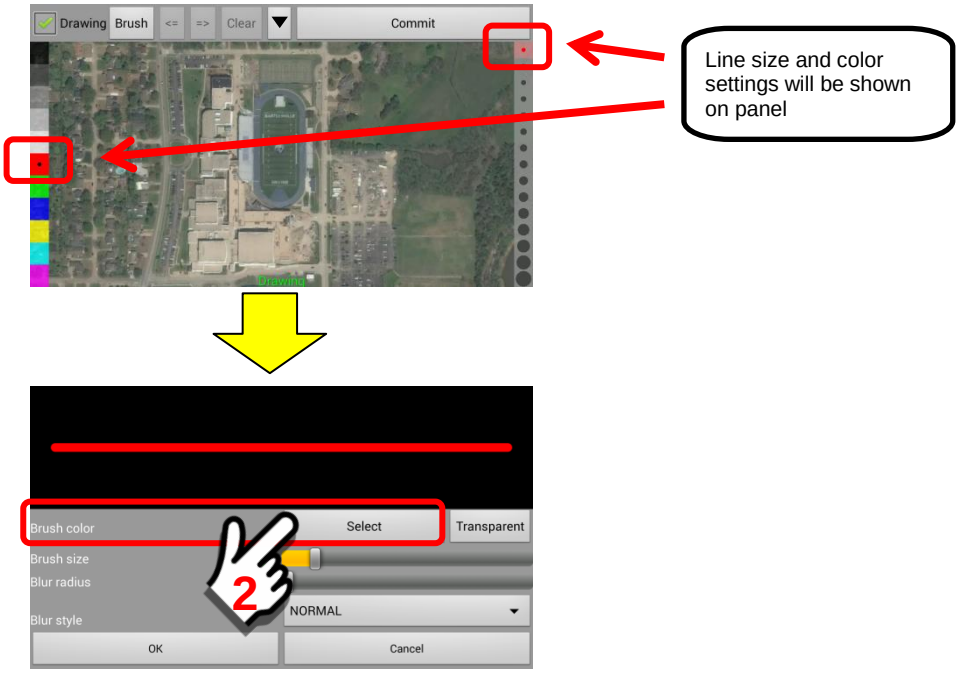
The "Drawing" checkbox is unchecked, we are in moving mode

Note at the bottom of the screen it indicates we are in the "Moving" Mode.

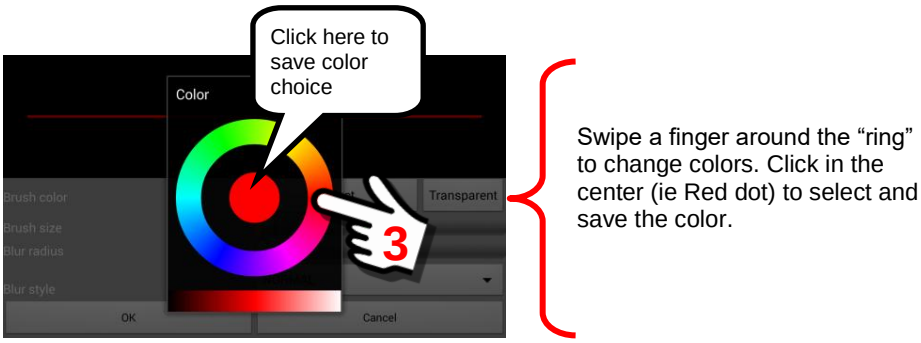
2. ***Brush button***

   The "Brush" Button allows a user to change the width, shading and blur of the drawing marks when using a finger as the stylist. To access these options, click on the Brush Button at the top of the screen panel.

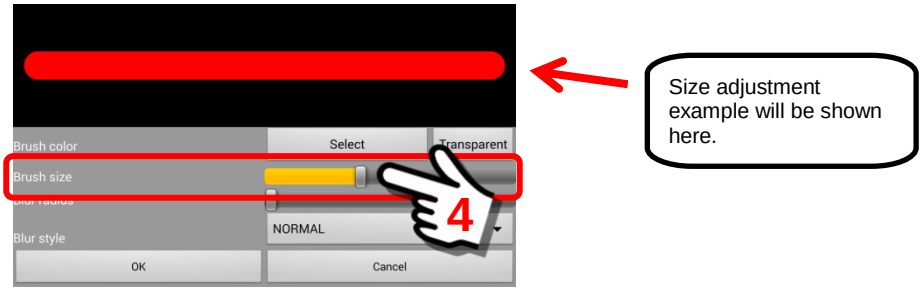
When the Brush Button is clicked, a panel opens with the current selected color and width size of the drawing instrument. In this example, the default settings are a “red” color and a small line width.



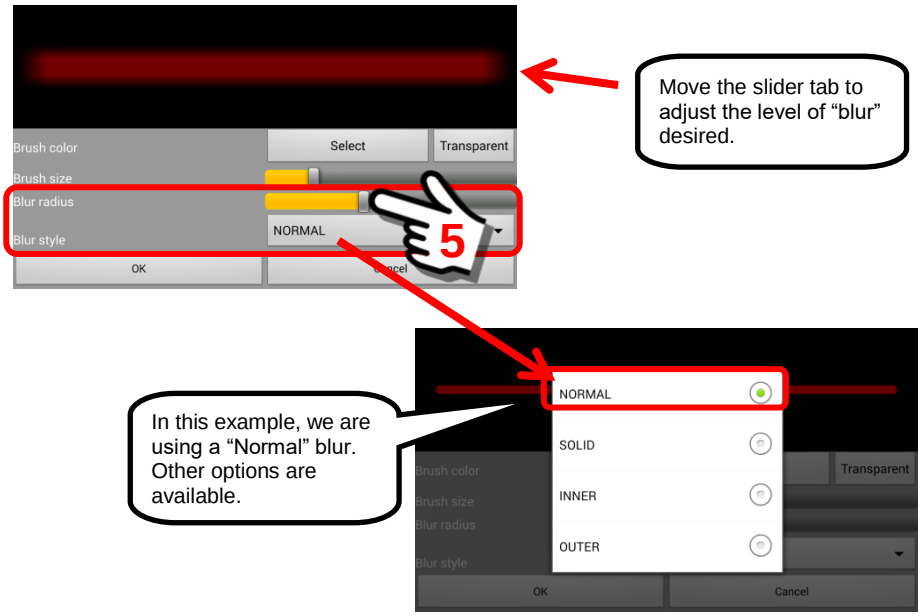
To select a NEW color (or change the color) click on the brush color “Select” button. A color selection panel will open.



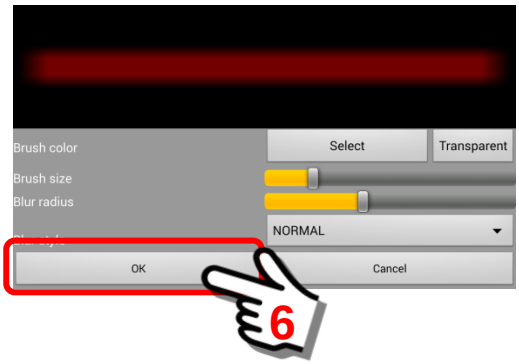
To change the brush “size”, drag the slider bar to the desired size.



Users may also make the line “blurry” by setting a Blur Radius and Blur Style using the features shown below.

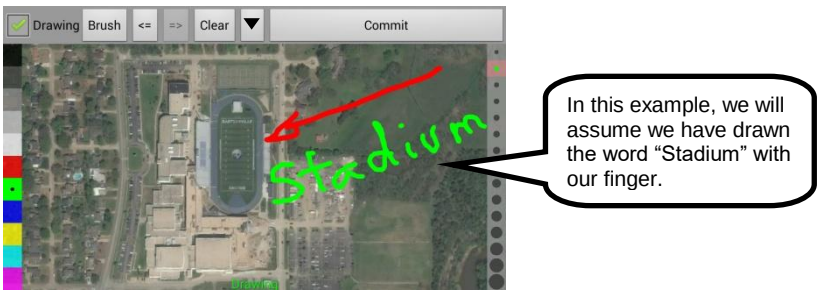


After making the desired selections, click the “OK” Button to save the changes and return to the Drawing Screen.

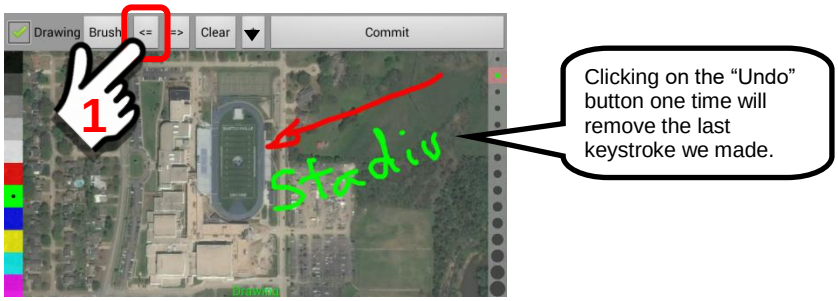


3. *Undo & Redo keystroke feature*

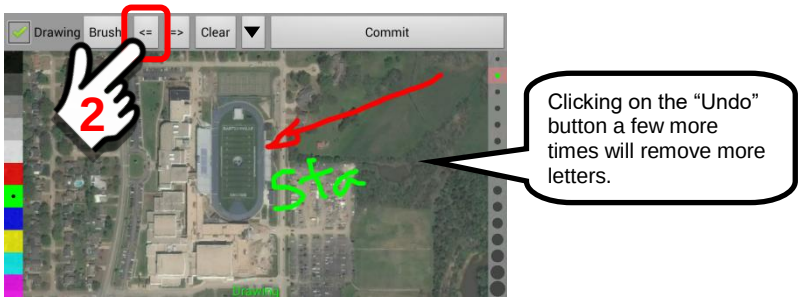
In the Drawing Mode the program will remember the screen touch events (as keystrokes) used to create/draw an object. The Undo/Redo buttons will allow a user to remove/add previous keystroke entries, one keystroke at a time. This feature will be illustrated below.



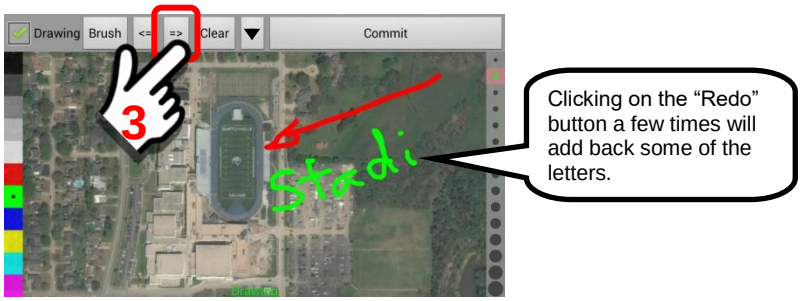
By clicking on the “Undo Button” one time, we remove the “m” from the word Stadium.



Clicking a few more times, and we remove more letters.

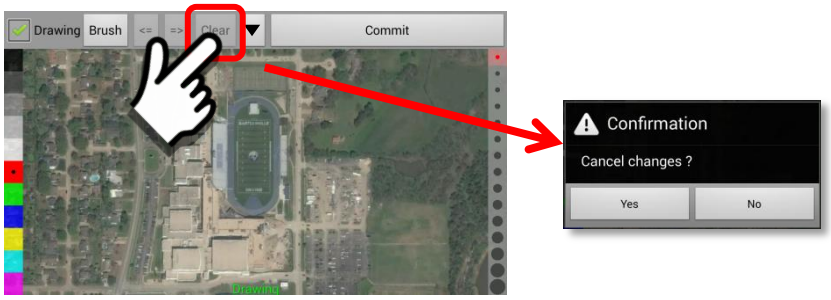


Notice that the “Redo” Button is now active (not grayed out). This means that the letters we removed are stored in the queue and may be reinstalled by clicking on the “Redo” Button.



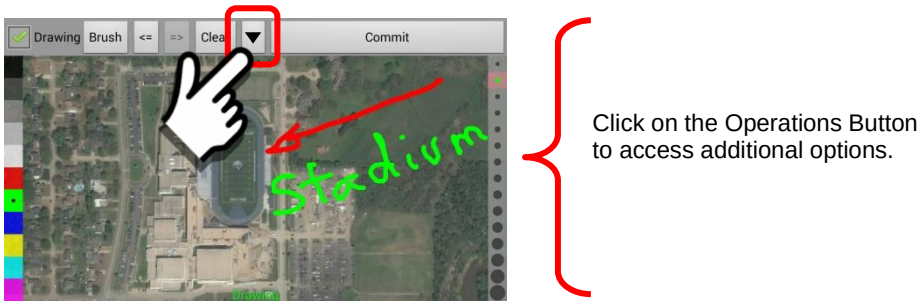
4. *Clear button*

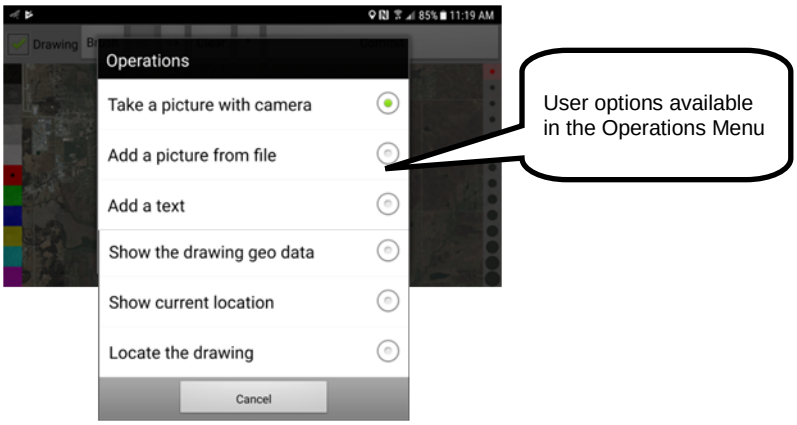
Click on the “Clear” Button to remove ALL drawing entries from the drawing panel. Click “Yes” to confirm clearing the screen.



5. ***"Operations" Menu Options***

The Operations Menu is accessed by clicking on the Operations Button (▼). This provides a set of options to enhance the drawing, measure distances and include pictures in the drawing. See **Section 13.4** for a discussion of available options.

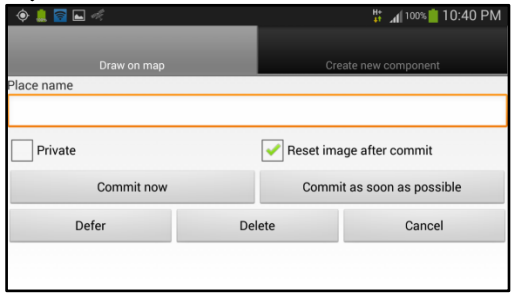




6. ***Commit button***

The "Commit" Button will commit all changes to the SentryMDU Data Server. Clicking the "Commit" Button will save/send the drawing panel.

When saving the drawing, enter a "name" and whether or not the drawing should be "private" (only for you) or "public" (available to anyone with adequate security access).



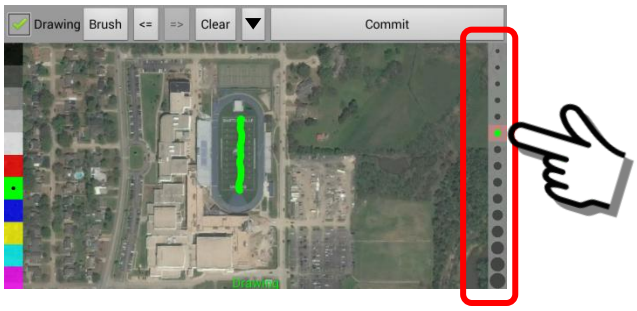
7. ***Color selection palette***

Users have the ability to select the “color” they would like to use while drawing. Simply click on the desired color box and that color becomes active. During any drawing session, multiple colors may be selected and used.

In this illustration, multiple colors are shown next to the selection box.

8. ***Drawing stylist size***

Users have the ability to change the “size” of the drawing stylist as they use their finger to draw. The example below shows a mid-size line width.



13.3. Access to Drawing Mode from Messaging and Secure Chat

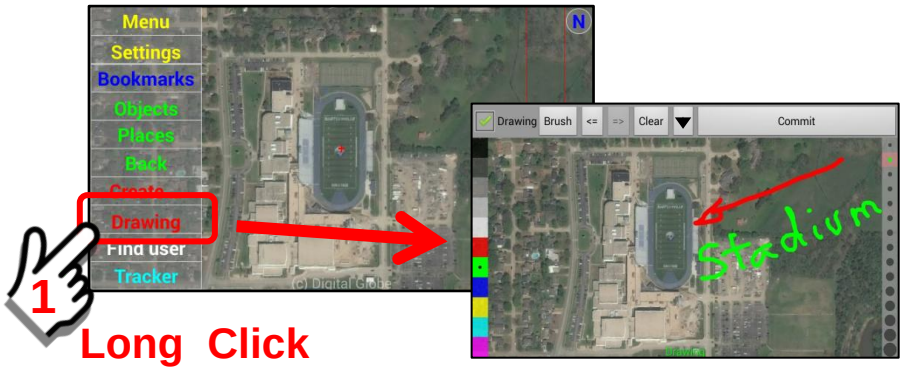
Overview:

The Drawing Mode Feature may be accessed from three different menus and the background image of the drawing surface will depend on the menu used. This section will describe both menu choices and illustrate the background images used.

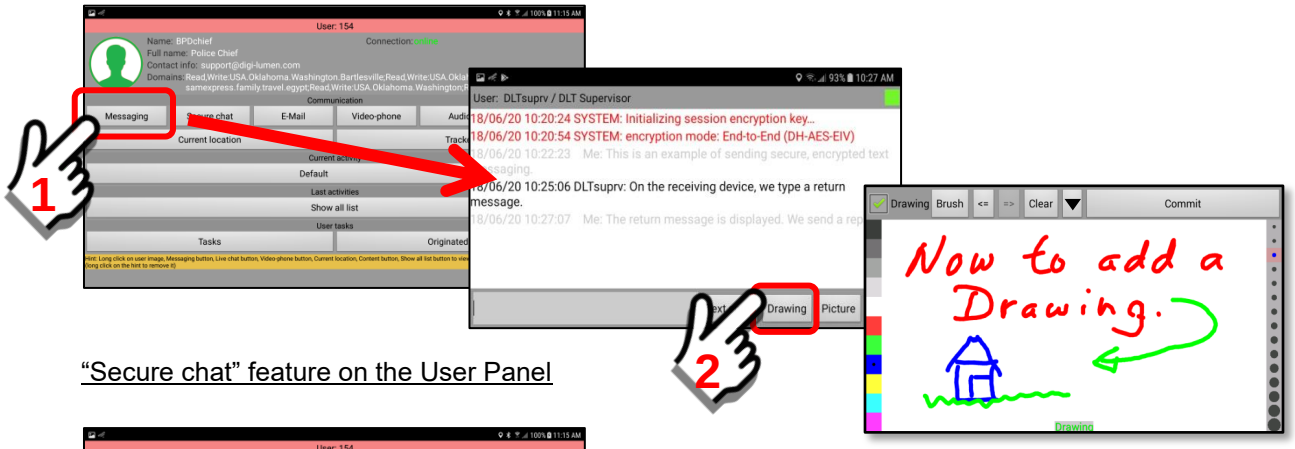
Menu locations for the Drawing Feature:

The drawing feature is available from 3 different menu locations within the SentryMDU application. These locations are listed below.

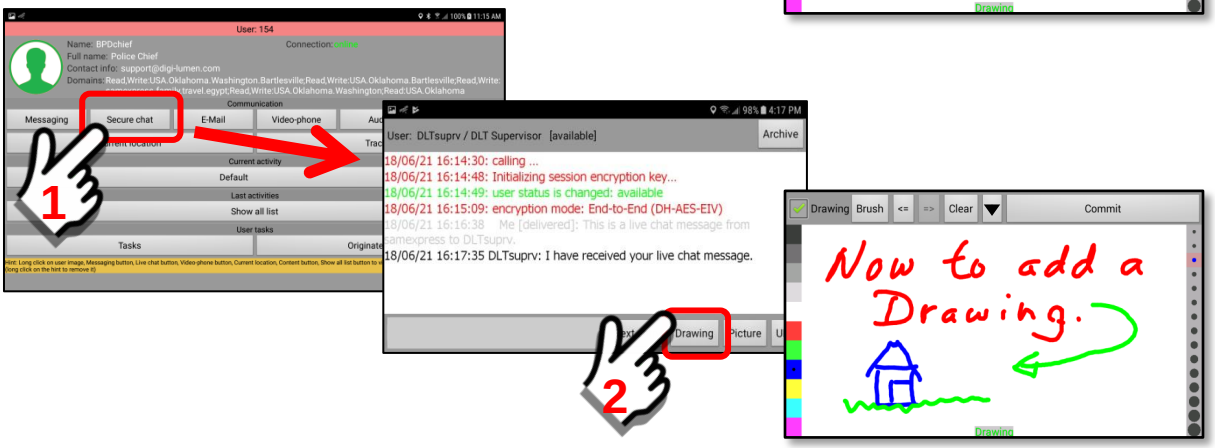
Main Menu Screen



"Messaging" feature on the User Panel

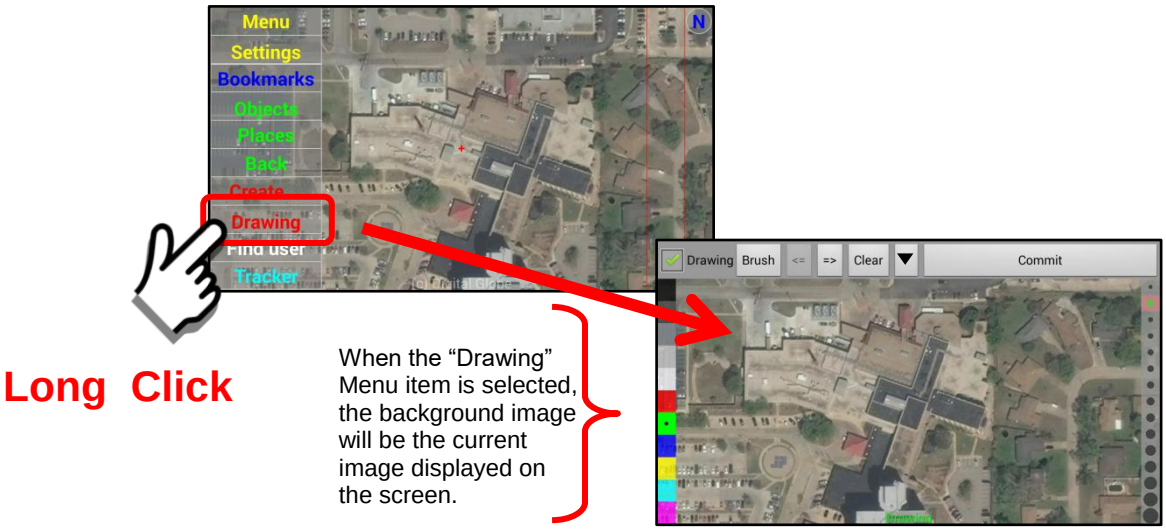


"Secure chat" feature on the User Panel

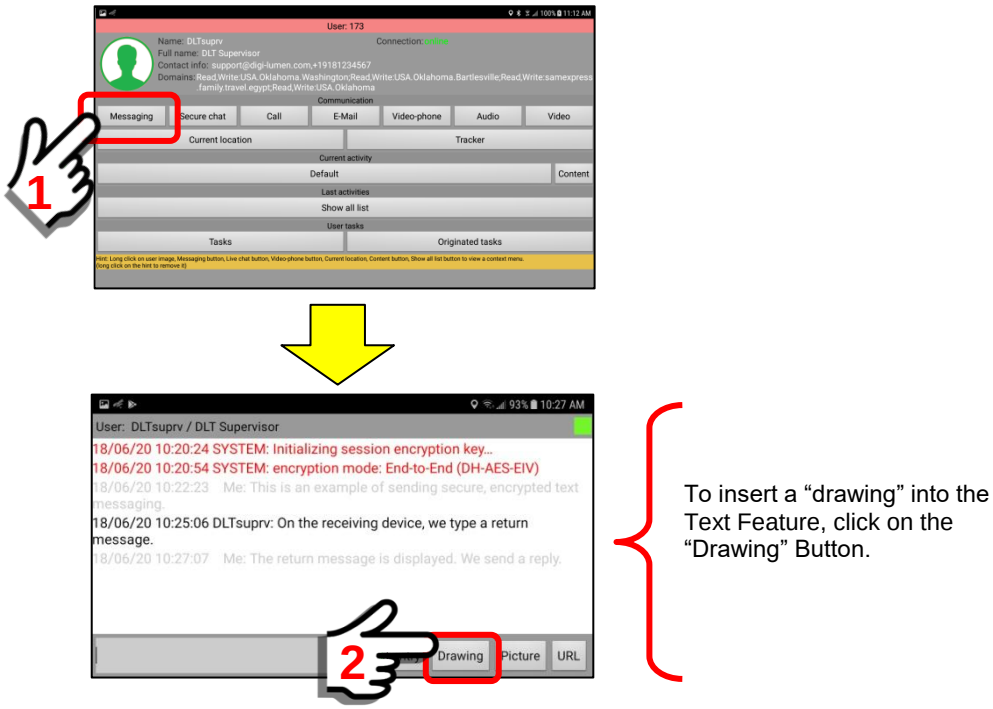


Setting the background image for the drawing panel:

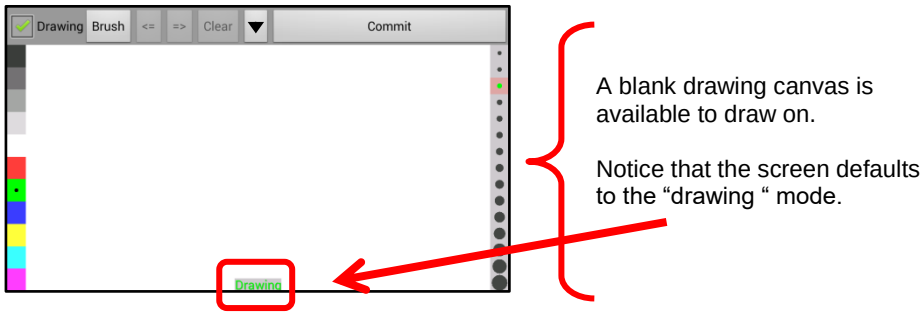
1. ***Main Menu screen drawing feature.***
   When the “Drawing” Feature is selected from the Main Menu screen, the background image will be a “screen capture” of the current main map display. This may be either a satellite image or map image depending on the user configuration settings.



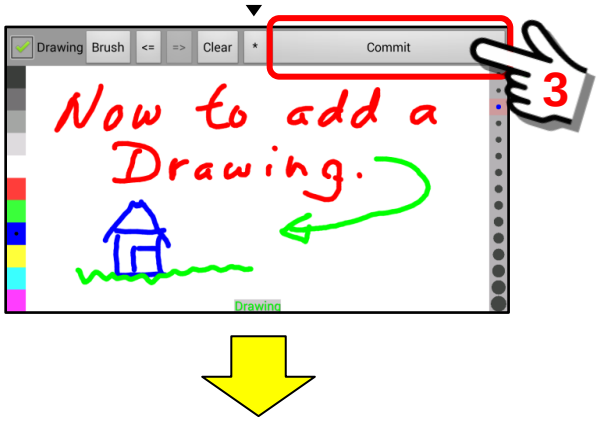
2. ***The “Drawing” feature accessed from the Messaging Panel.***
   A feature of the Messaging Panel is the ability of a user to insert a “drawing” into the message content. The example below will illustrate how to do this.



When the Drawing Button on the messaging panel is “clicked” a blank drawing canvas will be displayed. Use your finger as a stylist to draw on the screen.



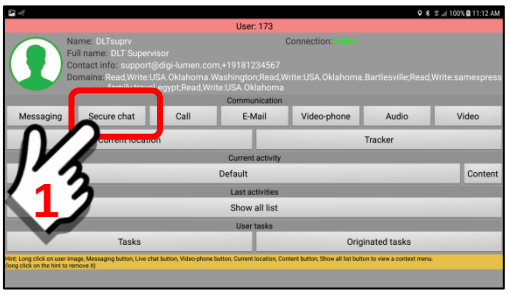
To draw, you may adjust color and stylist “size” to create your drawing.



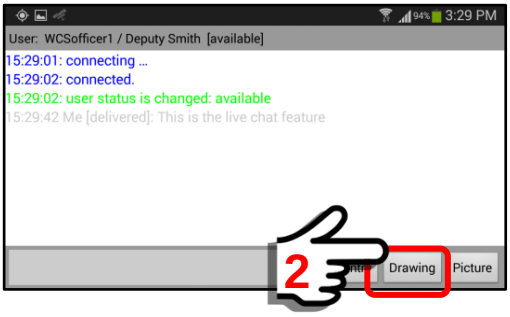
When finished, click on the “Commit” Button to add the drawing to the Messaging list. The drawing will be inserted into the text listing.

3. ***The "Drawing" feature accessed from the Secure Chat Panel.***

The "Secure chat" feature allows a user to insert a drawing into the message flow. Like the Messaging feature, the Secure Chat feature also defaults to a "blank" drawing canvas as shown below.

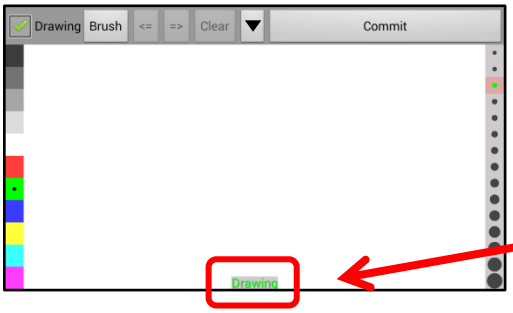


Once the "Secure Chat" session is active, click on the "Drawing" Button to create and insert a drawing using the same method illustrated above.



To insert a "drawing" into the Live Chat session, click on the "Drawing" Button.

The blank drawing canvas will be displayed to create the drawing you want to insert into the Secure Chat session.



A blank drawing canvas is available to draw on.

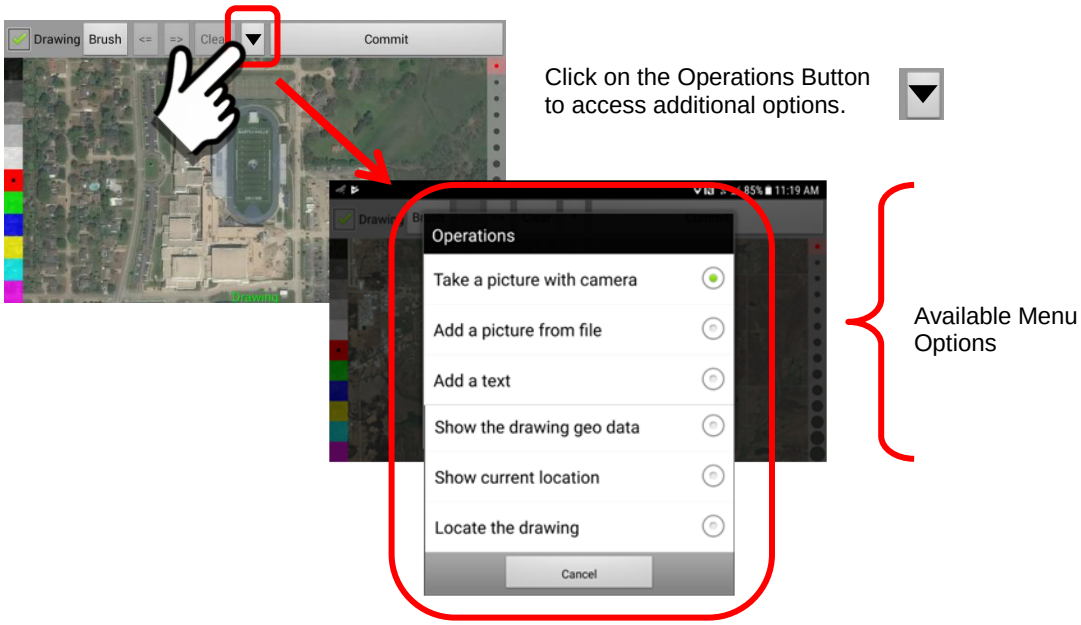
Notice that the screen defaults to the "drawing " mode.

To add a drawing, picture or URL to the chat session simply follow the same procedure as outlined in the previous section on Messaging (or see **Section 14.3.2, Items 3,4 & 5**). The process is identical.

13.4. Menu of operations that may be performed (Long click mode)

Available Menu Operations:

The available operations may be accessed by clicking on the Operations Button (▼) on the Drawing Panel. This provides a selection box with 6 choices. This section will review the available options.



The following section will briefly describe the 6 available menu options.

<u>Take a picture with camera</u>

The camera on the mobile device may be used to take a picture that will become the image upon which to be edited with the Drawing Tools.

<u>Add a picture from file</u>

A picture file stored on the mobile device (any folder) may be imported and edited with the Drawing Tools.

<u>Add a text</u>

A “text” object may be added to the drawing. This piece of text may be rotated, made larger/smaller and moved about the screen to a particular location (will use the “In place editor” for these tasks). This is a good tool for making notes on the Drawing Canvas..

<u>Show the drawing geo data</u>

This feature will allow a User to measure distances on the screen of a mobile device.

Show current location

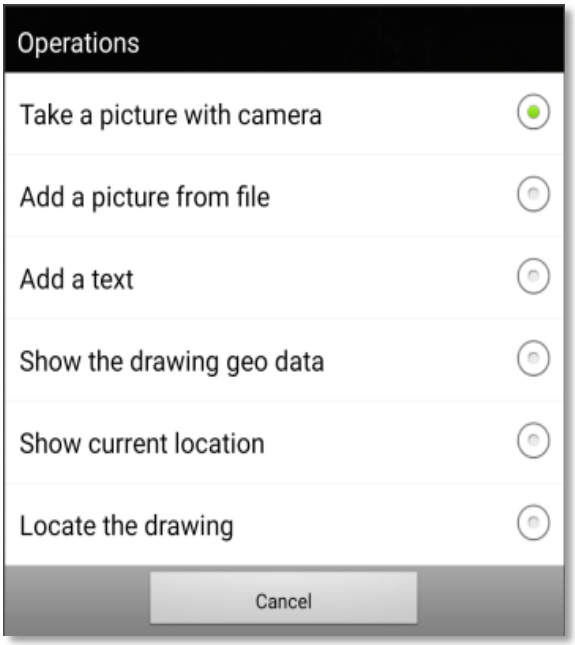
This feature will center the Map Image on the Drawing Canvas to the current GPS location of the mobile device.

Locate the drawing

The “Locate the drawing” menu item is used to display a drawing file (such as a trail route) that has been stored in device memory. The User may then locate the drawing on the Map Screen so it may be compared to their current GPS location.

This feature (Locate the drawing) is most often used when the mobile device is “off-line” and not in contact with the SentryMDU Data Server. Typically, this would be in remote locations without cellular service.

The following sub-sections (**13.4.1 – 13.4.6**) will illustrate each of the above menu options.



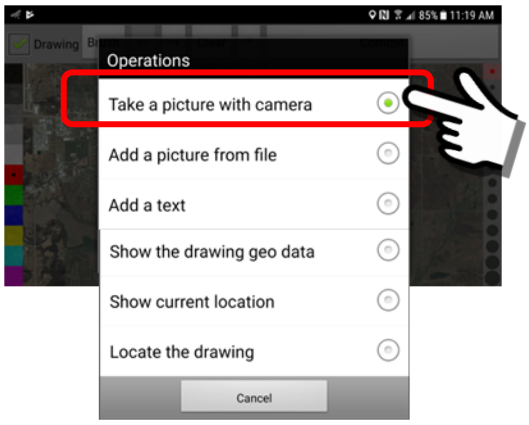
13.4.1. Take picture with the camera and include in drawing

Overview:

This option allows a User to take a picture with the camera on the mobile device and then “edit” the picture by “drawing” on the image and making notes or marks.

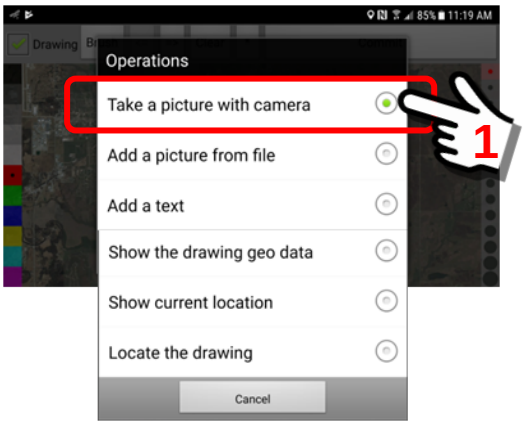
The Menu Selection:

The “Take a picture with camera” is the menu selection used in this illustration.

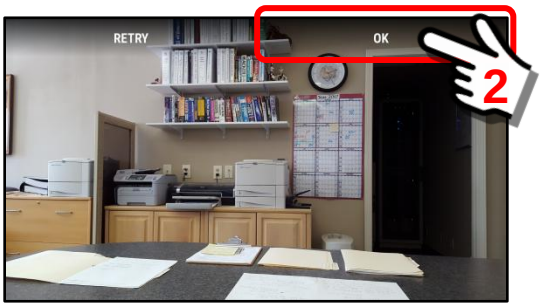


Steps to take a picture with the camera and edit:

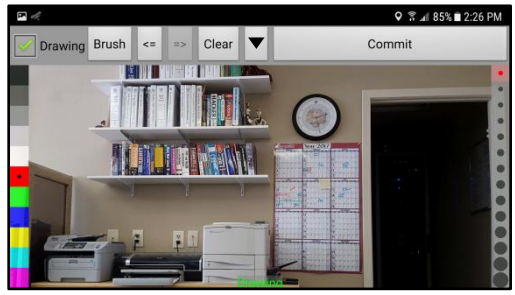
1. ***Select the Operations Menu from the Drawing Panel.***
   Click on the Operations Button (▼) on the Drawing Panel. This will open the Operations Menu options. Click on the “Take a picture with Camera” choice.

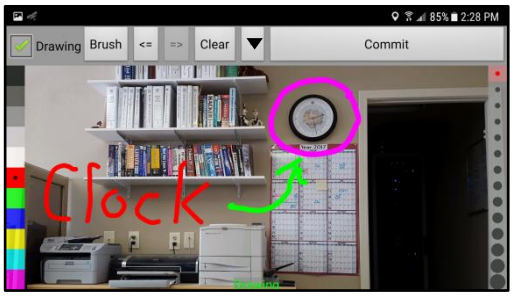


2. ***Take and save a picture with the camera on the mobile device.***
Take a picture with the camera on the mobile device. The camera feature on the device will now allow the user to take a picture.



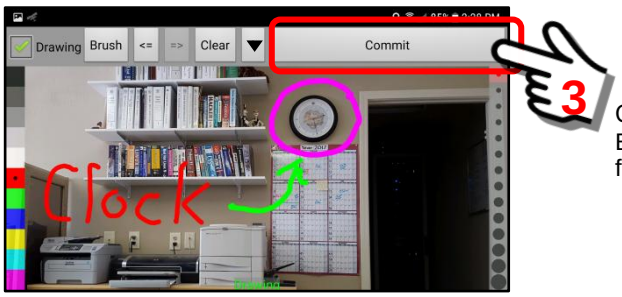
3. ***Edit the picture.***
Use the drawing tools to "edit" or make notations on the picture.





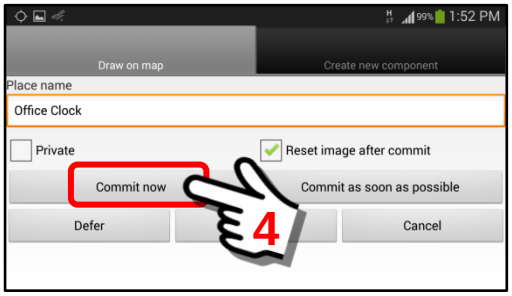
Use the drawing tools to edit and make notes on the picture.

4. ***Save the picture (Commit) for later use.***
The picture will be "saved" in the user's Content Folder.



Click on the "Commit" Button when you are finished.

Enter a “name” for the picture of the place you have created.

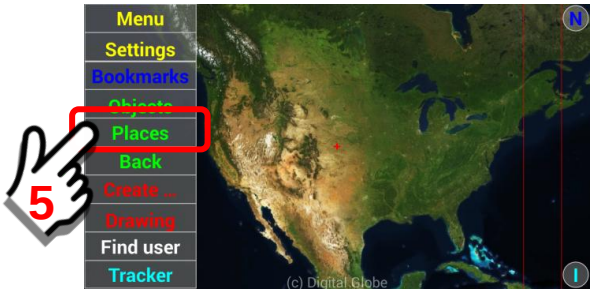


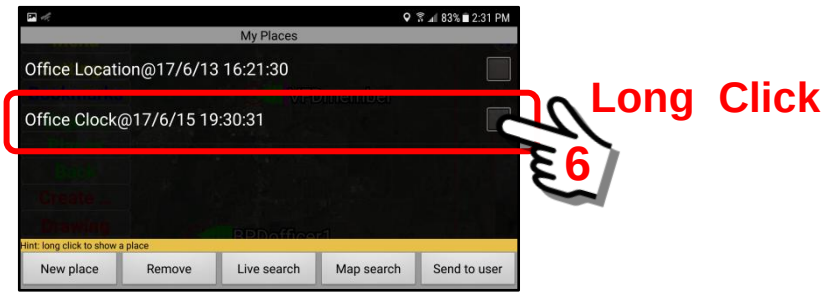
If you do NOT want others to be able to see this picture, click on the “Private” checkbox. If left unchecked (default) it may be viewed by any user that has the security credentials to allow access to your content.

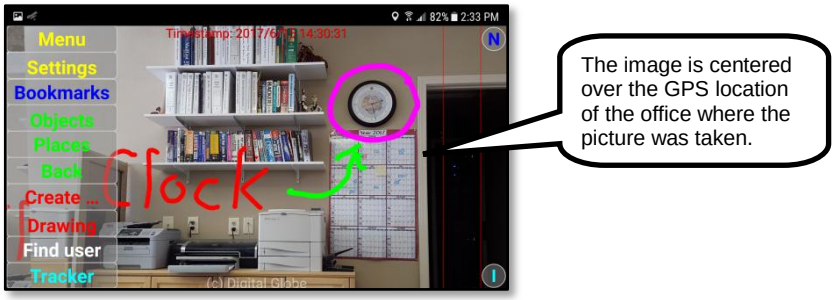
The picture is now SAVED and may be accessed in two primary locations.

1. The “Places” Panel on the Main Map Screen.
2. The “Content” Folder on the User Panel.

<u>The Places Panel</u>

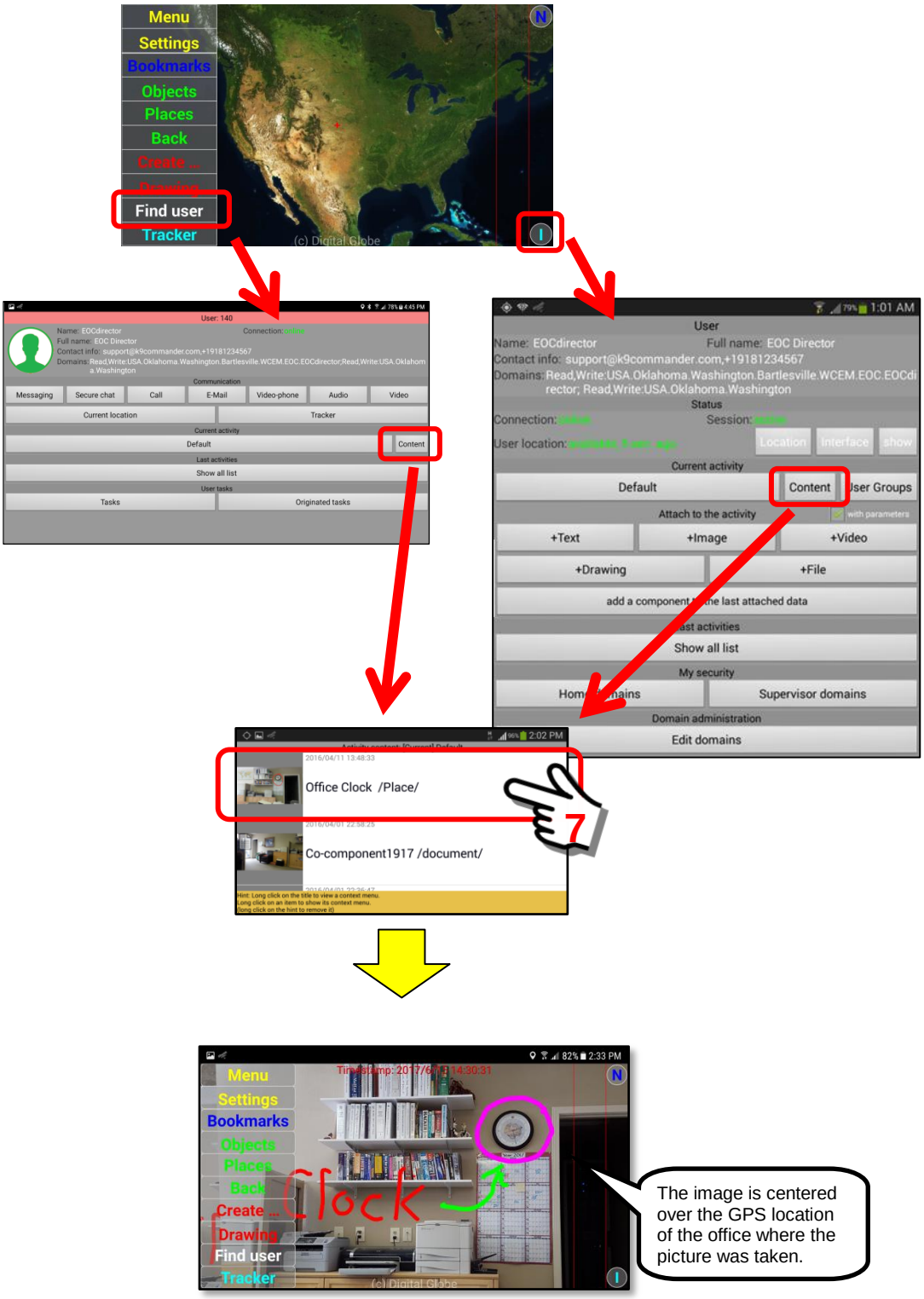






The image is centered over the GPS location of the office where the picture was taken.

The Content Folder (User Panel available from 2 locations)



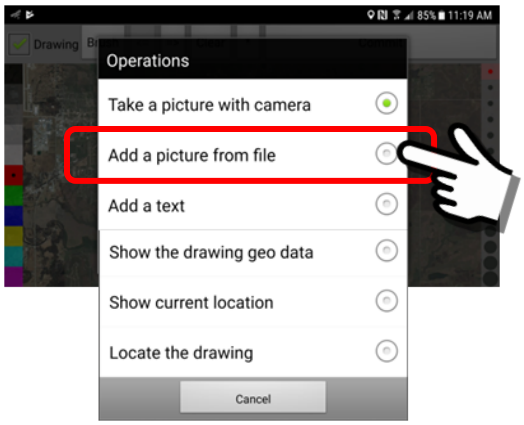
13.4.2. Add a picture to the drawing from a file

Overview:

This option allows a User to retrieve a picture from a file on the mobile device and insert that picture into a Drawing Canvas.

The Menu Selection:

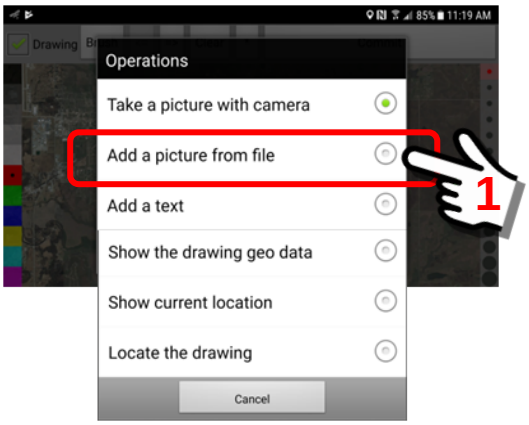
The “Add a picture from file” menu selection is used in this illustration.



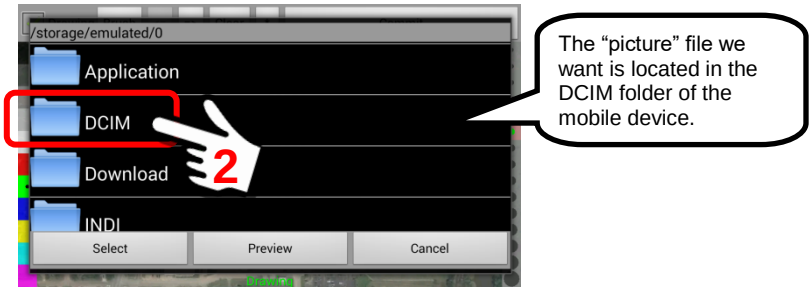
Steps to add a picture from a file folder on the mobile device:

1. ***Open the Drawing Panel and select the Operations Menu.***
   Click on the Operations Button (▼) on the Drawing Panel. This will open the Operations Menu options.

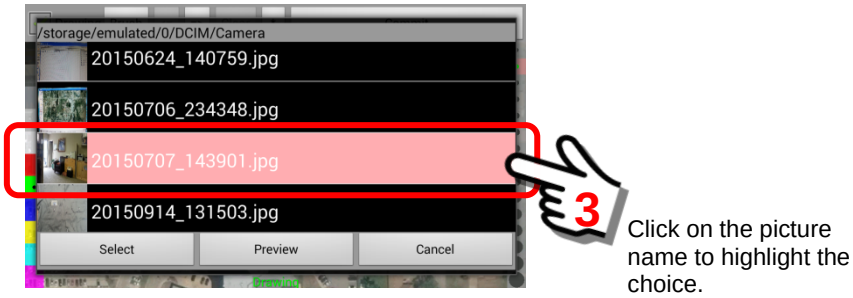
   Click on the “Add a picture from file” choice.



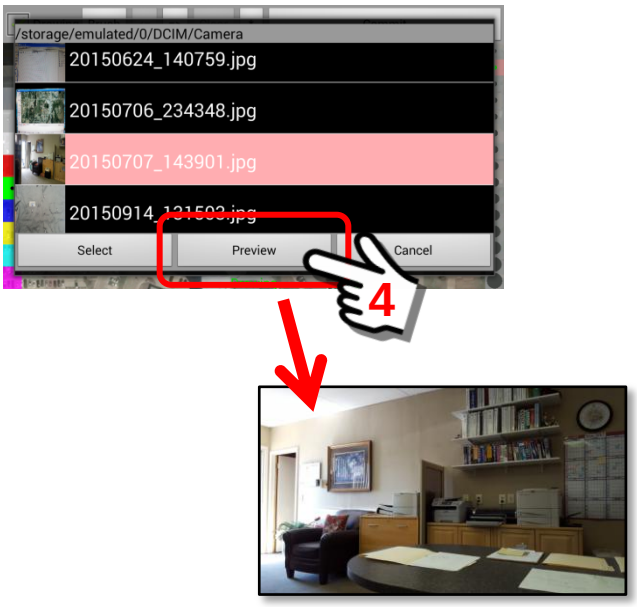
2. ***Select the "Add a picture from file" option and locate folder.***
Click on the "Add a picture from file" menu choice and the folder structure of the mobile device will be displayed. Select the folder and file you wish to add.



3. ***Select the desired picture from mobile device directory.***
Navigate the DCIM Folder until we locate the picture we want.

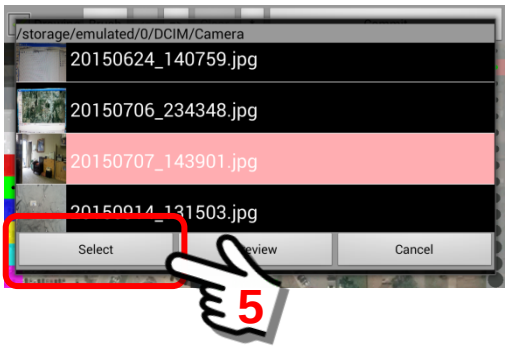


4. ***Review a "preview" of the picture before final selection.***
To make sure this is the picture you want, you may click on the "Preview" Button to view the picture.



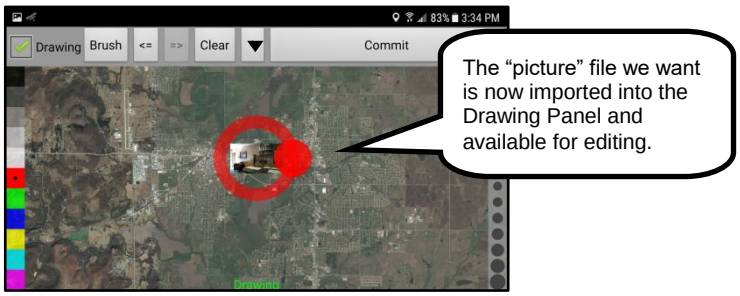
5. ***Select desired picture from directory of mobile device.***
Click on the “Select” Button to select the picture and import it into the Drawing Panel feature.

Edit and process the picture as desired.

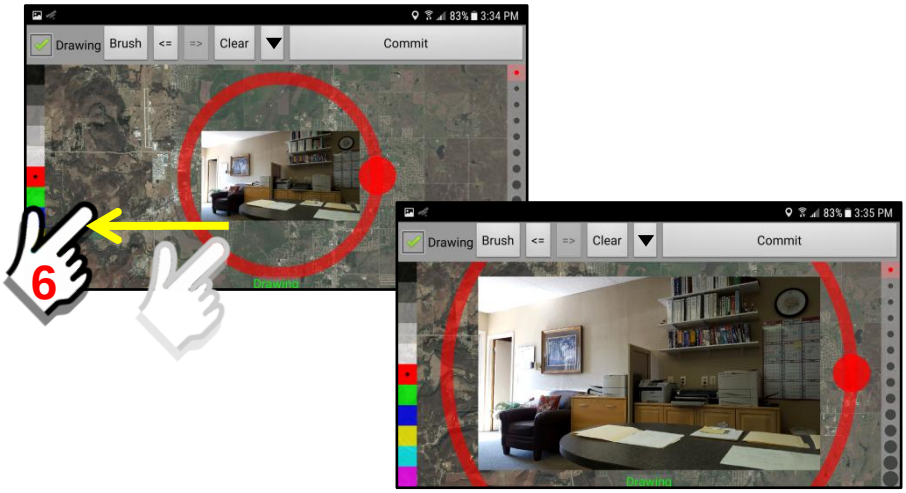


Whenever a picture (or document) “file” is selected to be added to the Drawing Canvas, the editor feature will be launched to enable the user to manipulate the picture image (rotate, zoom, move).

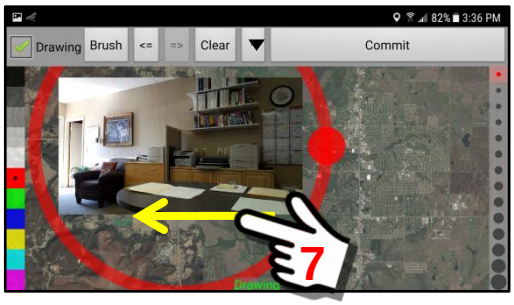
In this example, the picture to be added is centered on the Drawing Canvas as shown below.



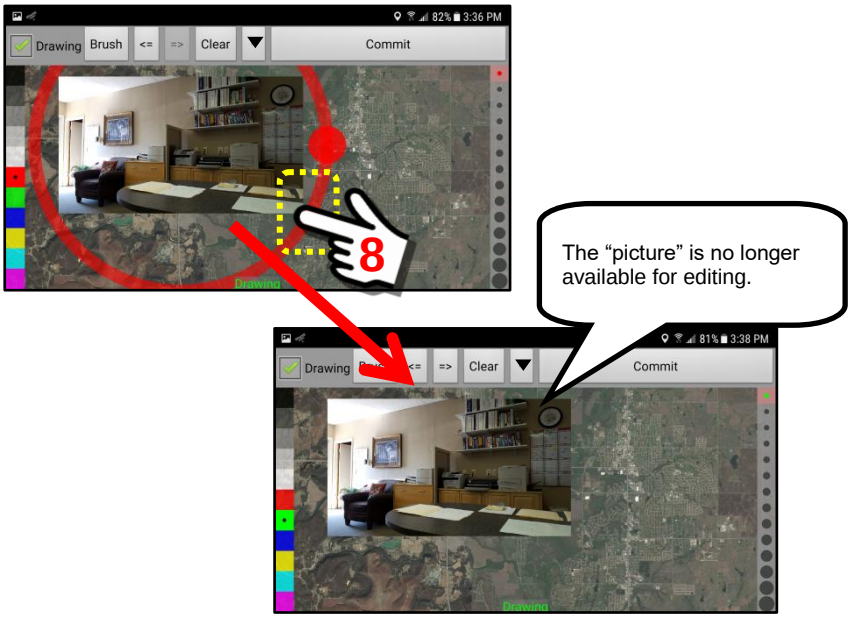
Using the editor feature, we may drag the red circle to make the picture larger.



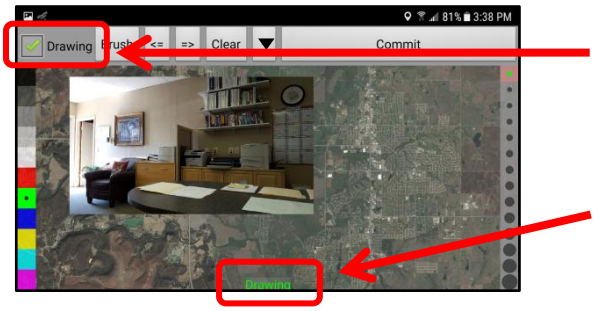
The picture may be expanded, rotated and moved on the Drawing Canvas. For this example, we will move the picture to the upper left hand corner of the Drawing Canvas.



To close the editor (remove the red ring around the picture), click on the outside edge of the red ring itself. This will allow us to do some freehand notation on the Drawing Canvas.



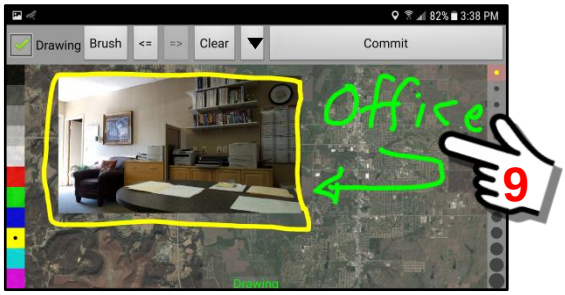
With the editor closed, we can now do some freehand drawing on the Drawing Canvas.



The “Drawing” checkbox is checked, we are in drawing mode

Note at the bottom of the screen it indicates we are in the “Drawing” Mode.

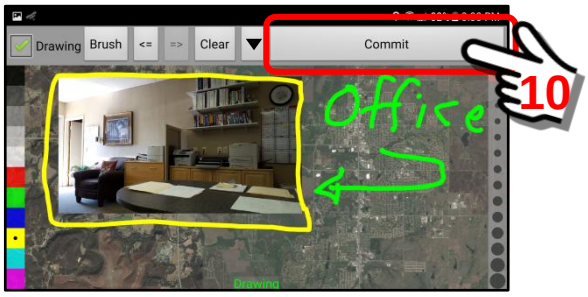
Using the available drawing tools, make notations on the Drawing Canvas.



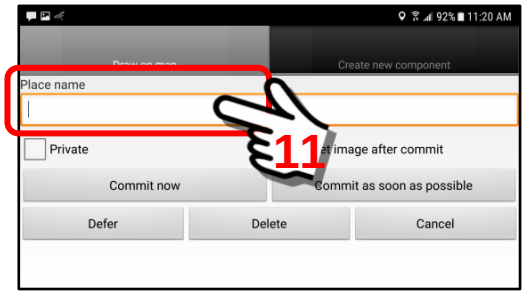
See **Section 13.2** of this Manual for layout and details of using the Drawing Tools.

6. ***Save this Drawing File in our Content Folder.***
In this example we will save the Drawing Map screen with our picture and freehand sketch to the Current Activity content folder.

Click on the “Commit” Button.



A “Place name” data entry panel will appear. Click within the data entry box and the on-screen keyboard will appear. Enter a name that describes the PLACE that you want to save.



In this example, we will name the file … ***Office Picture***.
Click the “Commit now” Button when finished.

We will leave review of the new Content as an exercise for the reader.

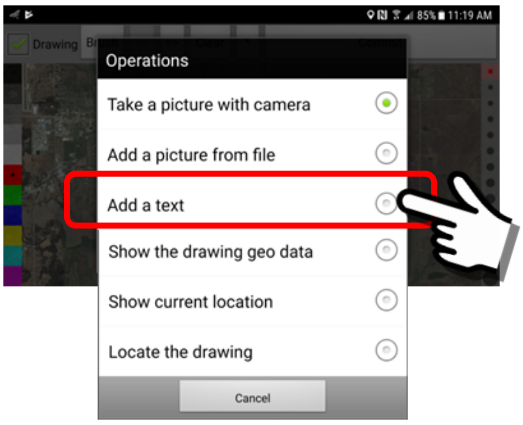
13.4.3. Add a Text Object to the Drawing Canvas

Overview:

This option allows a User to insert TEXT into a Drawing Canvas. This text may then be rotated, made larger/smaller and moved about on the screen to new locations.

The Menu Selection:

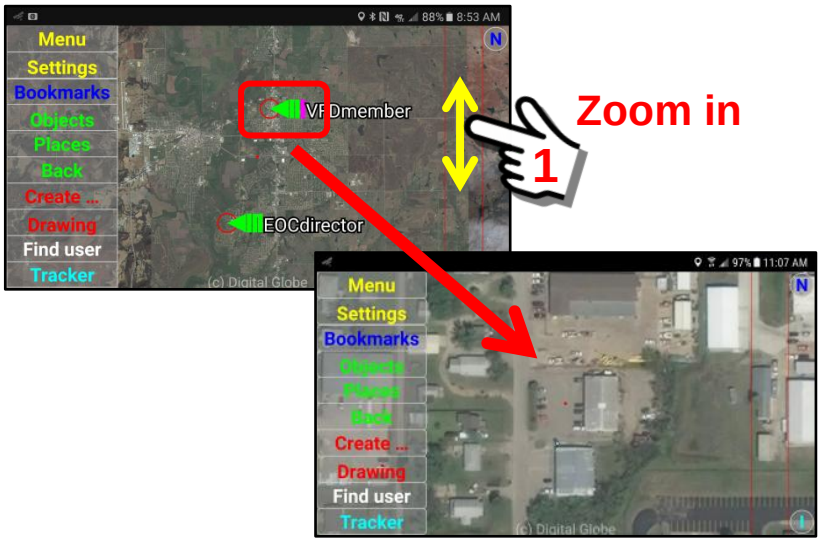
The “Add a text” menu selection is used in this illustration.



Steps to add TEXT to the Drawing Canvas:

1. ***Select the area of the screen where you want to insert TEXT.*** In this example, we will insert the words “Office Location” on to a satellite map image of a building.

   Locate the building location on the Map Screen. Zoom in to street level.



2. ***Open the Drawing Panel and select the Operations Menu.***
Perform a “Long click” on the Drawing Button and then click on the Operations Button (▼) on the Drawing Panel. This will open the Operations Menu options.

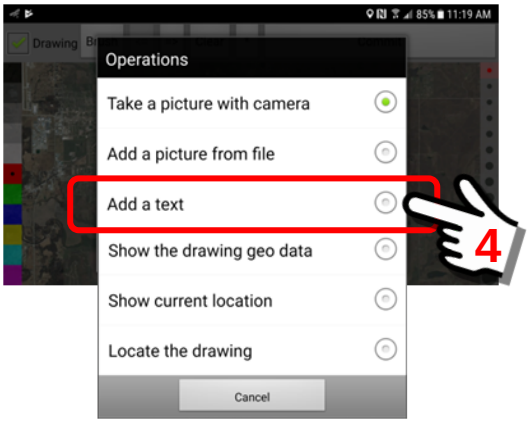
Long Click on the “Drawing Button” at the Main Map Screen.

Long Click

When we open the Drawing Panel, it will capture an image of the “current” map screen view. This is why we zoom in to the desired location and satellite view level (ie street level).

Click on the Operations Button (▼) on the Drawing Panel.

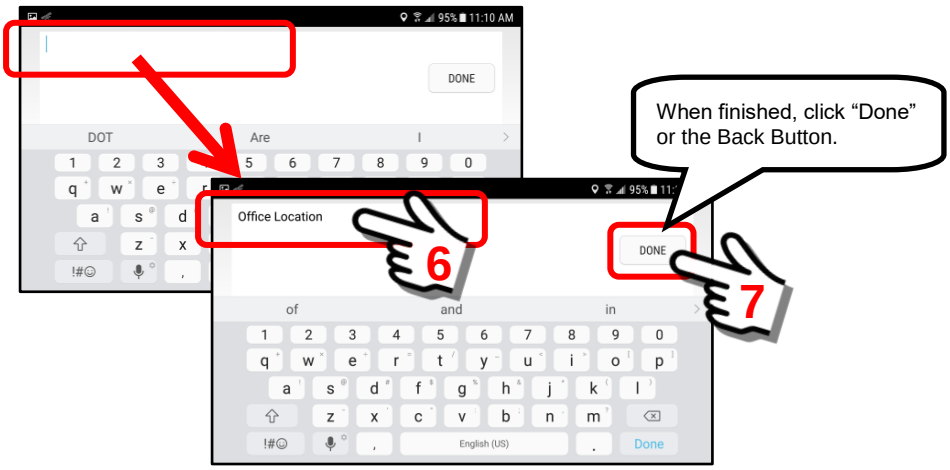
A pop-up Operations Menu will appear.
Locate the “Add a text” menu option. Click on the choice.



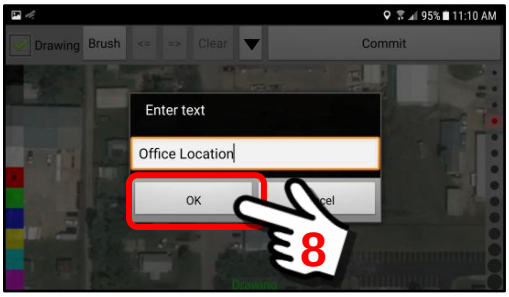
3. ***Select the "Add a text" option and enter text.***
Click on the "Add a text" menu choice. A pop-up box will appear. Click inside the text entry field to open an on-screen keyboard.

Enter the text you will want to display. In this example we will insert the text …"Office location".

The on-screen keyboard will open. Enter the text.

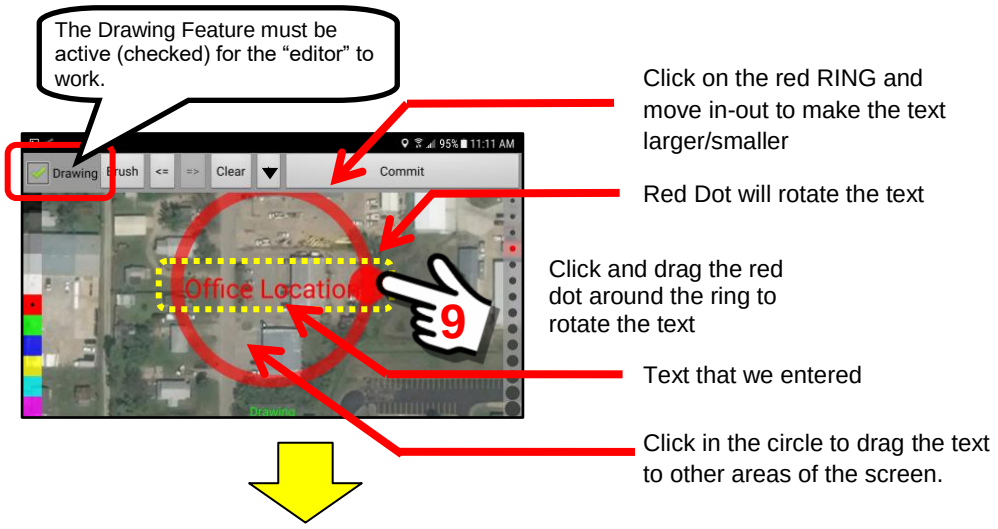


When finished with the TEXT entry, click "Done" and then the "OK" button to save the text entry.

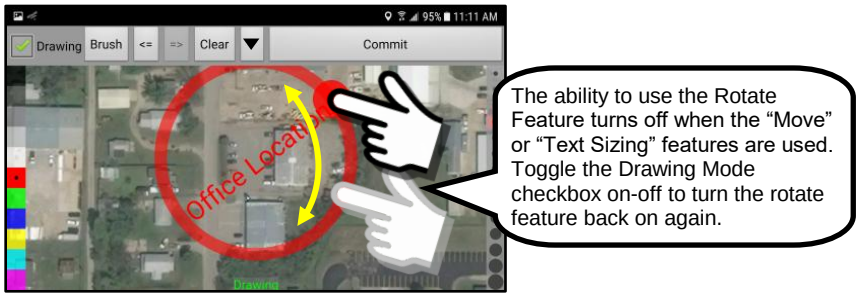


4. ***The TEXT entry is now inserted into the Drawing Canvas.***
When the text is "saved" it is now inserted onto the Drawing Canvas. In this example, the words "Office Location" are now shown on the Map.

When text is added to the Drawing Canvas, the editor feature will be launched to enable manipulation of the text (size, rotate, move). The following features are available.



Rotate Feature



Make text larger / smaller

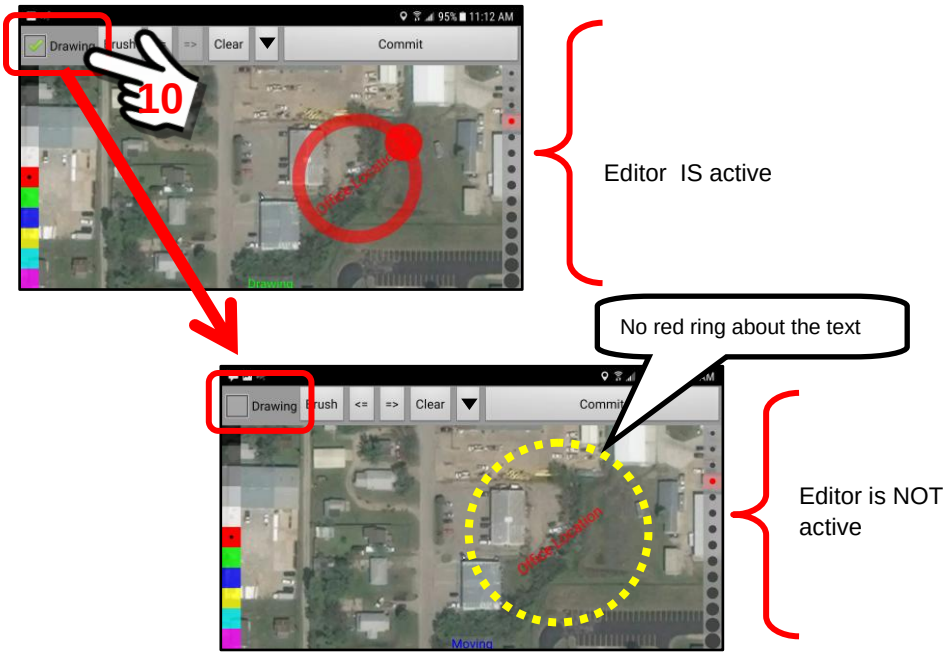
Move text screen location

5. ***Turn off the "editor".***

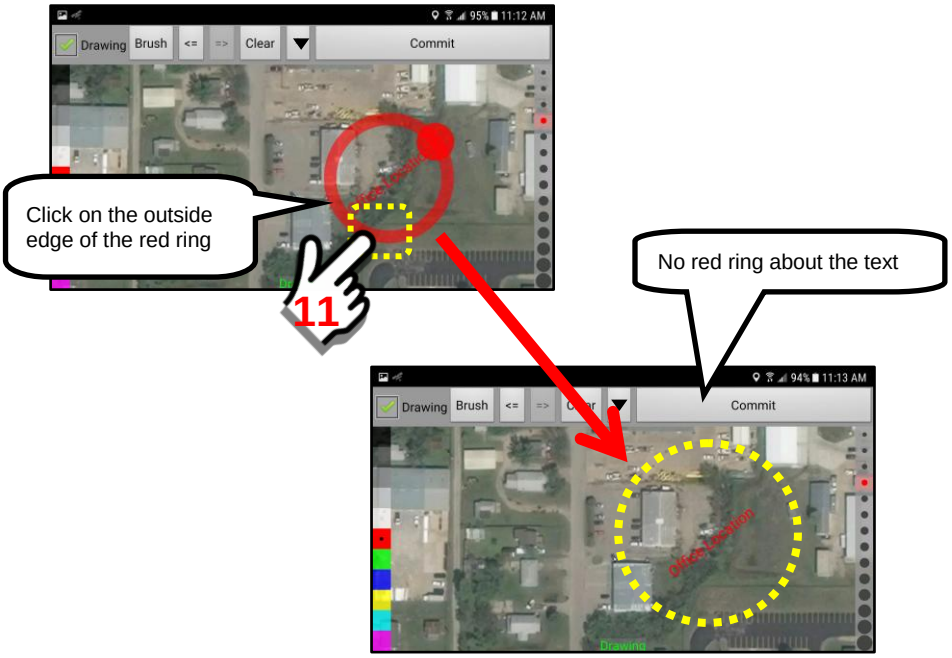
When you are finished with the text insert, the "editor" feature may be turned off by two methods:

(1) Exit the Drawing Mode (uncheck)
(2) Close the "editor" via a "click" on the edge of the red ring

<u>Exit the Drawing Mode</u> (uncheck the Drawing checkbox)

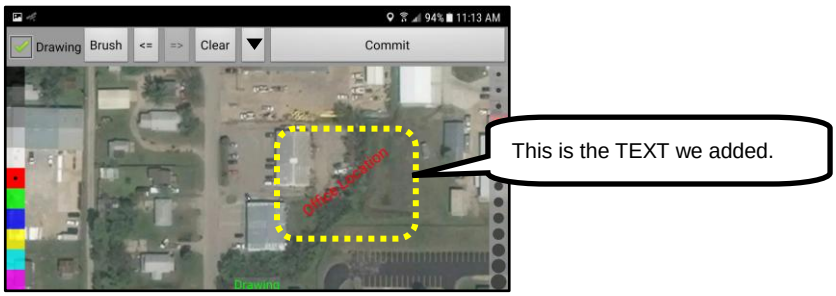


<u>Close the editor via a "Click" on the red ring</u>



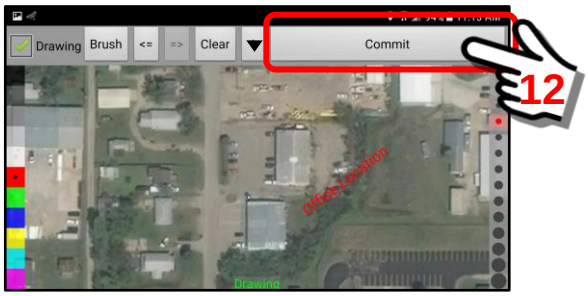
6. ***Review the TEXT entry inserted onto the Map Screen.***
In this example we have now inserted the TEXT (Office Location) onto the Drawing Canvas map screen.

At this point a user may add more text, pictures or other data to the screen “place” location. For this example, we will assume we are done and will save the drawing.

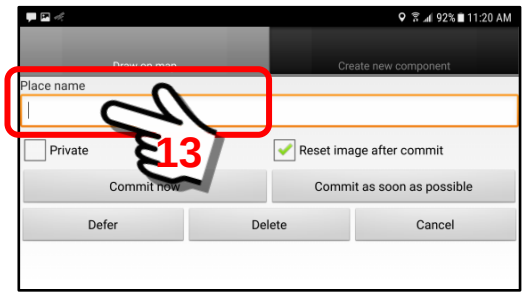


7. ***Save this Drawing File in our Content Folder.***
In this example we will save the Drawing Map screen with our text notation to the Current Activity content folder.

Click on the “Commit” Button.



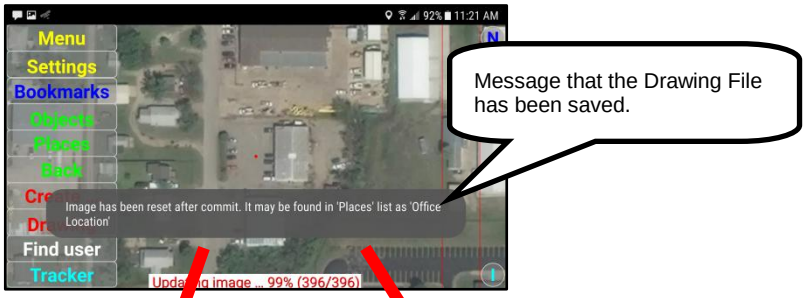
A “Place name” data entry panel will appear. Click within the data entry box and the on-screen keyboard will appear. Enter a name that describes the PLACE that you want to save.



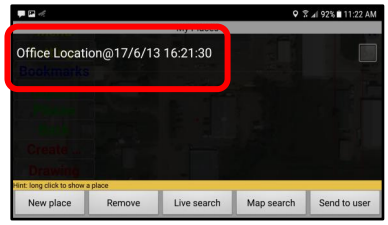
In this example, we will name the file … ***Office Location***.
Click the “Commit now” Button when finished.

When the “Commit now” Button is clicked, the system will store the Drawing File in BOTH the Current Activity Content folder and Places folder.

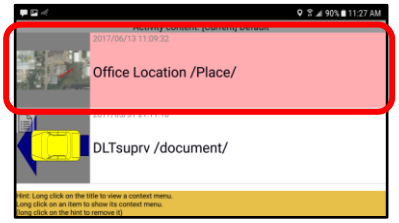
Message that the Drawing File has been saved as a “Place” under the Places Section (in addition to the Current Activity Content folder).



Places Folder



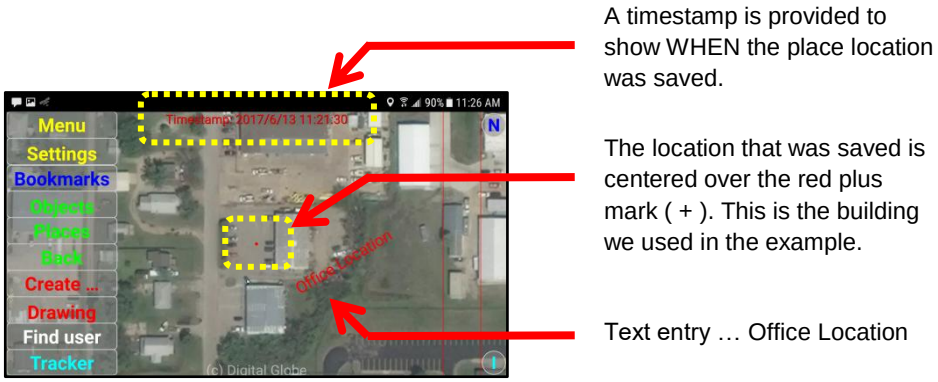
Current Activity Content Folder



8. ***Review the TEXT entry inserted onto the Map Screen.***
In this example we have now inserted the TEXT (Office Location) onto the Drawing Canvas map screen.

To review the text entry, navigate to the Places Section and locate the “Office Location” place item. Perform a “Long click” on the heading.

The saved Map Screen will be displayed with the TEXT entry of “Office Location” showing.



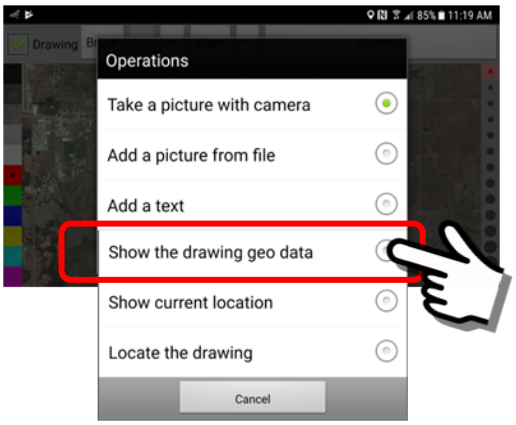
13.4.4. Show the drawing Geo Data (measure distances)

Overview:

The SentryMDU System provides a feature that will allow a User to measure distances on the screen of a mobile device. In this example, we will view the satellite image of a sports stadium and measure the length of the playing field. This section will illustrate this feature.

The Menu Selection:

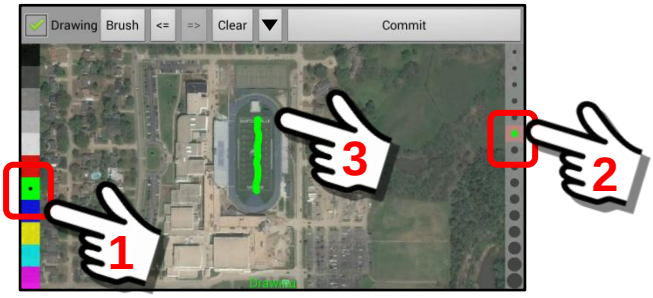
The “Show the drawing geo data” is the menu selection used in this illustration.



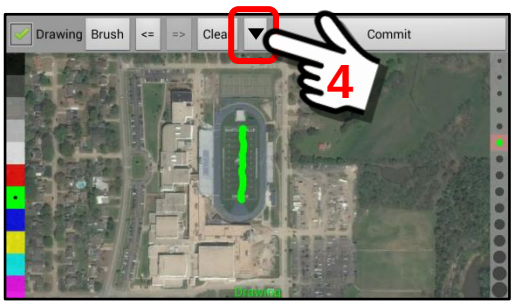
Steps to measure distances on the screen:

1. ***Select the image and zoom level of the location.***
   On the Main Map screen we have located the Stadium and zoomed down to the appropriate level. When we clicked on the “Drawing” Button this captured the screen image for our drawing panel as shown below.

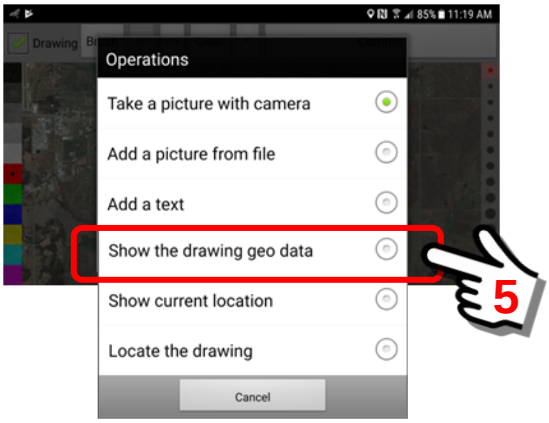
2. ***In drawing mode, make a line on the image that you want to measure.***
Select a color and stylist size and using your finger, drag down the length of the Stadium to make a “mark” on the screen from one end of the field to the other.



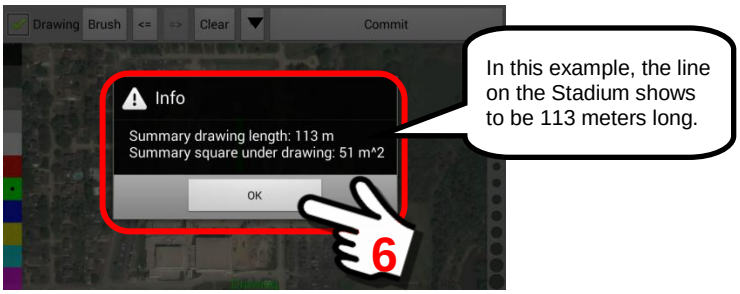
3. ***Select the geo data menu choice to view the results.***
To measure distances, the system uses geo-coordinates from the map view. Higher levels of zoom (greater detail) will provide better results. For accurate estimates of distance, lines should be as straight as possible.



Click on the Operations Button (▼) to view the Operations Menu. Select the “Show the drawing geo data” menu option.



A pop-up box will display the length of the drawing object.



Click the “OK” Button to return to the Drawing Screen. You may “clear” the screen and draw another line if this one did not produce the desired result.

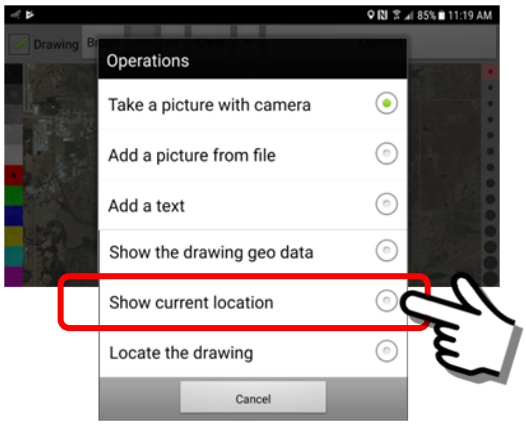
13.4.5. Show current location of device on satellite/map view

Overview:

This option will run a GPS satellite scan and then center the display screen over the current GPS location of the mobile device. The displayed image (satellite or map view) will be at the current “zoom level” of the mobile device.

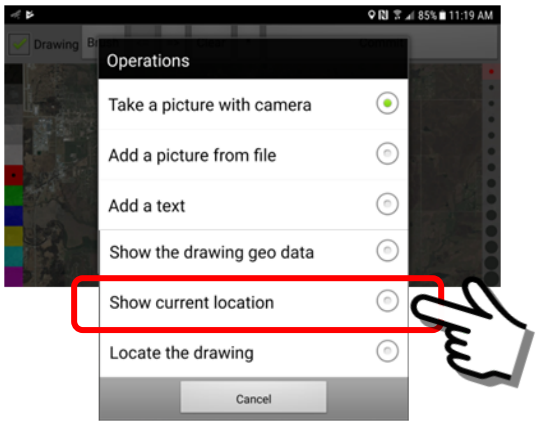
The Menu Selection:

The “Show current location” is the menu selection used in this illustration.



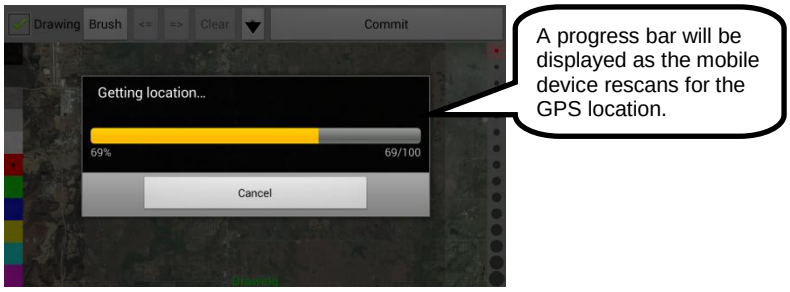
Steps to show current location of mobile device:

1. ***Select the Operations Menu from the Drawing Panel.***
   Click on the Operations Button (▼) on the Drawing Panel. This will open the Operations Menu options. Click on the “Show current location” choice.

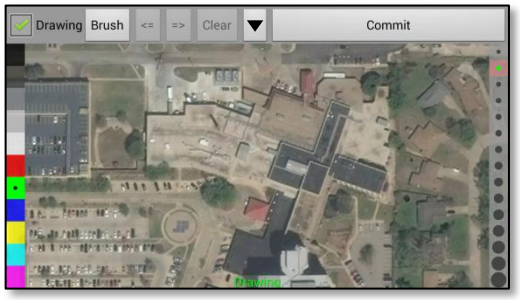


2. ***The mobile device will attempt to rescan GPS satellites.***
The mobile device will attempt to update the GPS/GLONASS position data by a re-scan of satellite data. Typically, at least three satellites are required for a “fix” of your location.

If there are not enough satellites in view or you are in a building (steel/concrete) where the mobile device cannot receive the satellite signals, the operation may “time out” without an update of the location.



3. ***The Drawing Panel map image will show current location of mobile device.***
Once the GPS/GLONASS satellite rescan is complete, the Drawing Panel will center the display at the current location of the mobile device.



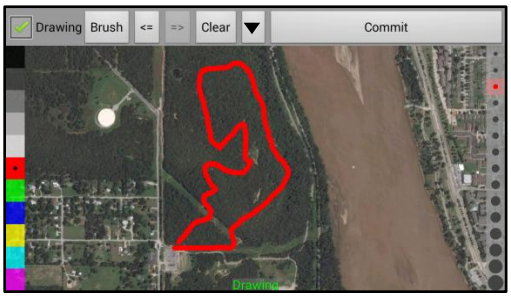
13.4.6. Using the "Locate the drawing" menu option

Overview:

The "Locate the drawing" menu item is used to display a drawing file (such as a trail route) that has been stored in device memory. The User may then locate the drawing on the Map Screen so it may be compared to their current location.

A typical scenario is as follows:

A user plans to hike in a forest that has few or no marked trails. To begin, the user traces a proposed route on a satellite image of the area using the tools in the Drawing section. This drawing is saved on the local device to be recalled later. It is assumed, that during the hike, there will be no cellular coverage and therefore no access to the SentryMDU Data Server via the internet. However, a GPS signal is available. In the event the User becomes "lost" or deviates from the desired path, the current GPS location may be compared to the designated route markings to determine which direction the User should take to get back on the desired path that had previously been traced on the map.

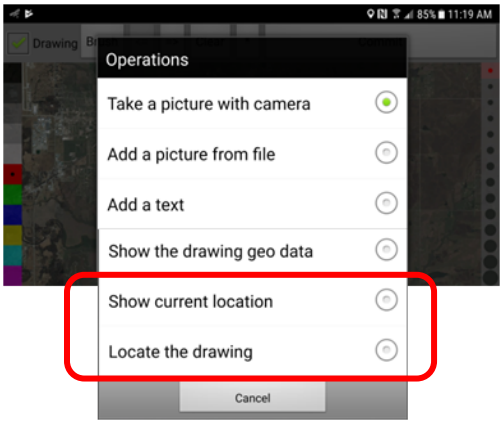


We will use the drawing tools to trace a hiking path through the forest.

This example will outline the steps necessary to accomplish this objective.

The Menu Selection:

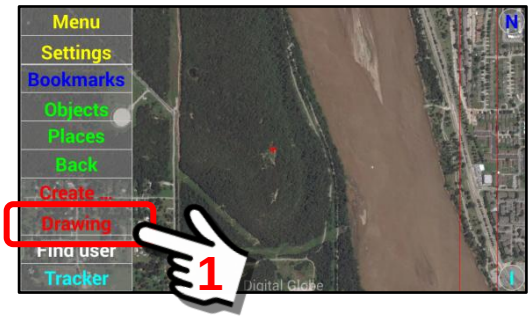
This example will use two of the Operations menu options as shown below.



Steps to follow in using the "Locate the drawing" feature:

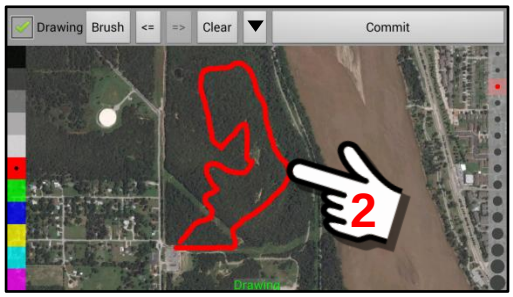
1. ***Locate the satellite view of the area of interest (hiking area).***
   We begin by locating the general area where we plan to conduct the hike. From the Main Map Screen, zoom in to the area in close enough detail to recognize landmarks and topographical features.

2. ***Trace the proposed hiking route on the satellite image.***
   Once we have zoomed in to the area of our hike, click on the "Drawing" Menu item to capture this screen area.



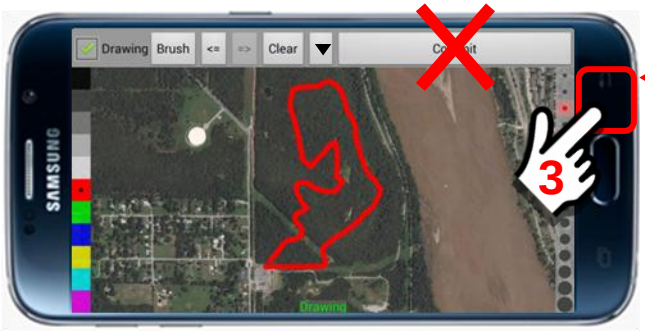
Long Click

Clicking on the “Drawing” Menu item will open the Drawing Panel with the screen capture of the proposed hiking location.

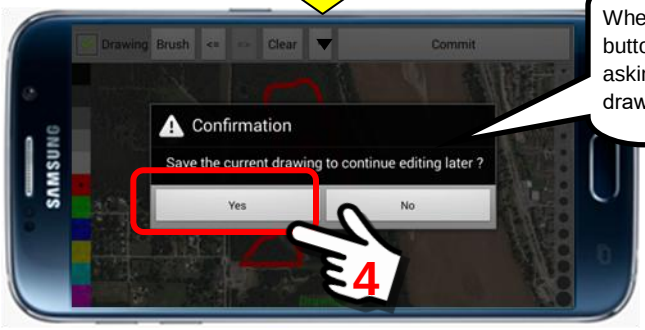


Use the drawing tools to trace a hiking path through the forest.

3. ***Save the hiking route to the local device.***
When finished, do NOT click on “Commit”. This would save the drawing to the Data Server. Instead, we want to save the drawing to the local mobile device so it can be retrieved at a later date when internet service is NOT available.



To save on the Local Device, do not click on the “Commit” Button. Instead, click on the “Back” button on the phone as shown below.



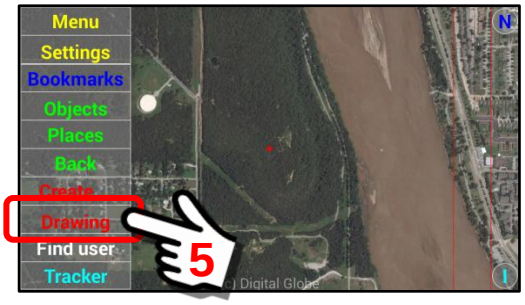
When you click on the back button you will get a message asking if you want to save the drawing for later. Click “Yes”.

4. ***Go on the hike into the forest.***
With the drawing now stored on the local device, go on your hike.

Assume you are now hiking in the forest area.

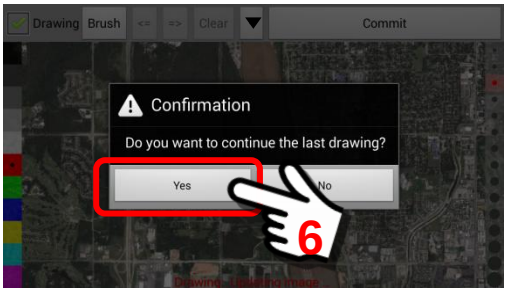
After a while, you are lost and not sure where you are.

5. ***Compare current location to the desired hiking route.***
To determine your “current location” in relation to the desired hiking trail (the trail you traced), long click on the Drawing Button.

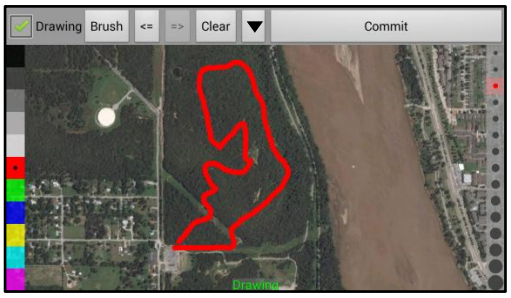


Long Click

When you click on the “Drawing” menu item, the system will ask if you want to “continue” with the last drawing you were working on previously. Click “Yes”.

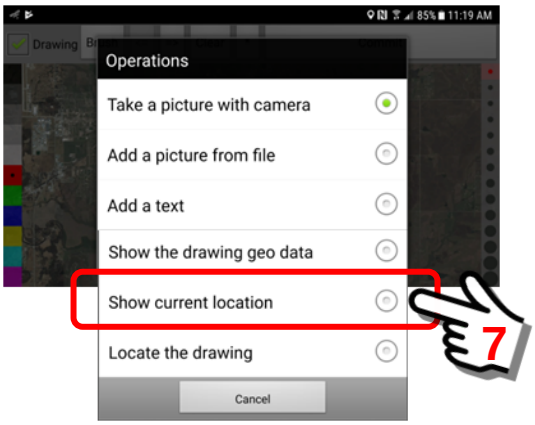


This will retrieve the last drawing (our hiking route).

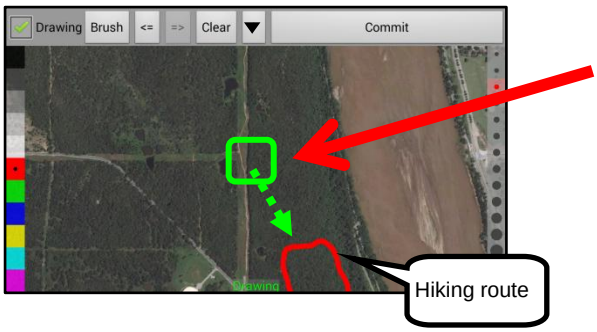


However, we are not sure exactly where WE are in relation to the desired hiking trail.

To find our current GPS location, we will go to the Operations Menu and select "Show current location".



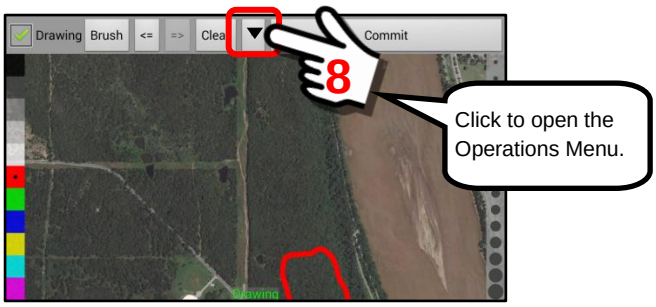
When we select to show the current location (via GPS coordinates) the mobile device will re-scan the GPS/GLONASS satellites to get a "new" GPS fix. You will see the following screen.



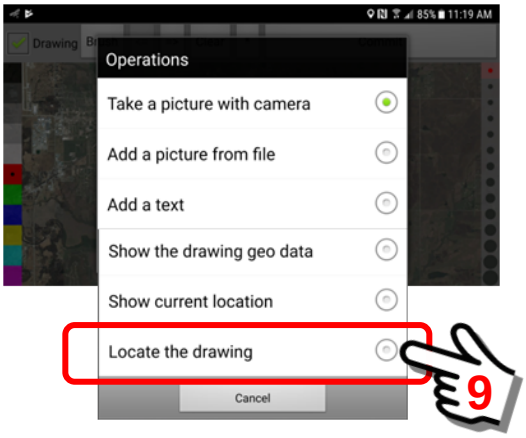
When a "current location" is shown, it is always in the center of the screen.

In this example we can see that the desired hiking route is south of our current location. Most of the route is "off the screen".

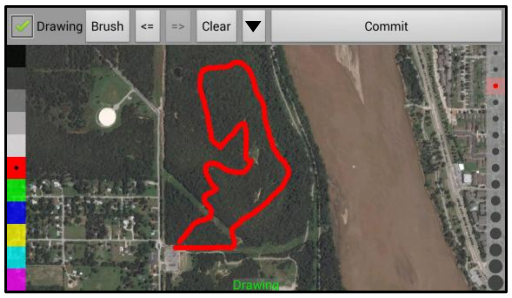
From the above example, we can see that we need to hike “south” to reach our desired hiking trail. To bring our hiking route back into view, we need to use the Operations Menu item “Locate the drawing” as shown below.



Click on the “Locate the drawing” option in the Operations Menu.

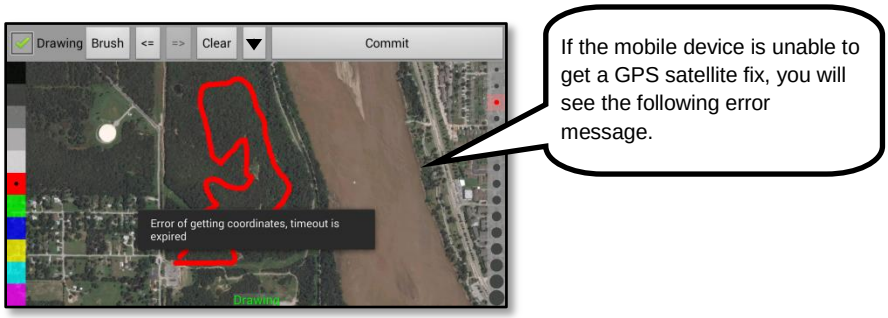


This will now re-establish the hiking route screen that was moved off-screen when we looked for our current location. The system now displays the full hiking route.



This feature (Locate the drawing) is most often used when the mobile device is “off-line” and not in contact with the SentryMDU Data Server. Typically, this would be in remote locations without cellular service.

6. ***Error message if unable to acquire GPS fix from satellites.***
In the event your mobile device is unable to receive GPS satellite signals, the following error message will appear.



13.5. Store the new Drawing File in the User's Content Folder

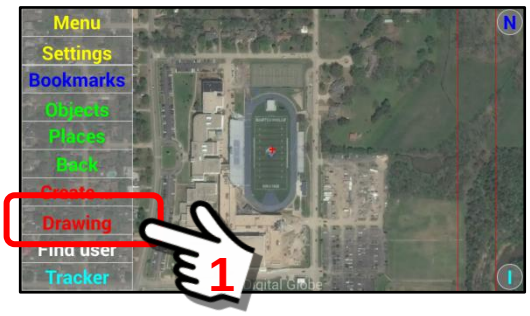
Overview:

This section will describe how to create and store a newly created drawing image in a User's Content Folder.

Steps to store a new drawing image:

1. ***Create the "new" drawing image.***
   The first step is to create a "new" drawing. Locate the area on the map that you want and zoom in to the level of detail desired.

   Start by clicking on the "Drawing" menu item from the Main Map screen. For this example, we will use a sports stadium.

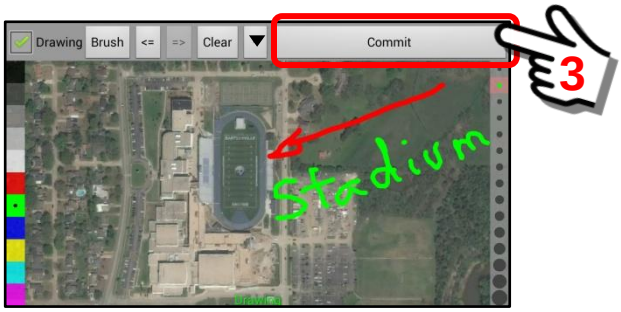


Long Click

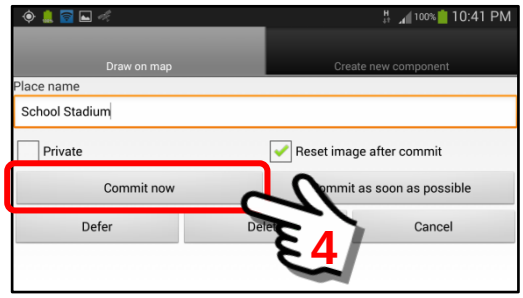
   Clicking on the Drawing item will capture the screen showing the stadium.

   Use the Drawing Tools to make notes and marks on the Drawing Panel.

2. ***Click on the "Commit" Button to name and save the Drawing.***
Once the editing is complete, click on the "Commit" Button. This will allow you to create a "name" for the place and it will then be transferred to the Sentry Data Server.



Fill out the "Place name", decide if you want the image private (default is NOT Private) and click the "Commit now" Button.



Once the "Commit" Button is clicked the system will transfer the place to the Sentry Data Server for storage (and available to other users).

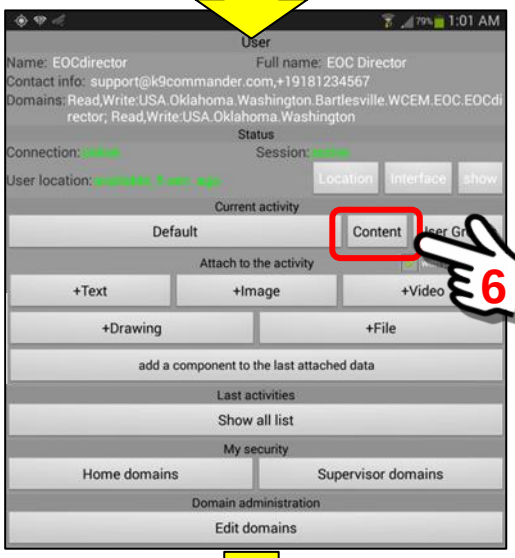
The User will be returned to the Main Map screen with a message that a "new" place has been created and that the file is stored in the Places Folder.

3. *Review the Drawing Image in the Content Folder*

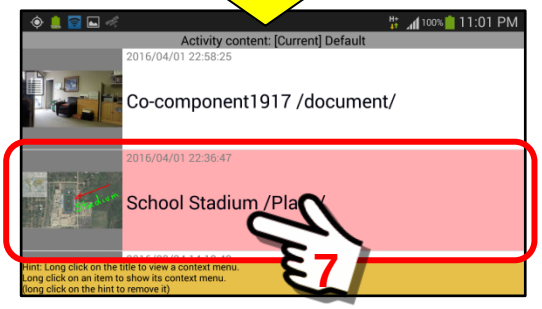
To review the installed Drawing (new place), see the following screens. We will start at the Main Map screen, click on the "I" Icon for access to the User Panel.

Message that a new Place has been created.

5 Click to launch the User Panel.



6 Click to open the Content Folder for the user.

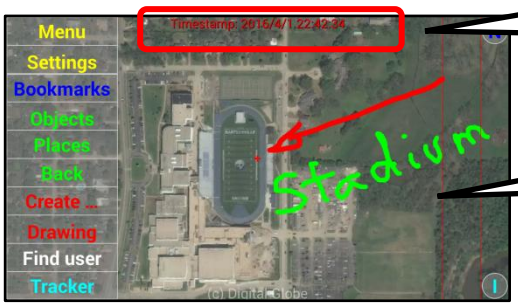


7

The Content Folder will contain a listing of all content stored for this user.

Scroll through the list to locate the item installed.

To open the file, click on the text name.



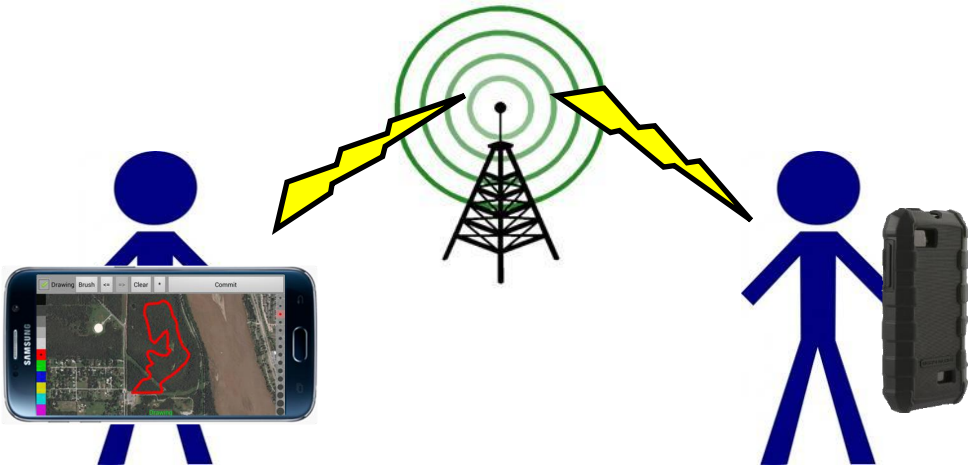
Note the timestamp of when this item was created

Example of new place created

13.6. Send a Drawing File (from “Places” Folder) to another user

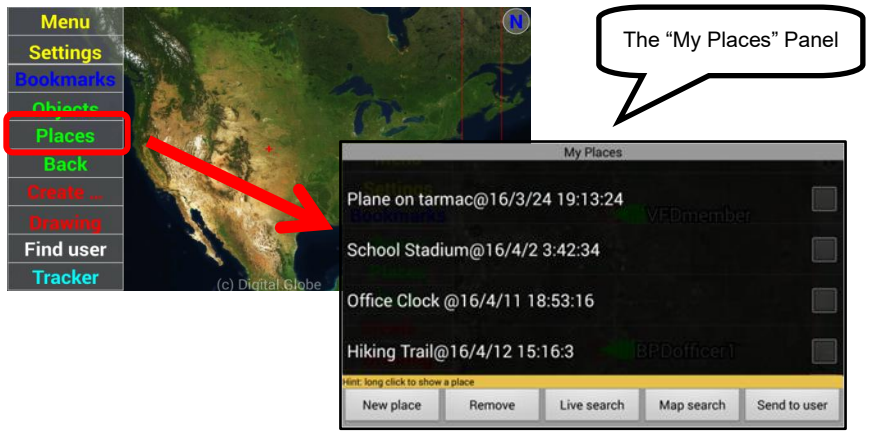
Overview:

This feature allows one user to create a “Place” with the drawing tools and then send this “place” file to another user where it can be stored in their “My Places” Folder.



Menu Selection:

In this example we will be using the “My Places” Panel located in the Places Folder.



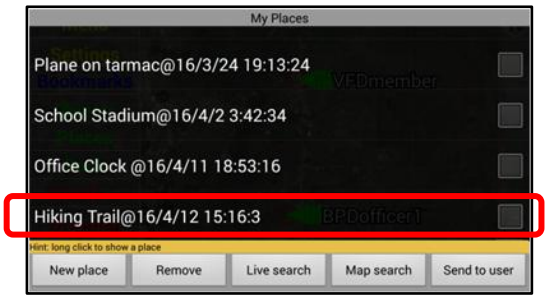
Steps to send another user a “Place” File from the Places Folder:

1. ***Assume we have created a “Place” and it is stored in the Places Folder.***
   In this example, we will send a Hiking Trail route to another user so they will know the route we are going to take.

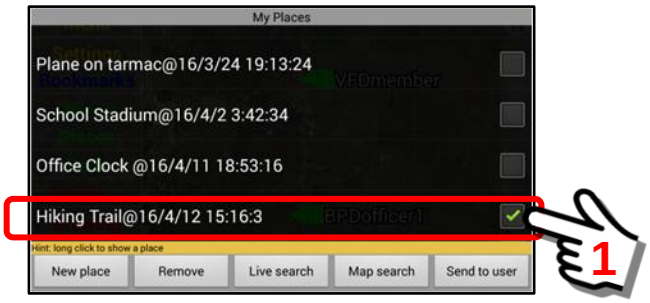
We have created and stored the drawing of our Hiking Trail route in our “My Places” Folder.

This is what it looks like when displayed on the Main Map screen.

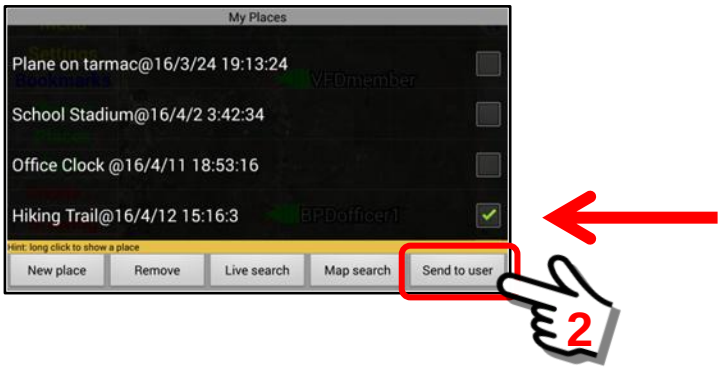
The drawing is currently stored in the “My Places” Folder as shown below.



2. ***Send the “Place” to another user.***
To send this drawing to another user, put a “checkmark” in the checkbox next to the Hiking Trail place entry.

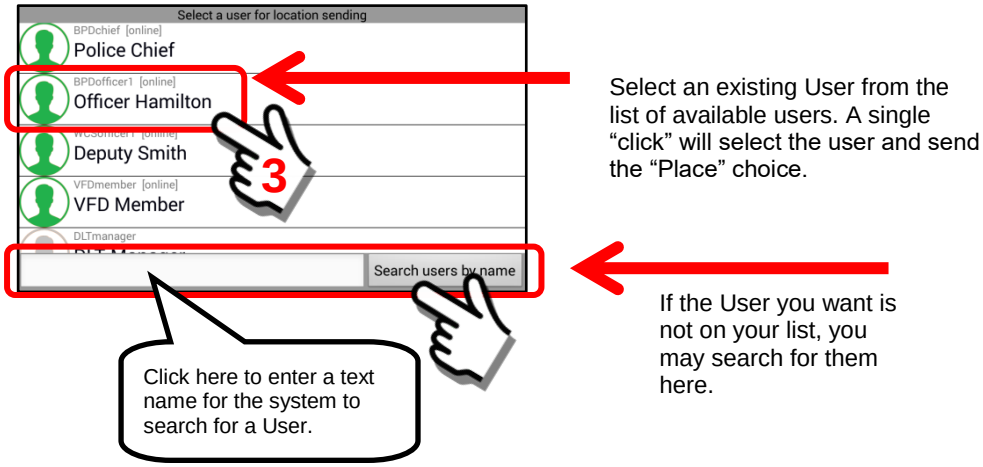


Now that we have selected the file to send, we will need to select the “User” that the drawing will be sent to. Click on the “Send to user” button.

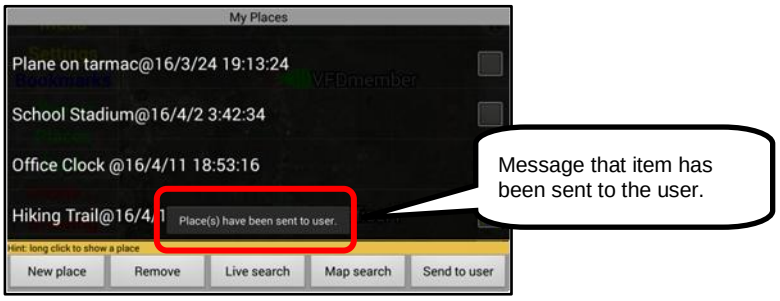


A list of Users will now appear on the screen. Scroll through the list until you find the User that you want to send the “place” to. If the user is NOT in the available listing, enter a name (part of a name) in the blank at the bottom of the screen and click on the “Search for users by name” button.

Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.



When you "click" on the User Name (ie Officer Hamilton), the drawing will be sent to the selected User. If the transfer is successful, a message will appear on the Places Panel as shown below.



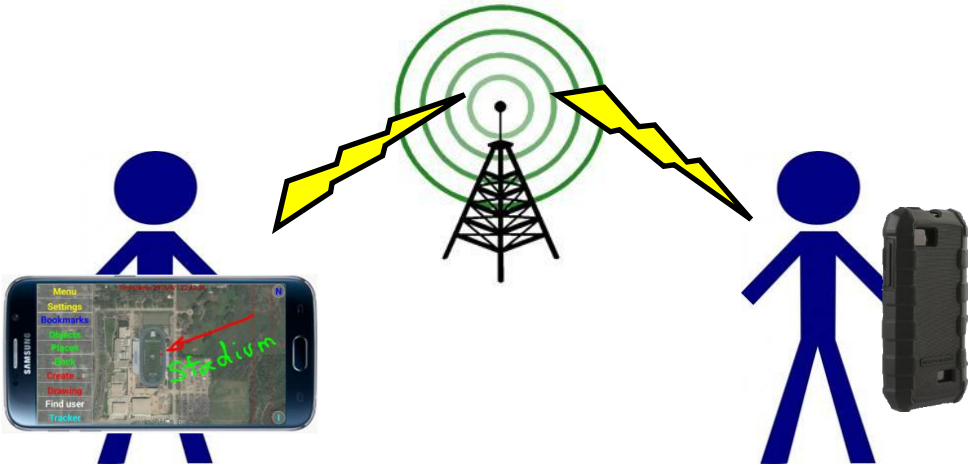
3. ***The other mobile device receives the "place" drawing data.***
The User that receives the drawing file will get a notification on the Main Map screen of their mobile device indicating that someone has sent them a file. They have the option to accept or reject the transfer.

Click "Yes" to accept the file.

13.7. Send a Drawing File (from "Content" Folder) to another user

Overview:

This feature allows one user to create a "Place" with the drawing tools and then send this "place" file to another user where it can be stored as a Bookmark in their "Bookmarks" Folder.

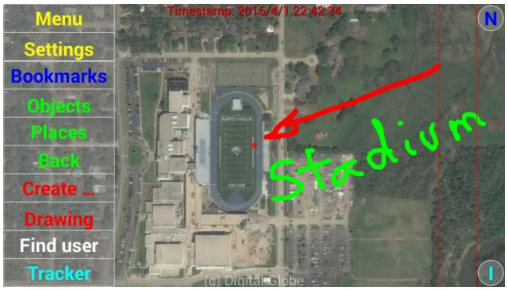


Menu Selection:

In this example we will be using the "Content" Folder located in the User Panel.

Steps to send another user a “Place” File from the Content Folder:

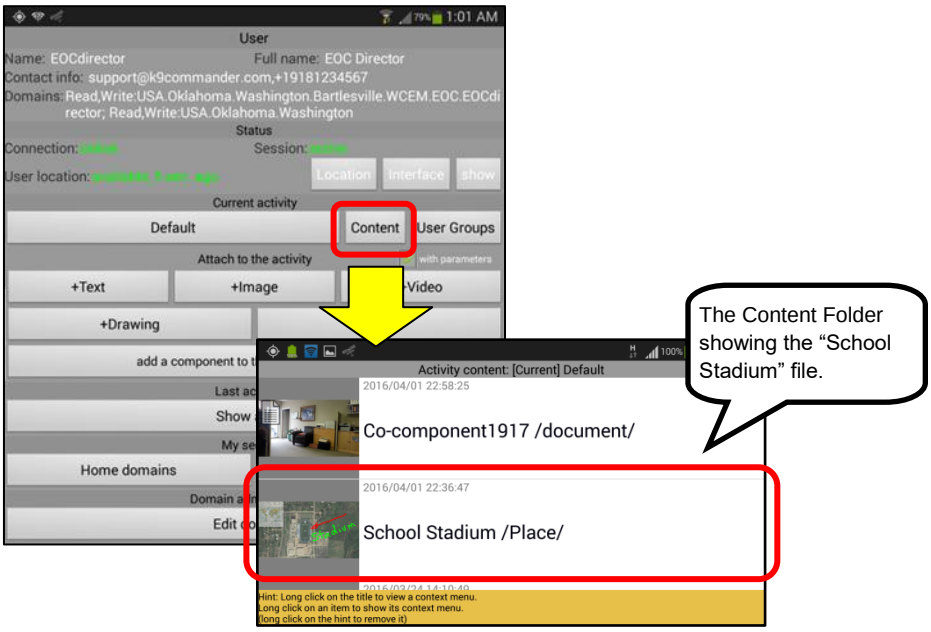
1. ***Assume we have created a “Place” and it is stored in the Content Folder.***
   In this example, we will send a picture of a sports stadium to another user so they can have a “bookmark” of the location for easy review.



We have created and stored the drawing of the Stadium location in our “Content” Folder at the User Panel.

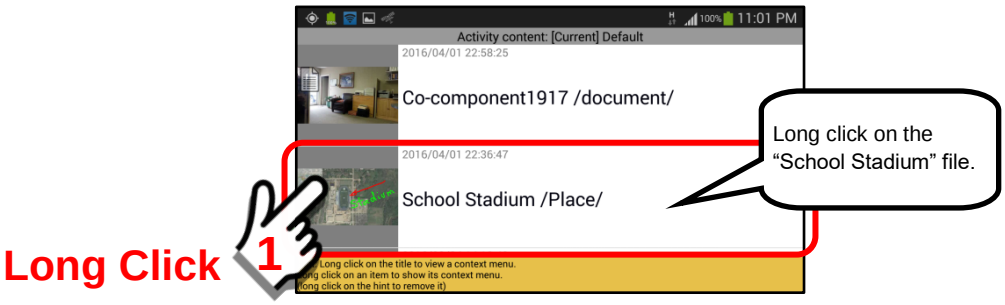
This is what it looks like when displayed on the Main Map screen.

The drawing is currently stored in the “Content” Folder as shown below.



The Content Folder showing the “School Stadium” file.

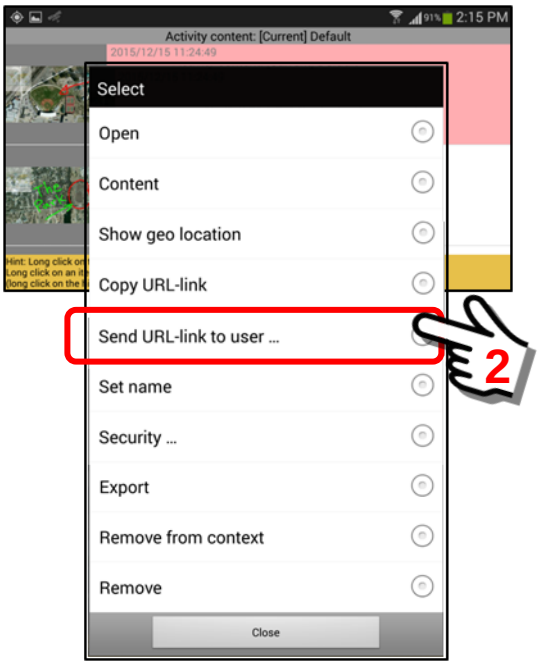
2. ***Send the “Place” to another user as a Bookmark.***
   To send this drawing to another user, perform a “long click” on the name of the place. This will open a menu of options.



Long click on the “School Stadium” file.

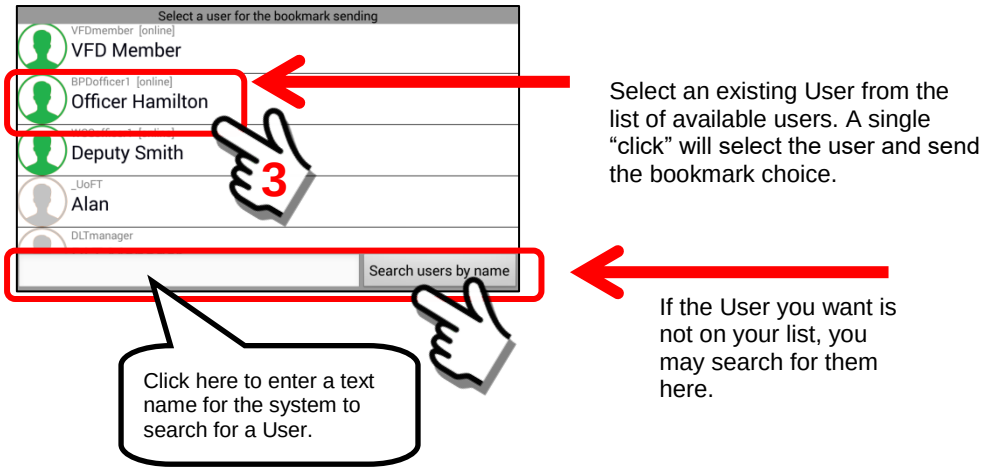
Now that we have selected the file, we must select the option “Send URL – link to user …” from the available list.

Click on the “Send URL – link to user …” button.

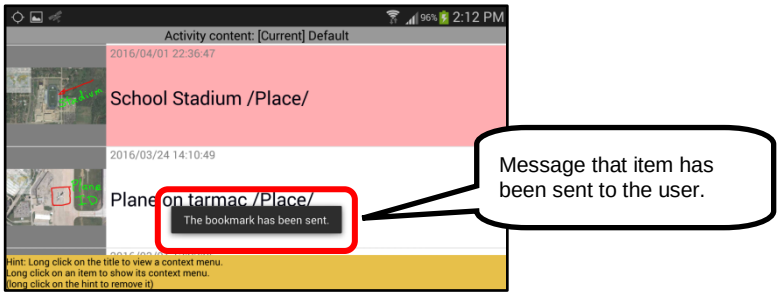


A list of Users will now appear on the screen. Scroll through the list until you find the User that you want to send the bookmark link to. If the user is NOT in the available listing, enter a name (part of a name) in the blank at the bottom of the screen and click on the “Search for users by name” button.

> **Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.**

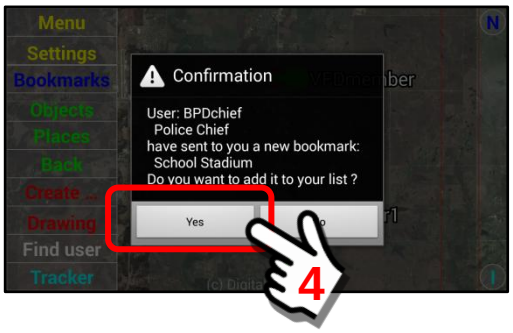


When you “click” on the User Name (ie Officer Hamilton), the drawing will be sent to the selected User as a bookmark. If the transfer is successful, a message will appear on the Places Panel as shown below.

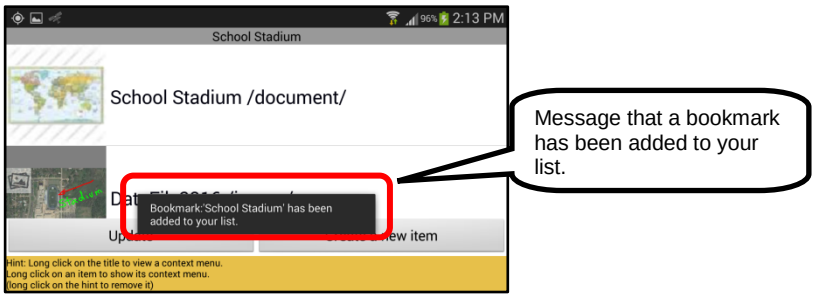


3. ***The other mobile device receives the “place” bookmark data.***
The User that receives the drawing file will get a notification on the Main Map screen of their mobile device indicating that someone has sent them a bookmark file. They have the option to accept or reject the transfer.

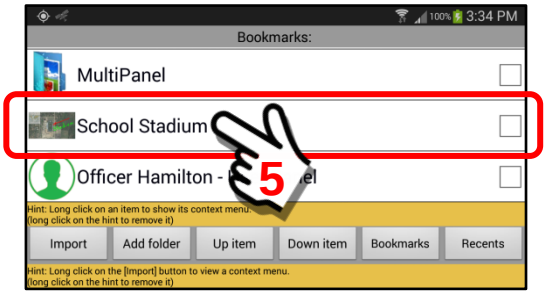
Click “Yes” to accept the bookmark.



When the user accepts the bookmark, the file is opened for review by the User. Bookmarks may contain several files. This allows the user to see the components of the bookmark.



The following screen shows the bookmark installed in the list of available bookmarks.



To test the example, click on the “School Stadium” entry to open the bookmark.

13.8. View Drawings that have been created by OTHER users

Overview:

To view drawings created by other Users it will be necessary to access the "Content" Folder of another user's mobile device. This feature will allow the sharing of content across the SentryMDU System network.

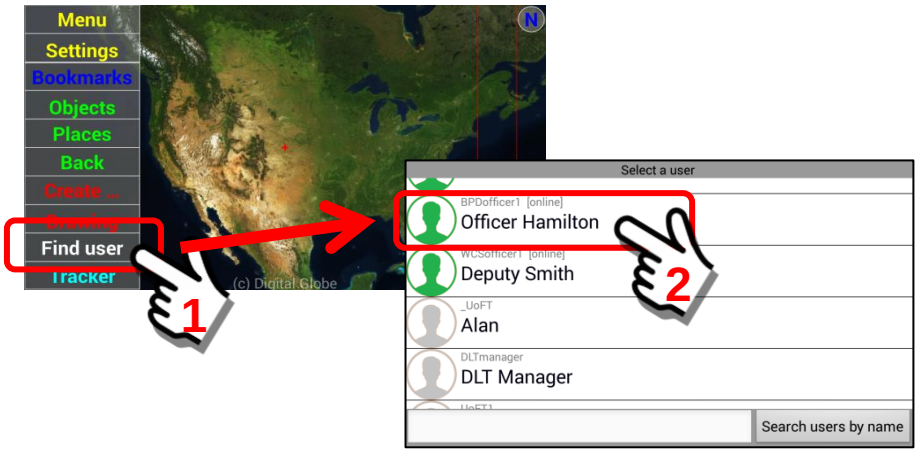
Important Note: To access other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to review the data on their device.

Menu Selection:

The "content" of another user is located on their User Panel. This example will demonstrate how to navigate to the desired user panel and retrieve the content.

Steps to access another User's content (Drawings/Places):

1. ***Find the User whose content you want to review.***
   Click on the "Find user" Button on the Main Menu. Select the user you want.



2. ***Open the User Panel for the desired user, review content.***
Click on the user name to open the User Panel.

Scroll through the content until you locate the item you are looking for. Once you have found the item, click to display.

13.9. Saving drawings in "DRAFT" mode to continue editing later.

Overview:

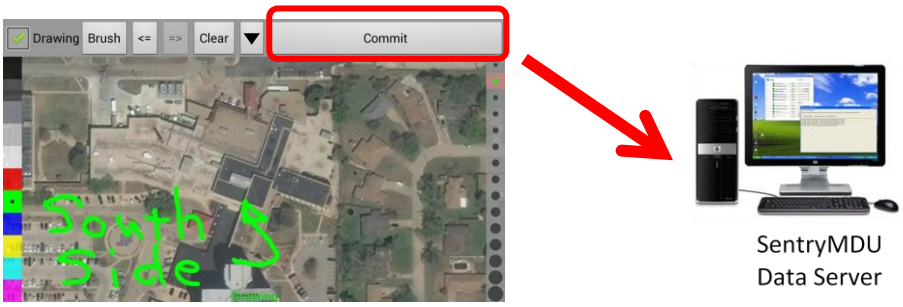
The SentryMDU "Drawing" feature has an option to save drawings in a DRAFT mode so they may be edited later. This section will describe the process to start on a drawing, save in draft mode and then continue editing again later to finish.

Drawing feature data storage concepts:

To understand the "draft" mode concept, it is important to know how and where the SentryMDU System stores drawing data.

<u>When a drawing is "Committed"</u>

When a drawing is "Committed" by clicking on the "Commit" Button at the Drawing Panel, the drawing file is sent and stored on the SentryMDU Data Server. Once sent to the Data Server the drawing file may not be "edited" (changed). However, the file may still be removed, the name changed, security options changed, etc.



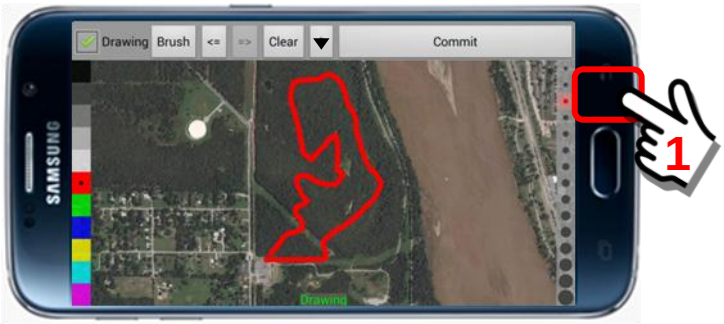
<u>When a drawing is saved for editing later</u>

When a drawing is NOT committed to the Data Server, it is stored locally on the mobile device. It is available for further editing if desired.

Steps to save a drawing in “DRAFT” mode and edit later:

1. ***Create a drawing and save in draft mode***
   In this example, we will assume we have created a drawing of a “Hiking Trail” route on a satellite view image.

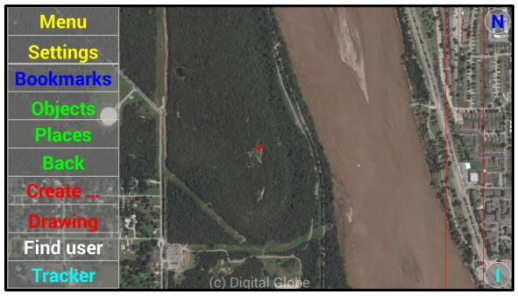
   For this example, we do NOT click on the “Commit” Button to save the drawing to the SentryMDU Data Server. Instead, we click on the “back” button on the phone.



   When we click on the “back” button, a pop-up confirmation box will appear asking us if we want to save the drawing for later?

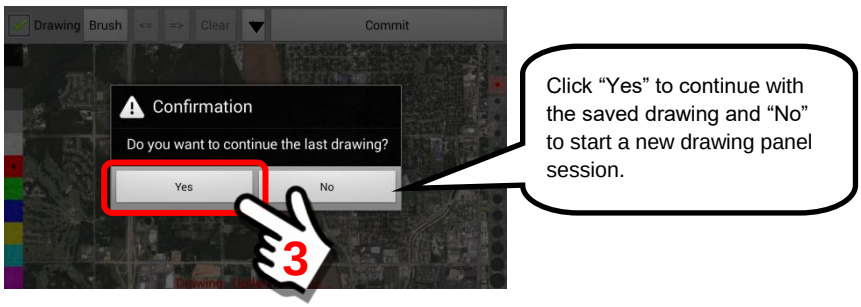
   Click “Yes” to save in draft mode.

2. ***The draft drawing is now saved on the local device.***
   The drawing is now “saved” on the local device and has not been transferred to the Data Server. The user is returned to the previous view level of the Main Map screen and may now do other things with the mobile device.

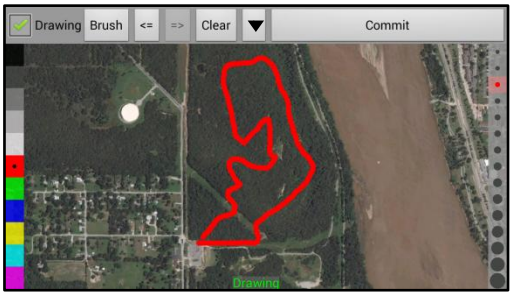


3. ***How to retrieve a drawing that is in "draft" mode.***
In our example, the mobile device has stored a "draft" copy of the last drawing that was worked on. Now, each time the Drawing Panel is opened, a pop-up box will appear asking the user if they would like to continue with the "draft" copy that is stored locally or not.

Click "Yes" to retrieve the previous draft mode drawing.



The "draft" mode drawing will now be displayed. Additional editing and changes can now be made to the document. After all changes the drawing can then be "Committed" and saved to the Data Server.



4. ***How this "draft" mode feature may be used.***
This draft mode feature has two primary applications:

<u>Use during "off-line" mode of the mobile device</u>

As described in ***Section 13.4.6 – Using the "Locate the drawing" menu option***, this use of the locally stored drawing file has application when the mobile device will be used in an "off-line" mode where internet connectivity is not available. This feature has application with the "My Tacker" feature. See **Section 9.30** when the feature is used in "offline" mode.

<u>Use when the drawing is not yet completed</u>

There are situations where a drawing is not complete but work needs to be saved and worked on again later.

14. The “Find user” Button features

14.1. Overview of the “Select a User” panel

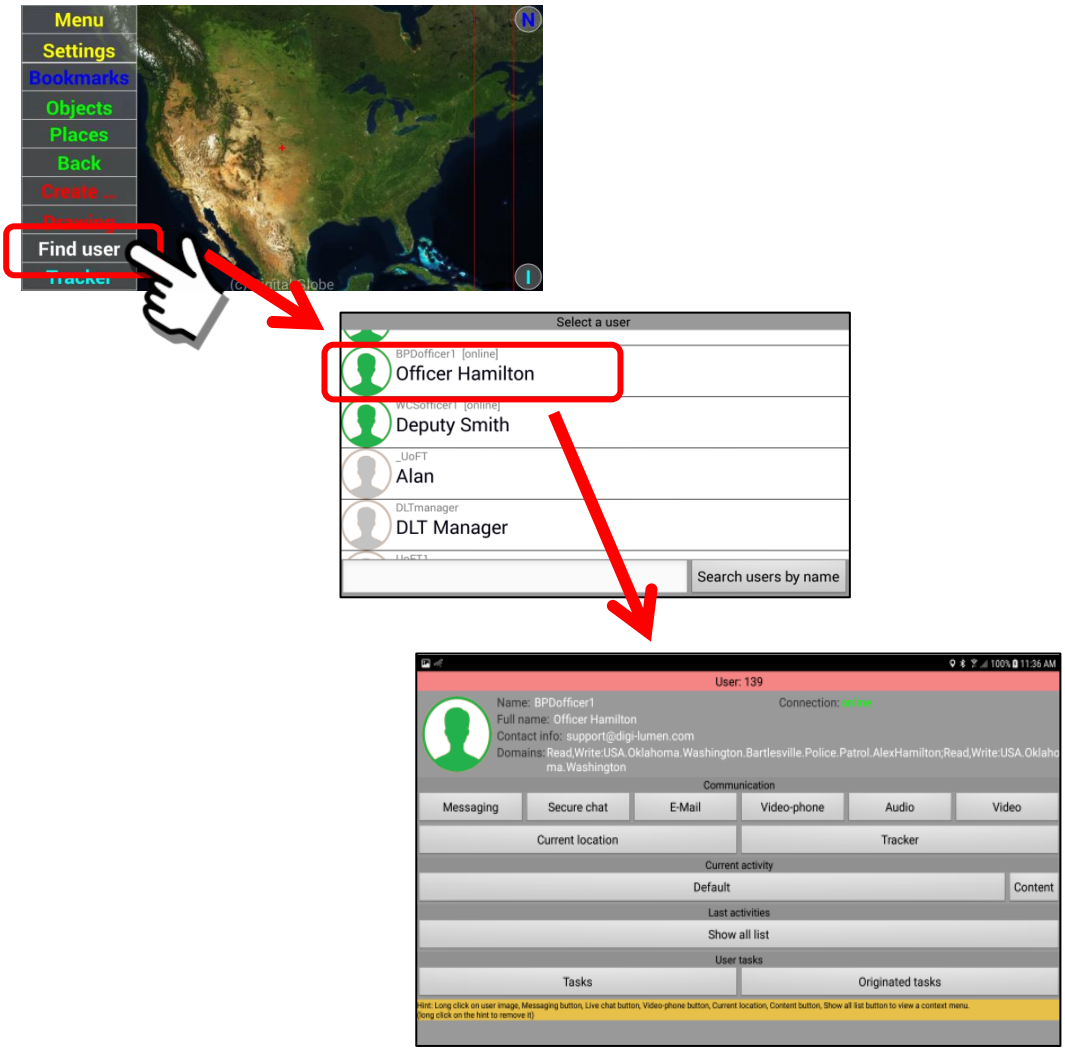
Overview:

The Find User feature allows users to search for other users in the network and then connect via text messaging, live chat or video-phone. In addition, users may view/review the stored content (audio, video, images, places) of other users (assuming permissions allow). The panel will maintain a list of frequently accessed users.

> **Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.**

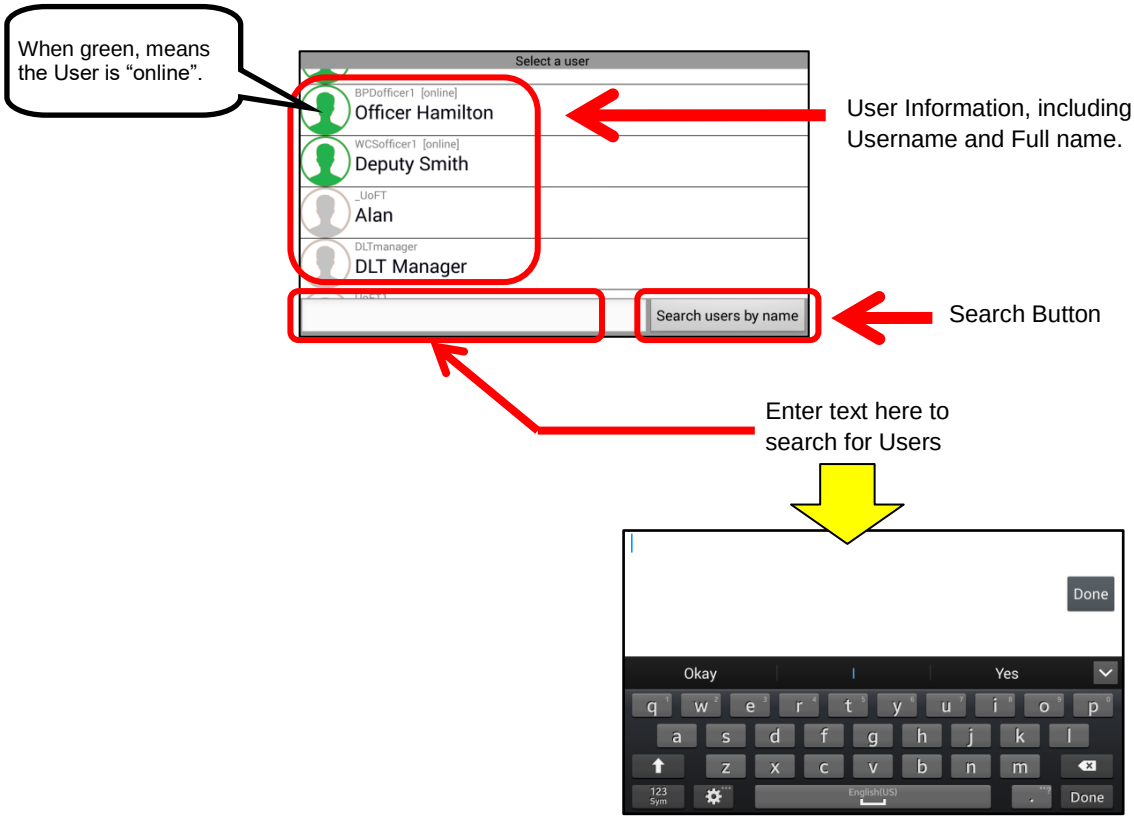
SentryMDU “Select a user” Panel:

The “Find user” Button opens a listing of available Users in the Security Domain. It also provides a means to “search” for users that may not be on the current list.



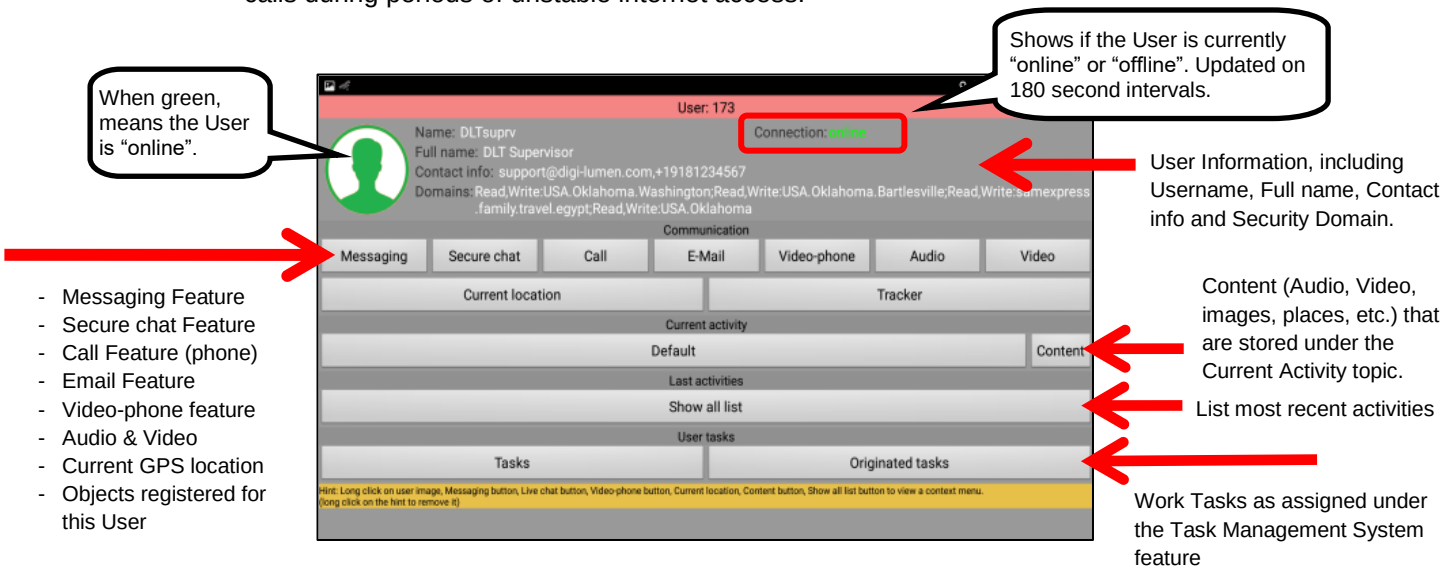
General layout of the “Select a user” Panel:

The “Select a user” Panel has a listing of other users on the network that have been saved on the mobile device for easy access. In addition, the panel has a “search” button that will search for another user by name (partial names).

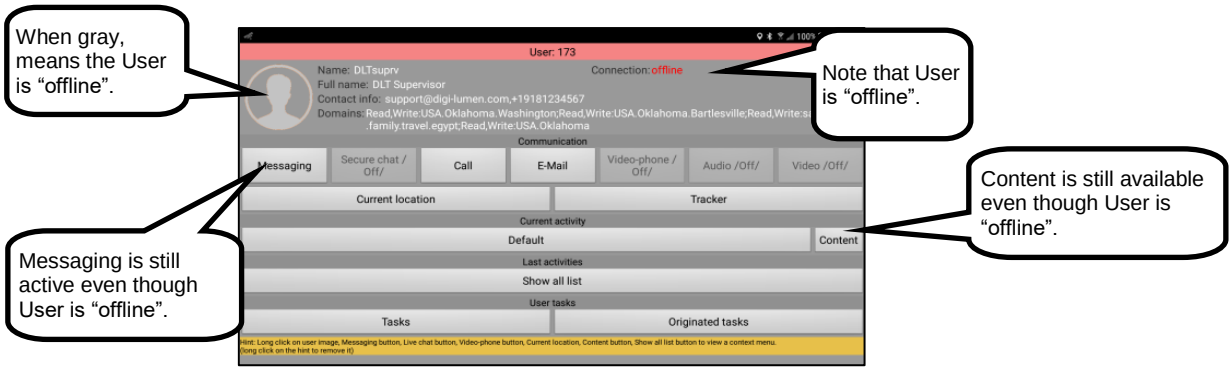


General layout of the User Data Panel:

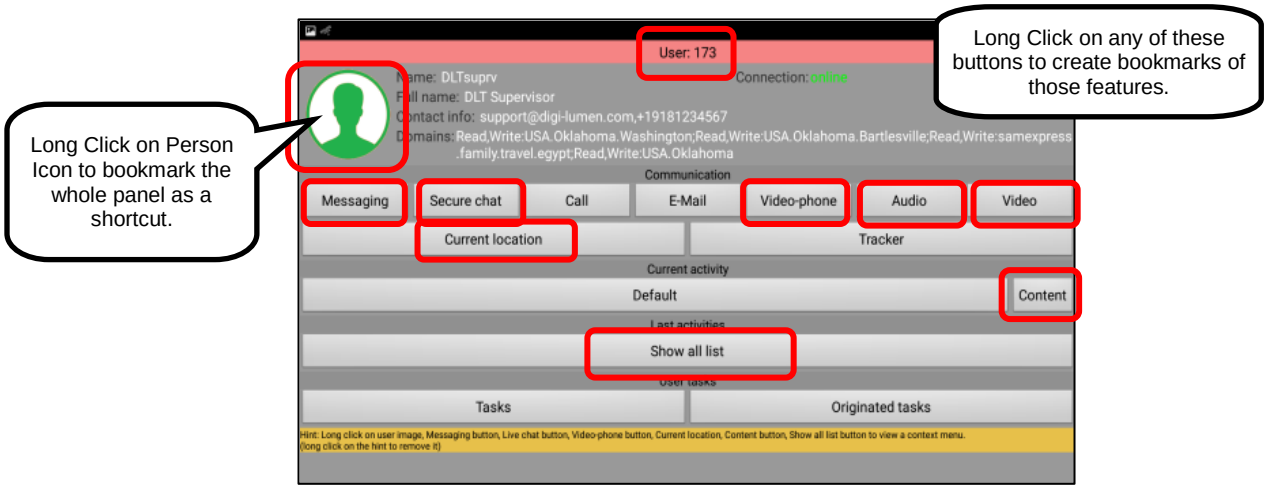
The User Data Panel has a series of buttons arranged under different topics. See the illustration below. The server connection status (online or offline) is updated once every 3 minutes (180 seconds). We do a time period between status checks to minimize server calls during periods of unstable internet access.



If a User is “offline” (not connected to the Sentry Data Server) the User Data Panel will have several grayed out sections as shown below. Note that if another user is “offline” you can still use the Messaging Feature even though they will not receive the message until they are back online. In additional, you may still review Content and Activities.



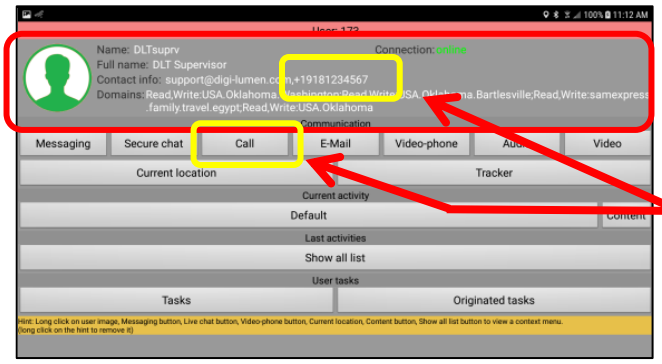
The User Data Panel has the capability to be bookmarked in a variety of locations as shown below.



Description of the button functions and features:

1. *User Information*

The User information includes the Name, Full name, Contact Info and Security Domain.



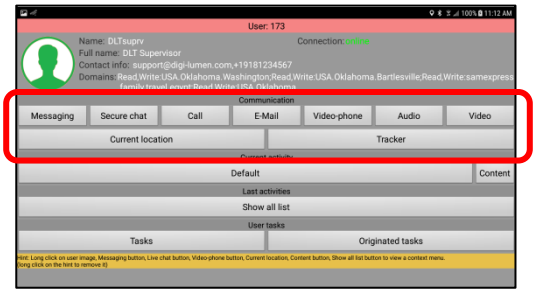
User Information Section

Note:

If a phone number was provided during initial registration a “Call” Button will also be displayed on the User Panel. Clicking on this button will place a phone call to the User.

2. *Communications*

The Communications Section of the User Data Panel has 9 feature buttons that will be described in this section.



- Messaging Feature
- Secure Chat Feature
- Call Feature (phone)
- Email Feature
- Video-phone Feature
- Audio Feature
- Video Feature
- Current GPS location
- Mobile Object Panel for this User

Messaging Feature

The Messaging Feature is similar to native “Text Messaging” on a smartphone in that the other party does not have to be “online” at the time. The Sentry MDU System will send a notification signal to the mobile device. The device will emit a “beep/tone” and display a SentryMDU Icon in the notification bar when a message is received. The messaging feature has a 10MB limit. Keep this in mind if you will be attaching “pictures” to the message.

All SentryMDU messaging is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms (such as AES). The application will automatically update/replace session encryption keys at 15 minute intervals.

The Messaging Feature may combine text entry with drawings and with pictures taken with the camera. In addition, active content (streaming video) may be embedded into text messages. Examples below will show how this is done.

Secure chat

The “Secure Chat” Feature will require that BOTH users are online. It is called “secure chat” because the Sentry MDU System will establish a “live” encrypted connection between the two devices.

Secure chat is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. The application will automatically update/replace session encryption keys at 15 minute intervals during the live chat session.

Call Feature

The Call Feature is “optional” since the button will not appear unless a phone number has been entered during registration. This feature simply uses the native “Phone App” on the mobile device to place a phone call. The phone number that will be called is the number the User entered during initial registration of the Sentry MDU system.

Email Feature

The Email Feature simply uses the native “Email App” on the mobile device to compose and send an email. The email address that will be used is the address the User entered during initial registration of the SentryMDU system.

Video Phone Feature

The “Video Phone” feature will establish an audio-video communications channel between two mobile devices. The feature will allow video from the remote device and face camera video from the local device.

Audio Feature

The Audio Button on a User’s Panel will activate the microphone on the mobile device of a remote user. You will receive an audio feed from the remote device.

Video Feature

The Video Button on a User’s Panel will activate the camera on the mobile device of a remote user. You will receive a video feed from the remote device.

Current Location Feature

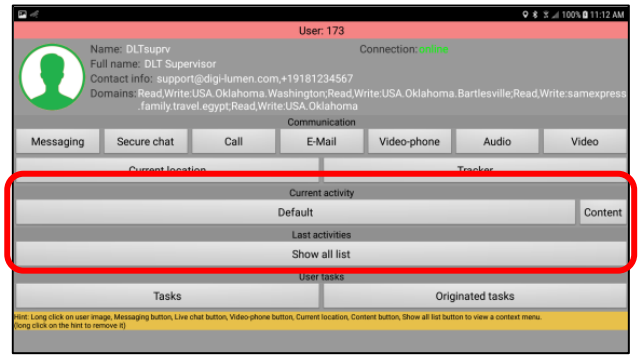
The “Current Location” Button will contact the mobile device and retrieve a new GPS reading from the sensor. This will display the current GPS location of the user selected. The main map screen will be displayed with the screen centered (red “+” mark) over the location of the user.

Tracker Feature

The “Tracker Button” opens the Mobile Object Panel for the selected remote device. The mobile object panel provides access to sensors, recorders, data archive and tracking history for other users.

3. *Current Activity and Last Activity*

This section has Category tile blocks for both the “Current” and “Last” activities and a Content button. The current activity category, marked “Default” in the example below, is where current “content” is stored. This section will review how to gain access to the content on a mobile device.

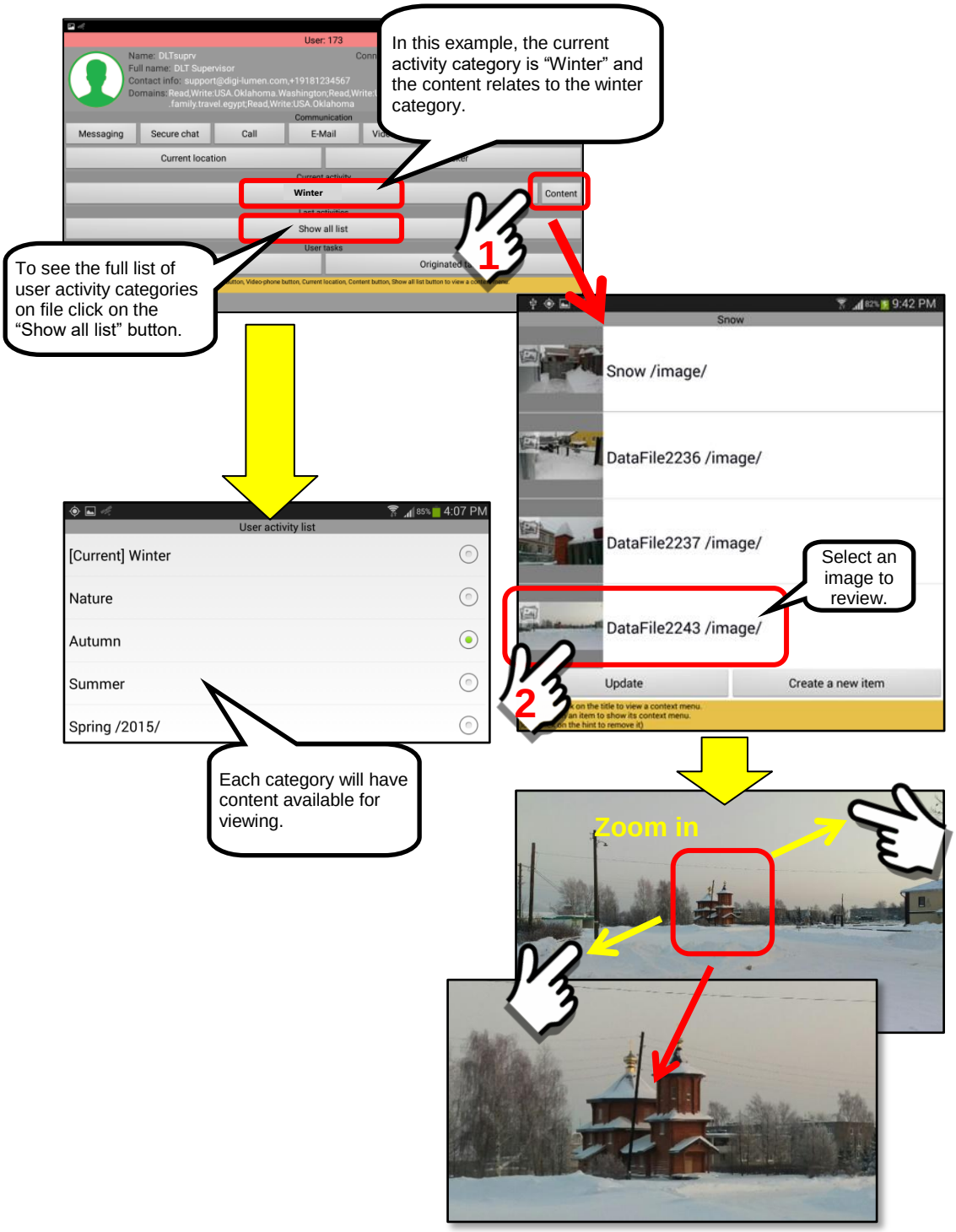


Content may include the following data types:

1. Pictures
2. Videos
3. Telemetry (GPS) data
4. Points-of-Interest
5. Audio Files
6. Places
7. Imported Data Files

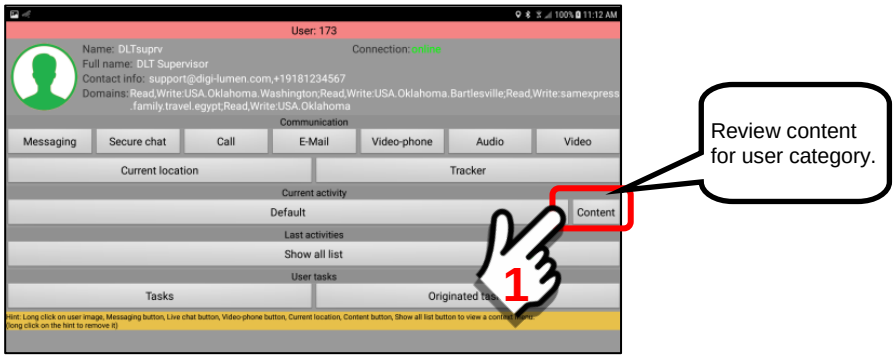
In the example above, content that is created by the User will be stored in the current activity (shown as Default). To access the content, click on the “Content” button which allows access to data within the current activity.

Users have the ability to create a variety of “Activity Categories”. In the following example, notice that the “Current activity” is shown as “Winter”. In this example, the stored content all relates to the “Winter” category.



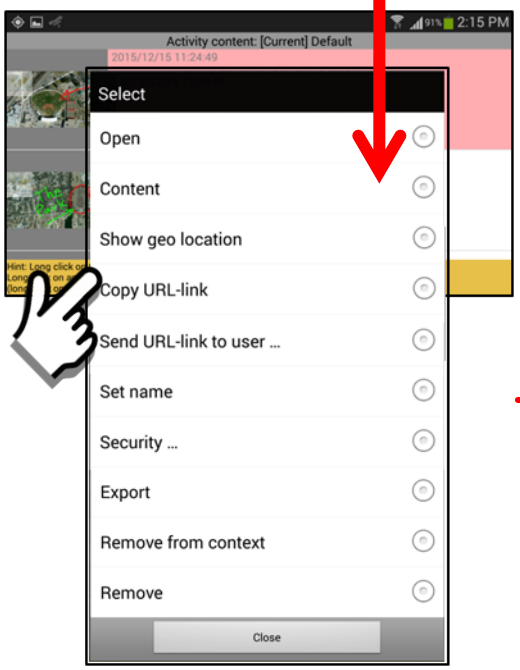
4. *Reviewing User Content*

The “Content” Button allows a user to review a variety of data stored on the mobile device (and associated Data Server). This section with outline the features and options available.



Short-Click will display the “Place”

Long-Click will display an options menu for a “Place” Item



The drop-down menus will be the same for all data types.

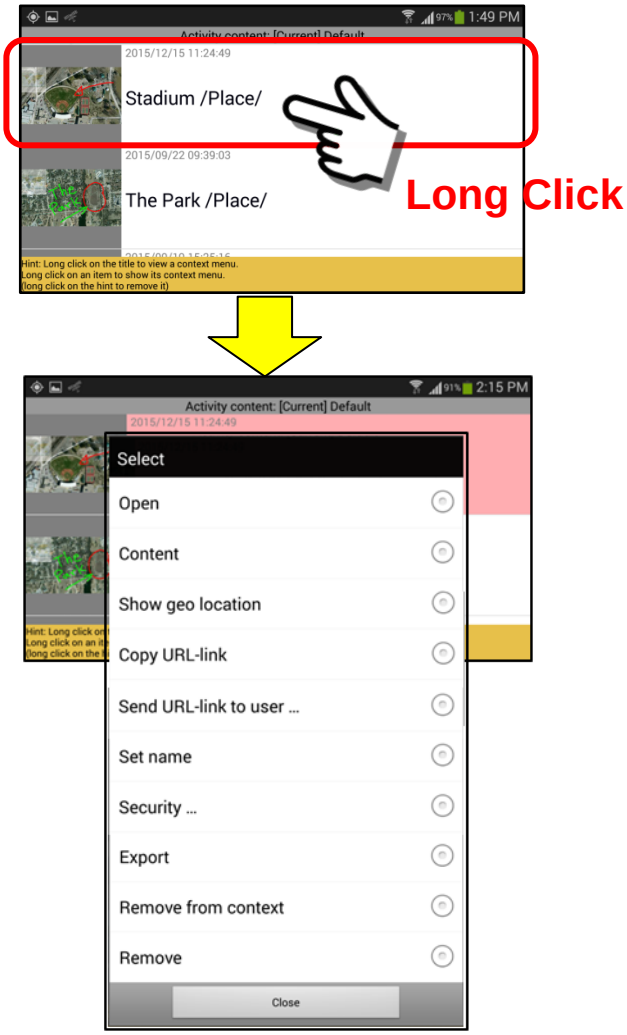
This example will show that ten (10) menu options are available to the User.

These menu options will be explained in more detail in the following sections.

5. ***User Content Menu Options – Map Item***

When a “Long-Click” is performed on User Panel content data a series of menu options are available.

The menu listing below will illustrate using a “Place” data item.



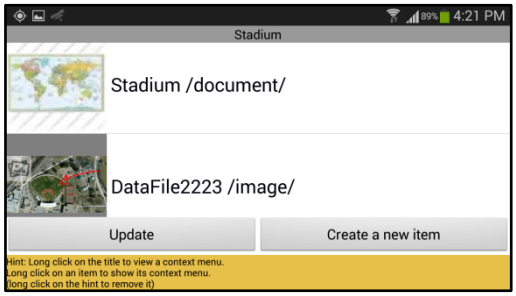
The 10 menu items are explained in detail below.

<u>Open</u>

The “Open” menu option will open the file and display the contents, In the case of our example, it will display the satellite image view of the “Place” which is a Stadium.

Content

The “Content” menu option will display the components of the data that make up the item. In the example of the Stadium, “Place” content, the Place item has two components … a document item and an image item. They are shown below.

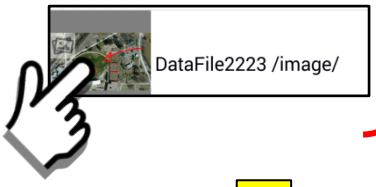


Map image of “Place” data

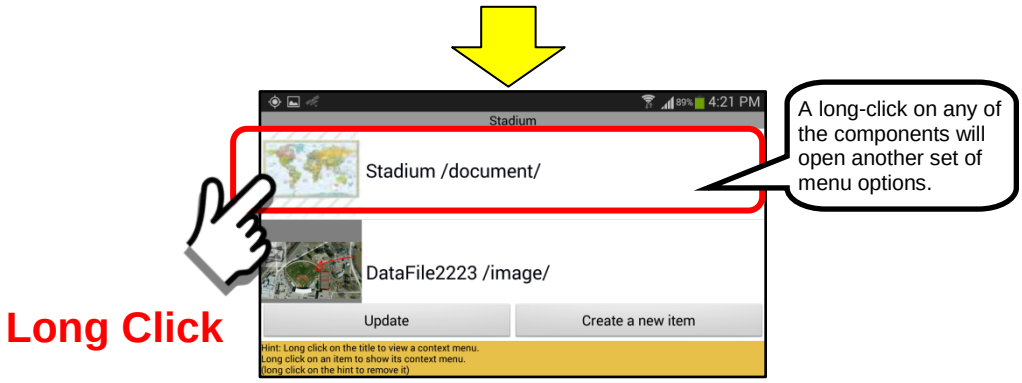
Clicking on the Stadium /document/ data will give us the “map” image of the Place item.

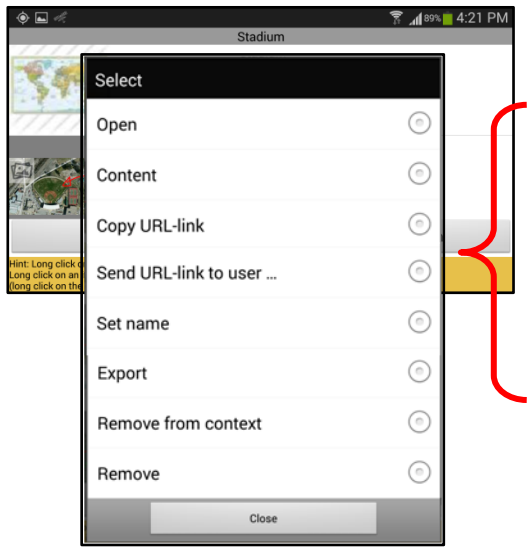
Raw picture image of “Place” location

Clicking on the DataFile2223 /image/ data will give us the raw picture/image of the Place item on the satellite image.



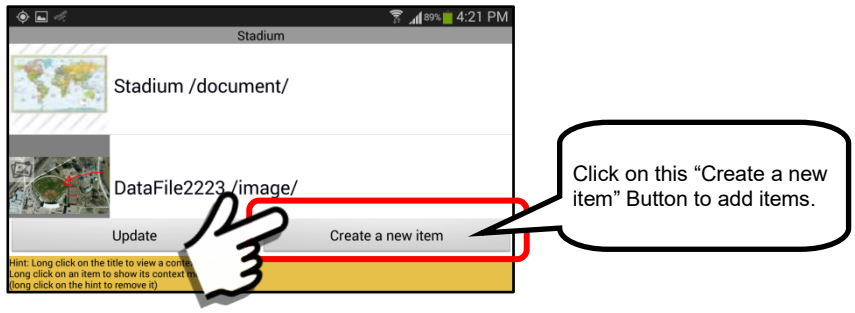
The Content menu item also allows a user to perform additional operations on the data elements. The following section will show how additional data files may be added to the existing group.

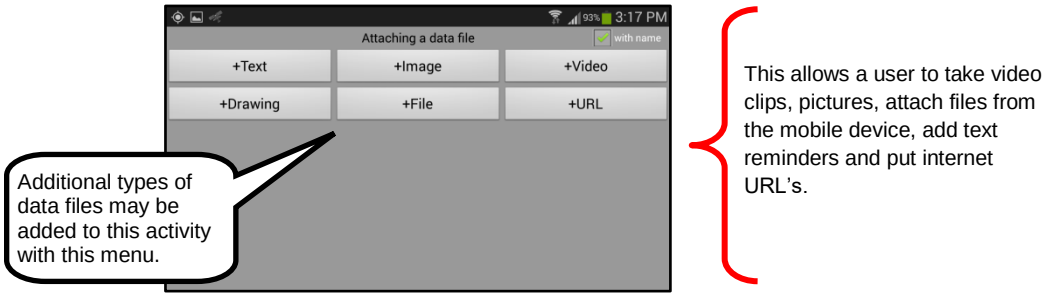




This secondary set of drop-down menus will be the same for all data types.

This example shows eight (8) menu options are available to the User.

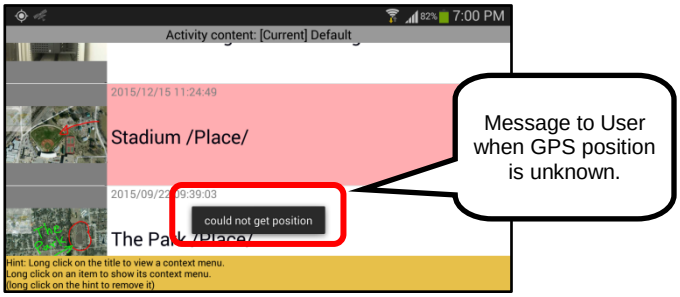




Show geo location

The “Show geo location” menu option will display a map view (Satellite image) of the location of where the data was gathered. The GPS location will be derived from a geo-tagged picture or video. If the GPS data is not available a message will be provided indicating that no position is known.

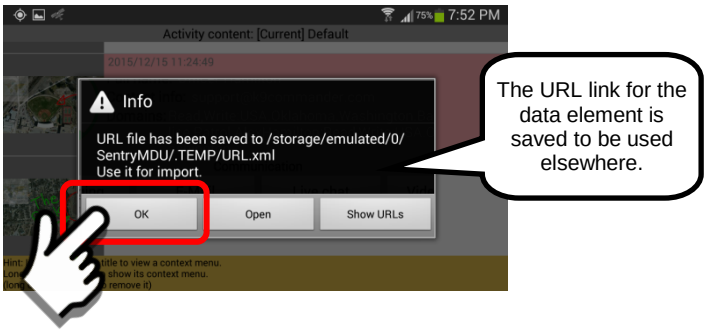
If a GPS location is NOT available for the data item, a message will say “could not get position”.



Copy URL – link

The “Copy URL – link” menu option is provided to allow the user to “bookmark” data from their own content or other user content.

Once the URL link is copied into the TEMP file system on the local device, it may be imported and saved.



Send URL – link to user …

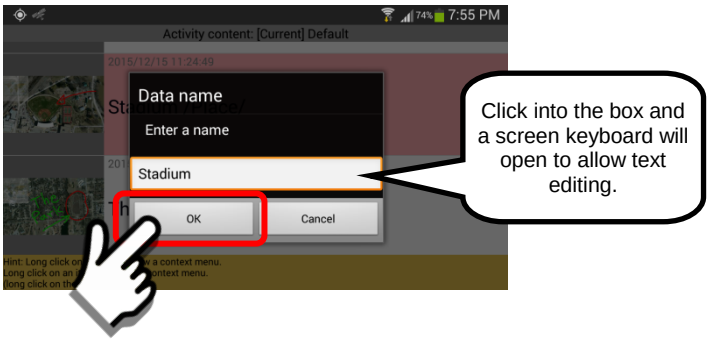
The “Send URL – link to user” menu option is provided to allow a user to send another user a bookmark link to this specific data.

Select a User to send the information to.

Set name

The “Set name” menu option allows a user to change the name that is attached to a particular data element. When we click on the “Set name” menu option, we are presented with a data entry box to edit/change the name.

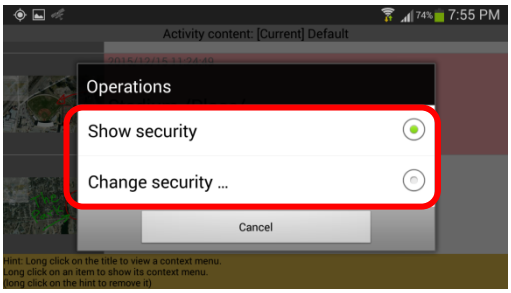
When the changes are complete, click “OK” to finish the operation.



Security …

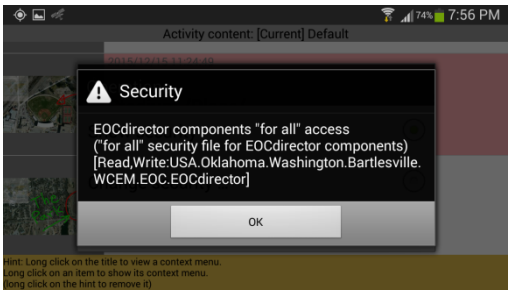
The “Security …” menu option allows a user to view and change the security settings and access for the information stored on the mobile devices.

On clicking the “Security” menu option, another set of menus provide options to show or change the security settings.



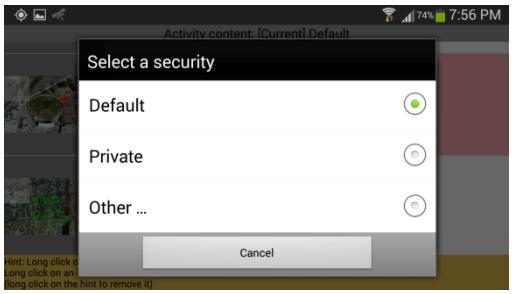
Clicking on the “Show security” option of the Operations menu gives us the security settings of the data element under review.

Show security



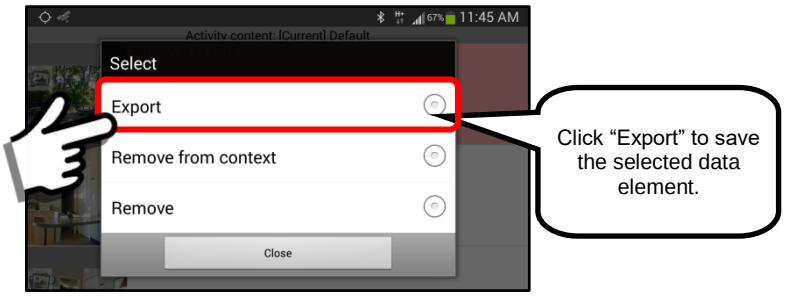
To change the security settings from default (everyone) to private, click on the menu options provided here.

Change security ...

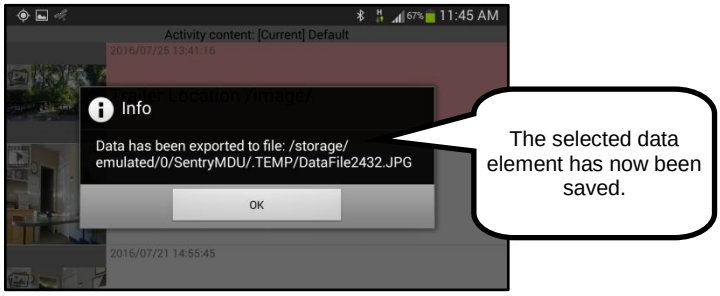


Export

The “Export” menu option allows a user to save a copy of the file in a “temporary” folder location where it is available to send to other users or transfer from the mobile device to another device.



The data element will be saved in the “TEMP” folder. Note that the data element (in this example, an image) has been saved using the DataFile2432.jpg name as assigned by the SentryMDU System. From the TEMP Folder the file may be renamed and moved to other systems.

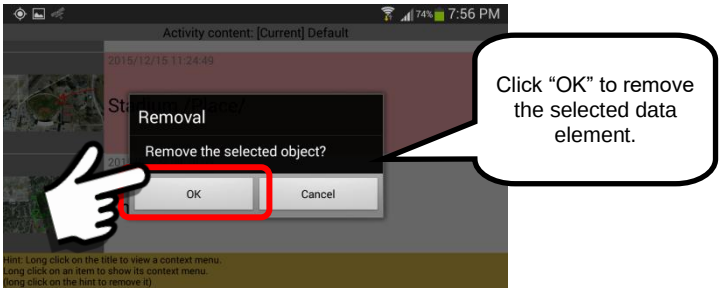


Remove from context

This menu option removes content from the .CONTEXT folder on the local device. This situation will occur if a user downloads a long video and plays it. This video would be stored in a memory “cache” on the local device. If some time later, the user wanted to view the video again, it would not be downloaded again because it is already resident on the device. It would be played immediately because it is stored locally. This option allows a user to “remove” the video from the local device memory if they do not want to view it any more.

Remove

The “Remove” menu option allows a user the ability to remove data elements no longer needed.

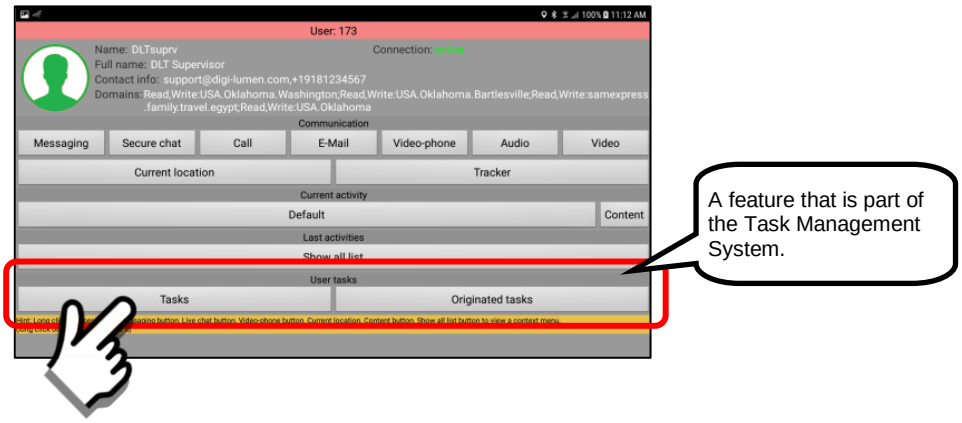


Important Note: The removal of content data from the mobile device may or may not remove the same data from the Sentry MDU Data Server if it is also stored there. This will depend on the specific configuration settings of your organization. See your System Administrator for your company policies.

6. *User Tasks*

The “User Tasks” buttons are part of the SentryMDU Task Management System. This requires access to the Sentry MDU Desktop client application to properly use this feature.

These buttons provide a listing of Tasks for the User.



14.2. Search for Users by Name

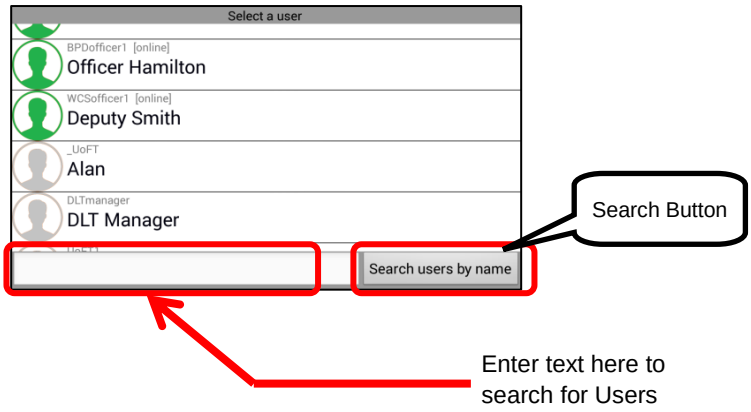
Overview:

The “Find User” section allows a user to search for another user on the network by entering a “name” or a partial name in a search box. This section will illustrate how to use the search function.

User panel search function:

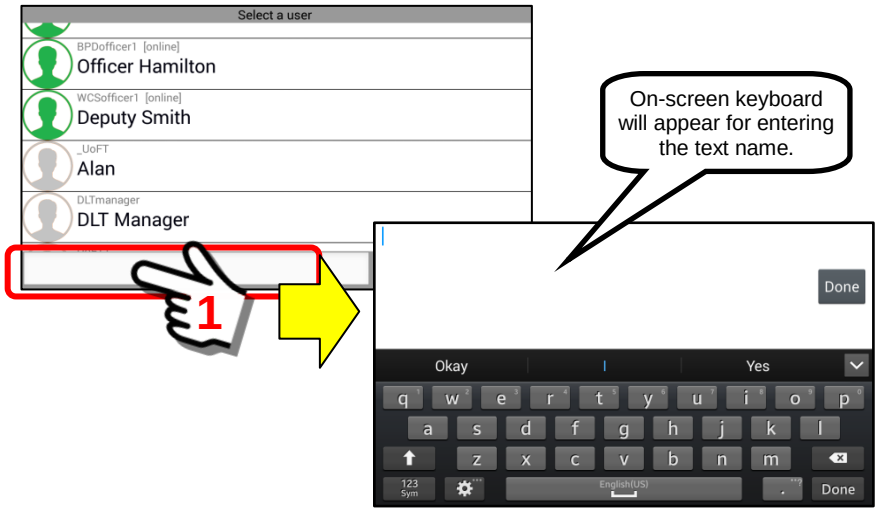
The “Select a user” panel has a search function for other users on the network.

Important Note: To search for other users, they must be in the same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to send data to their device.

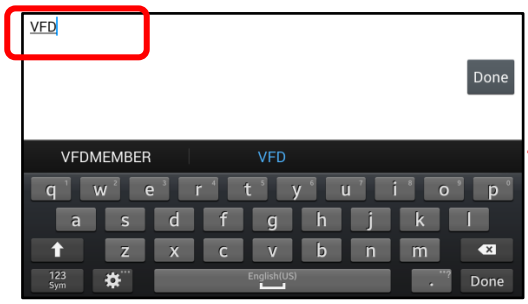


Steps to use the search feature on the “Select a user” panel:

1. ***Entering a name (or partial name) into the search box.***
   Click on the search “box” to get a pop-up keyboard for entering the text.



In this example, we will search for the User = VFDmember on the network (and we have security privileges to access this user). We do not need to enter the complete name, so we enter “VFD” (abbreviation for Volunteer Fire Department). The system will now look for all users where the letters “VFD” are in the name.

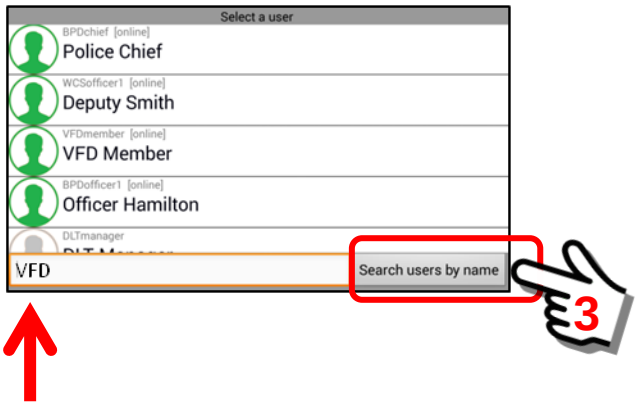


Although we show “VFD” in all capital letters … the search is NOT case sensitive … we could have used “vfd”.

If we click “Done” the system will immediately search. However, if we click the “back” button on the phone, we will return to the search panel and can see that the “VFD” text entry is in the search box.

Click the “back” button on the phone to close the keyboard and transfer the text to the search box.

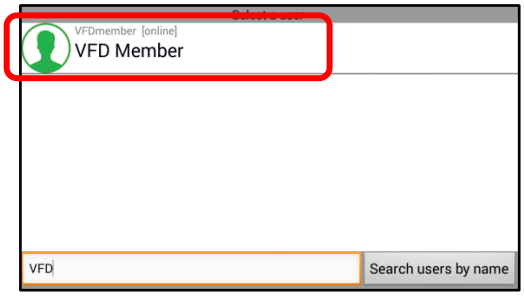
The “VFD” text is now transferred to the search box.
Click the “Search users by name” button to start the search process.



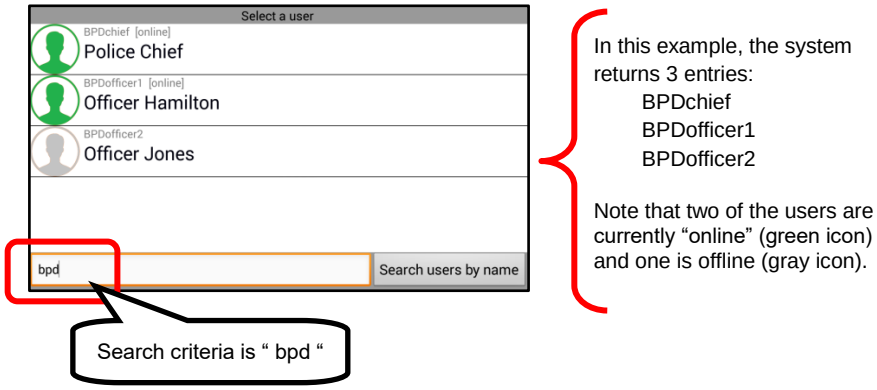
The SentryMDU System will search for a user and retrieve all that match the search criteria.

> **Important Note: If you have searched for a user, and they do NOT appear on the list (and you KNOW they should be there) perhaps you do not have adequate security credentials to access that user. Please check with your organizations Systems Administrator.**

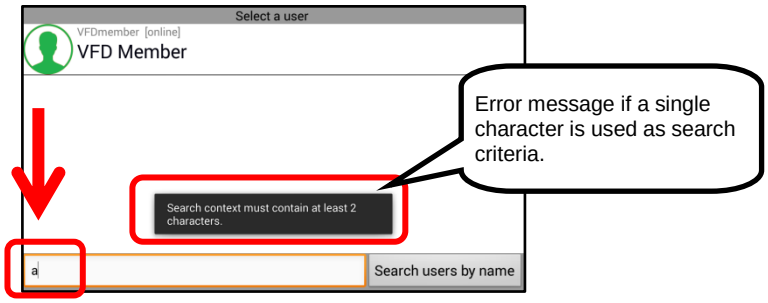
In this example, the search returned one user as shown below.



In another example, we have 3 users that all have “BPD” as part of their username. The search returns 3 entries.



2. ***Search criteria must include at least 2 characters.***
   The “Select a user” panel search function requires at least a 2-character data entry for search criteria. As shown in the example below, if only a single character is entered, an error message will result.

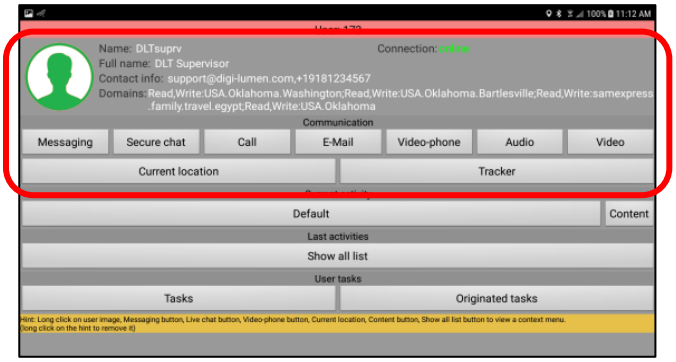


14.3. Access to the selected user information panel

14.3.1. Communications options available

Overview:

The User Panel has a communications section that has 9 feature buttons. This section will review the use of these features.



- Messaging Feature
- Secure Chat Feature
- Call Feature
- Email Feature
- Video-phone feature
- Audio Feature
- Video Feature
- Current GPS location
- Mobile Object Panel for this User

Description of the button functions and features:

Messaging Feature

The Messaging Feature is similar to native “Text Messaging” on a smartphone in that the other party does not have to be “online” at the time. The Sentry MDU System will send a notification signal to the mobile device. The device will emit a “beep/tone” and display a SentryMDU Icon in the notification bar when a message is received. The messaging feature has a 10MB limit. Keep this in mind if you will be attaching “pictures” to the message.

All SentryMDU messaging is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms (such as AES). The application will automatically update/replace session encryption keys at 15 minute intervals.

The Messaging Feature may combine text entry with drawings and with pictures taken with the camera. In addition, active content (streaming video) may be embedded into text messages. Examples below will show how this is done.

Secure chat

The “Secure Chat” Feature will require that BOTH users are online. It is called “secure chat” because the Sentry MDU System will establish a “live” encrypted connection between the two devices.

Secure chat is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms. The application will automatically update/replace session encryption keys at 15 minute intervals during the live chat session.

Call Feature

The Call Feature is “optional” since the button will not appear unless a phone number has been entered during registration. This feature simply uses the native “Phone App” on the mobile device to place a phone call. The phone number that will be called is the number the User entered during initial registration of the Sentry MDU system.

Email Feature

The Email Feature simply uses the native “Email App” on the mobile device to compose and send an email. The email address that will be used is the address the User entered during initial registration of the SentryMDU system.

Video Phone Feature

The “Video Phone” feature will establish an audio-video communications channel between two mobile devices. The feature will allow video from the remote device and face camera video from the local device.

Audio Feature

The Audio Button on a User’s Panel will activate the microphone on the mobile device of a remote user. You will receive an audio feed from the remote device.

Video Feature

The Video Button on a User’s Panel will activate the camera on the mobile device of a remote user. You will receive a video feed from the remote device.

Current Location Feature

The “Current Location” Button will contact the mobile device and retrieve a new GPS reading from the sensor. This will display the current GPS location of the user selected. The main map screen will be displayed with the screen centered (red “+” mark) over the location of the user.

Tracker Feature

The “Tracker Button” opens the Mobile Object Panel for the selected remote device. The mobile object panel provides access to sensors, recorders, data archive and tracking history for other users.

14.3.2. Messaging Button (secure encrypted messaging)

Overview:

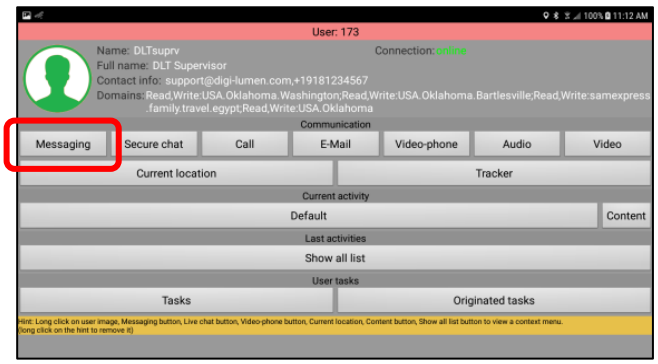
This section will describe the Messaging Feature that is contained in the User Panel. Example screens and configuration will be provided.

The Messaging Feature is similar to native “Text Messaging” on a smartphone in that the other party does not have to be “online” at the time. The Sentry MDU System will send a notification signal to the remote mobile device. The device will emit a “beep/tone” and display a SentryMDU Icon in the notification bar when a message is received. The messaging feature has a 10MB limit. Keep this in mind if you will be attaching “pictures” to the message.

All SentryMDU messaging is secured using end-to-end Diffie-Hellman (DH) as a method of exchanging cryptography keys for use in symmetric encryption algorithms (such as AES). The application will automatically update/replace session encryption keys at 15 minute intervals.

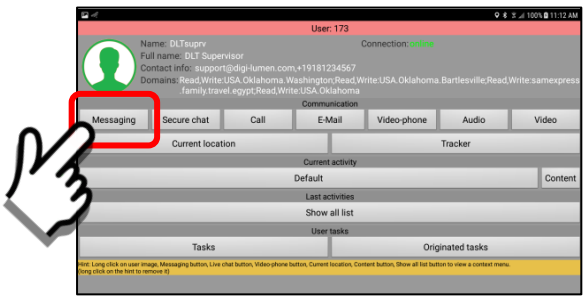
General layout of the User Panel:

The User Panel as shown below. The Messaging Button is located on the upper left side of the Panel.

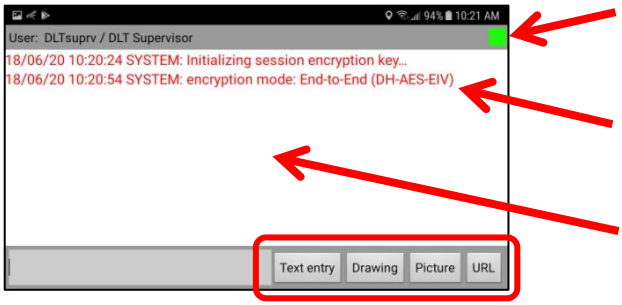


Steps to implement Messaging:

1. ***Launching the Messaging Feature.***
   To launch the Messaging Feature, click on the Messaging Button. In this example we have selected the user DLTsuprv to send a message to … we open the User Panel for this user.



The messaging panel for the selected User will open. The panel will immediately begin initializing the encryption protocol in order to exchange cryptography keys between the two devices.



If the block is GREEN this indicates that this User is "online" and receiving text messages.

Notification that encryption for the "session" is being initialized.

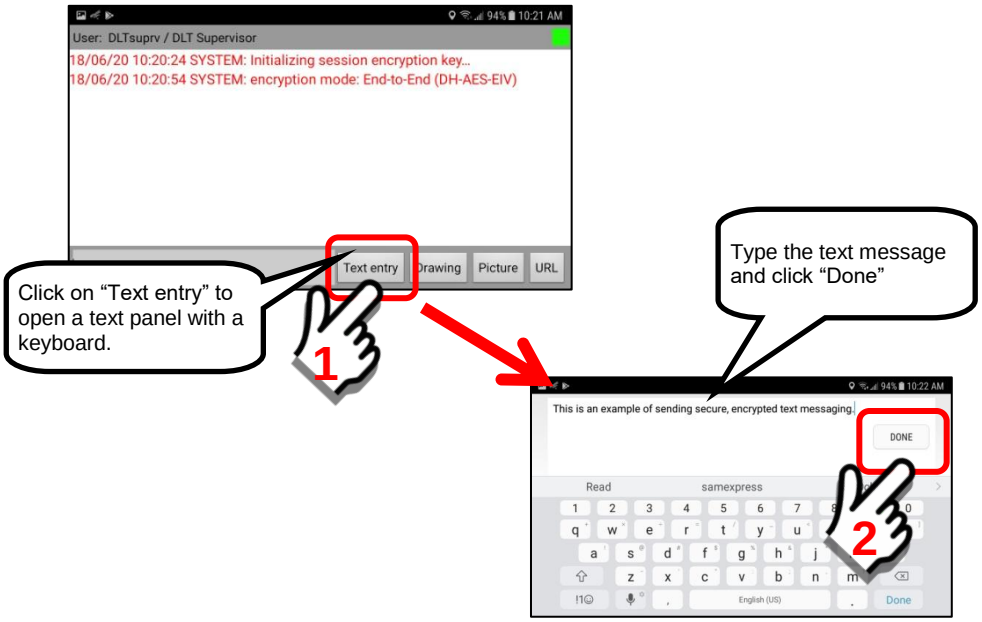
Panel where text messaging is displayed

Clicking on the Messaging Feature opens a panel with 4 buttons in the lower right hand corner.

1. Text Entry
2. Drawing
3. Picture
4. URL

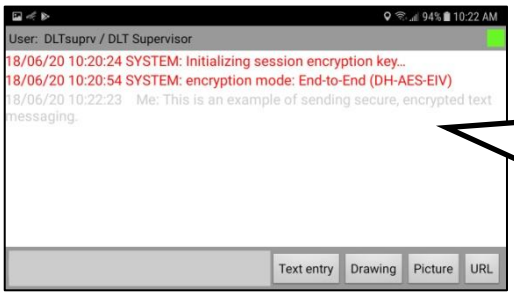
The Messaging Feature may combine text entry with drawings and with pictures taken with the camera. In addition, active content (streaming audio-video) from internal and external sources may be embedded into text messages.
Examples below will show how this is done.

2. ***Making text entries.***
To begin making "text" entries, click on the "Text entry" Button.

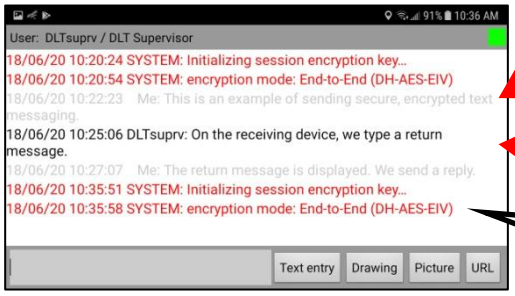


Text will be transferred to the Messaging Panel. Note that the text entry will have the following information displayed:

Date: 18/06/20 … format yy/mm/dd (year / month / day)
Time: 10:22:23 … format hh:mm:ss (hour : minutes : seconds)
User: Me …….. since YOU are the User sending the message



Text messages are displayed here. The text messages YOU type, shown as "Me" will be displayed in "gray" text and the text you receive will be in black bold text.



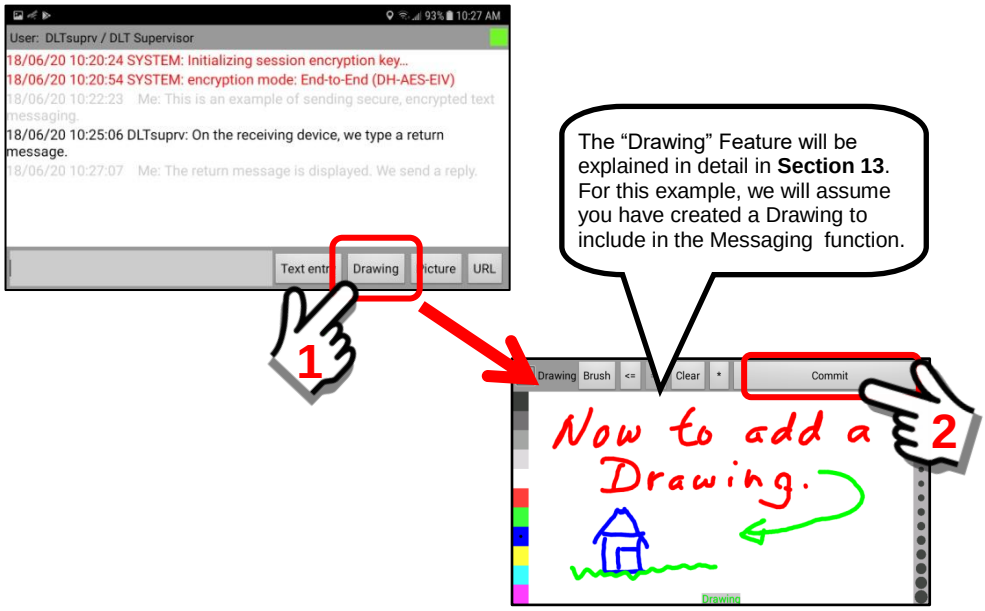
Message in "gray" is from YOU to the other person.

Message in "black" is from the other person to YOU.

After 15 minutes, another DH encryption key exchange occurs

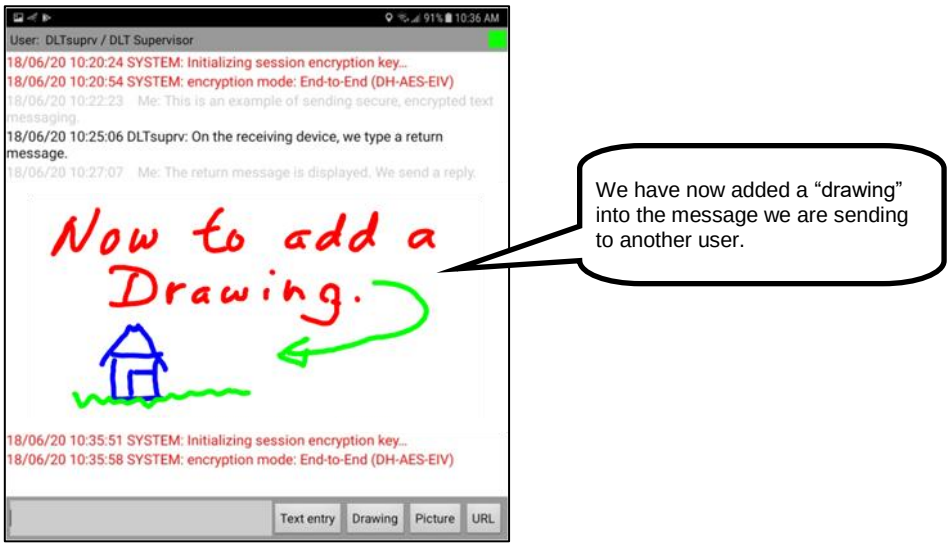
3. *Add a DRAWING to the messaging panel.*

In addition to making "text" entries, we may also add freehand drawings to the secure messaging panel. To add a drawing, click on the Drawing Button, create the drawing, click "Commit" when finished.

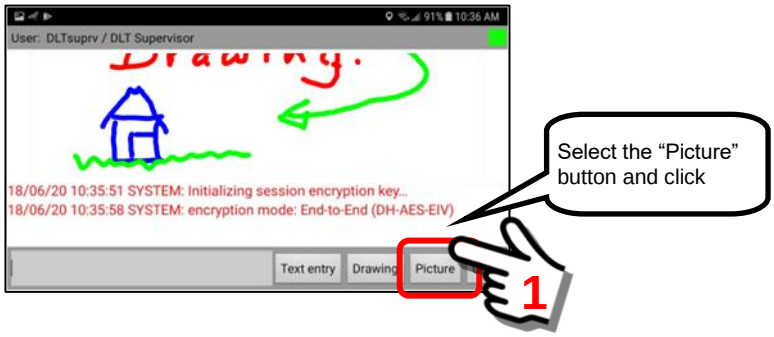


The "Drawing" Feature will be explained in detail in **Section 13**. For this example, we will assume you have created a Drawing to include in the Messaging function.

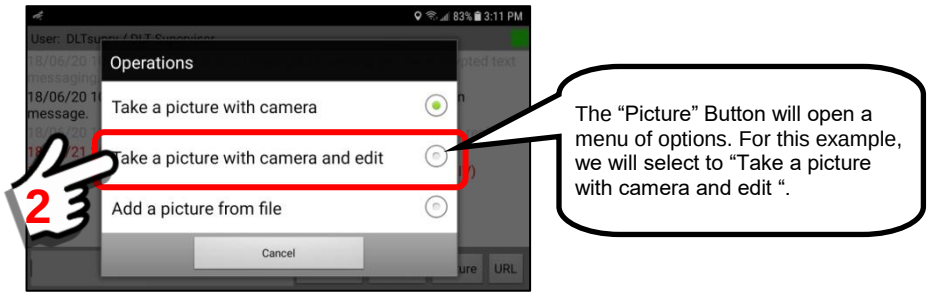
The drawing will now be inserted into the Messaging Panel and sent to the other user. An example of a DRAWING added to a text messaging panel is shown below.



4. ***Add PICTURES to the messaging panel.***
We will now add a "Picture" to the messaging exercise. We will take a picture with the camera and then "draw" on the picture to highlight an area. Note that the Messaging Feature has a 10MB limit.



Selecting the "Picture" Button opens a pop-up menu of operations. For this example, we will take a picture and then edit it.

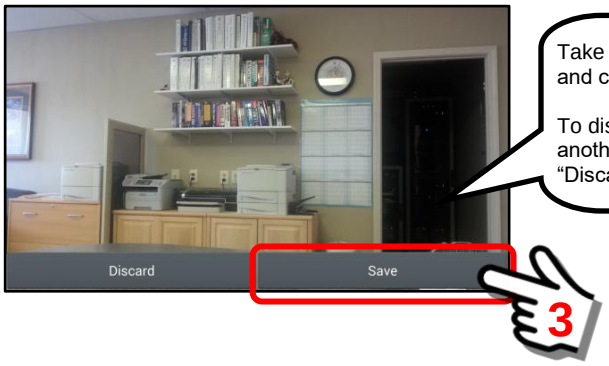


The device will change to “camera mode” and you will have the ability to snap a “picture”. In this example, we are taking a picture of an Office setting.

Take a picture with the Camera on the mobile device.

Since the Messaging Feature has a 10MB limit, make sure that you do not send a picture that exceeds this limit.

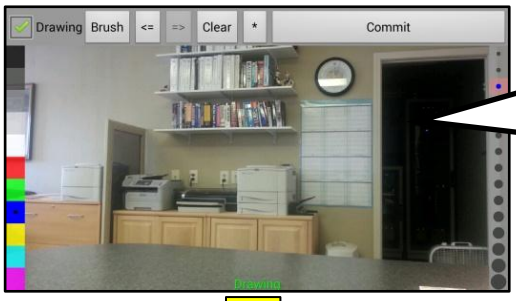
Save the camera snapshot.



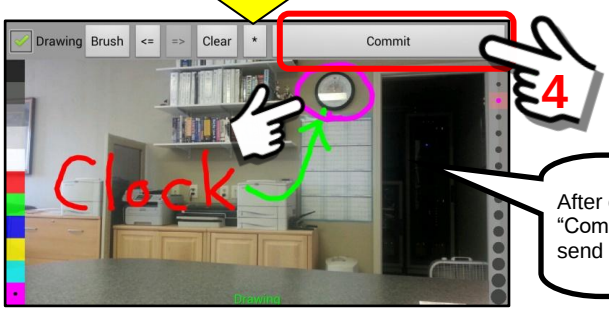
Take a picture with the camera and click on the “Save” Button.

To discard this picture and take another one … click on the “Discard” Button.

Since we selected “***Take a picture with camera and edit***” the picture will now be automatically inserted into the Drawing Feature Application. We may now draw on the picture canvas and make notes, as shown below.



Since our Menu Option was to take a picture and “edit”, we are now at the Drawing Panel that will enable editing the picture.



After editing the picture, click on “Commit” to save the picture and send it to the Messaging Panel.

We have now added BOTH a Drawing and Picture to a text messaging panel.

This is an example of what the messaging panel would look like.

The picture is now included in the Message sent to another user.

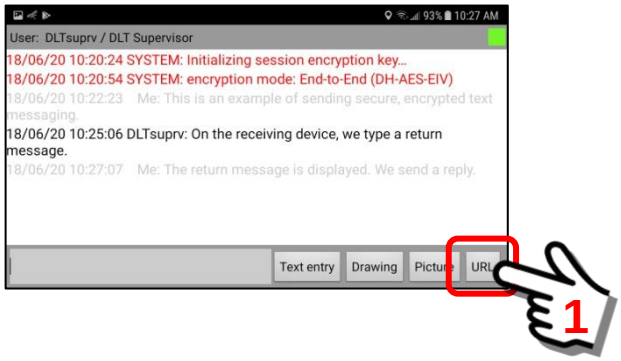
5. ***Add a URL to the messaging panel.***
The Messaging Feature has the ability to add URLs to the message panel. These can be both internal and external URLs (websites and streaming services). When sent (via messaging) to another User, they can simply "click" on the link and it will access the URL. They may also "save" this URL as a Bookmark in their list to access later.

This example will illustrate how to add a URL from an external music streaming broadcast website.

In this example, we will use the same two users as above.

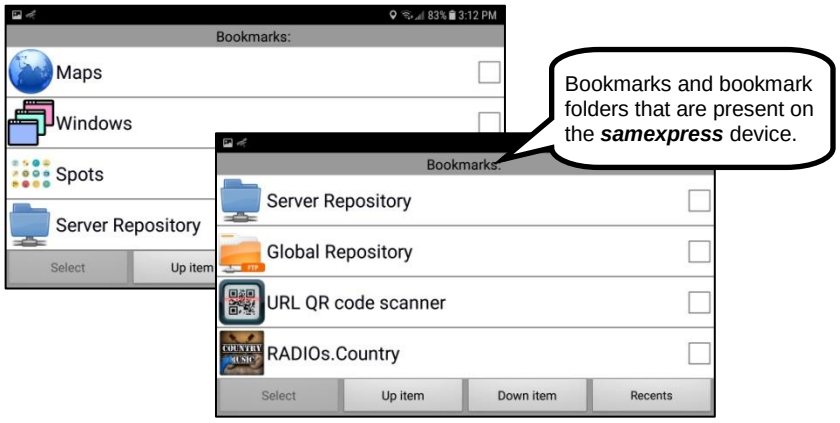
User #1: **samexpress**
User #2: **DLTsuprv**

Click on the URL Button (messaging panel for ***DLTsuprv*** on ***samexpress*** device).

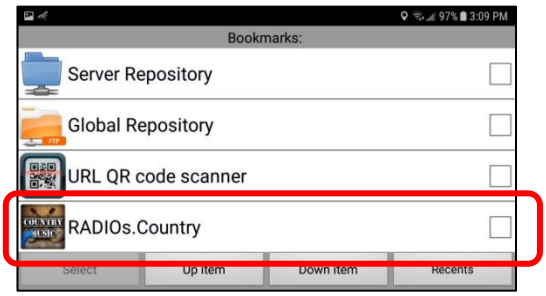


The URL Button will open the Bookmarks Folder that is stored on the device. This will provide a listing of available URLs that may be copied into the Messaging Panel.

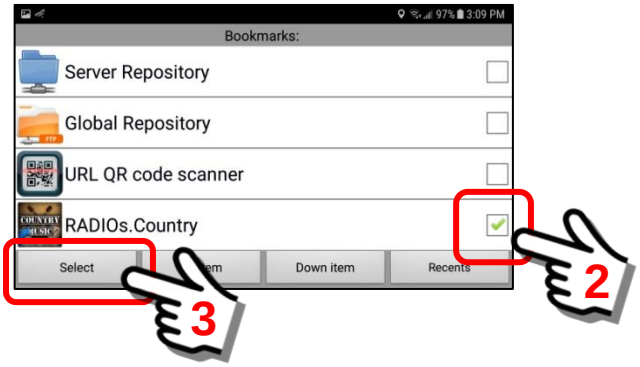
Bookmarks list on the ***samexpress*** device.



In this example, we will select the **RADIOs Country** bookmark URL from the available list.

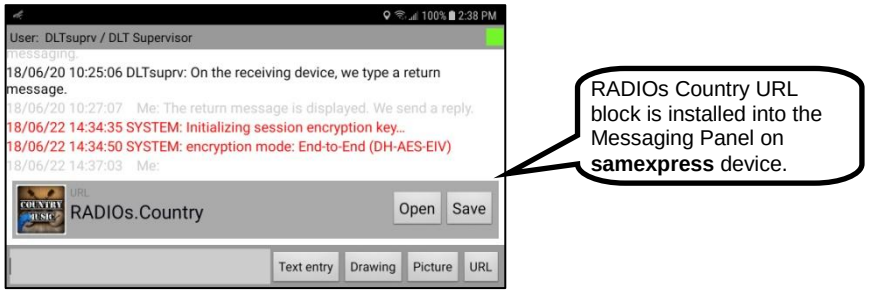


To select the **RADIOs Country** bookmark, put a “checkmark” in the checkbox and click the select button.



When the URL is selected, the system will now install the URL onto the Messaging Panel, as shown below.

Sam Express User Device



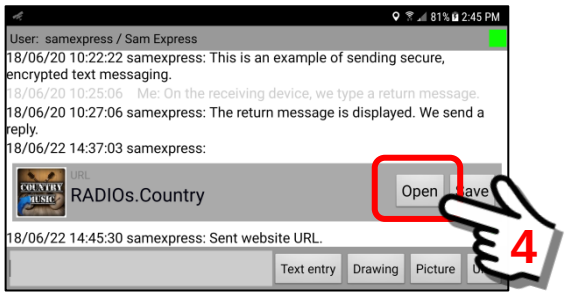
The **RADIOs Country** URL block will now appear on the ***DLTsuprv*** mobile device messaging panel.

DLT Supervisor User Device

When the URL block is displayed on the ***DLTsuprv*** device, the user has 3 options:

1. Do nothing, leave it with no action.
2. “Save” the URL to his Bookmark Folder
3. “Open” the URL to launch the application

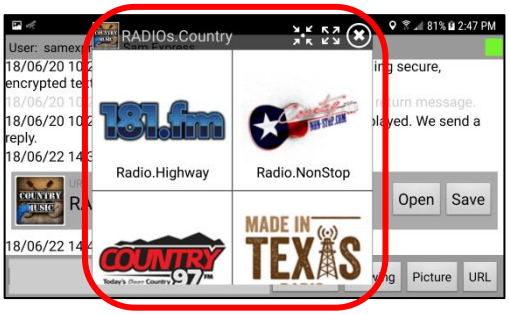
In this example, the user **DLTsuprv** will “launch” (Open) the URL. Click on the “Open” Button.



When “opened”, the system will launch the URL into a floating window on the mobile device. As with all floating windows, it may be moved about the screen, resized and minimized to the Notification Bar (see **Section 9.13** for more details on Floating Windows).

In this example, the RADIOs Country URL floating window is comprised of 4 separate URLs of music streaming radio stations.

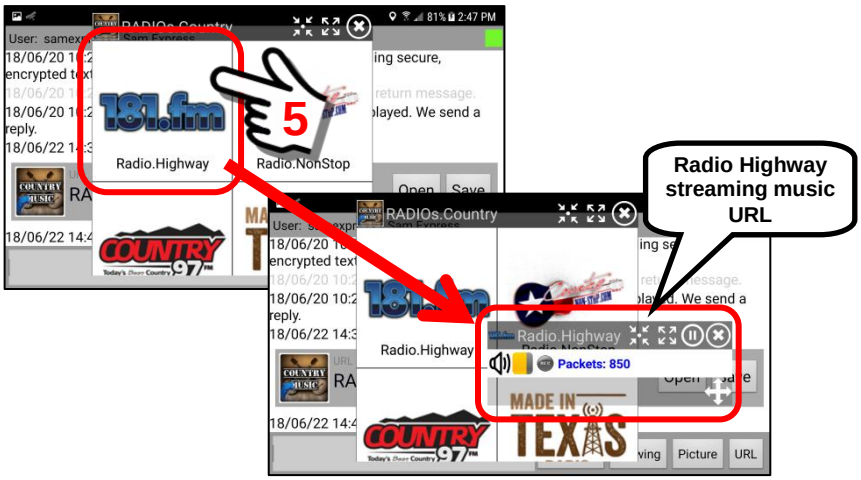
It would display as shown below:



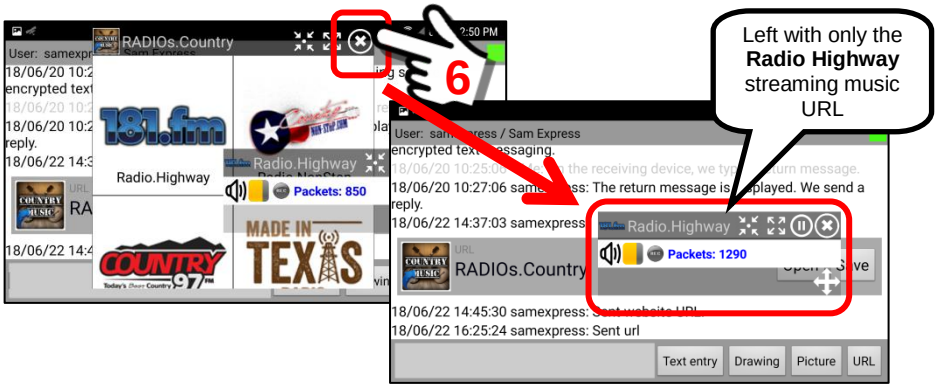
Floating window as an overlay onto the Messaging Panel.

Messaging Panel is still “active” while the floating window is also active.

In this example, we click on the **Radio Highway** streaming music URL. It will open ANOTHER floating window, as shown below.

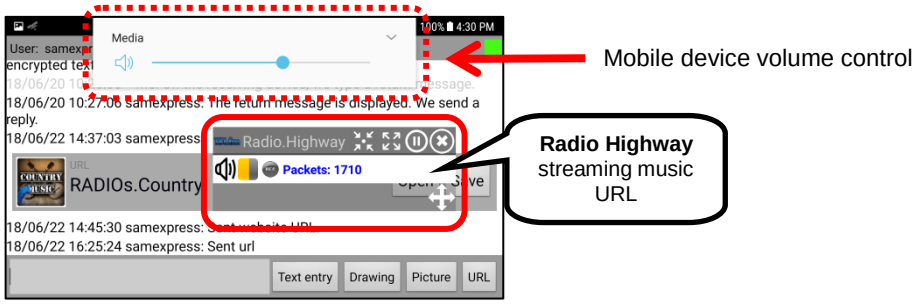


As explain earlier, we can now CLOSE the **RADIOs Country** URL block. Click on the **X** to close the floating window.



The **Radio Highway** streaming music URL is now playing the music through the speakers on the mobile device. A user may adjust the volume using the standard volume controls on the mobile device.

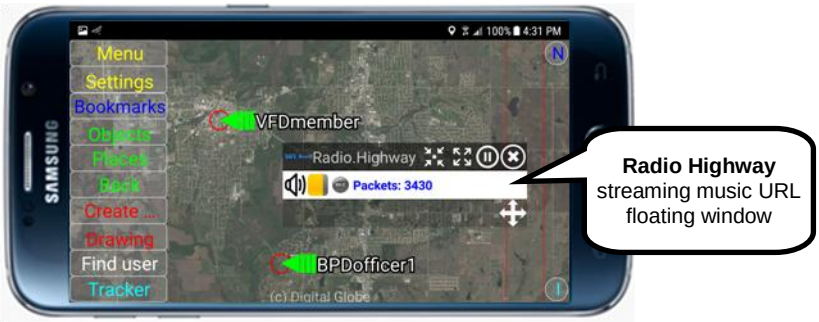
This feature is illustrated below.



Once the User (DLTsuprv) is finished with the Messaging Panel, it may be “closed” using the **Back Button** on the mobile device.

Since the **Radio Highway** streaming music URL is launched in a Floating Window, it remains on “top” of other screens. As the Messaging Panel is closed, the SentryMDU App returns to the Main Map Screen.

Note that the Floating Window is now an “overlay” on the Main Map Screen.



14.3.3. Secure Chat Button (secure encrypted chat)

Overview:

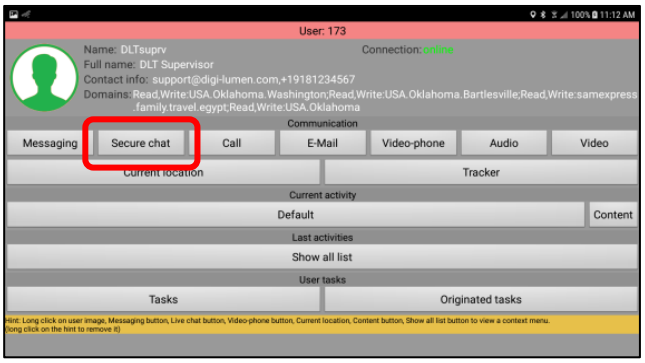
This section will describe the Secure Chat Feature that is contained in the User Panel. Example screens and configuration will be provided.

> **Important Note: Secure Chat uses the Diffie-Hellman encryption method. Cryptography keys are updated/exchanged at 15 minute intervals to further enhance security.**

The "Secure Chat" Feature will require that BOTH users are online. It is called "secure chat" because the Sentry MDU System will establish a "live" encrypted chat connection between the two devices.

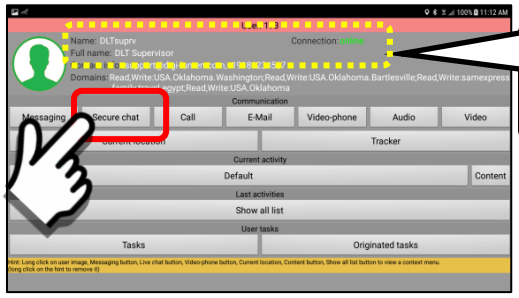
General layout of the User Panel:

The User Panel as shown below. The "Secure Chat" Button is located on the upper left side of the panel.



Steps to implement Secure Chat:

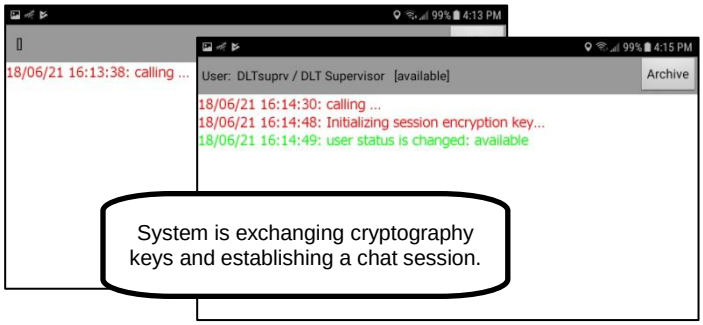
1. ***Launching the Secure Chat Feature.***
   To launch the Secure Chat Feature, click on the Secure Chat Button. In this example we have selected the user DLTsuprv to create a secure chat session … we open the User Panel for this user.



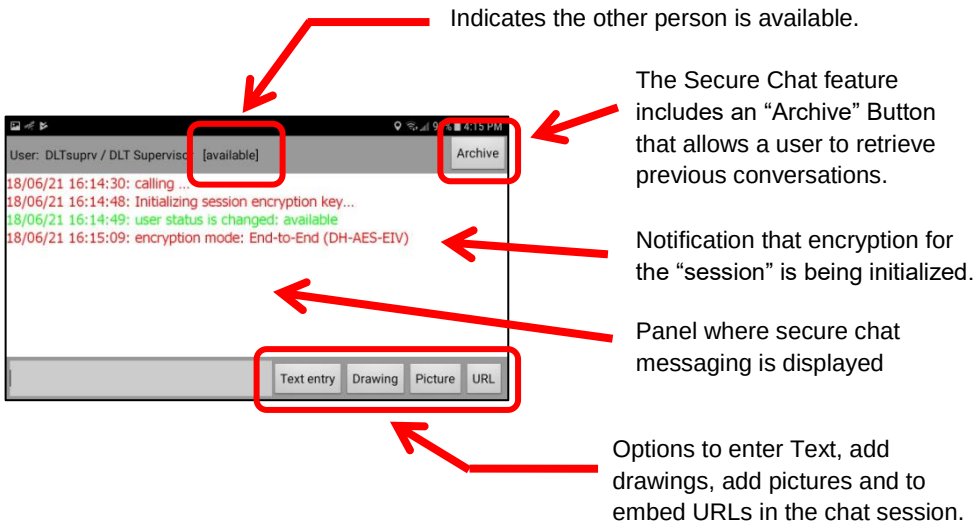
In this example, we will be having a "live chat" with the User = DLTsuprv.

We must verify that the other person is "online".

Click on the “Secure chat” Button. The SentryMDU system will attempt to contact the other User. Several messages will be displayed during the initialization process.



It may take several seconds for the encrypted connection to initialize, exchange keys, and be ready for input. When completed, the chat panel will be similar to the following.

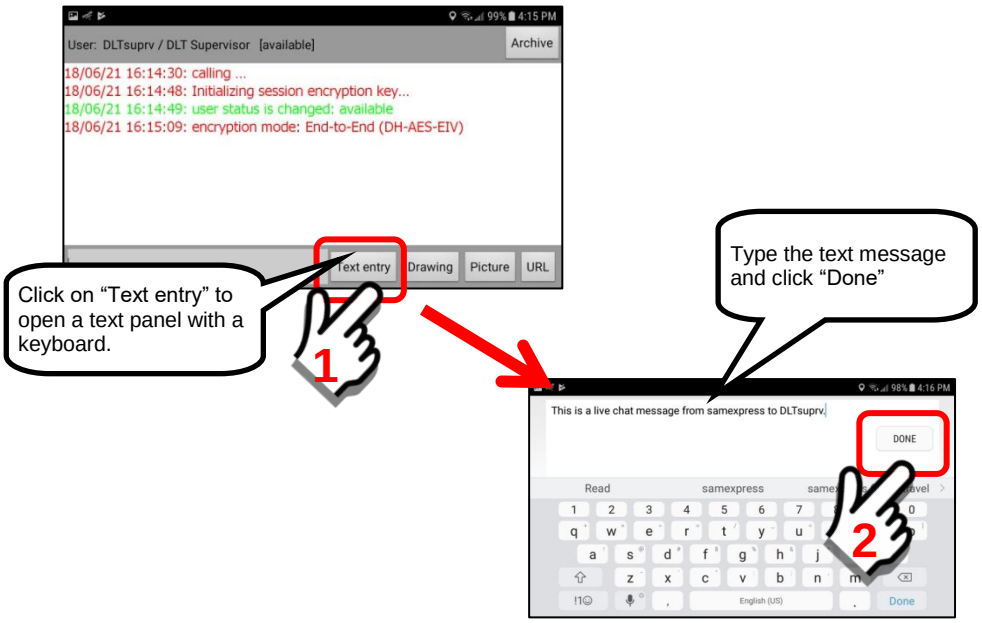


Clicking on the Secure Chat Button opens a panel with 4 buttons in the lower right hand corner.

1. Text Entry
2. Drawing
3. Picture
4. URL

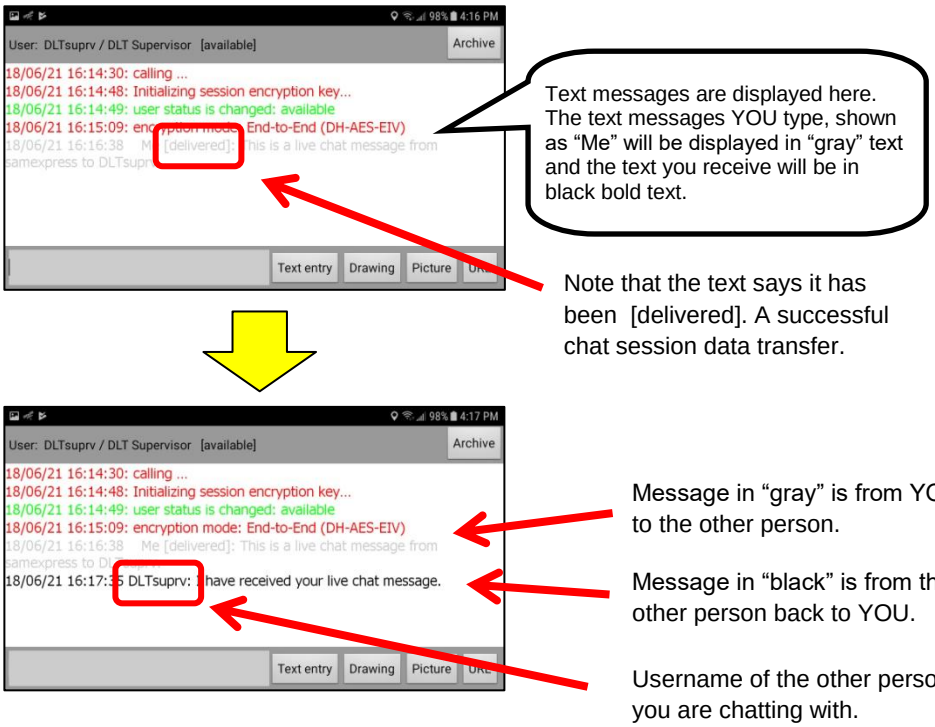
The Secure Chat Feature may combine text entry with drawings and with pictures taken with the camera. In addition, active content (streaming audio-video) from internal and external sources may be embedded into chat messages. Examples below will show how this is done.

2. ***Making text entries during a chat "session".***
To begin making "text" entries, click on the "Text entry" Button.



Text will be transferred to the Live Chat Panel. Note that the text entry will have the following information displayed:

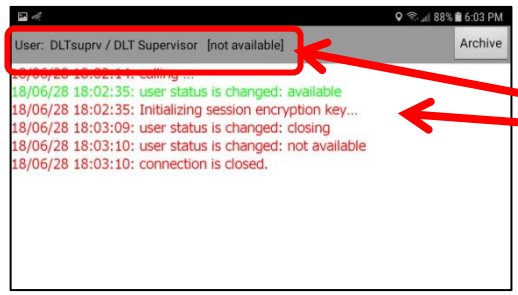
Date: 18/06/21 … format yy/mm/dd (year / month / day)
Time: 16:16:38 … format hh:mm:ss (hour : minutes : seconds)
User: Me …….. since YOU are the User sending the message



3. ***Review PREVIOUS chat session conversations.***

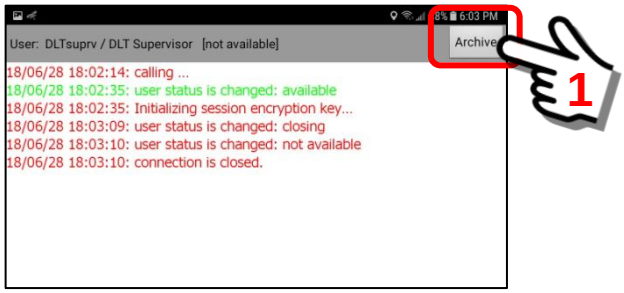
This section will illustrate how the Archive Button is used to retrieve previous chat session data.

Open a “Chat Session” with the desired User. In this example, we will open a chat session with User = DLTsuprv. It is NOT necessary for the other user to be available, we are simply selecting the person whom the “chat session” was with.

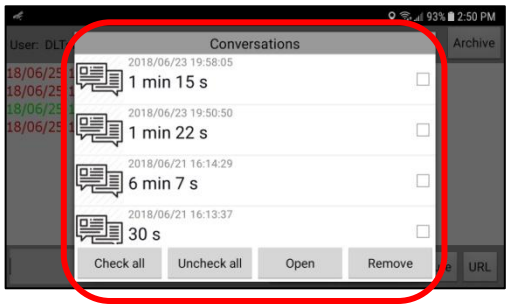


Notification that encryption for the “session” is being initialized. However, in this case the person is unavailable.

Click on the Archive Button in the upper right hand corner of the Panel.



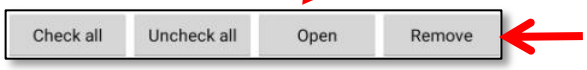
A pop-up panel will be displayed with a scrolling list of previous conversations showing Date, Time and Duration of the session.



Previous chat sessions

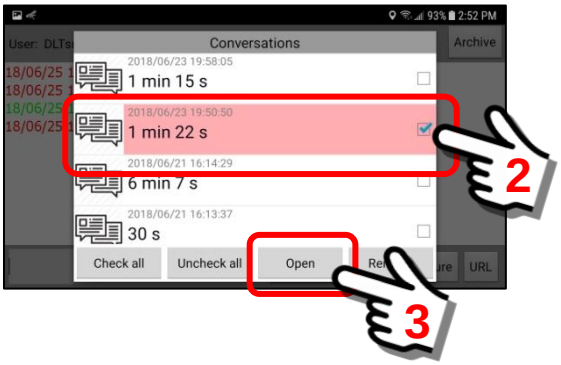
The system will store up to 200 past conversations in folders on your mobile device.

Open conversations to view them.

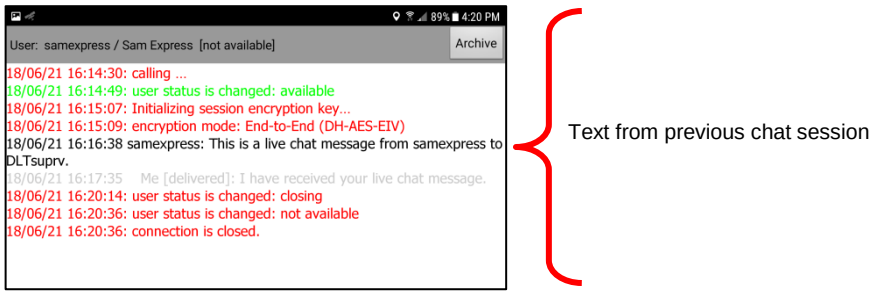


Conversations may be removed.

To review/open a previous chat session, put a “checkmark” in the checkbox … and click the “Open Button”.

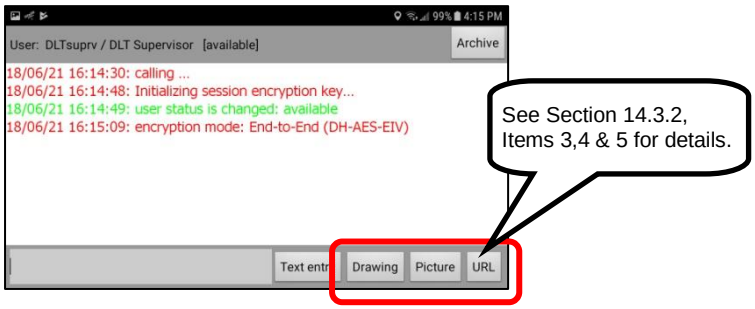


The system will then display the data (text / pictures / URLs) from the previous chat session.



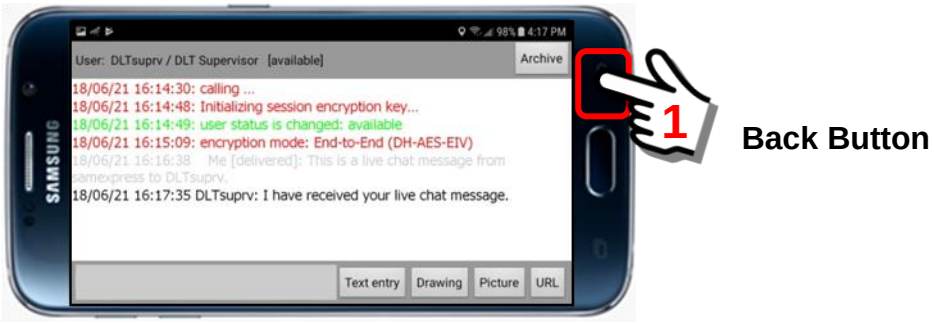
Click the “Back” Button on the mobile device to close the review of past chat sessions.

4. ***Add a DRAWING, PICTURE or URL to the chat session panel.***
To add a drawing, picture or URL to the chat session simply follow the same procedure as outlined in the previous section on Messaging (**Section 14.3.2, Items 3,4 & 5**). The process is identical.



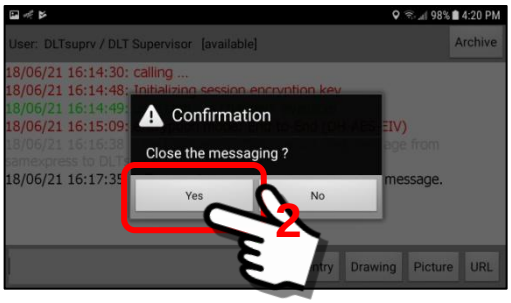
5. ***Closing the chat session panel.***

To close the Chat Session Panel, click on the “Back” Button on the mobile device.



The chat session will begin closing and a confirmation pop-up box will appear.

Select “Yes” to close the panel..



The system will return to the Main Map Screen.

14.3.4. Call Button (place phone call from within App)

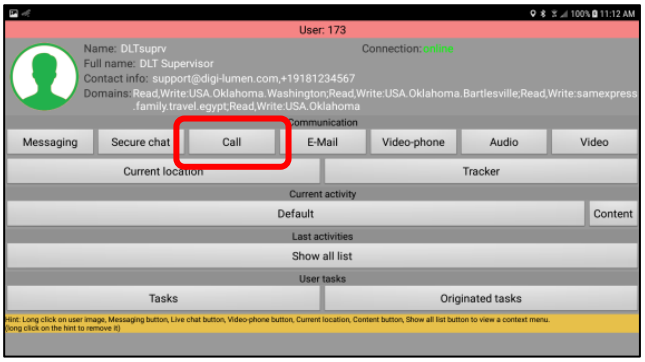
Overview:

This section will describe the function of the Call Button. This feature simply uses the native “Phone App” on the mobile device to place a phone call. The SentryMDU App enables a User to call another User in the security domain from WITHIN the SentryMDU App. You do not have to close the SentryMDU App and open a phone App on the mobile device.The phone number that will be called is the number a User entered during initial registration of the SentryMDU system.

In order to work … the mobile device you are “calling” must have a SIM card and be cellular enabled to receive phone calls. Tablets and other devices that may have SIM cards (for cellular data only), but do not function as telephones, do not work.

General layout of the User Panel:

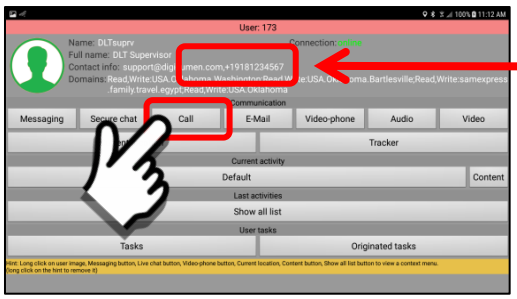
The User Panel is shown below. The “Call Button” is located in the middle-center of the User Panel. This will be the User Panel of the user you want to call.



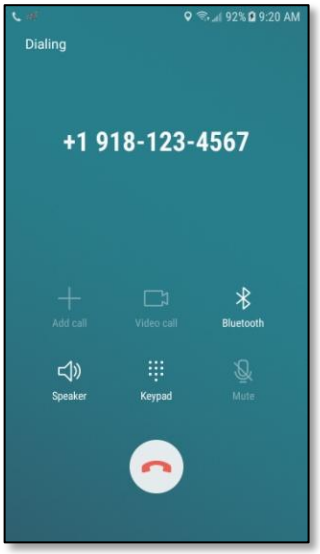
Steps to implement the Call Feature:

1. ***Launching the “Call Feature” on your mobile device.***
   In this example, we will illustrate the “Call Feature” in the SentryMDU App. In the example below we have the following user with a phone number.

   +1-918-123-4567 (although it is shown as +19181234567)



Click on the “Call Button”.
The system will open the “native” phone application on the mobile device. You will have a screen similar to what is shown below.



When finished with the call, the system will return you to the SentryMDU App.

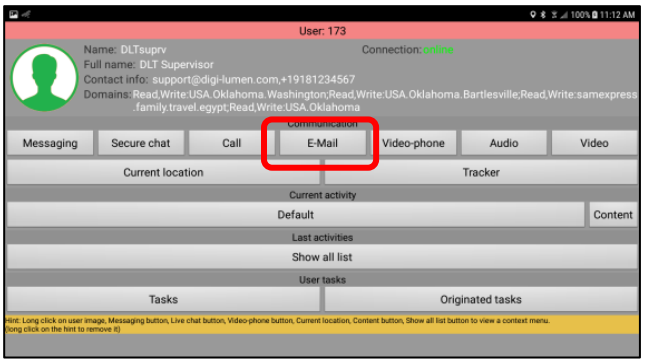
14.3.5. E-Mail Button (access device email features)

Overview:

The Email Feature simply uses the native “Email App” on the mobile device to compose and send an email. The SentryMDU App enables a User to email another User in the security domain from WITHIN the SentryMDU App. You do not have to close the SentryMDU App and open an email App on the mobile device. The email address that will be used is the address the User entered during initial registration of the SentryMDU system.

General layout of the User Panel:

The User Panel as shown below. The “E-Mail Button” is located in the middle-center of the User Panel. This will be the User Panel of the person you want to email.



Steps to implement the E-Mail Feature:

1. ***Launching the “E-Mail Feature” on your mobile device.***
   In this example, we will illustrate the “E-Mail Feature” in the SentryMDU App. The system will open the “native” email application on the mobile device. You will have a screen similar to what is shown below.

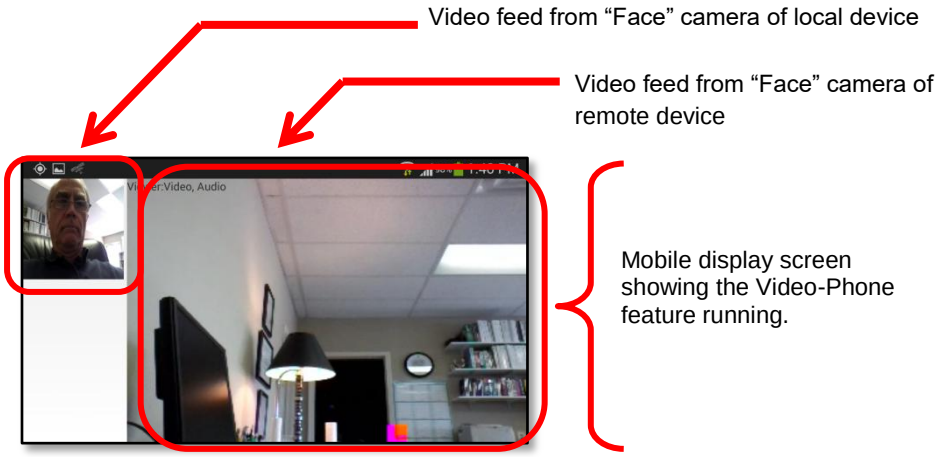
support@digi-lumen.com

14.3.6. Video-phone Button (two-way video phone call)

Overview:

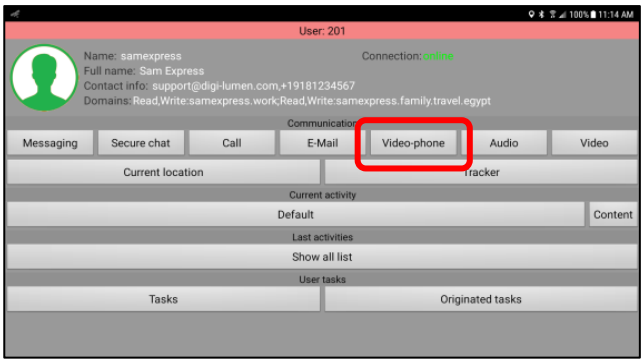
The “Video Phone” feature will establish an audio-video communications channel between two mobile devices. The feature will allow video from the remote device and face camera video from the local device.

The Video-phone Feature works on a “network” connection which can be either WiFi or Cellular.



General layout of the User Panel:

The User Panel as shown below. The “Video-phone Button” is located in the middle-right of the User Panel. This will be the User Panel of the user you want to establish a video-phone call to.



Steps to implement the Video-phone Feature:

1. ***Launching the Video-phone Feature on your mobile device.***
   The “Video Phone” feature is launched from the User Panel of the user you want to call.

In the example below we will establish a video-phone connection between two users. We will have DLT Supervisor (DLTsuprv) call Sam Express (samexpress).

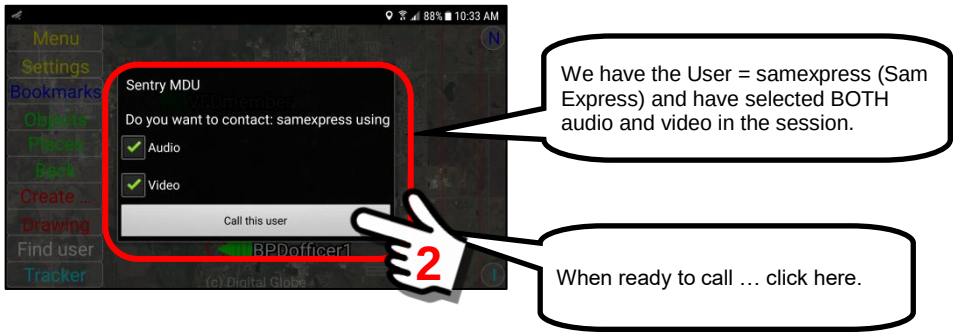
User #1: **samexpress**
User #2: **DLTsuprv**

The user DLT Supervisor will open the User Panel of Sam Express as shown below. Click on the “Video-phone” Button.

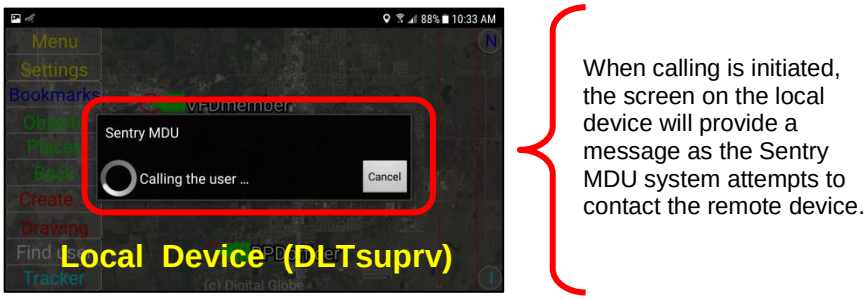
A pop-up box will appear asking if user ***DLTsuprv*** wants to contact the other user (***samexpress***)? You will have the option to request a connection of BOTH audio and video.

Important Note: Although you may select BOTH audio and video, the other person may also choose only audio, only video ... or both.

After selecting your options, click the “Call this user” Button.



2. ***Establishing a video-phone connection.***
When you click on the “Call this user” Button, the mobile device will attempt to contact the other mobile device.

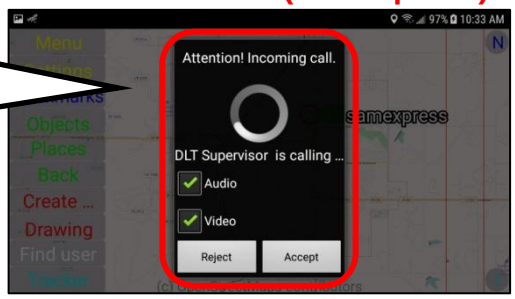


A pop-up box will appear indicating that the system is attempting to contact the other mobile device and establish a connection. Depending on how quickly the other user "answers", this process may take 10 – 15 seconds.

Remote Device (samexpress)

Shows the name of the user that is calling.

In this example, the user DLT Supervisor is calling the remote user.



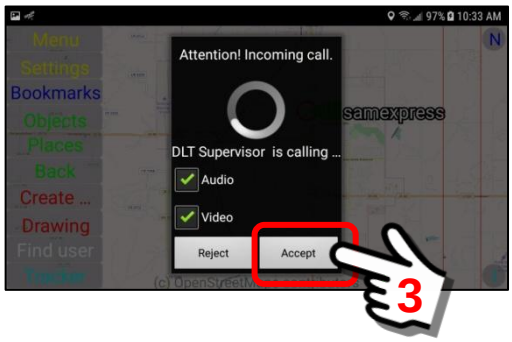
As the Sentry MDU system attempts to contact the remote device a notification box will appear on the remote device indicating that a "call" is waiting.

Click "Accept" to answer the video-phone.

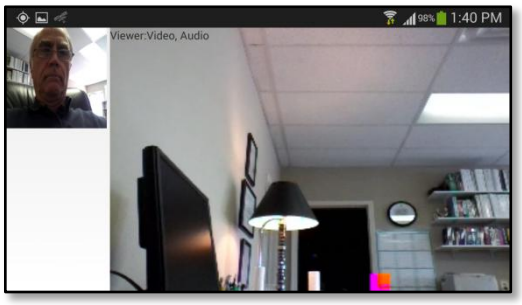
The remote device will RING with a distinctive ringtone. This indicates that a video-phone call is coming in. The remote user has the option to select how they want to receive the call … Audio only, Video only or BOTH audio-video.

After setting options, click "Accept" to accept the video-phone call from the other user.

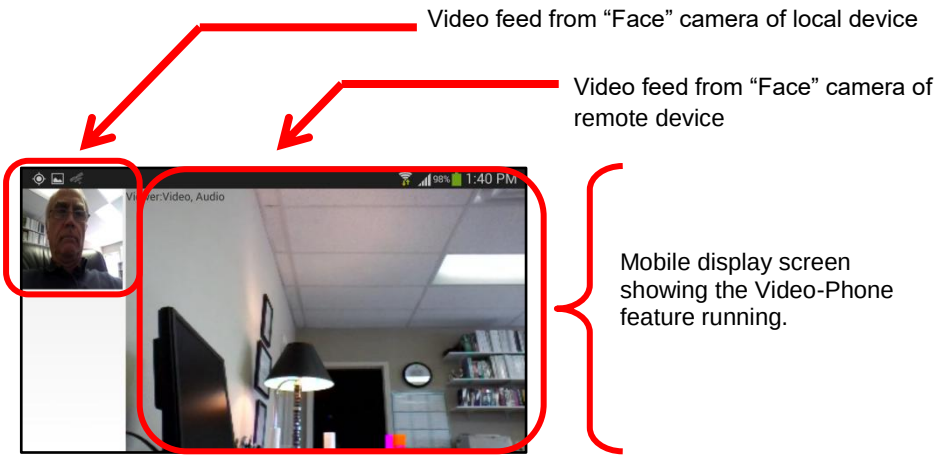
Remote Device (samexpress)



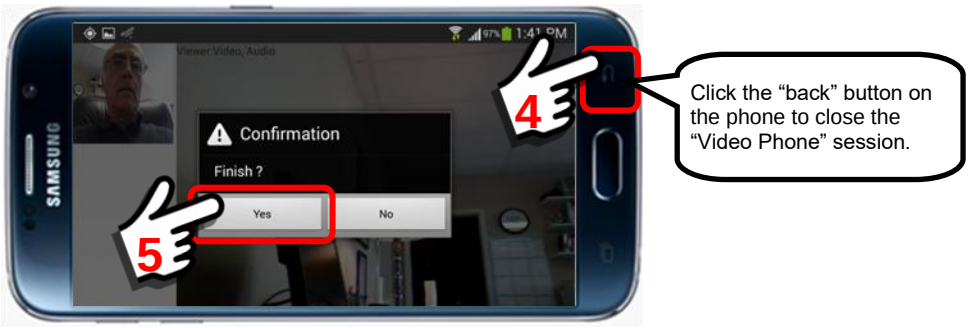
3. ***Viewing the video-phone display.***
As the remote device "Accepts" the video call, a split screen display will appear. In the upper, left hand corner will be the video from the face camera of the local device and the right side of the screen will be the video feed from the remote device.



The video-phone screen layout is as follows:



4. ***Closing the video-phone session.***
When finished with the video call, click the “back” button on the mobile device. This will display a confirmation panel to close the video-phone feature.



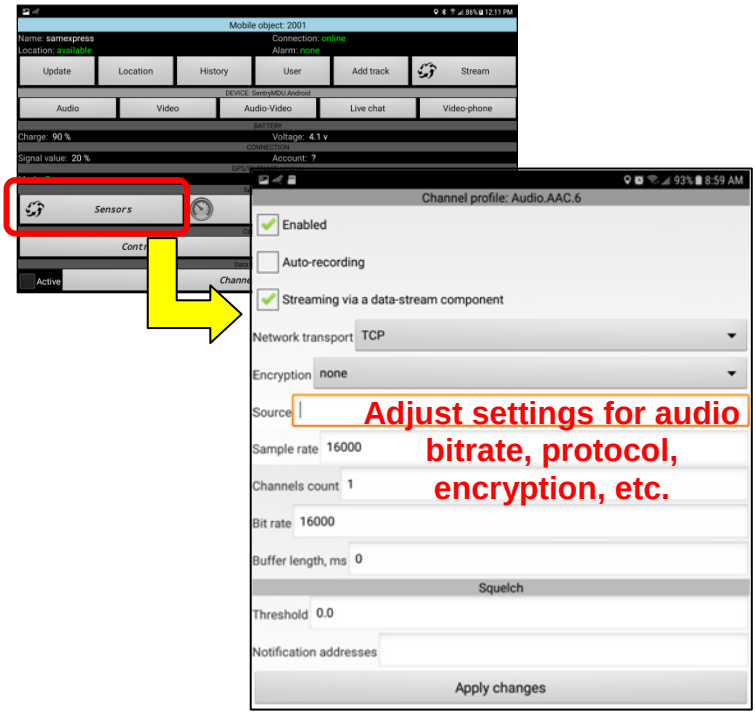
14.3.7. Audio Button

Overview:

This section will describe the Audio Feature that is contained in the User Panel. Example screens and configuration will be provided.

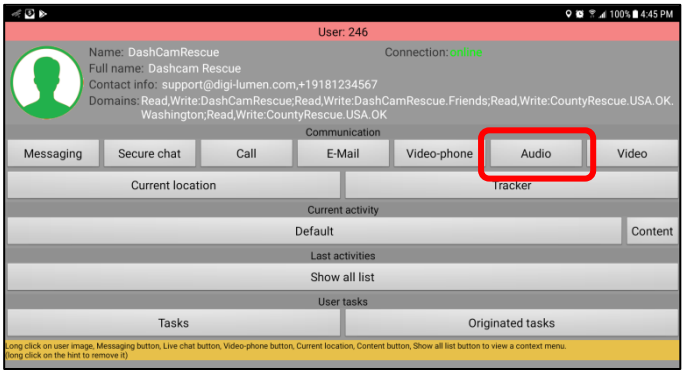
The Audio Button on a User's Panel will activate the microphone on the mobile device of a remote user. You will receive an audio feed from the remote device.

Important Note: The settings for the Audio Sensor on the remote device may be configured by accessing the Sensors Button on the User's Mobile Object Panel.



General layout of the User Panel:

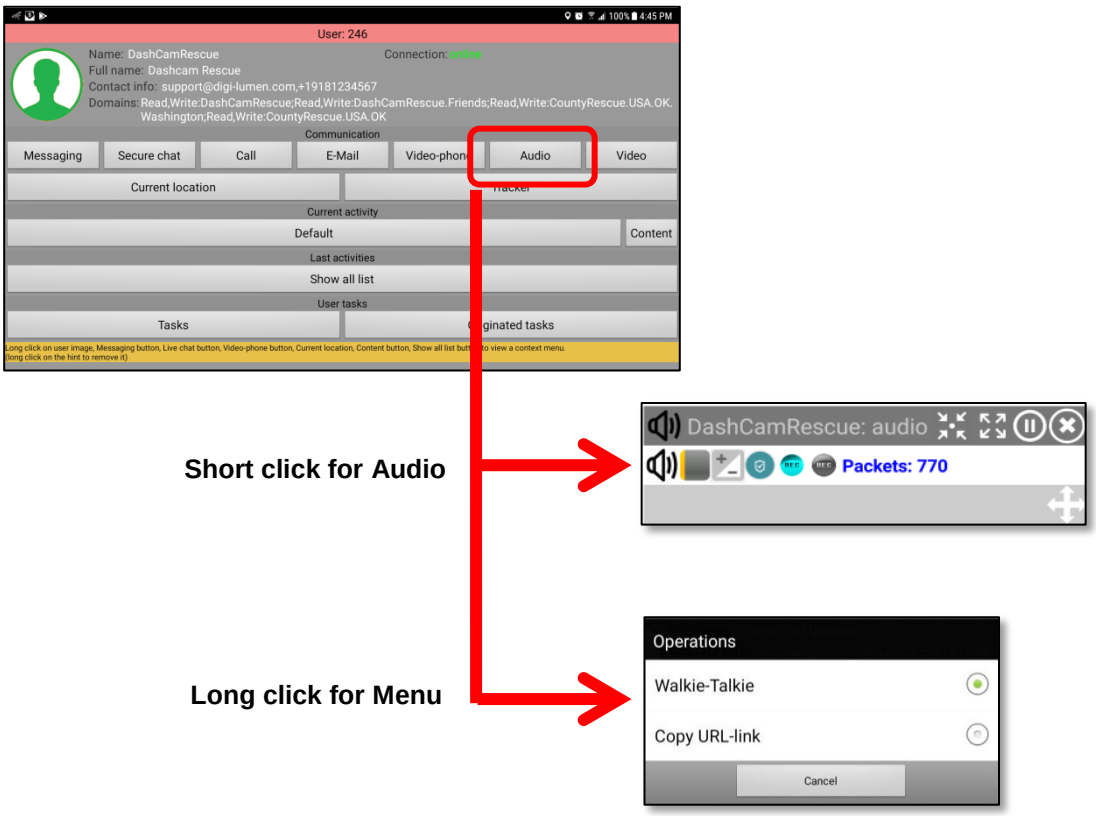
The User Panel as shown below. The "Audio Button" is located in the middle-right of the User Panel. This will be the User Panel of the user you want to receive an audio feed FROM.



Two functions available with the Audio Button

The Audio Button has two functions. A “Short click” will launch the Audio Feature and a “Long click” will open an Operations Menu with two additional options.

The screens are shown below.



Operations Menu, “Long click” options

The Operations Menu has two options. The first will open a “Walkie-Talkie” Feature between two mobile devices. The second will copy a URL-Link that may be used to create a Bookmark of the Audio Feature for easy access (see **Section 9** for details).

An detailed example of using the “Walkie-Talkie” Feature is covered in **Section 15.13** of this User Manual. For this section, we will simply provide a review of available features and screen panels.

Click on the “Walkie-Talkie” Button to launch the feature.

To use the Walkie-Talkie Feature, you will “open” a User Information Panel for another user … someone you want to talk with. When you click the “Walkie-Talkie” Button, it will establish a two-way audio connection between YOUR device and their device. A floating window panel will open with additional controls for adjusting volume, recording of the conversation and more.

The audio indicator bar provides the user with a progress indicator on the number of data packets that have been received by the mobile device.

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned “on” (Default)

Speaker is muted, turned “off”

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

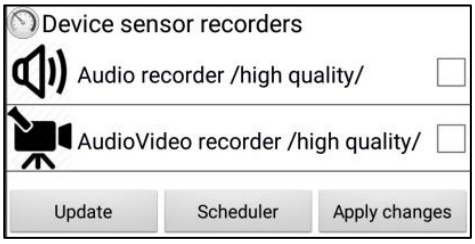
High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

Flow control is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



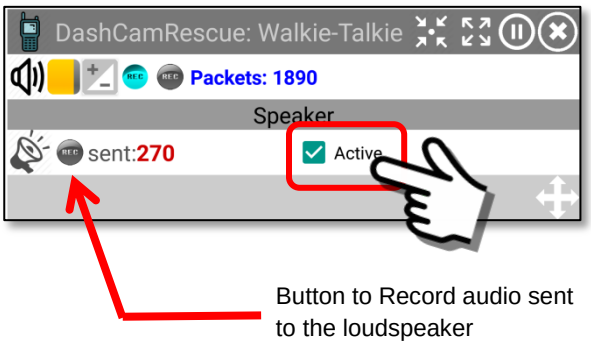
The audio output of the mobile device may be "recorded" at any time by simply clicking on the "record" button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned "off" (Default)

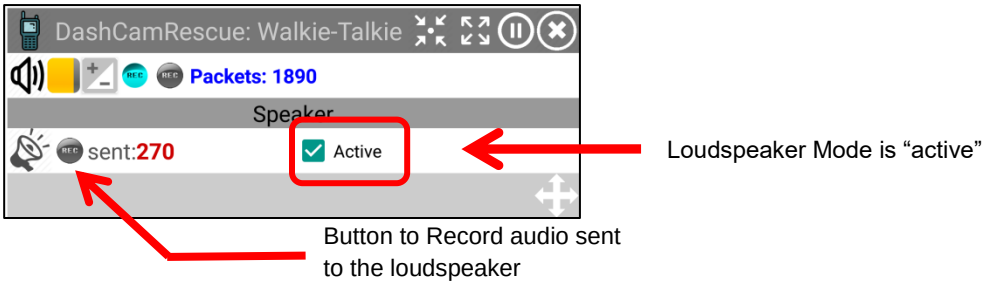
Recording is turned "on"

Speaker Access Option

The Walkie-Talkie Feature also has an option to turn on the external speaker of the remote device such that it acts as a "loudspeaker". Typically, this would be used in conjunction with an External Bluetooth Speaker. This will enable increased volume and coverage.



The speaker on the remote device is now in "loudspeaker" mode.



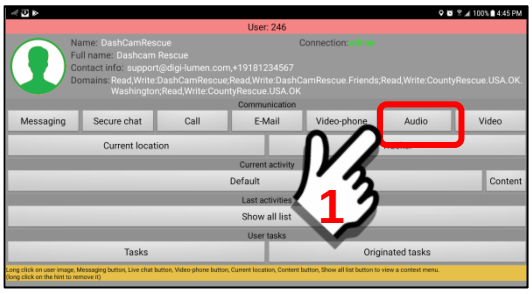
Steps to implement the Audio Feature:

1. ***Launching the audio feature on a remote mobile device.***
   The "Audio" feature is launched from the User Panel of the user you want to monitor.

   In the example below we will monitor the audio feed (microphone) of the mobile device belonging to the user Dashcam Rescue (DashCamRescue).

   User #1: **DashCamRescue**
   User #2: **DLTsuprv**

   The user DLT Supervisor will open the User Panel of Dashcam Rescue as shown below. Click on the "Audio" Button



2. ***Establish audio feed connection with remote device.***
   The SentryMDU App will establish a connection with the remote device based on the pre-configured settings for "Audio" in the Sensor Channel configuration.

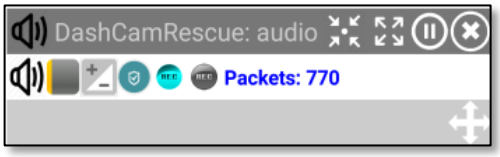
   When the Audio feed is established, by default, a floating wondow is created to hold the audio panel.

When you see this panel you should start hearing sound

Floating Window that holds the Audio Feed

When the "Audio Button" is clicked, a floating window is created for the audio.

Floating Panel for Audio connection



Once the floating panel is created, it may be moved about the screen, resized and minimized to the notification bar (for later use). See **Section 9.13** for details on manipulating floating windows.

Features on the Floating Panel

A “floating” Audio Panel will open. As the “packets” numbers begin to change this indicates that data is being received from the remote device.

A “Mute” button is available to mute the sound if you have other activities to do, but want to leave the screen active.

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device

A “Flow control” feature is also available that will automatically optimize parameters (sample rate and bitrate) in the event you have an unstable network connection.

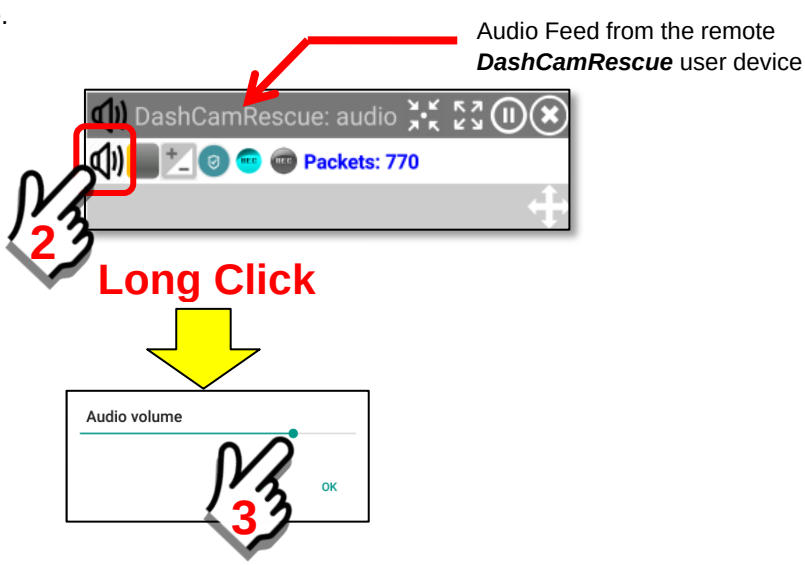
Adjustible Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in audio transmissions.

Sensor Recorder Panel Button. This opens the Sensor Recorder Panel on the remote device to schedule recording parameters.

A “Recording” feature is also available to start-stop recording of the Audio at any time.

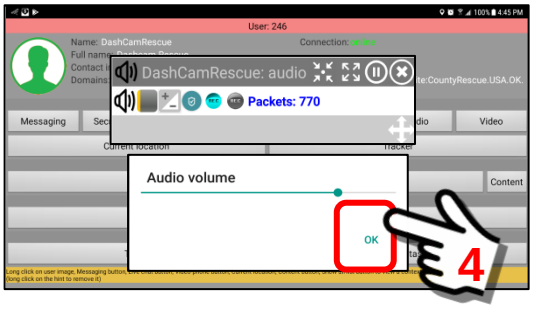
3. ***Adjusting audio volume of sound coming from remote device.***
The audio volume that is being monitored on the remote device may be adjusted to a comfortable level.

To adjust the volume, perform a “Long click” on the speaker icon. An audio volume pop-up box will open and allow adjustment of the volume.

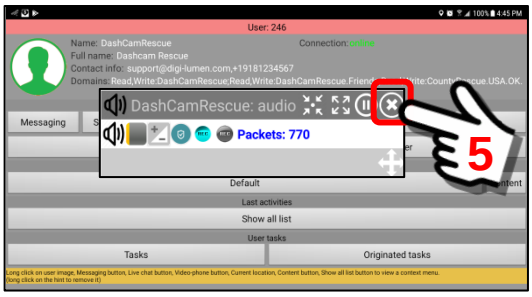


Slide your finger on the bar to adjust the volume. As displayed on the User Panel with a floating window, it will be similar to the following.

When finished, click “OK” to close the volume adjustment pop-up.



To close the audio feed from the remote device, click to close the floating window.



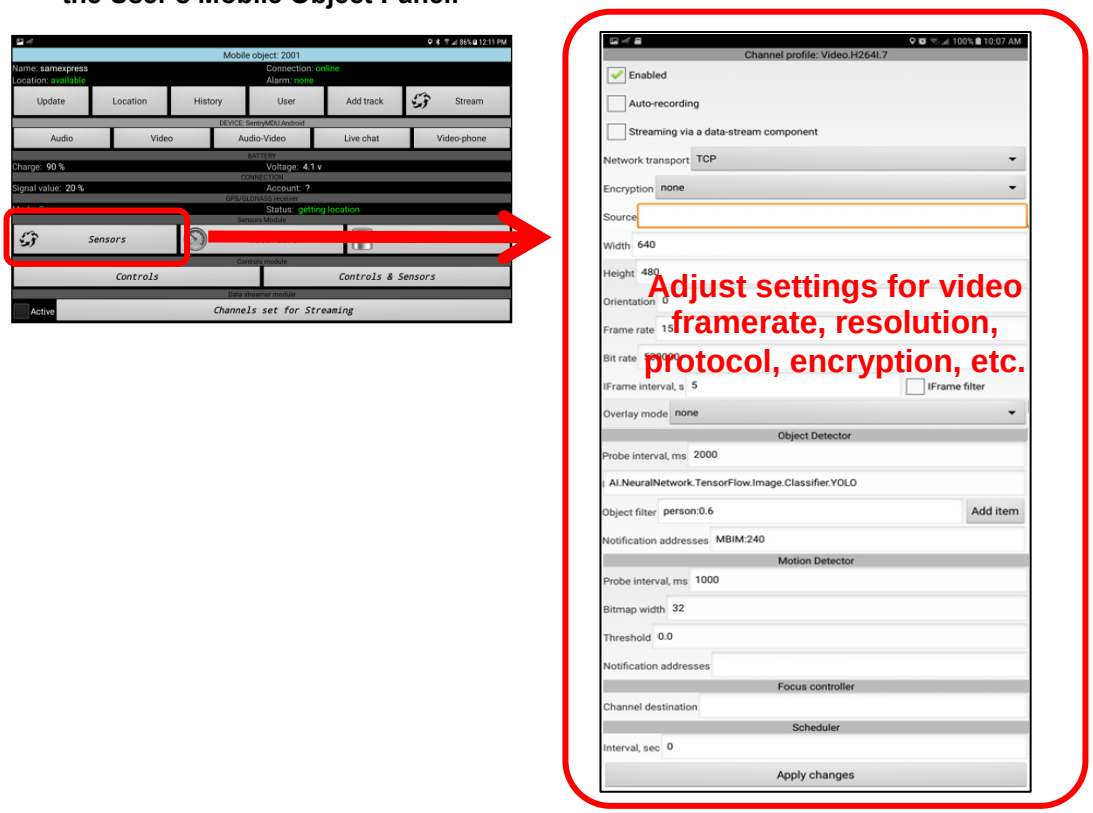
14.3.8. Video Button

Overview:

This section will describe the Video Feature that is contained in the User Panel. Example screens and configuration will be provided.

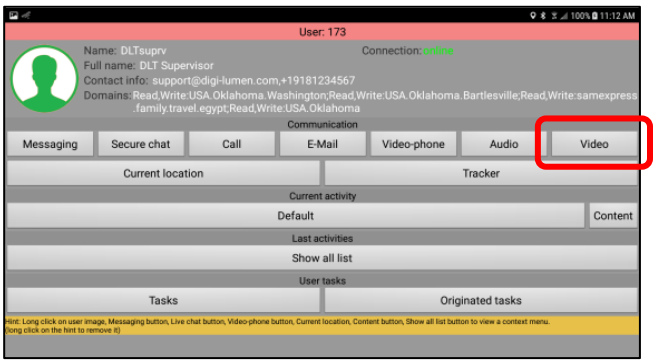
The Video Button on a User's Panel will activate the camera on the mobile device of a remote user. You will receive a video feed from the remote device.

Important Note: The settings for the Video Sensor (camera) on the remote device may be configured by accessing the Sensors Button on the User's Mobile Object Panel.



General layout of the User Panel:

The User Panel as shown below. The "Video Button" is located on the far-right of the User Panel. This will be the User Panel of the user you want to receive an video feed FROM.



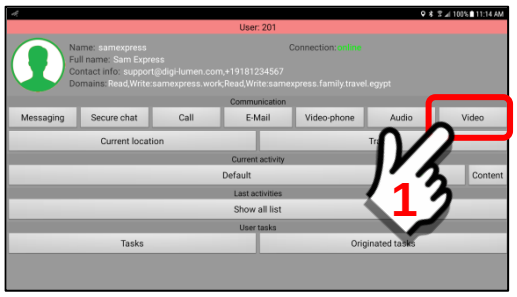
Steps to implement the Video Feature:

1. ***Launching the video feature on a remote mobile device.***
   The "Video" feature is launched from the User Panel of the user you want to monitor.

   In the example below we will monitor the video feed (camera) of the mobile device belonging to the user Sam Express (samexpress).

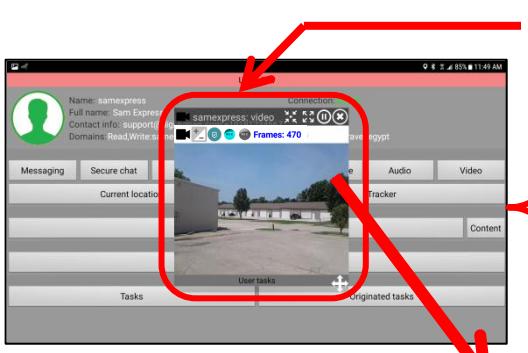
   User #1: **samexpress**
   User #2: **DLTsuprv**

   The user DLT Supervisor will open the User Panel of Sam Express as shown below. Click on the "Video" Button



2. ***Establish video feed connection with remote device.***
   The SentryMDU App will establish a connection with the remote device based on the pre-configured settings for "Video" in the Sensor Channel configuration.

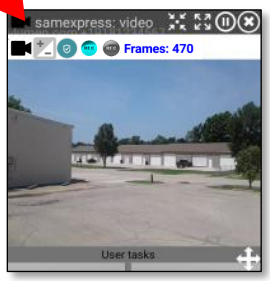
   When the Video feed is established, by default, a floating wondow is created to hold the video display panel.



Floating Window that holds the Video Feed

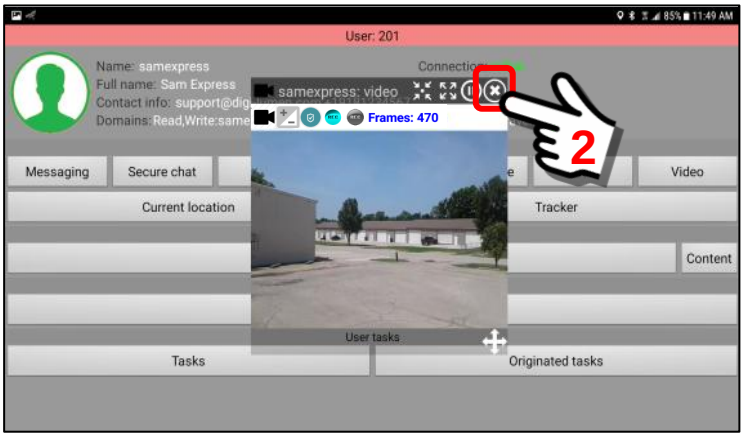
When the "Video Button" is clicked, a floating window is created for the video panel.

Floating Panel for Video connection



Once the floating panel is created, it may be moved about the screen, resized and minimized to the notification bar (for later use). See **Section 9.13** for details on manipulating floating windows.

3. ***Closing the video panel and disconnecting from remote device.*** To close the video feed from the remote device, click to close the floating window.



14.3.9. Current Location Button

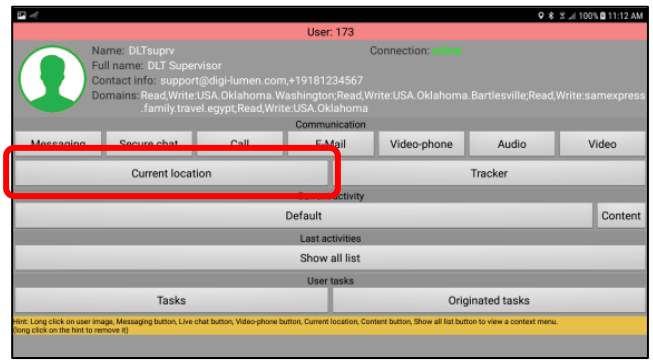
Overview:

This section will describe the Current Location Feature that is contained in the User Panel. Example screens and configuration will be provided.

The “Current Location” Button will contact the mobile device and retrieve a new GPS reading from the sensor. This will display the current GPS location of the user selected. The main map screen will be displayed with the screen centered (red “+” mark) over the location of the user.

General layout of the User Panel:

The User Panel as shown below. The “**Current Location Button**” is located on the left-center of the User Panel. This will be the User Panel of the user you want to find the location of.

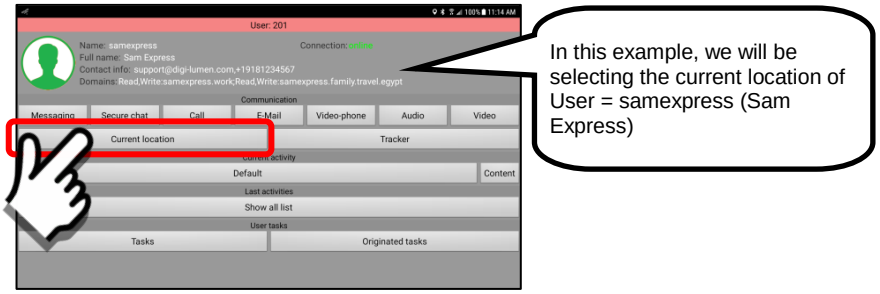


Steps to implement finding a user current location:

1. ***Launching the Current Location Feature on a mobile device.***
   The “Current Location” feature is launched from the User Panel of the user you want to locate. In the example below we will locate the mobile device belonging to the user Sam Express (samexpress).

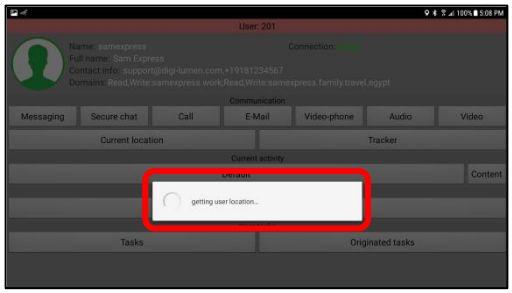
   User #1: **samexpress**
   User #2: **DLTsuprv**

   The user DLT Supervisor will open the User Panel of Sam Express as shown below. Click on the “Current Location” Button.



2. ***Access to the Current GPS Location of a remote user.***
Clicking on the "Current Location" Button causes the GPS in the remote device to update the satellite fix and GPS location and report this location to the Data Server. This new/updated location is then reported to the calling device.

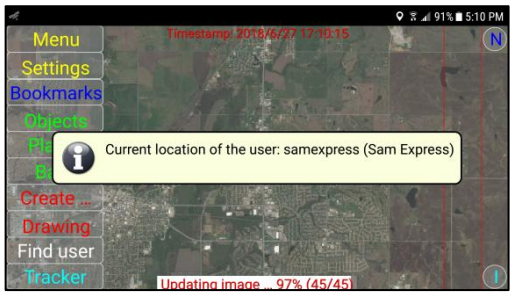
In this example, we are updating the current location of the user ***samexpress***.



Clicking on the "Current location" button starts the process of determining the User location via GPS satellite coordinates.

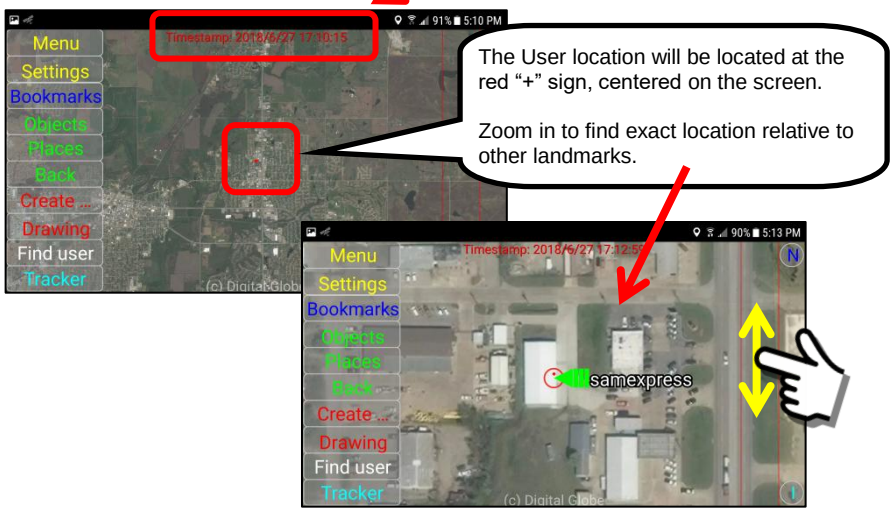
Depending on the number of satellites that are locked on the position (sometimes affected by time of day), this may take a few seconds to several minutes. The process will time out after 3 minutes if a GPS fix is not able to be established.

When a satellite "lock" has been obtained (at least 3 satellites), the Main Map Screen will be displayed with the location of the user (samexpress). A brief message will be displayed for about 3 seconds.



As the user location is determined, note that a "timestamp" has been placed on the screen.

GPS location timestamp



14.3.10. Tracker Button

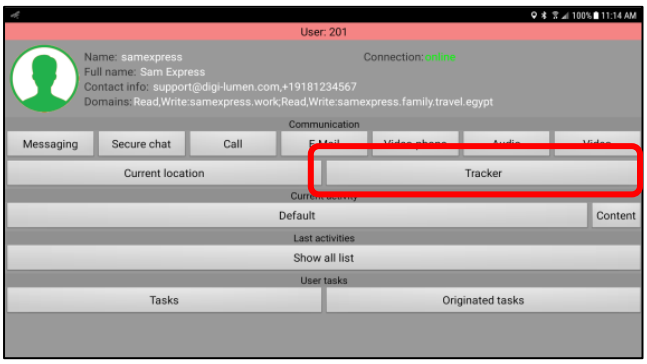
Overview:

This section will describe the Tracker Button Feature that is contained in the User Panel. Example screens will be provided.

The “Tracker Button” opens the ***Mobile Object Panel*** for the user of the remote device. The mobile object panel provides access to sensors, recorders, data archive and tracking history for other users.

General layout of the User Panel:

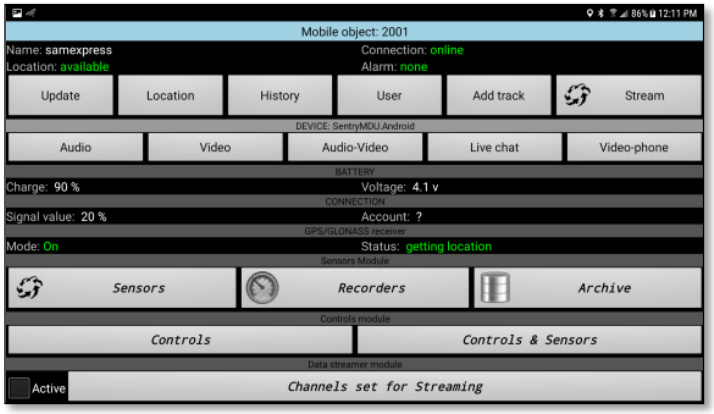
The User Panel as shown below. The “Tracker Button” is located on the right-center of the User Panel.



Step to access the Mobile Object Panel of a User:

1. ***Launching the Mobile Object Panel of a User.***
   The User Panel provides a secondary way to access the Mobile Object Panel of a remote user. You may do it directly from the Objects Button on the Main Menu Screen, or from the User Panel by clicking on the Tracker Button.

   In this example the Mobile Object Panel for user ***samexpress*** is launched from the ***Tracker Button*** on the User Panel.



14.3.11. Current Activity and Last Activity Content

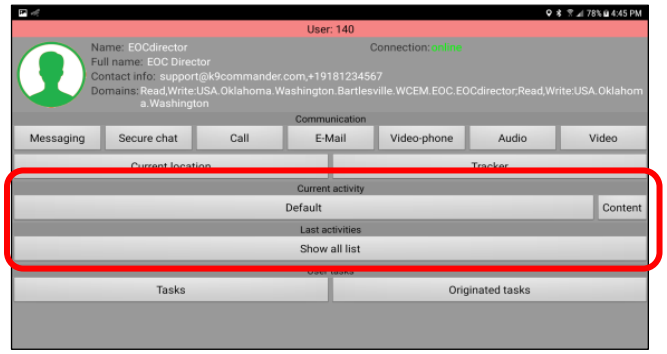
Overview:

The content stored on the Sentry MDU System is arranged by categories specified by the User. As initially configured, the system uses a default category called “Default”. Users may create additional categories as needed.

This section will describe how to add additional activity categories to an existing content database.

General layout of the User Panel – Content:

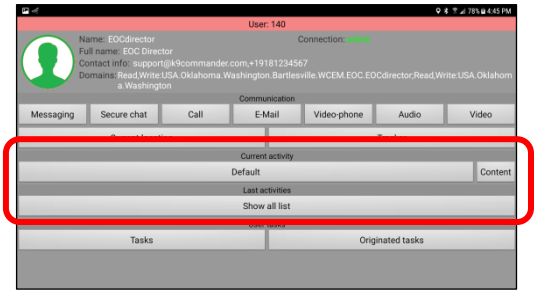
The Current Activity designation (with Content Button) and Last Activity button are located in the center of the User Panel. The Content Button is on the far right side.



Description of the buttons and features:

1. ***Current Activity and Last Activity***

   This section has Category tile blocks for both the “Current” and “Last” activities and a Content button. The current activity category, marked “Default” in the example below, is where current “content” is stored. This section will review how to gain access to the content on a mobile device.

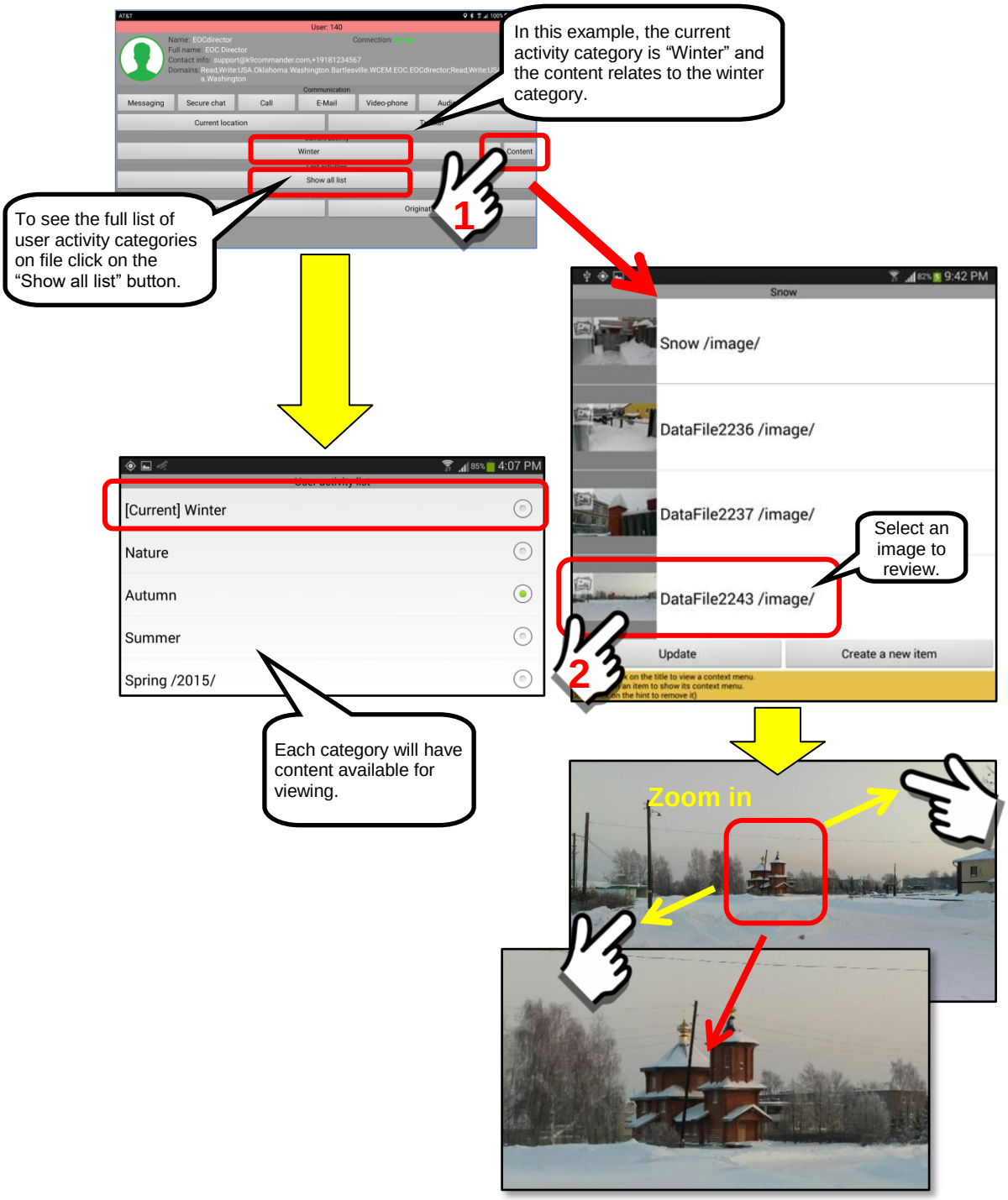


Content may include the following data types:

1. Pictures
2. Videos
3. Telemetry (GPS) data
4. Points-of-Interest
5. Audio Files
6. Places
7. Imported Data Files

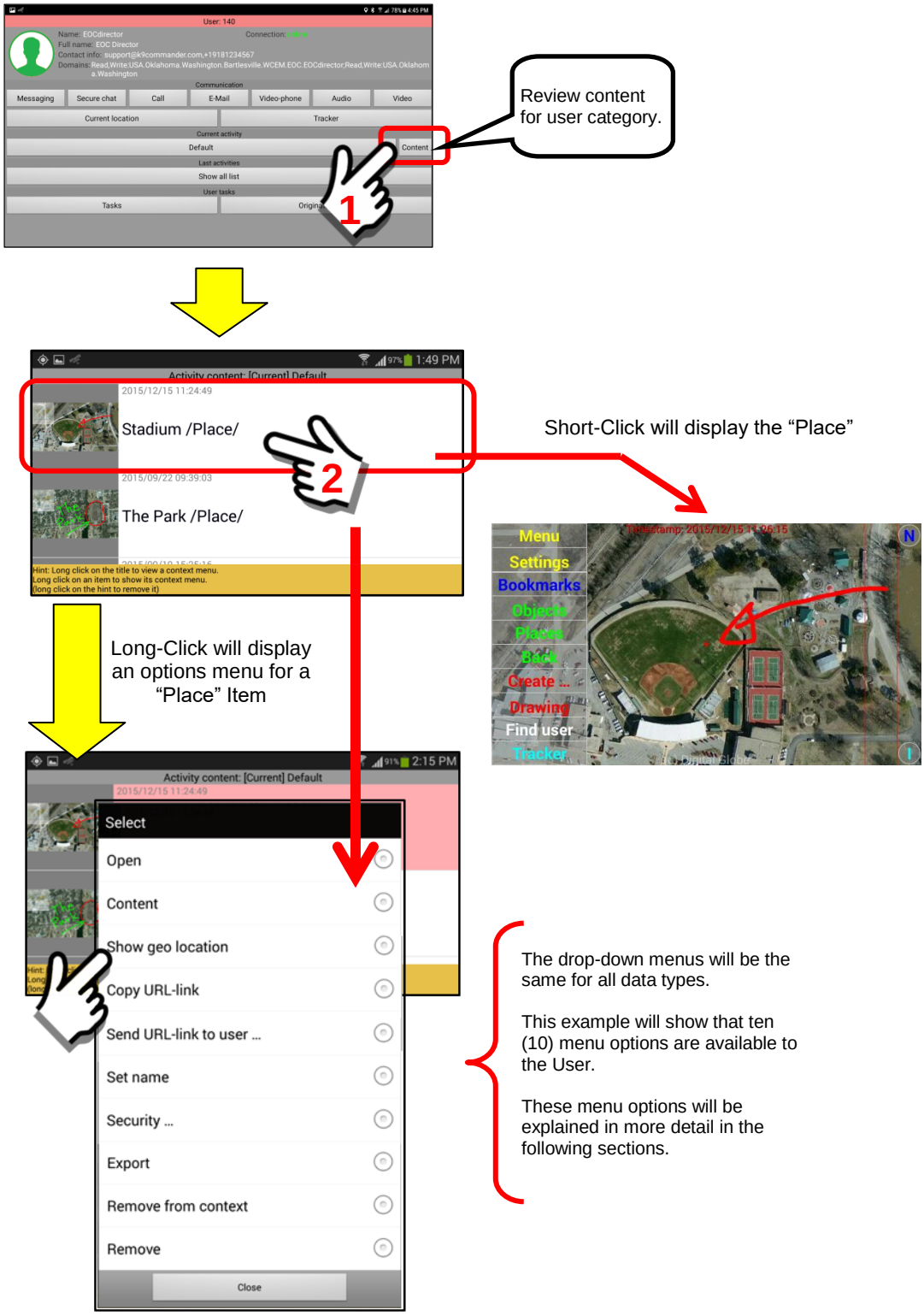
In the example above, content that is created by the User will be stored in the current activity (shown as Default). To access the content, click on the “Content” button which allows access to data within the current activity.

Users have the ability to create a variety of “Activity Categories”. In the following example, notice that the “Current activity” is shown as “Winter”. In this example, the stored content all relates to the “Winter” category.



2. *Reviewing User Content*

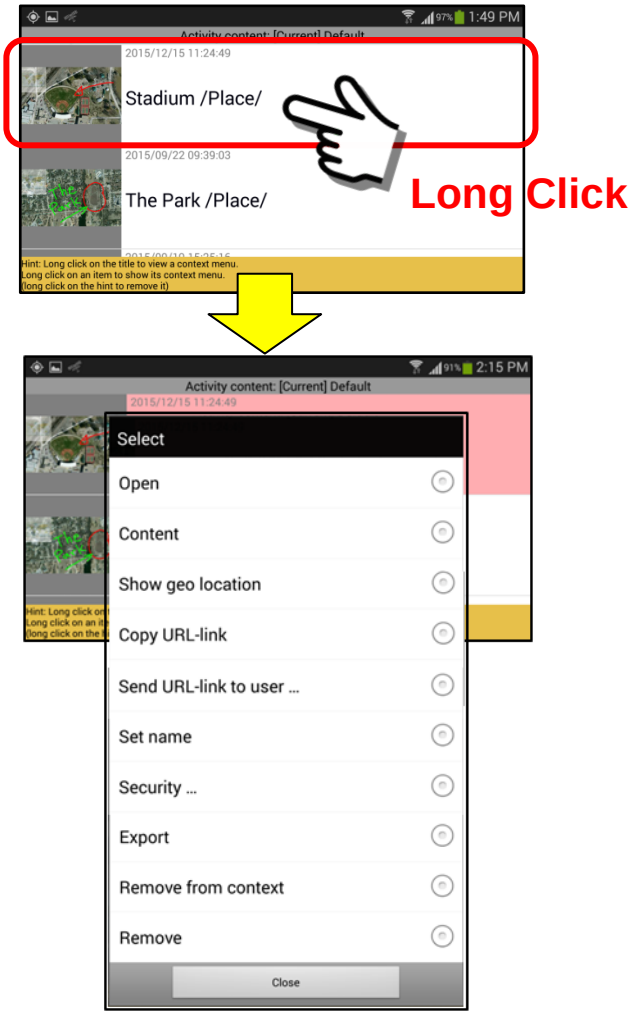
The “Content” Button allows a user to review a variety of data stored on the mobile device (and associated Data Server). This section with outline the features and options available.



3. *User Content Menu Options – Map Item*

When a “Long-Click” is performed on User Panel content data a series of menu options are available.

The menu listing below will illustrate using a “Place” data item.



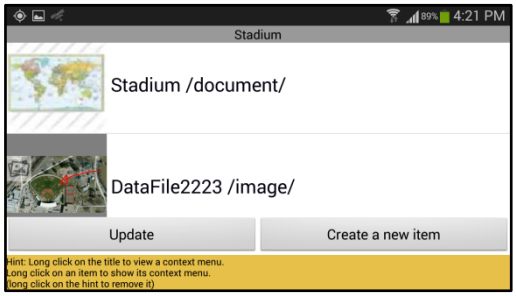
The 10 menu items are explained in detail below.

<u>Open</u>

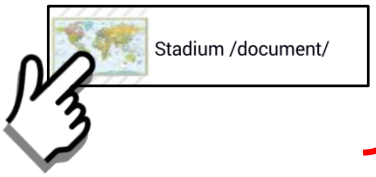
The “Open” menu option will open the file and display the contents, In the case of our example, it will display the satellite image view of the “Place” which is a Stadium.

Content

The “Content” menu option will display the components of the data that make up the item. In the example of the Stadium, “Place” content, the Place item has two components … a document item and an image item. They are shown below.

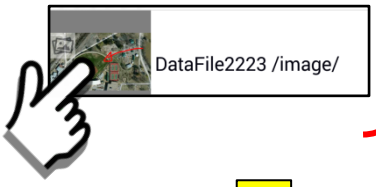


Clicking on the Stadium /document/ data will give us the “map” image of the Place item.



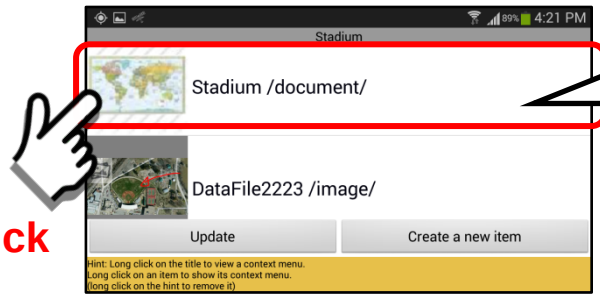
Map image of “Place” data

Clicking on the DataFile2223 /image/ data will give us the raw picture/image of the Place item on the satellite image.



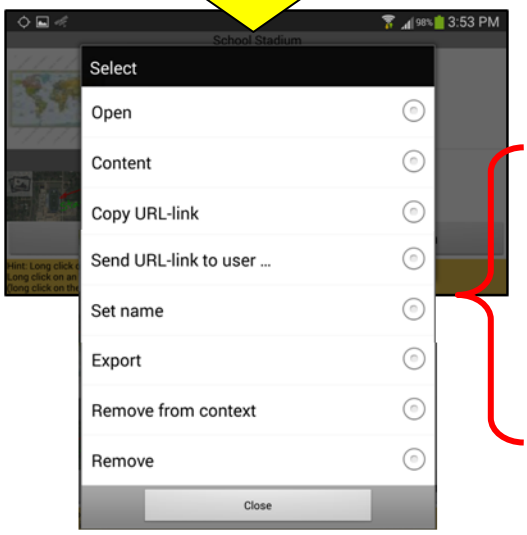
Raw picture image of “Place” location

The Content menu item also allows a user to perform additional operations on the data elements. The following section will show how additional data files may be added to the existing group.



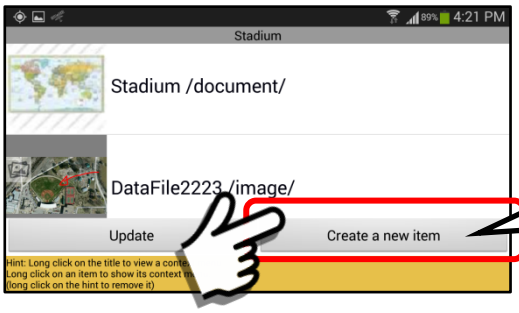
Long Click

A long-click on any of the components will open another set of menu options.



This secondary set of drop-down menus will be the same for all data types.

This example shows eight (8) menu options are available to the User.



Click on this “Create a new item” Button to add items.

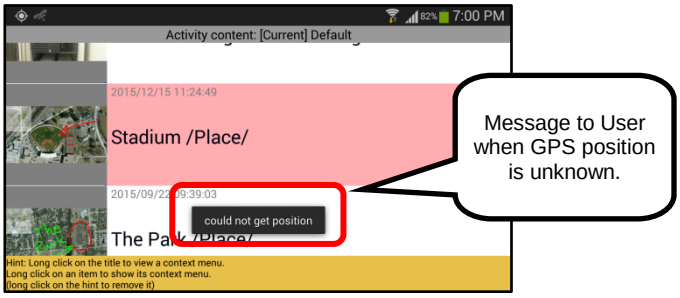
Additional types of data files may be added to this activity with this menu.

This allows a user to take video clips, pictures, attach files from the mobile device, add text reminders and put internet URL’s.

Show geo location

The “Show geo location” menu option will display a map view (Satellite image) of the location of where the data was gathered. The GPS location will be derived from a geo-tagged picture or video. If the GPS data is not available a message will be provided indicating that no position is known.

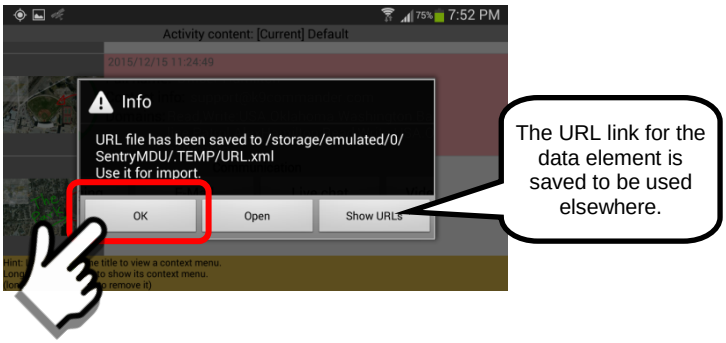
If a GPS location is NOT available for the data item, a message will say “could not get position”.



Copy URL – link

The “Copy URL – link” menu option is provided to allow the user to “bookmark” data from their own content or other user content.

Once the URL link is copied into the TEMP file system on the local device, it may be imported and saved.



Send URL – link to user …

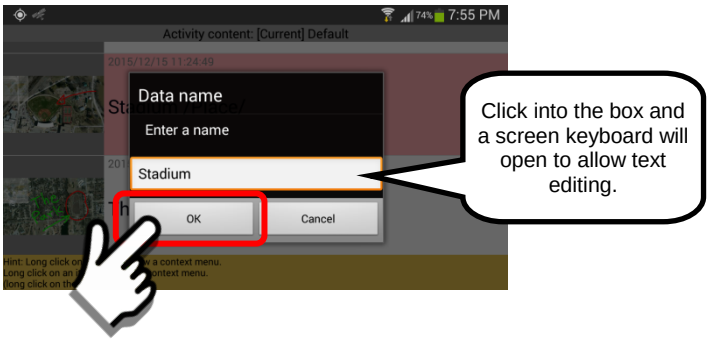
The “Send URL – link to user” menu option is provided to allow a user to send another user a bookmark link to this specific data.

Select a User to send the information to.

Set name

The “Set name” menu option allows a user to change the name that is attached to a particular data element. When we click on the “Set name” menu option, we are presented with a data entry box to edit/change the name.

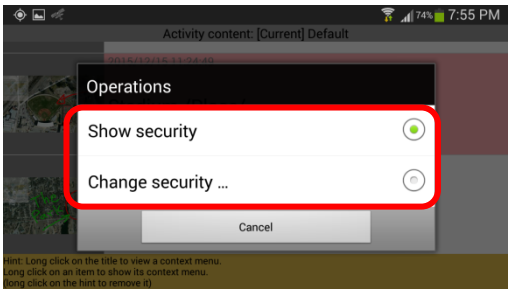
When the changes are complete, click “OK” to finish the operation.



Security …

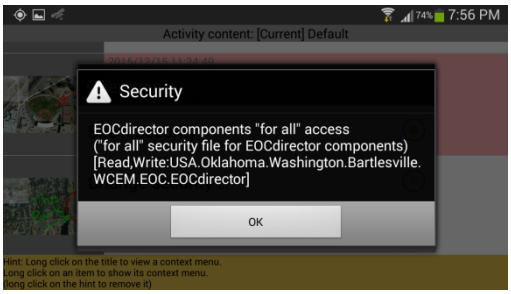
The “Security …” menu option allows a user to view and change the security settings and access for the information stored on the mobile devices.

On clicking the “Security” menu option, another set of menus provide options to show or change the security settings.



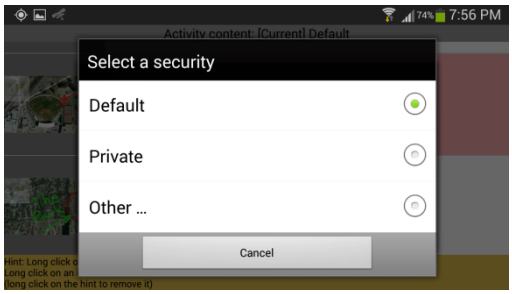
Clicking on the “Show security” option of the Operations menu gives us the security settings of the data element under review.

Show security



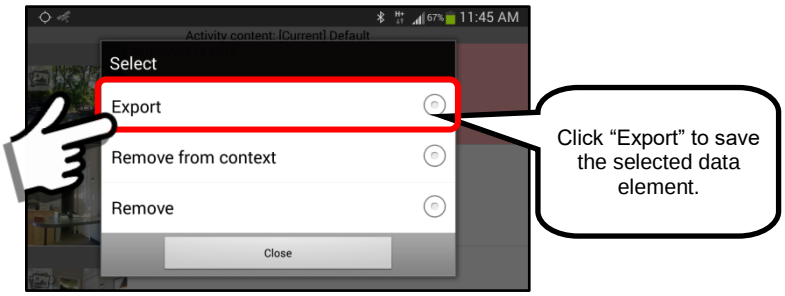
To change the security settings from default (everyone) to private, click on the menu options provided here.

Change security ...

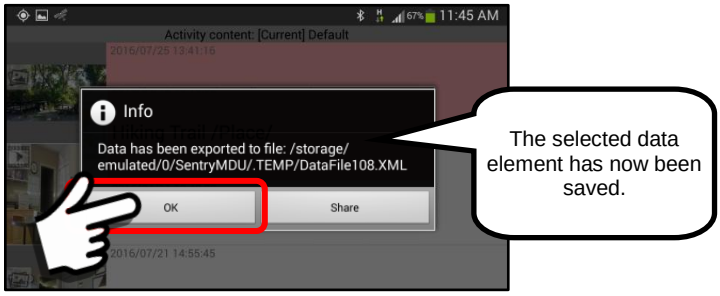


Export

The “Export” menu option allows a user to save a copy of the file in a “temporary” folder location where it is available to send to other users or transfer from the mobile device to another device.



The data element will be saved in the “TEMP” folder. Note that the data element (in this example, an image) has been saved using the DataFile2432.jpg name as assigned by the SentryMDU System. From the TEMP Folder the file may be renamed and moved to other systems.



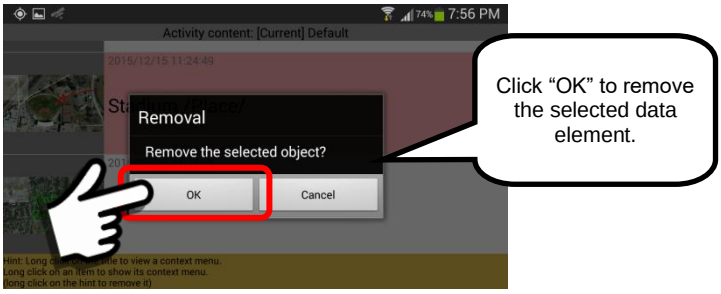
If you want to “share” the document with other users or import into other programs, do this.

Remove from context

This menu option removes content from the .CONTEXT folder on the local device. This situation will occur if a user downloads a long video and plays it. This video would be stored in a memory "cache" on the local device. If some time later, the user wanted to view the video again, it would not be downloaded again because it is already resident on the device. It would be played immediately because it is stored locally. This option allows a user to "remove" the video from the local device memory if they do not want to view it any more.

Remove

The "Remove" menu option allows a user the ability to remove data elements no longer needed.



Important Note: The removal of content data from the mobile device may or may not remove the same data from the Sentry MDU Data Server if it is also stored there. This will depend on the specific configuration settings of your organization. See your System Administrator for your company policies.

14.3.12. Task Management Feature

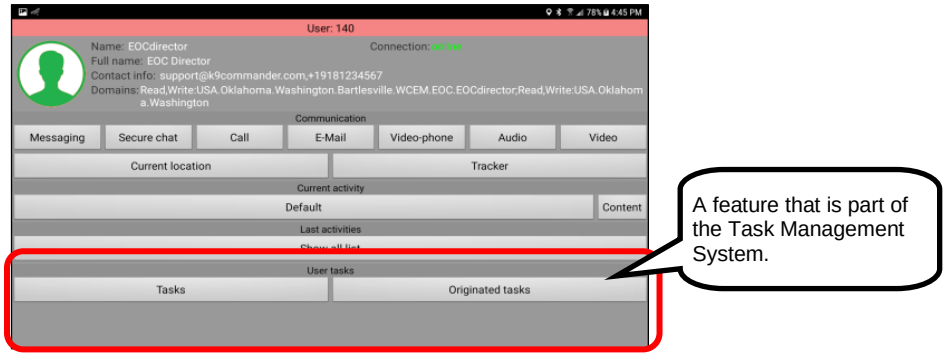
Overview:

The “User Tasks” section of the User Panel is part of the SentryMDU Task Management System. This requires access to the Sentry MDU Desktop client application to properly use this feature (requires additional system configuration).

This topic is explained in the SentryMDU Manager User Guide.

General layout of the User Panel – Task Management:

The Task Management buttons are located on the bottom of the User Panel.



14.3.13. Viewing the selected user Security Domain

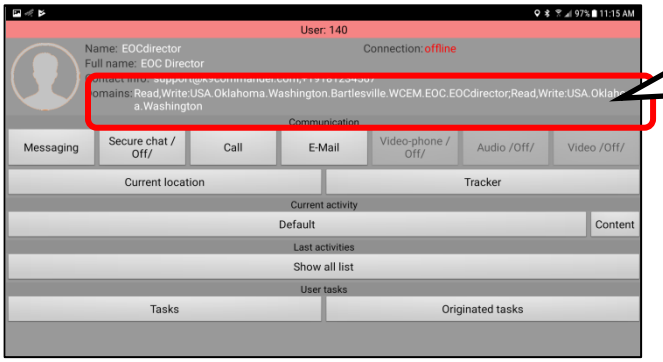
Overview:

This section will describe the Security Domain information that is contained in the User Panel. For a more detailed review of Security Domains, refer to **Section 6** of this manual.

> **Important Note: Default Security Domains created by the SentryMDU System are NOT user changeable. "User" (personal) Security Domains ARE user changeable. Please contact your SentryMDU Administrative person for changes to the default security settings.**

General layout of Security Domain information:

The Security Domain information is contained in the top section of the User Panel as shown below.



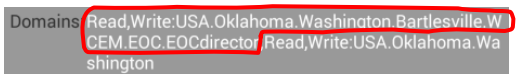
This example, will review the Security Domain of the User = EOCdirector (EOC Director)

Two components of the Security Domain data:

1. ***User level security settings (Security Key #1).***
   The first part of the Security Domain controls the individual User Access for the mobile device. This controls what they can see (Read) and change (Write) on their own device. It also describes a hierarchy within the overall security domain system. This hierarchy and the corresponding "levels" will be decided/created by each organization depending on their needs.

   In the example below we have the following:

   - Read
   - Write: USA.Oklahoma.Washington.Bartlesville.WCEM.EOC.EOCdirector



The “Read”, with no entries after the word, mean that the User may “read” (see) everything on their mobile device, no restrictions. This is the default setting.

The “Write”, with qualifications (USA.Oklahoma.Washington. Bartlesville.WCEM.EOC.EOCdirector) establishes the hierarchical relationship within the overall Security Domain system. In this example, the hierarchy is as follows:

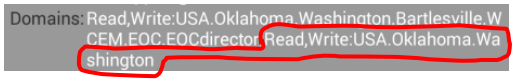
- Country (USA)
  - State (Oklahoma)
    - County (Washington County)
      - City (Bartlesville)
        - Regional Group (Washington Country Emergency Management)
          - Organization (Emergency Operations Center)
            - Individual user position within organization (EOC Director)

If you are aware of other “users” on the system, but you are not able to “see” them on your mobile device, it may be that their (or your) security settings do not allow access. If that is the case, you will need to see your SentryMDU Administrator for any changes.

2. ***Access to the mobile device of other users (Security Key #2).*** The second part of the Security Domain controls the access YOU have to another users’ mobile device. This controls what YOU can see (Read) and change (Write) on THEIR device. The default setting is that YOU have NO privileges, cannot see or change anything (this field is “blank”). This hierarchy and the corresponding “levels” will be decided/created by each organization depending on their needs.

In the example below we have the following:

- Read
- Write: USA.Oklahoma.Washington



The “Read”, with no entries after the word, mean that another User may “read” (see) everything on your mobile device, no restrictions.

The “Write”, with qualifications (USA.Oklahoma.Washington) says that any user with a minimum hierarchical relationship of “USA.Oklahoma.Washington”, within the overall Security Domain system will have “write” access (can turn on-off) features on your device. This would include things such as the audio, video, monitoring sensors, etc. In this example, the hierarchy is as follows:

- Country (USA)
  - State (Oklahoma)
    - County (Washington County)

If you are aware of other "users" on the system, but you are not able to access their audio-video on your mobile device, it may be that their (or your) security settings do not allow access. If that is the case, you will need to see your SentryMDU Administrator for any changes.

3. ***Adding "personal" security domains.***

The example shown above does NOT include a personal security domain entry. However, all users may create personal security domains in addition to those that may be provided by the "system".

A "personal" Security Domain will ALWAYS start with a Username. In the example above, if the user ***EOC Director*** … with a registered Username = "EOCdirector", then the ROOT value of this user's "Home" Security Domain would default to the following:

Read,Write:EOCdirector

A few examples showing a "personal" Security Domain are as follows:

Read,Write: EOCdirector
Read,Write: EOCdirector.Friends
Read,Write: EOCdirector.work
Read,Write: EOCdirector.family
Read,Write: EOCdirector.family.children.alex
Read,Write: EOCdirector.hobby.sailing

These 2 are always installed by default.

Notice that ALL "personal" security domains have the same ROOT context of "EOCdirector". This would be the system default for this user.

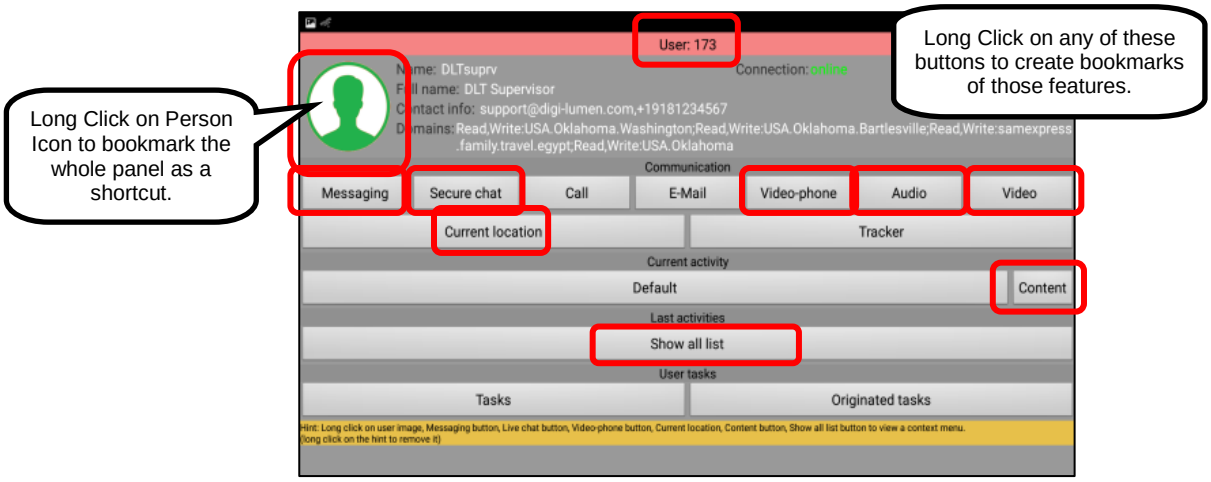
14.3.14. Creating bookmark shortcuts for a selected user

Overview:

The User Panel may be “bookmarked” to allow rapid access to specific users that you correspond with frequently. This section will describe bookmarking a User.

General layout of the bookmark options for the User Panel:

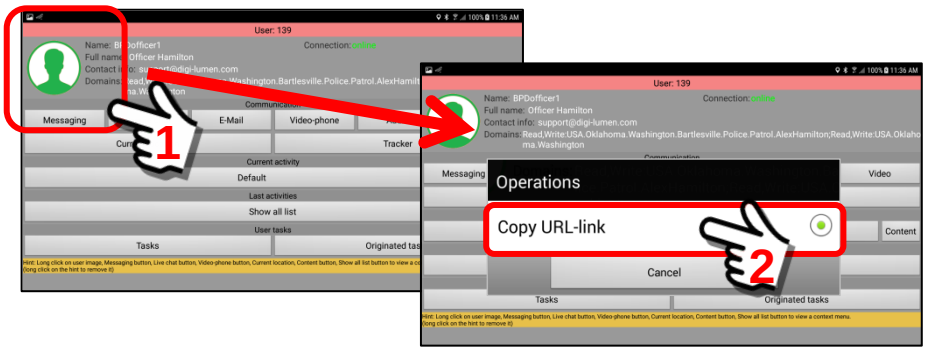
The User Data Panel has the capability to be bookmarked in a variety of locations as shown below. This example will bookmark the User Panel itself.



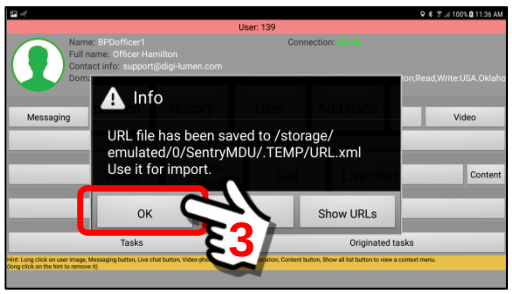
Steps to bookmark the User Panel:

1. ***Open the User Panel and save the URL link.***
   Perform a “long click” on the green icon on the User Panel.

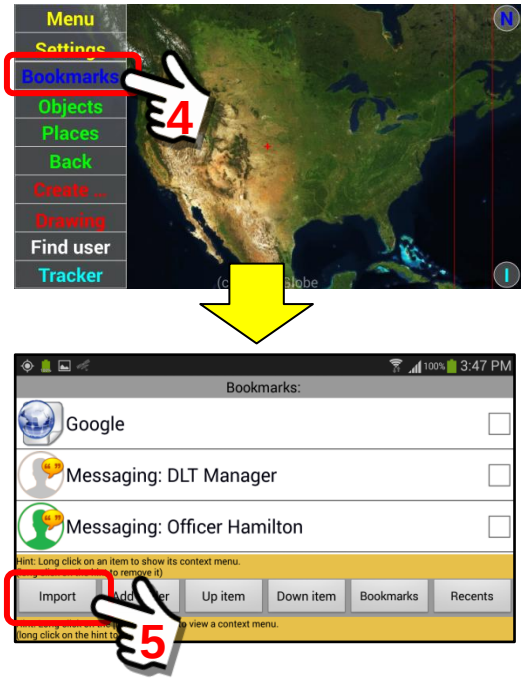
Long Click



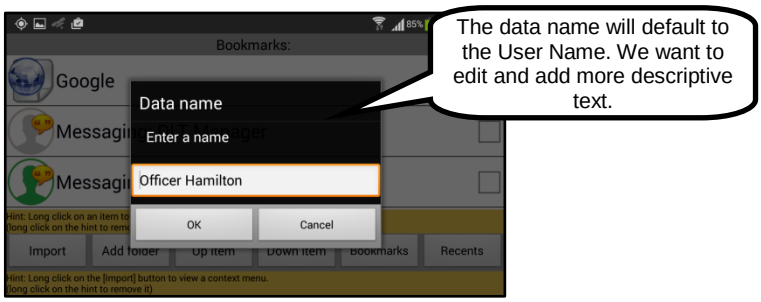
Once the “Copy URL-link” has been clicked, a pop-up box will appear indicating that the link for the User Panel has been saved and is available for import. Click “OK” to continue.



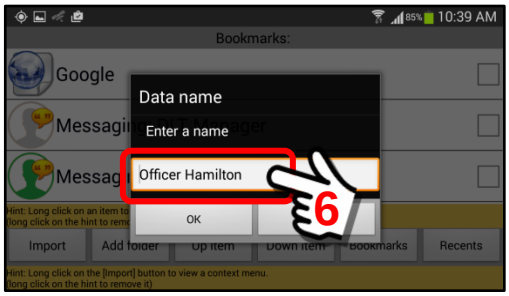
2. ***Navigate to the Bookmark Panel and "import" the link.***
Starting at the Main Menu screen, open the Bookmark Panel and select the "Import" Button.



Click on the "import" button and a pop-up box will appear with the name of the User Panel that was saved. The system will default to the "name" that was provided for this user during configuration. In this example, we have "Officer Hamilton".

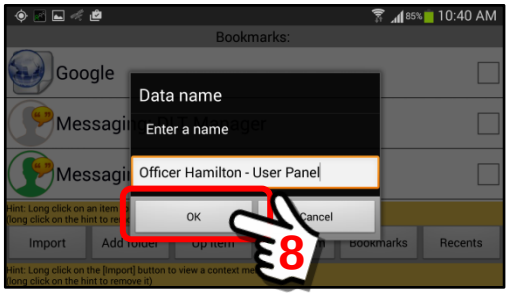


Click on the "name" in the blank and an "on-screen" keyboard will appear to allow editing of the name.

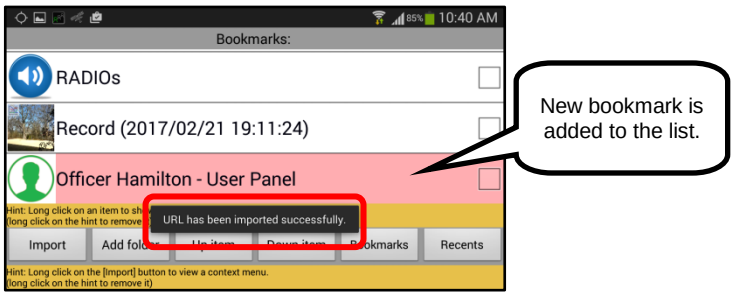


Edit the text by adding " – User Panel" to the entry.

When finished, click the "back" button on the phone to return to the previous screen (or click Done). Click on the "OK" Button to save the changes.



Click the "OK" Button to save the changes and install the new bookmark in the list of available bookmarks.

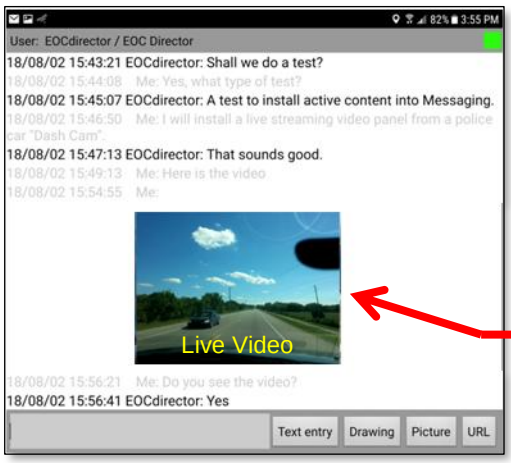


14.4. Example – Embed "active" video content into a text message

Overview:

This section will describe how to embed active content (live streaming audio or video) into the SentryMDU messaging function. This example will use an existing bookmark that opens a video feed from a remote mobile device and puts this "live" video into a secure messaging panel. This same principle may be used to display reference data, pictures, video clips, third-party content and more.

Example of "live" video displayed within the messaging function



Display of "live streaming" video embedded in the Messaging Panel This video comes from a remote SentryMDU mobile device installed as a vehicle "Dash Cam".

The scenario we create is as follows:

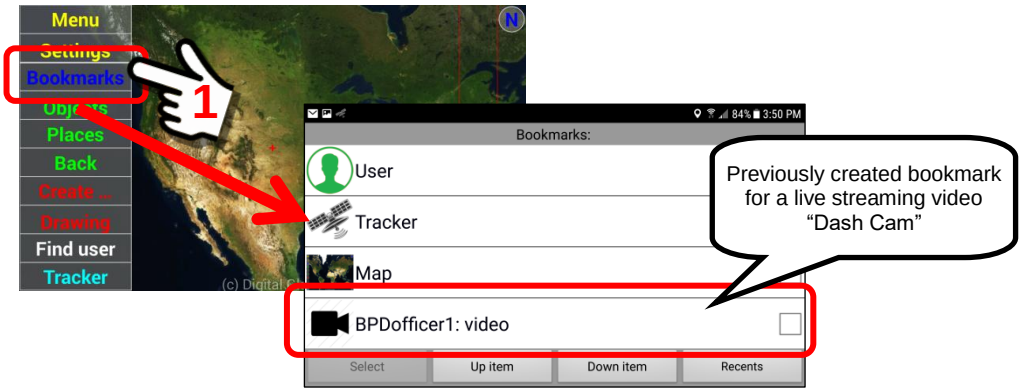
Two users, on different continents, are using the secure Messaging Feature. One User accesses a SentryMDU mobile device configured as a "Dash Camera" on a Police Car on a third continent and installs the "live streaming video" into the Messaging Session so BOTH users may watch the live video.

Steps to install “active” video content into the Messaging Function

1. Verify an existing bookmark for the remote “Dash Cam” mobile device.
2. At the Main Map screen, click on the “Find User” Button.
3. Select the user EOCdirector at the “Select a user” Panel.
4. Select the Messaging Button from the EOCdirector User Information Panel.
5. The Secure Messaging Panel will initialize the encryption method.
6. Begin your Messaging Session with the other User.
7. During the messaging session, to embed active video, click on the URL Button on the Messaging Panel.
8. Navigate to a Bookmarks Panel, select the active video entry that you wish to embed in the messaging layer.
9. The bookmark URL will open as a floating window.
10. Click the “Back” Button to return to the Messaging Panel such that the BPDofficer1-video floating window is an overlay on the Messaging Panel.
11. Click on the video icon on the floating window panel. This will launch the Drawing Mode Panel.
12. Move and resize the live streaming video panel. Click the “Commit” Button when you are ready to transfer the video panel to the Messaging Panel
13. The live streaming video panel is now installed into the Messaging Panel.
14. The embedded video panel is now an active URL link. Clicking on the embedded video panel will launch the BPDofficer1-video floating window.
15. The embedded video panel will remain active as long as the video panel within the messaging panel is visible on the screen.

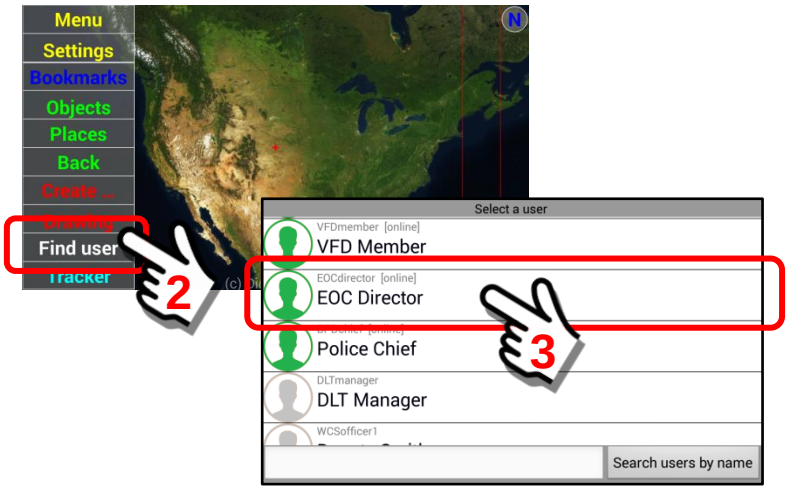
Steps to embed a video panel within a Messaging Panel:

1. ***Verify an existing bookmark for the remote “Dash Cam”.***
   Begin at the Main Map Screen, click on the Bookmarks Button.

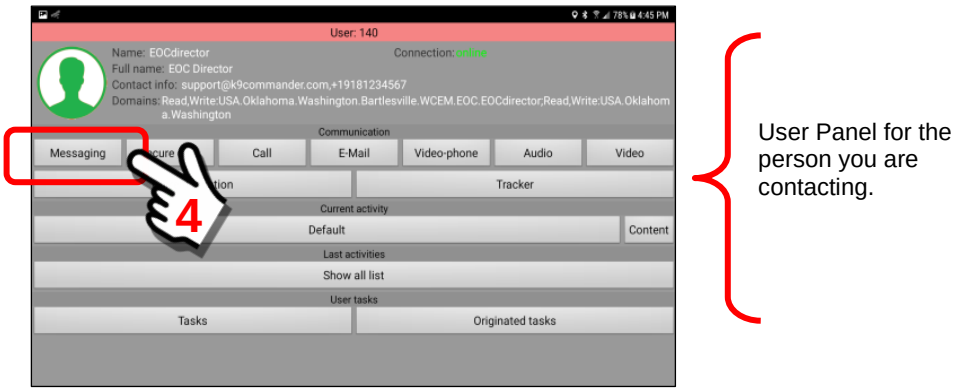


In this example, we are assuming that in the past we have created and saved a streaming video bookmark for a SentryMDU mobile device that is being used as a “Dash Cam” by user BPDofficer1. We simply verify we have the bookmark we will need. Return to the Main Map Screen. This bookmark item MUST be configured to “open” as a floating window.

2. ***Select the "Find User" Button on the Main Map Screen.***
To access the Messaging Feature, we begin by selecting a User from the "Select a user" Panel.

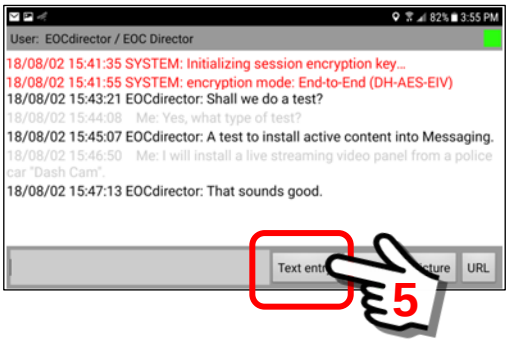


3. ***Select the Messaging Button from the User Information Panel.***
In this example, we will be working with the Messaging Feature.
Click on the Messaging Button.



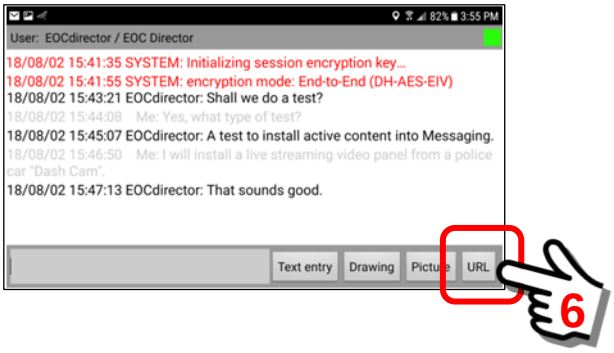
4. ***The secure messaging panel will initialize the encryption method.***
The Secure Messaging Panel will open. Your mobile device is now contacting the other user (ie EOCdirector mobile device) and establishing an encrypted connection. It may take several seconds for the secure connection to be established.

5. ***Begin the Messaging Session with the other User.***
Now that we have "activated" the Messaging Feature, we may begin a messaging session with the other user (EOCdirector).



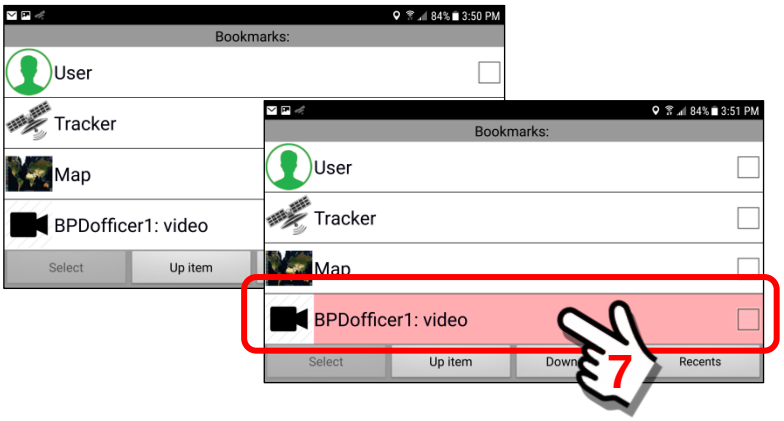
6. ***To embed active video, click on the URL Button.***
Select the URL Button from the Messaging Panel. This will open a set of Bookmark screens so that we may select the previous created bookmark that will open a video feed from the vehicle "Dash Cam" from the user BPDofficer1.

Click on the URL Menu item.

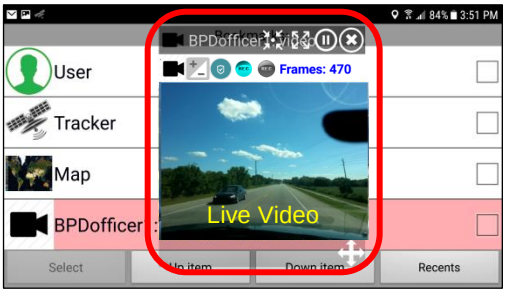


7. ***Navigate to the Bookmarks Panel, select the desired URL.***
At the Bookmarks panel, scroll down the list of available bookmarks until you find the "***BPDofficer1: video***" Bookmark that you will to install into the Messaging Panel.

Click on the Bookmarks Menu item.



8. ***The selected Bookmark will open as a floating window panel.***
Click on the Bookmarks Menu item (ie BPDofficer1: video).
It should open as a “floating window” centered on the screen.

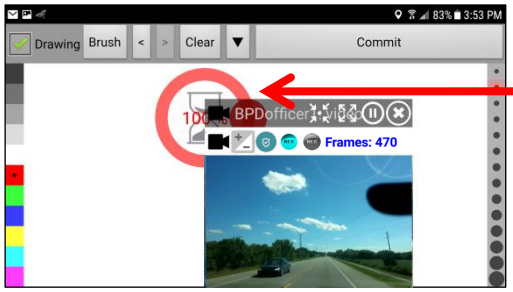


9. ***Return to the Messaging Panel with the BPDofficer1-video overlay.***
Use the “Back” button on the mobile device to return to the Messaging Panel.
The “BPDofficer1: video” floating window should remain on TOP of the messaging panel.

With your “finger”, drag the floating window panel down to about 1/3rd of the screen as shown. The objective is to line up the upper left corner of the floating window (ie the video icon) centered in the screen.

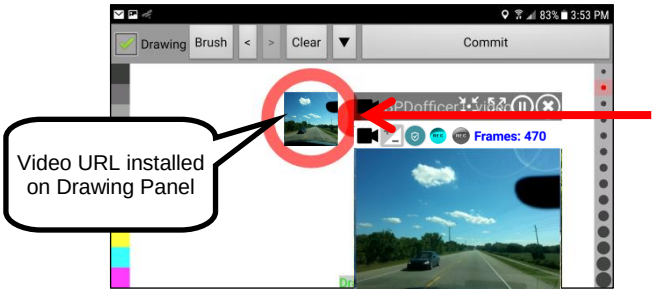
10. ***Launch the Drawing Mode Panel for the floating window.***
Click on the Video Icon located in the upper left corner of the floating window.
This will open the Drawing Mode tool set and install the “BPDofficer1: video” URL onto the drawing canvas.

When the Video Camera icon is “clicked”, it will transfer the “***BPDofficer1: video***” URL from the floating window to the drawing canvas. This will allow movement and resizing of the video panel.



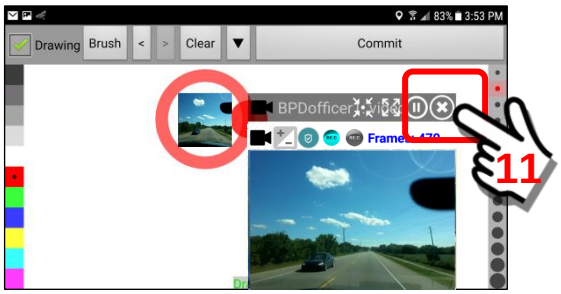
Video URL is transferred from the floating window panel to the Drawing Mode canvas

When the video URL is transferred, it will be installed at the upper left corner of the floating window location. The “new” URL location will begin to display “live” video.

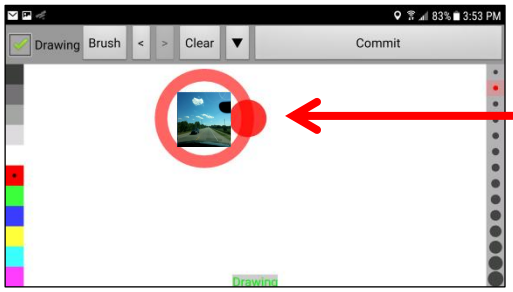


“***BPDofficer1: video***” URL is now transmitting “live” streaming video.

You may now “close” the Floating Window panel, you will not need it for the remainder of this exercise. Click on the “X” Button to close.

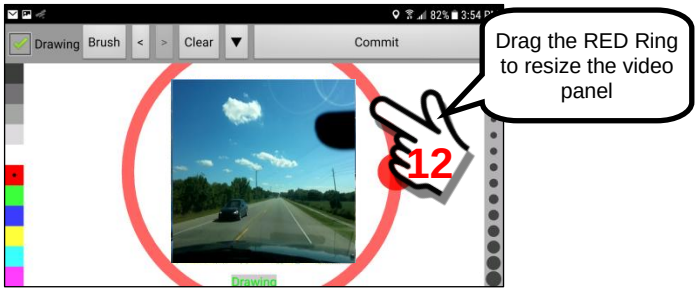


11. ***Move and resize the streaming video panel.***
With the floating window now “gone” you may move or resize the video panel that is installed on the Drawing Canvas. See the Drawing Tools section (**Section 13**) for more information if needed.

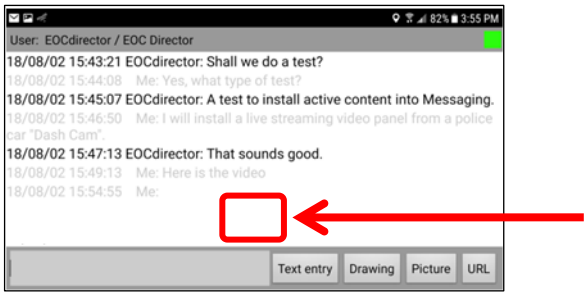


“***BPDofficer1: video***” URL as installed on the Drawing Canvas.

In this example, we have resized the ***BPDofficer1: video*** URL panel as shown below.

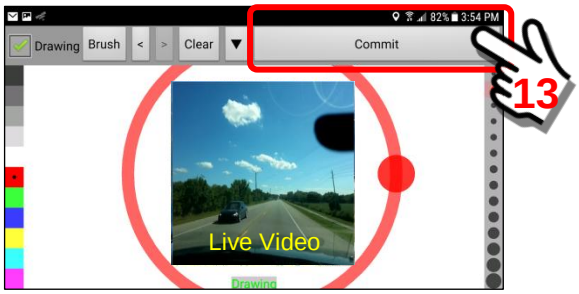


12. ***Install the streaming video panel into the Messaging Panel.***
In this example, we will now INSTALL the "***BPDofficer1: video***" URL into the Messaging Session.

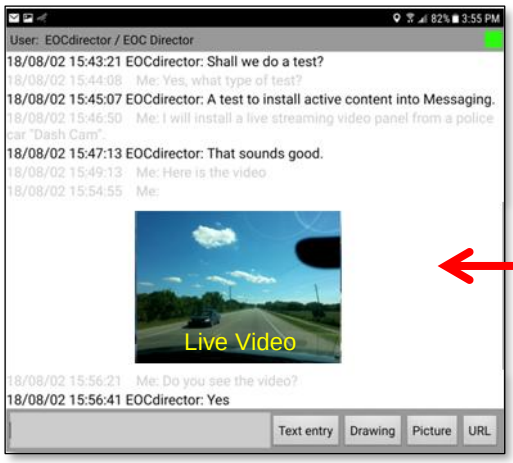


"***BPDofficer1: video***" URL will be installed at this point in the messaging flow.

To install the video panel from the **Drawing Mode Panel** to the Messaging Panel, simply click the "Commit" Button on the Drawing Panel.

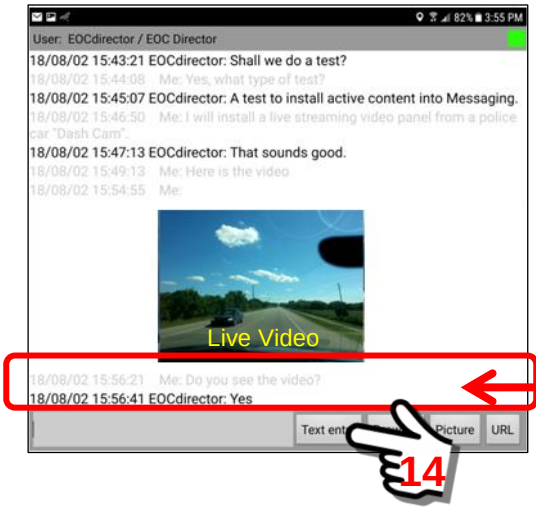


13. ***The embedded video panel is now an "active" URL link.***
The embedded "***BPDofficer1: video***" Dash Cam video is now active and showing live data to BOTH users. The two users may now continue with their messaging session.



The "live" dash cam video from user BPDofficer1 is now displayed inside the Messaging Session.

Once the live streaming has become active, the users may continue with the messaging.



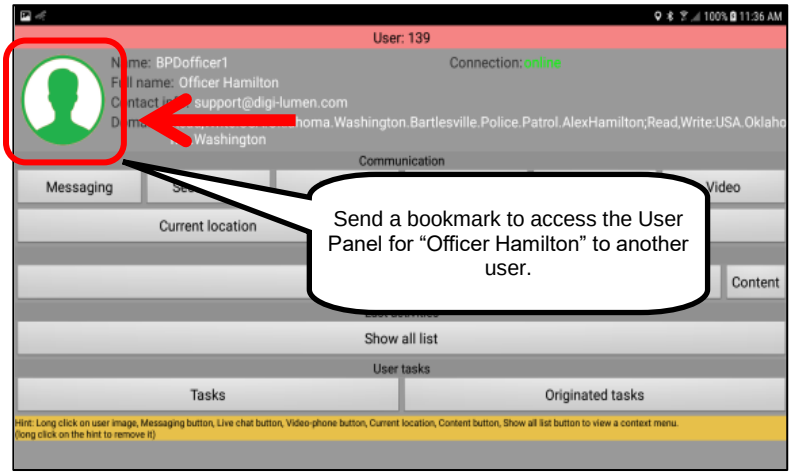
Users continue with the Messaging Session.

14.5. Sending a users information to other users on the network

Overview:

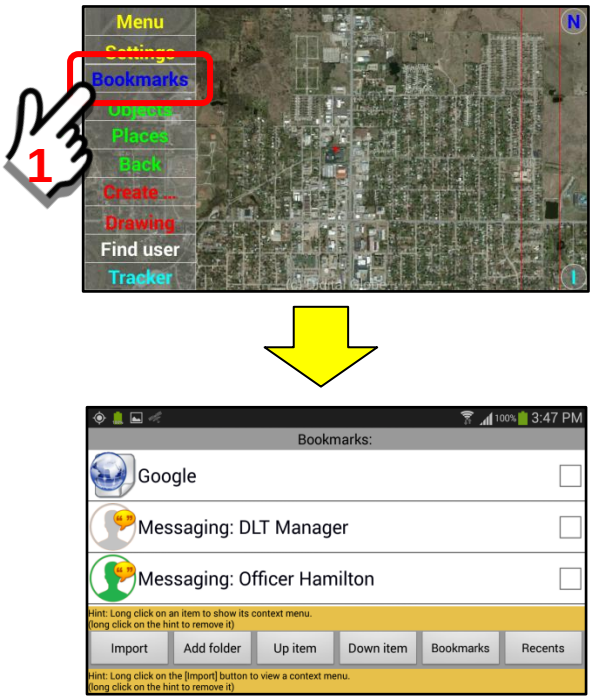
The Sentry MDU System makes it possible for Users to “share” bookmarks with each other. Of course, those sharing bookmarks must have the proper security privileges. This will enable users to rapidly share bookmarks of contact information, places and locations with other users.

In this example we will have a user share a bookmark of the “User Panel” with another user on the network.

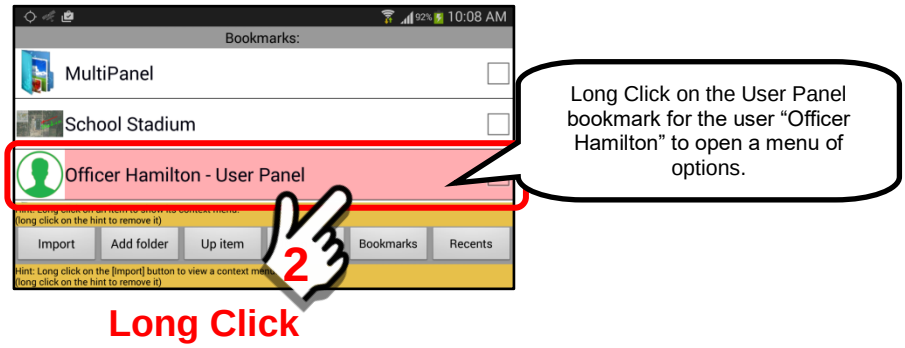


Steps to send a User Panel bookmark to another User:

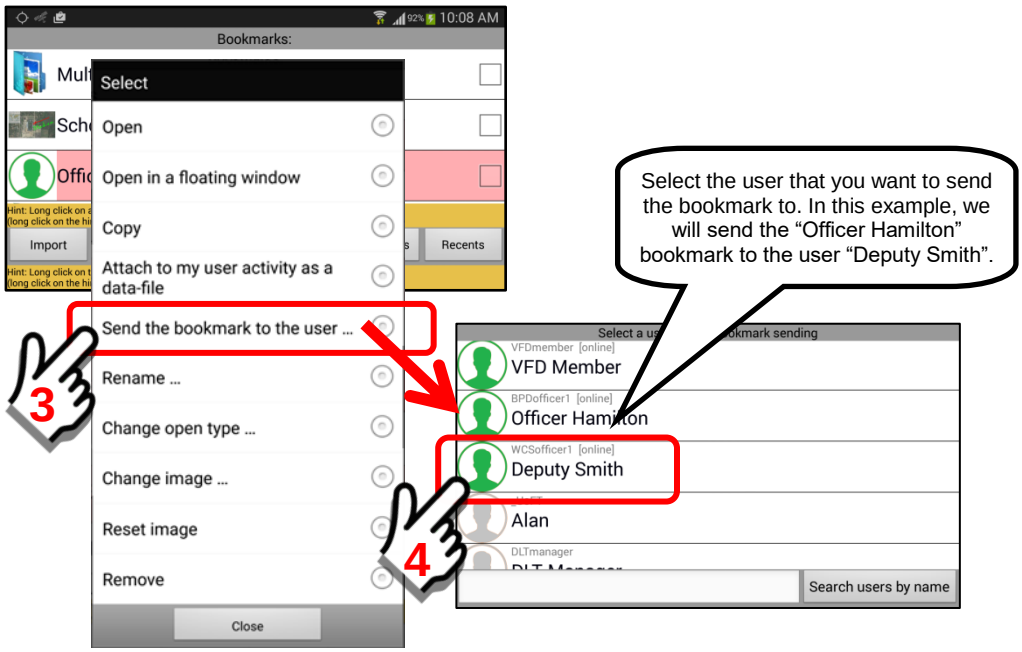
1. ***Navigate to the Bookmarks panel.***
   Click on the Bookmarks menu item to launch the Bookmarks Panel.



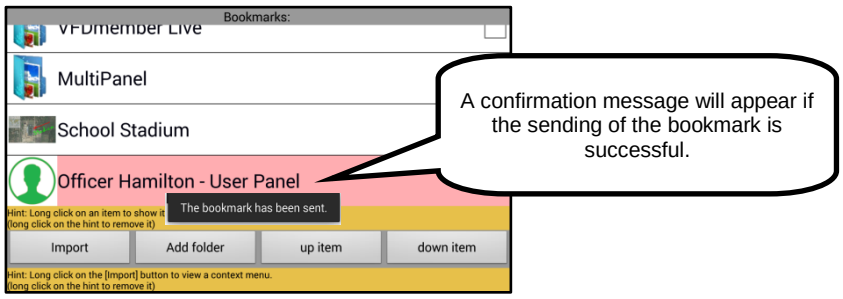
2. ***Select the desired bookmark to send from the menu list.***
In this example, we will select the "*Office Hamilton – User Panel*" bookmark to send to another user. Scroll down until you find the user you want.



3. ***Select the User that you want to send the bookmark TO.***
A "Long Click" on the bookmark will open a selection panel. Pick the menu choice to send the bookmark to another user.



4. ***Send the bookmark.***
Click on the user name to send the bookmark. If the transfer is successful, a confirmation message will appear,



15. The “Tracker” Button features

15.1. Overview of the Tracker panel

Overview:

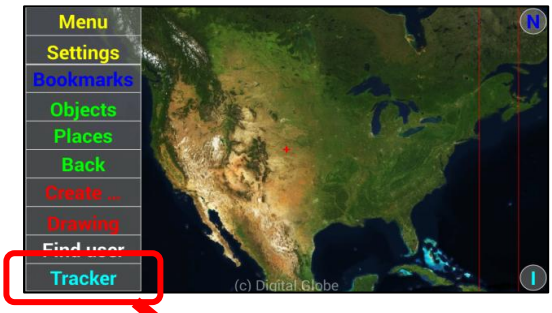
The Tracker feature provides for audio/video recording, body cam capability, setting of POI’s, monitoring environmental sensors and setting alarm parameters. The Tracker Panel will be the most used menu item. It is important that you become very familiar with the features of this panel as this is the core functionality of the SentryMDU System. This is the primary GPS tracking feature panel.

The “Tracker Panel” can only be accessed by the user of the mobile device (cannot be remotely accessed by others). However, several of the functions on the panel, such as sensors, recorders and archive can be accessed by others via the Mobile Object Panel.

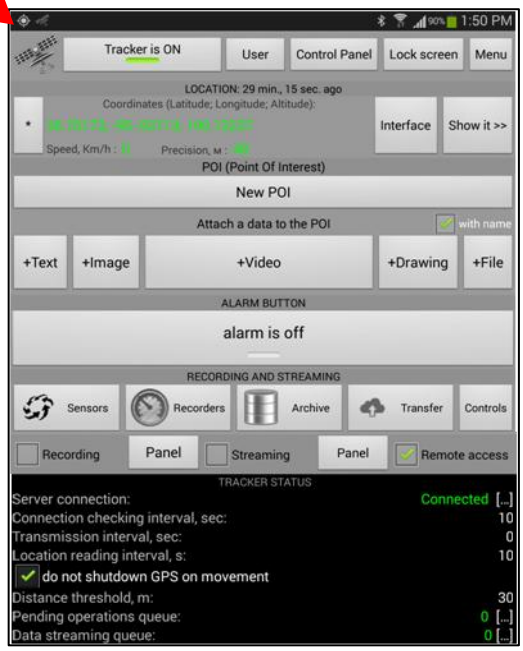
This section will describe the features and functions of the Tracker Panel.

General layout of the Tracker Panel:

The Tracker Panel is accessed from the Main Menu Screen by clicking on the “Tracker” Button.



Tracker Panel



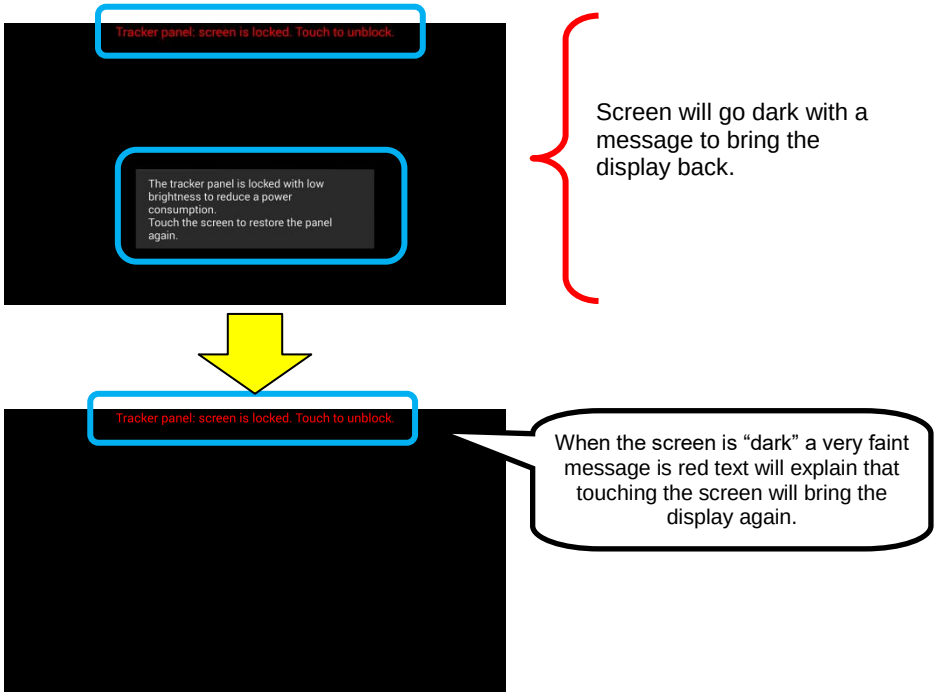
General operation of the Tracker Panel:

1. ***Screen "dimmed" on Tracker Panel after 30 seconds.***
   The Tracker Panel contains most of the controls and configuration settings for the SentryMDU mobile device. Many features are "launched" from this panel. In most cases after a feature is started (ie recorder started) the user does not want the display screen on the mobile device to remain "on". For this reason, the Tracker Panel (and subordinate screens) will be dimmed to black after 30 seconds of non-use. To re-establish the Tracker screen simply "tap" the screen on the mobile device and the screen will return.

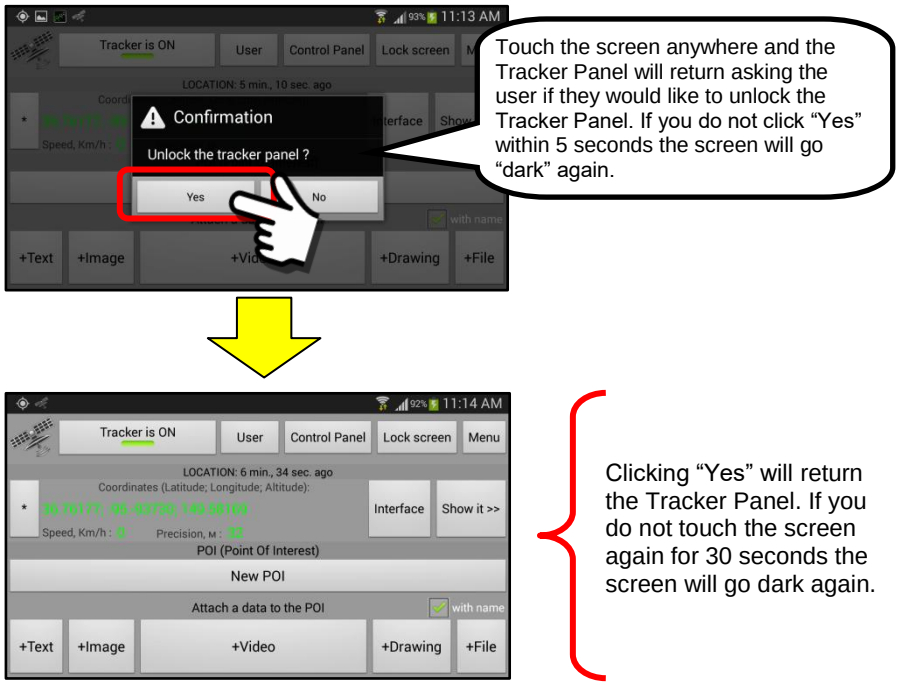
   The process is shown below.

   <u>Open the Tracker Panel</u>

   <u>After 30 seconds the screen will go dark (or 30 seconds of non-use)</u>

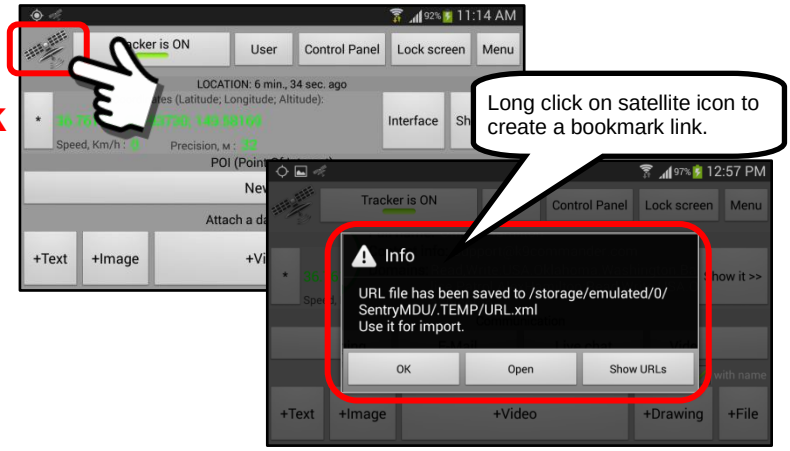


To restore the Tracker Panel display, touch the screen



2. ***A bookmark may be created for the Tracker Panel.***
The Tracker Panel allows a User to "bookmark" the panel. This will allow rapid access to those features used most often. A "long click" on the satellite icon in the upper left corner of the screen will create a bookmark link to the panel.

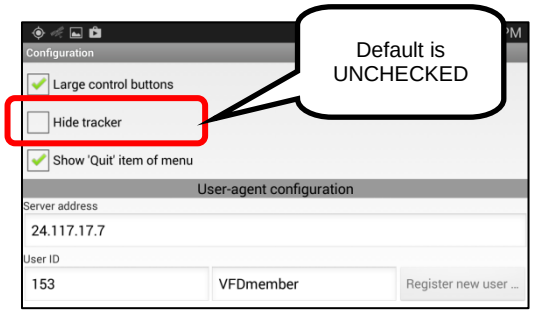
Long Click



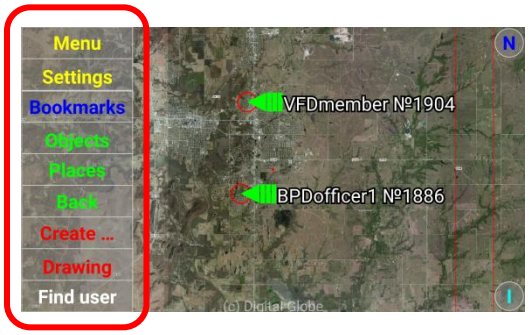
Once the link is created, navigate to the Bookmark Section and "import" the bookmark into your current bookmark list. See **Section 9** for details on the Bookmark feature.

3. *Hiding the Tracker Panel.*

The Tracker Panel may be “hidden” from user view by a Configuration Setting. See **Section 5.4** for details. The “Hide Tracker” configuration setting allows a user to hide the Tracker Panel so that the menu choice does NOT appear on the Main Screen.



If CHECKED, notice that the Tracker menu item does NOT appear on the menu



Tracker menu item is gone

15.2. Description of buttons and features

15.2.1. Location data (Latitude, Longitude, Altitude, Speed)

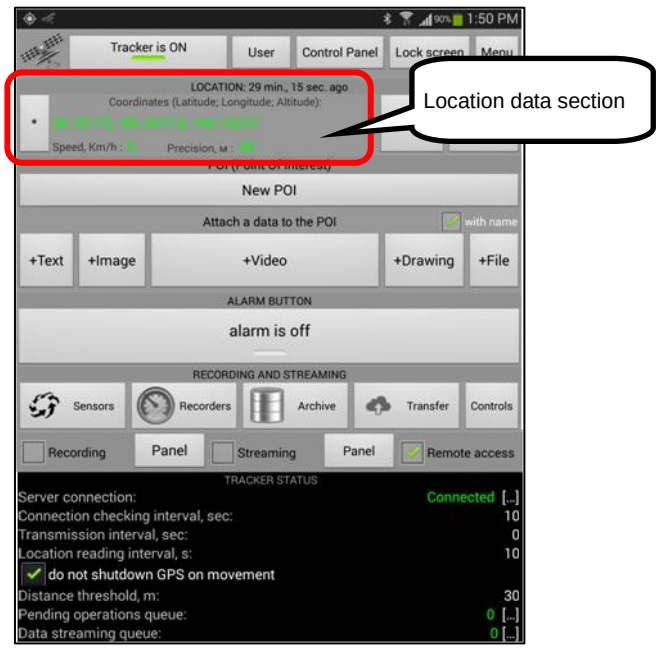
Overview:

The Tracker Panel implements the location acquisition services for the SentryMDU System on the mobile device. The system uses GPS/GLONASS satellite scans to determine the physical location of the mobile device anywhere in the world. The GPS tracking feature may be "turned off" (**Section 15.2.2**) and then the device location will not be reported to the Data Server.

Important Note: The location of the mobile device is reported to the SentryMDU Data Server on a periodic basis. The "default" time interval is to report the mobile device location once every 300 seconds (5 minutes). For most Users this is adequate. For those users that have jobs where more frequent updates are necessary (ie First Responders, Police, Fire, etc.) we recommend a time interval of 10 seconds or shorter. See Section 5.4 for details.

Location data on the Tracker Panel:

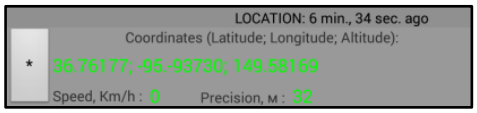
The location data is centered in the upper middle portion of the Tracker Panel.



Description of the location features:

1. ***Screen display of location features***

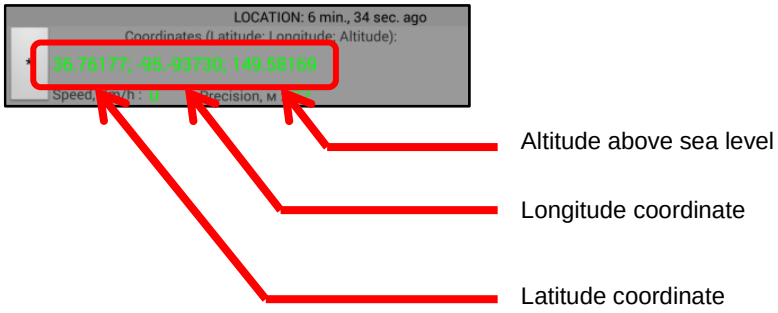
   This section will describe the location information that is available on the Tracker Panel.



Location

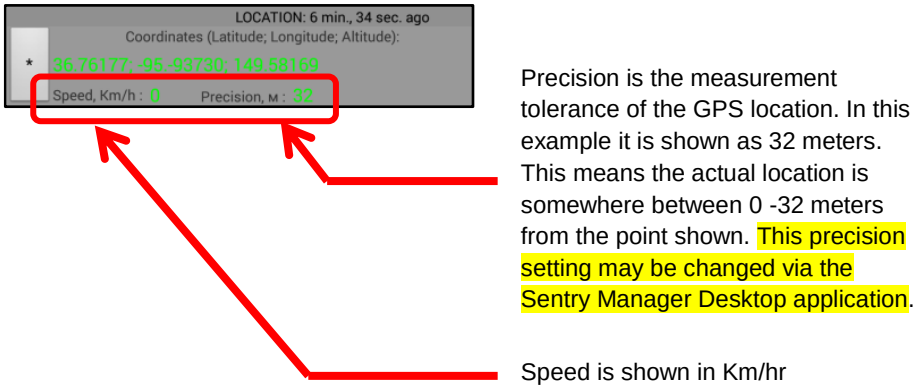
This describes the timeframe since the last location scan of data from the GPS/GLONASS satellites.

GPS Coordinates



These are the GPS coordinates as returned by the satellite receiver in the mobile device.

Speed and Precision



The GPS coordinates, speed and precision are all affected by the user location, the number of satellites that are “visible” to the mobile device, the signal strength, and the quality of hardware on the mobile device. Generally, higher quality mobile devices will have better antennae design and more sensitive GPS receivers.

15.2.2. The “Tracker is ON/OFF” button

Overview:

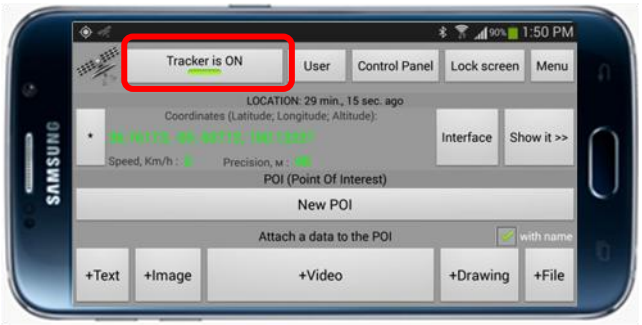
The system provides that a user may turn on-off the GPS tracking function. The “Tracker is ON/OFF” Button is used for this purpose.

The default operation of the SentryMDU System is for each mobile device to report its location to the SentryMDU Data Server on a periodic basis (set in the configuration settings). This will happen automatically with no input from the user. As long as the App is running on the mobile device (even as a background service) the GPS location is tracked.

This section will describe how to turn this feature on-off.

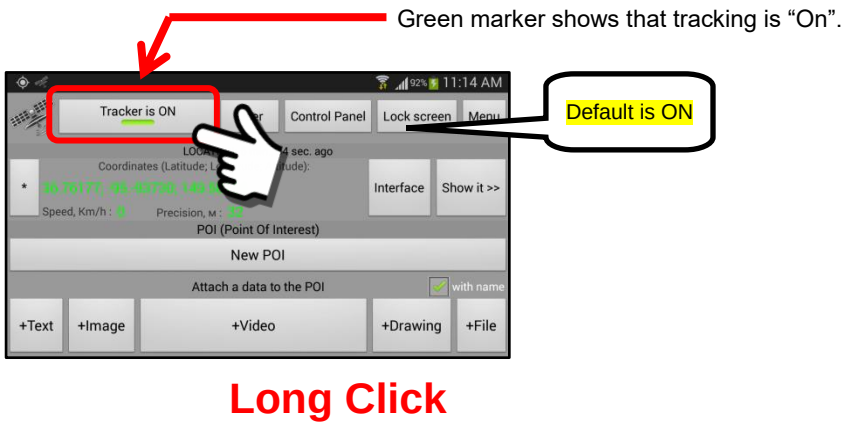
Tracker Panel – “Tracker is ON/OFF” Button:

The tracker “on/off” button is located in the upper left hand corner of the display screen. The button is activated and deactivated with a “Long Click”.



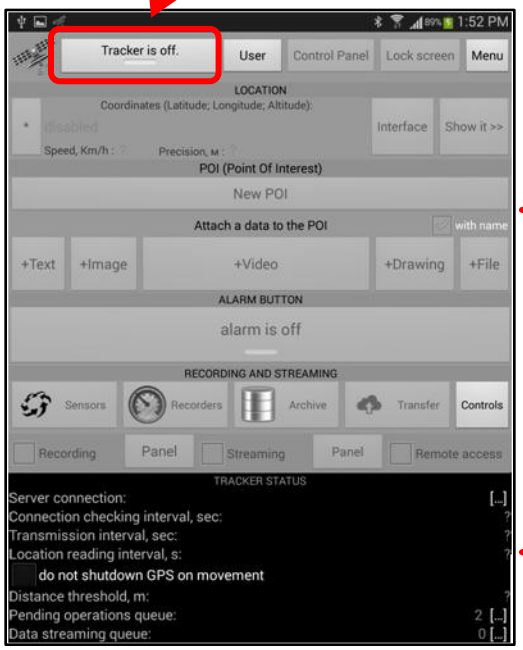
Description of the “Tracker is ON/OFF” feature:

1. ***Turning the tracker feature on and off.***
   Notice that when the tracking is “active”, a green indication marker is shown on the button. In this example, turn off the Tracker Feature by performing a “Long Click” on the Tracker Button.



Performing a “Long click” on the Tracking Button will turn “off” the feature. Notice that most other buttons are “grayed out” (inactive).

Green marker is now changed to gray, shows that tracking is “Off”.

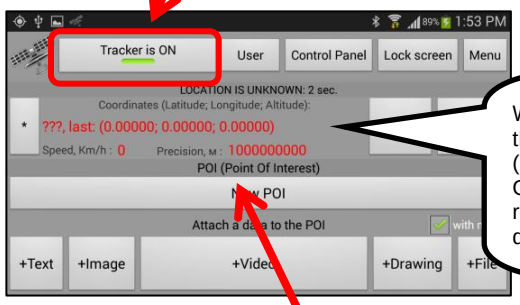


When the tracking feature is “off” most functions are made inactive.

Server connection has been stopped and all GPS tracking functions stopped.

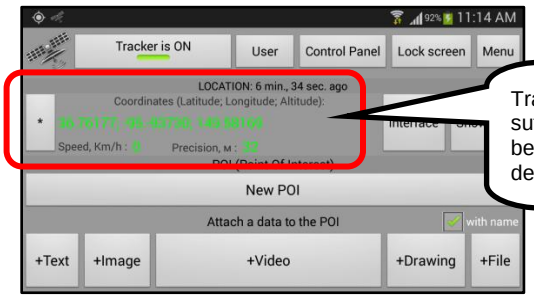
To re-start the Tracking function, perform a “Long click” on the Tracker Button. A green indicator should appear showing that the tracking function is now active.

Green marker is now visible, shows that tracking is “On”.



When tracking has been turned off … and then turned on again, it takes some time (10 seconds to several minutes) for the GPS receiver in the mobile device to rescan satellite signals and determine the device location.

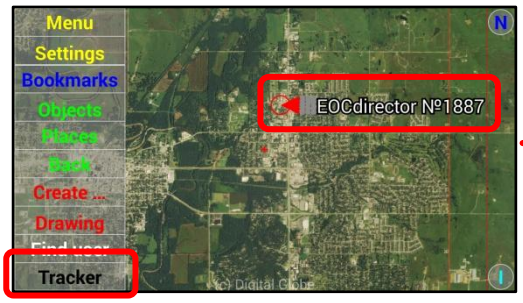
Will be “red” until sufficient satellites have been scanned to determine device location. The text will then turn green.



Tracking is back on and sufficient satellite data has been received to determine device location. Text is green.

2. ***What other users will see when your tracker feature is "Off".***
When the tracking feature is turned off, these are what the screens will look like.

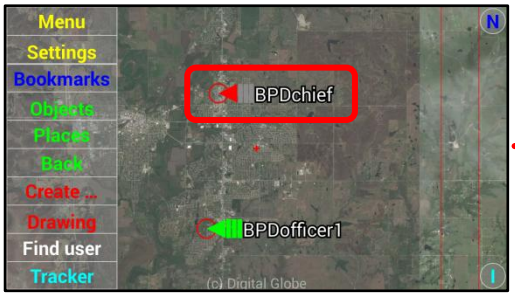
<u>When you turn off YOUR Tracking Feature</u>



The Object Marker on the screen (EOCdirector) has a red arrow and gray bars and is located at the "last" known location for the device.

The "Tracker" Menu item is changed from blue to black text.

<u>When another user turns off THEIR tracking feature</u>



The Object Marker on the screen (BPDchief) has a red arrow and gray bars and is located at the "last" known location for the device.

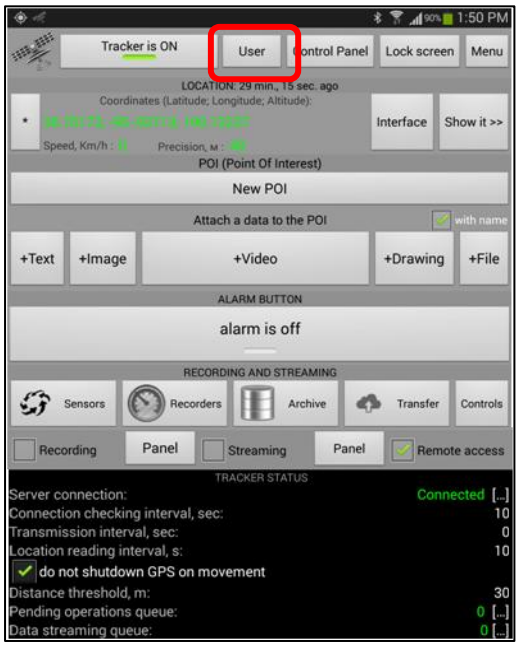
15.2.3. The “User” button

Overview:

The “User” Button on the Tracker Panel provides access to the User Information Panel. This panel is also available from the Main Menu, “ I “ icon in the lower right hand corner. This panel is discussed in **Section 16** of this User Guide.

Tracker Panel – “User” Button:

The User Button is located at the top middle portion of the Tracker Panel screen.



Access to the User Information Panel:

A click on the User Button will open the User Information panel. Since this panel is also available from the Main Screen, this button is simply a convenience for the User.

The **User Information Panel** will be discussed in detail in **Section 16** of this User Guide.

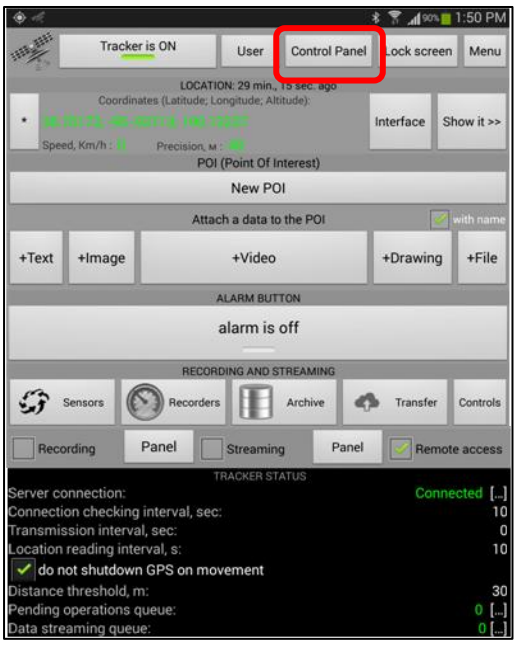
15.2.4. The “Control Panel” button (Body Worn Camera)

Overview:

The Control Panel button implements the “Body Worn Camera” solution for the SentryMDU System. This button launches a control panel for the “Body Cam”. This control panel is designed with 3 large buttons that make turning the “Body Cam” feature on/off a simple action. This section will describe the setup and operation of the Body Worn Camera feature.

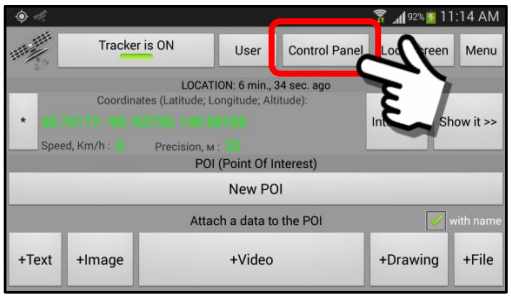
Tracker Panel – “Control Panel” Button:

The “Control Panel” Button is located at the top middle portion of the Tracker Panel screen.

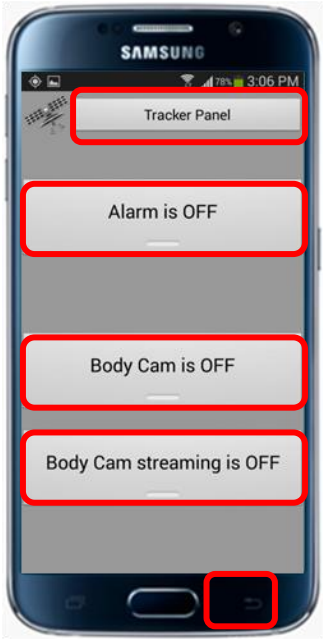


Description of the Body Worn Camera feature:

1. ***Screen view of the Body Worn Camera control panel***
   To open the Body Camera control panel, click on the “Control Panel” button.



The Body Worn Camera control panel is designed for the phone to be held in a vertical position. The elements of the screen layout are explained below.



Returns the User to the Tracker Panel

Turns the “Alarm” feature on-off

Turns the “Body Cam” feature to record on the local device, on-off

Turns the “Body Cam” feature to stream audio-video to others, on-off

“Back” button on the phone closes the Control Panel and returns to the Main Map screen. Clicking the Tracker Menu item returns directly to this Control Panel.

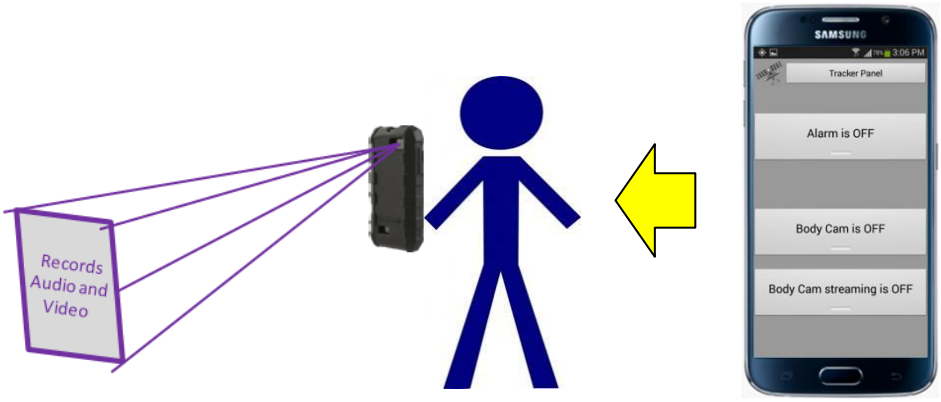
2. ***Overview of the Body Worn Camera feature***

The Body Worn Camera feature can allow the user to turn on the recording by several different methods:

a. Manually, by clicking a screen button
b. Tap Control by “tapping” on the screen

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, you will NOT HAVE the Tap Command option.

c. Voice commands by voice recognition features



3. ***The "Alarm" Button***

This is a "one button" activation of the Alarm parameters that have been set during configuration. This can monitor any of the "sensors" on the Device and provide an alarm notification if they are outside of desired parameters. The SentryMDU Manager destop client is required to set and use this feature.

4. ***The "Body Cam" Button***

This turns the Audio-Video recorder on or off. This feature uses the settings for the Audio and Video (frames per second, resolution, bitrate, audio fidelity) that were previously set up in the Sensor Channels.

5. ***The "Body Cam streaming" Button***

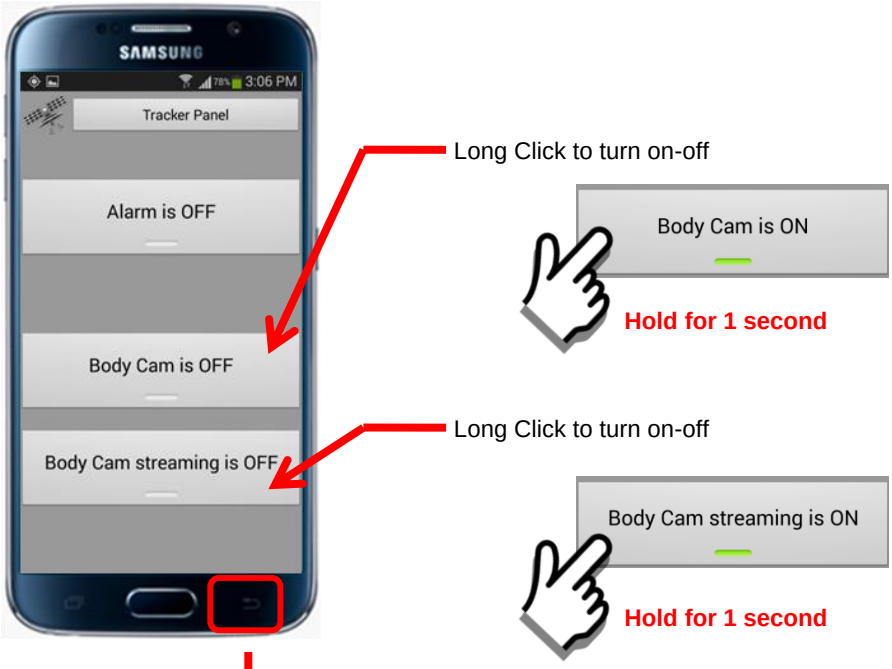
This turns the "streaming" function for the Audio-Video recorder on or off. This feature uses the streamer settings for the Audio and Video (frames per seconds, bitrate, audio fidelity, etc.) that were previously set up in the Sensor Channels.

6. *Activating the Recording and Streaming features*

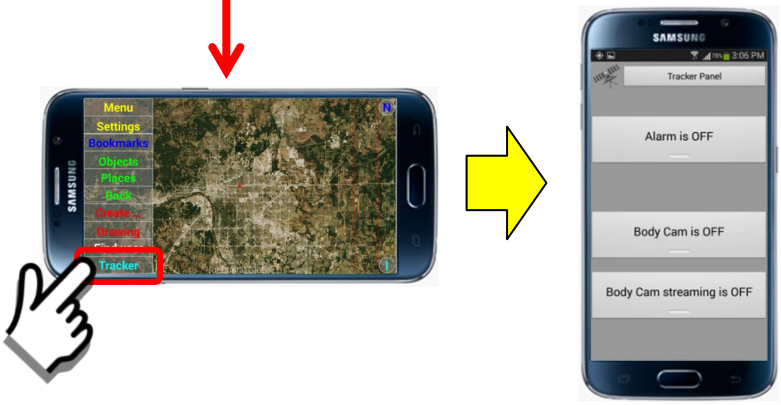
This section will describe how to activate and use the features.

To activate the Audio-Video recording (or streaming) … perform a LONG CLICK (touch for about 1 second). A long click is used so that it takes more than a simple “touch” to activate the feature.

The device may also be configured to provide vibration, voice notification and periodic beeping to alert the User that the recording is “active”.

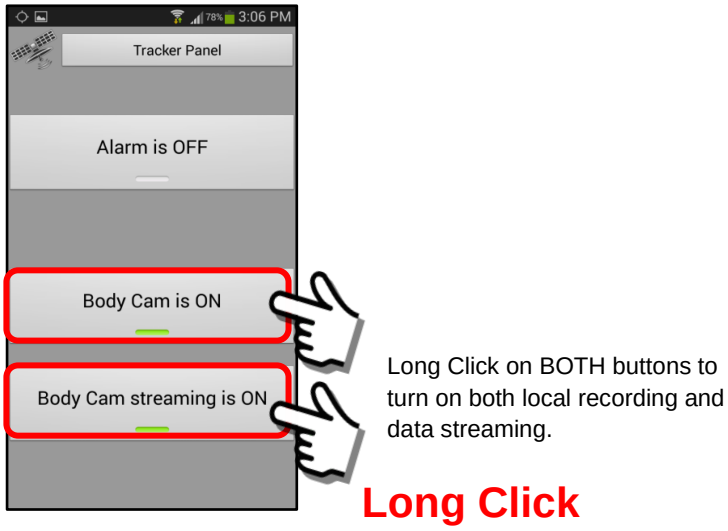


The “Back” Button returns a User to the Main Map Menu. However, the program remembers that the user was at the Body Cam panel … and the next time a User clicks on the Tracker Menu choice … the User is taken directly to this Body Cam panel (bypassing the Tracker Panel).



7. ***Activate BOTH local recording and streaming.***
The Body Worn Camera feature has the ability to both “record” the audio-video on the local device AND stream live audio-video to the SentryMDU Data Server which in turn can broadcast the live audio-video to other users on the system.

Simply activate BOTH buttons as shown below.



Configuration settings for the Body Worn Camera feature:

1. ***Overview of configuration***
The configuration of the Body Worn Camera feature is generally a “one time” exercise for a mobile device and is normally done during initial device configuration and setup.

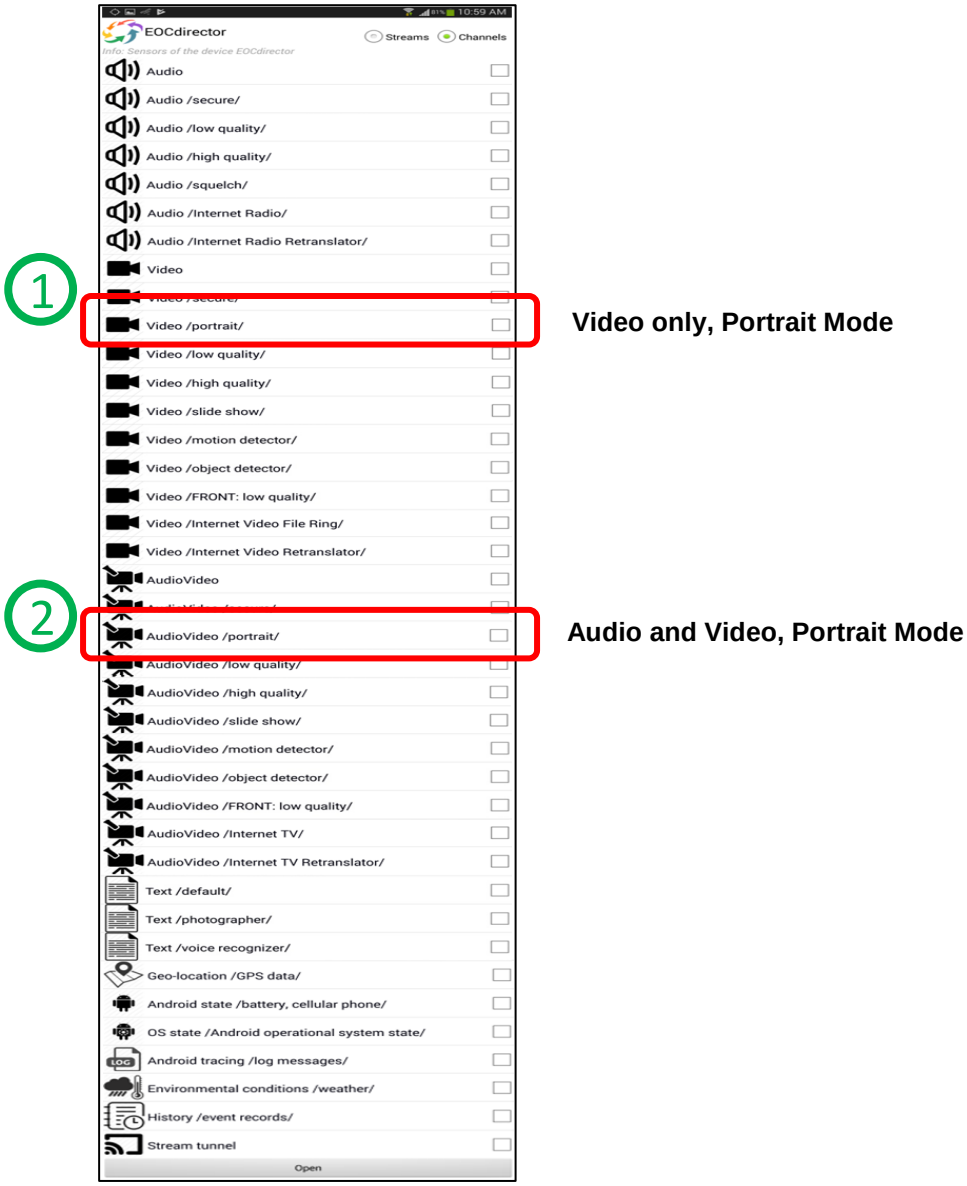
Since the SentryMDU System software is device independent (works with many different types of mobile devices) the configuration settings will depend on the specific hardware used. Issues such as screen resolution, camera/video resolution, radio specifications (ie 5G, 4G-LTE), GPS sensitivity and a host of other factors will all affect how the mobile device is configured.

This section will describe the menus and screens that will need to be addressed during configuration for the Body Worn Camera feature. Other sections of this guide will provide additional detail on specific configuration issues that may apply to the Body Worn Camera feature but are not included here.

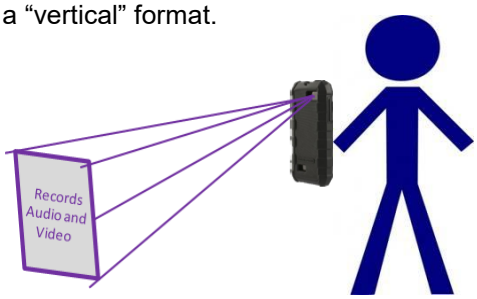
2. ***Configuration of the Camera Sensor (resolution, bitrate)***
The configuration of the Camera Sensor on the mobile device will depend on the hardware specifications and the application. Some of the considerations when setting up the camera resolution are as follows:

a. Camera resolution setting
b. Aspect ratio of camera sensor
c. Recording framerate of camera sensor
d. Bitrate of data transfer via Cellular or WiFi

To set up a mobile device to function as a “Body Worn Camera” the SentryMDU System provides the user with two pre-configured options. One is video only (no sound) and the other is audio and video. Since the mobile device is generally to be worn in a vertical orientation, the video is to be recorded in “portrait” mode.



The purpose of the “Portrait” mode designation is to remind the user that this channel sensor (camera sensor) is having the video image recorded in a “vertical” format.



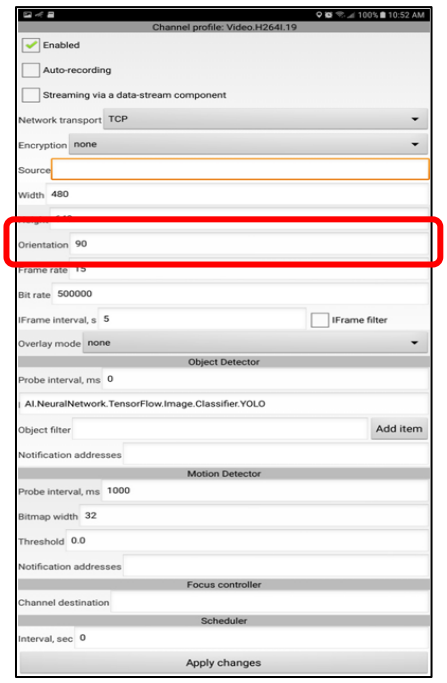
The images below show how the lens arrangement on a particular camera sensor will affect the field-of-view of the image.

Horizontal Format

Vertical Format

The default setting for the “portrait” mode is the vertical format image. As you will note from the images above, the vertical format exposes more of the scene in the vertical plane.

In configuration of the video channel it is possible to “change” the aspect ratio of the recorded image and rotate it. This is performed by putting a value of anywhere between 0 – 360 degrees of rotation into the “Orientation” data field.



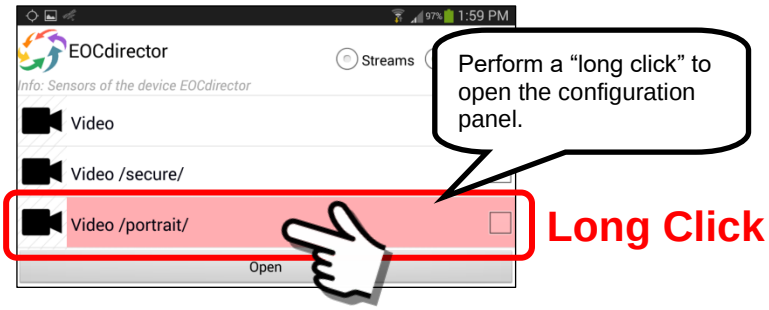
The default setting for “Orientation” is 90 degrees. This means the transmitted image is rotated 90 degrees.

If image rotation is desired, enter a value between 0 - 360 in this block.

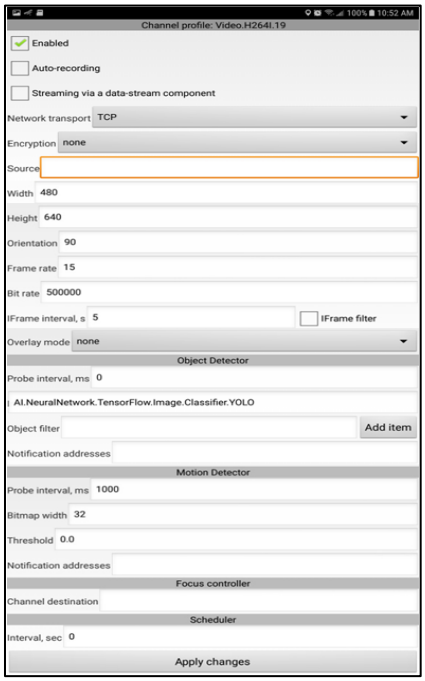
When transmitting live video from a mobile device worn as a “Body Cam” (vertical format) it may be desirable to have the aspect ratio “rotated” 90 degrees from the vertical format so it appears as a horizontal format image. The SentryMDU System allows the user to present the image in either a vertical or horizontal format. We use software algorithms to rotate the recorded/streamed image to achieve the desired view.

> **Important Note: Depending on the type of camera sensor (and lens arrangement) used by the device manufacturer, you will need to experiment with the width and height settings of the aspect ratio to arrive at an image that is not skewed (stretched).**

This example will use the “Video /portrait/” channel as the selected item and we will add a separate “audio” channel to the final configuration (we could have used the combined AudioVideo). The section will review the steps required to set up a “pre-configured” channel that can be used in the Body Cam application.



To review the configuration settings for the “Video /portrait/” channel, perform a “long click” on the menu item.



Default parameters for the “Video /portrait/” channel.

The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

TCP is the default network transport protocol that is used for most Sentry MDU features. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

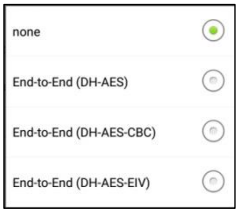
See **Section 5.6** for details.

e. Encryption

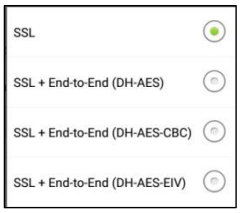
The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

The “Source” data entry location is for specifying a data source for the channel. In our example of the Video channel recorder, when the “Source” is empty (default) this indicates that the camera on the mobile device will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

This is the “width” of the video capture setting for the camera (height in portrait mode). Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent.

> **Reminder: For the Body Cam, in “portrait” mode, we are rotating the image 90 degrees and the “width” now becomes the vertical height. If your device has a 16:9 aspect ratio, you must still have the same aspect ratio to match the camera sensor native format.**

Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480).

h. Height

This is the “height” of the video capture setting for the camera (width in portrait mode). Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-

1920x1080. These settings are very much device dependent.

Reminder: For the Body Cam, in "portrait" mode, we are rotating the image 90 degrees and the "height" now becomes the horizontal width.

Also please note that just because a mobile device can record HD video, the ability to "transmit" due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480).

i. Orientation

The "Orientation" setting allows a user to "rotate" a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default is "0" (zero) which means no rotation.

j. Frame rate

This is the video data transfer rate in "video frames-per-second" of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the "Bit rate" all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the "Frame rate" at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

This is the data transfer rate in "bits-per-second" of the video data stream. The default of 2000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 5G, 4G-LTE cellular networks, values of 5 – 8000000 are appropriate.

l. iFrame interval, s

The default setting of 5 seconds is appropriate for most users. This "iFrame interval" is the time interval between "Key Frames" of "I-Frames" in an

H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3,2,1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

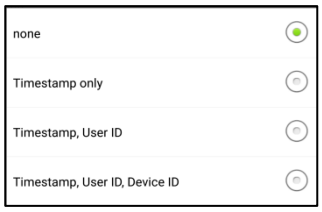
m. iFrame filter

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

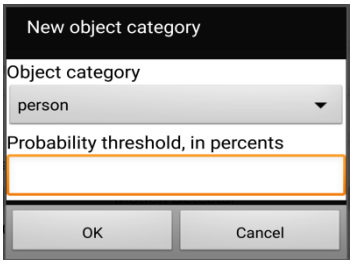
A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

t. Motion Detector - Bitmap width

The default is “32”.
This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them.

The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent. See **Section 15.5** for an example configuration.

w. Focus Controller – Channel Designation

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

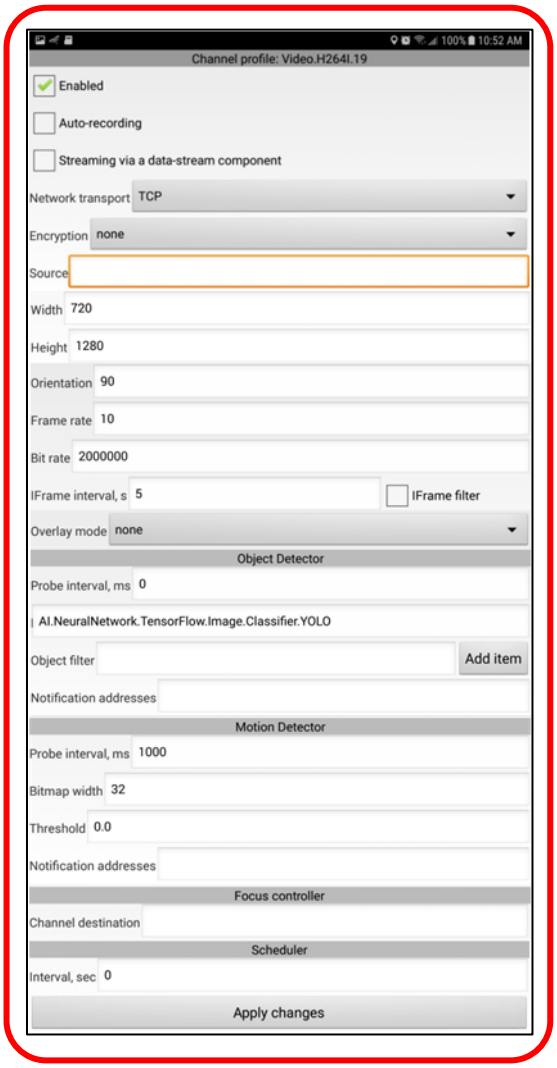
ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler – Interval sec

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

The settings for the example of a Body Worn Camera are as follows:



<u>The following settings refer to the Configuration Panel</u>

a. **Enabled checkbox**
   Checked
b. **Auto-recording**
   Unchecked
c. **Streaming via a data-stream component**
   Unchecked
d. **Network transport**
   TCP (for production, may want UDP-RSPP)
e. **Encryption**
   None
f. **Source**
   No Entry

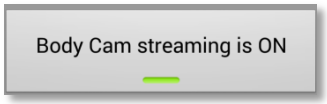
g. **Width**
   If we assume a typical smartphone with a native video resolution of 1280 x 720 in horizontal mode.
   Width = 720
h. **Height**
   If we assume a typical smartphone with a native video resolution of 1280 x 720 in horizontal mode.
   Width = 1280
i. **Orientation**
   90 Degrees
j. **Frame rate**
   10
k. **Bit rate**
   2000000
l. **iFrame interval, s**
   5
m. **iFrame filter**
   Unchecked
n. **Overlay mode**
   Timestamp, User ID, Device ID
o. **Object Detector - Probe interval, ms**
   0 (inactive)
p. **Object Detector – A.I. NeuralNetwork**
   AI.NeuralNetwork.TensorFlow.Image.Classifier.YOLO
q. **Object Filter**
   No Entry
r. **Object Detector – Notification addresses**
   No Entry
s. **Motion Detector - Probe interval, ms**
   1000
t. **Motion Detector - Bitmap width**
   32
u. **Motion Detector - Threshold**
   0.0 (inactive)
v. **Motion Detector – Notification addresses**
   No Entry
w. **Focus Controller – Channel Designation**
   No Entry
x. **Scheduler – Interval, sec**
   0 (inactive)

3. Configuration of the Data Streaming function

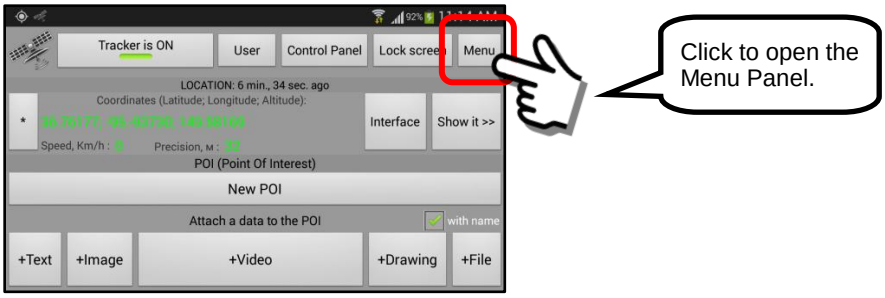
The configuration of the data streaming has many of the same issues as the camera sensor. However, for data streaming, the mobile device will stream data to the SentryMDU Data Server which in turn will stream data to all other connected devices. The issue for data streaming is the pathway from the mobile device (via WiFi or

Cellular) to the Data Server. The amount of available bandwidth is the critical factor which is affected by the following:

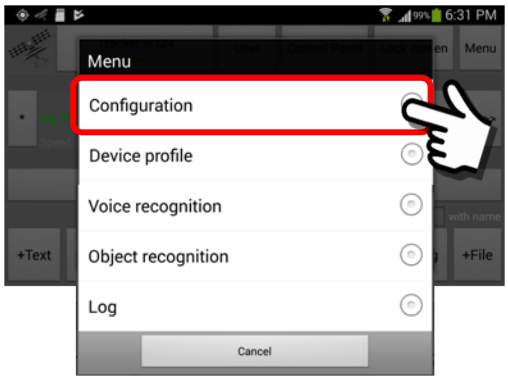
a. Camera resolution setting
b. Aspect ratio of camera sensor
c. Recording framerate of camera sensor
d. Bitrate of data transfer via Cellular or WiFi



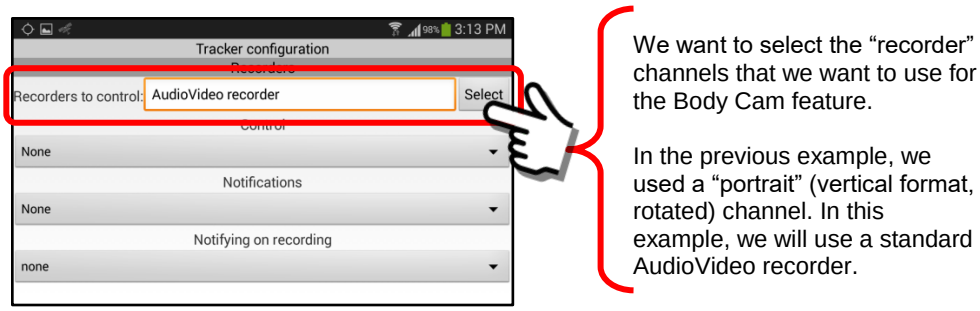
In this example, we will show how to set up the Body Cam feature for data streaming.



Select the “Configuration” menu choice.

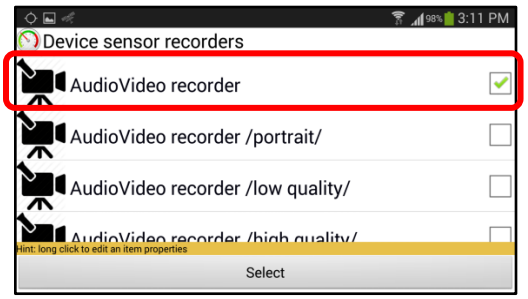


Click the “Select” button on the Configuration Panel.

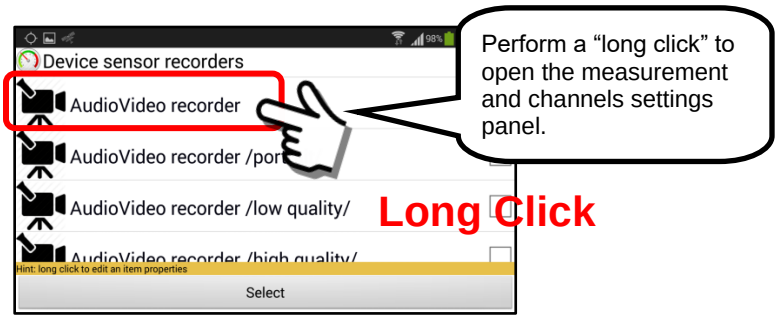


Clicking on the “Select” Button will open a listing of the available Device Sensor Recorders. The “AudioVideo recorder” is shown as “checked” (default). This is where a user can select any other pre-configured sensor recorders.

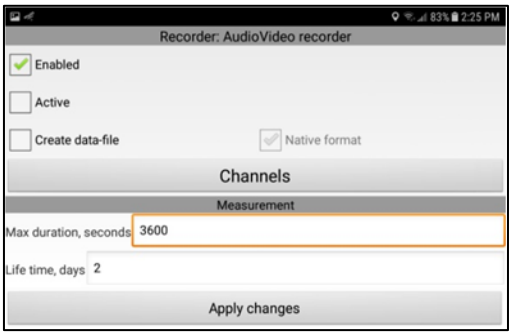
In our example, we will select the “AudioVideo recorder” option.



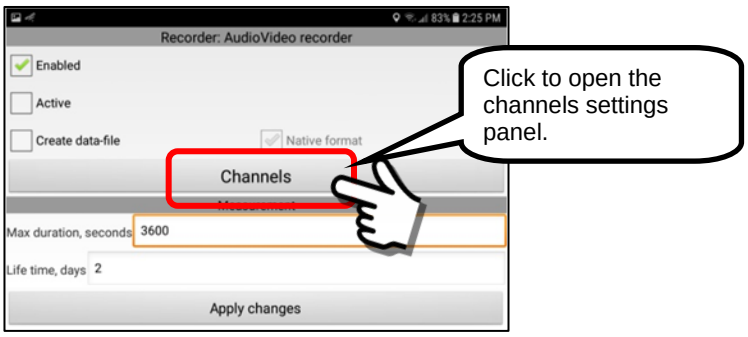
To review the video parameters for the selected “AudioVideo recorder”, perform a “long click” on the sensor name.



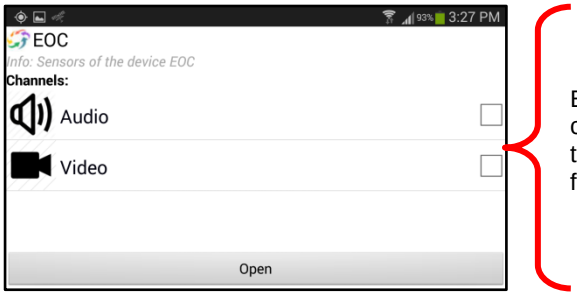
This panel shows the current settings for the AudioVideo recorder. A detailed discussion of these settings are in **Section 10.19.2**.



To review the individual settings for both the Audio and Video channels, click on the “Channels” Button.

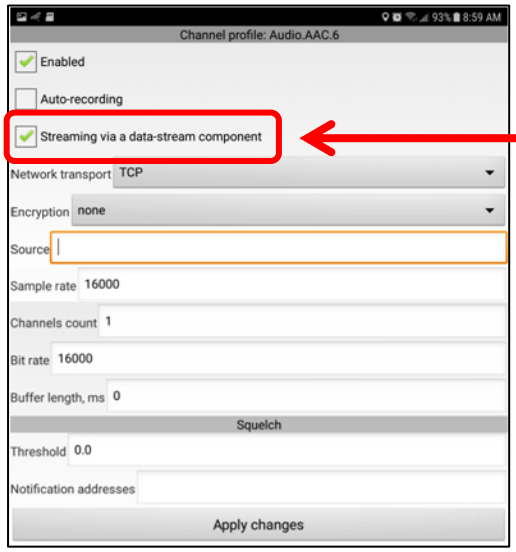


Depending on the type of recorder used, the channels will be listed as shown below. In this example we have BOTH an Audio and Video channel.



Both audio and video channels combine to make the AudioVideo Recorder feature.

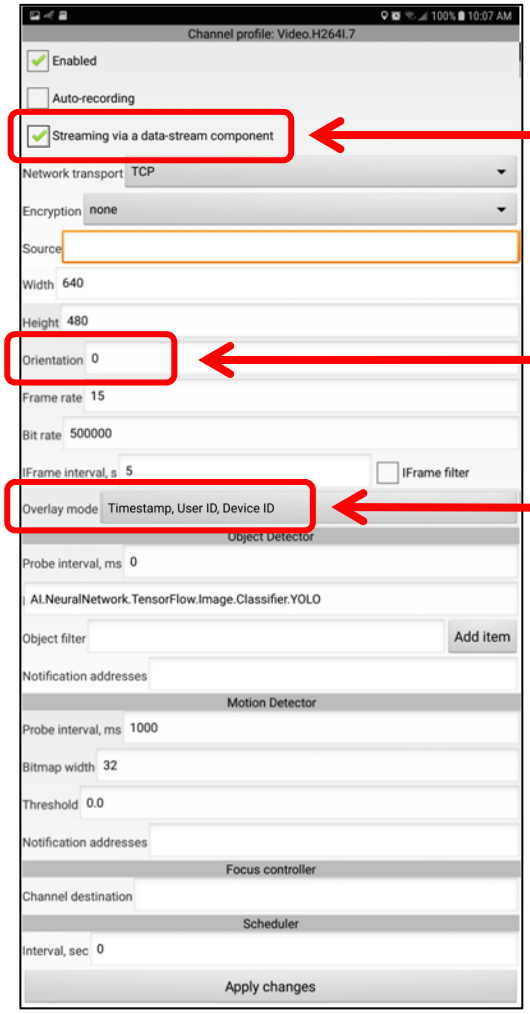
To view the “Audio” configuration settings, perform a “long click” on the Audio text block. The parameters menu will be displayed.



Since we are setting up the data “streaming” it is important that the checkbox is “checked”.

To view the “Video” configuration settings, perform a “long click” on the Video text block. The parameters menu will be displayed.

Video Parameters

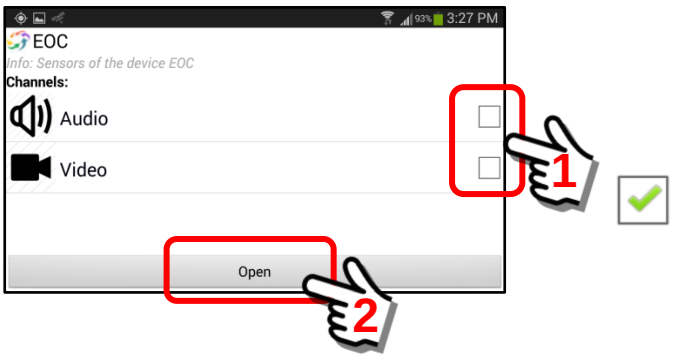


Since we are setting up the data “streaming” it is important that the checkbox is “checked”.

In this example, we are NOT rotating the image orientation.

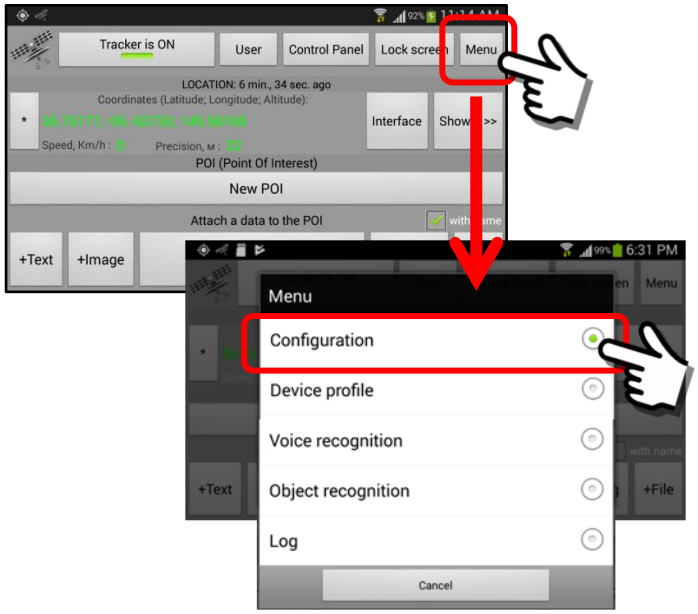
Watermark Text overlay for Body Cam Video Files

All parameters look good, we are ready to use the Body Cam feature in “streaming” mode. To “test” the configuration, put “checks” in each of the checkboxes and click “Open” to launch the audio-video streaming.



The audio-video output will be displayed on your device. The parameter settings for bitrate, framerate and video resolution will all impact the “smoothness” of the video.

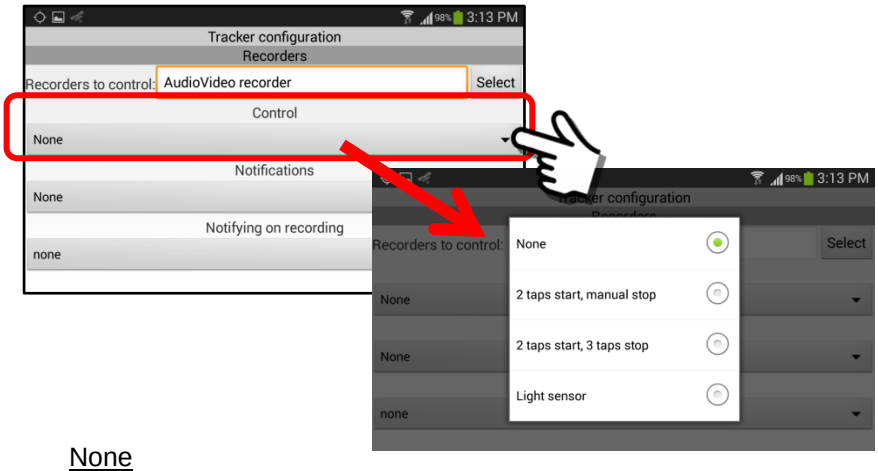
4. ***Configuration of the recorder notification feature (beep, voice)***
The Tracker Configuration panel provides the User options for control of the recording features, notifications of when recording is started-stopped and indications that the recorder is active. These features will be explained below.



<u>Control Features</u>
The default is “None”, no control. In combination with the “Tap Sensitivity” Controls found on the Main Configuration Panel, these

control features allow a user to turn the recording features on-off with various combinations of “tap” commands.

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, you will NOT HAVE the Tap Command option and this feature will NOT work.



None

Default, no control features activated.

2 taps start, manual stop

This option requires two “taps” on the device to turn the recording “on”. However, the recording must be turned “off” manually. This feature would most often be used in Body Cam applications where a User would tap the phone to start recording (ie steps out of a car) but then does not want the device to accidentally turn off if accidentally “tapped”. Want to manually turn off the recording function. Note that the “tap sensitivity” will have to be set on the device Main Configuration Panel.

2 taps start, 3 taps stop

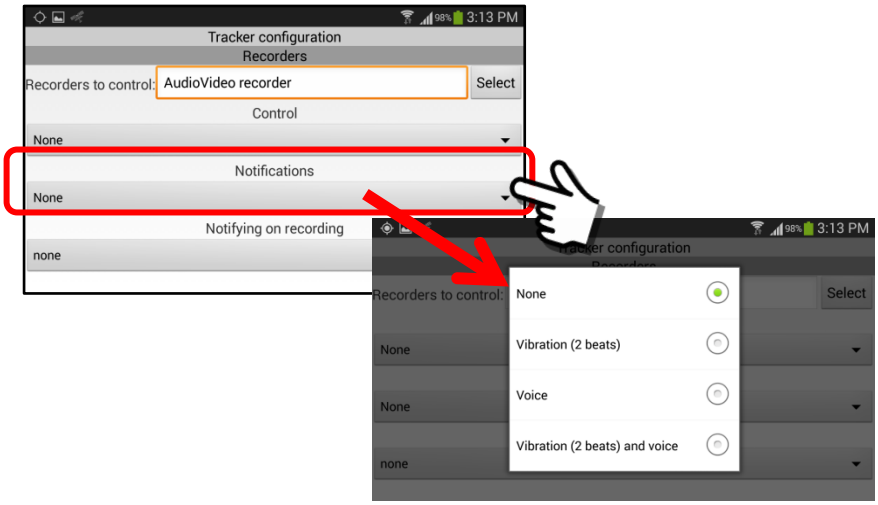
This option requires two “taps” on the device to turn the recording “on” and three taps to turn the device “off”. This feature would most often be used in Body Cam applications where a User would tap the phone to start recording (ie steps out of a car) and then tap again to turn off the device. Note that the “tap sensitivity” will have to be set on the device Main Configuration Panel.

Light sensor

This feature allows the device to start recording when the light sensor detects a “change” in intensity. For example, this feature could be used if the mobile device was covertly installed in a dark room. If someone came in and turned a light “on”, this can trigger the start of recording.

Notifications

The default is “none”, no notifications to the user that recording has started or stopped. This set of options will allow a user to receive a “vibration”, a voice announcement or a combination of the two.



<u>None</u>

No notification features are activated.

<u>Vibration (2 beats)</u>

This feature provides two beats of vibration feedback lasting 1 second each. This will alert the user that recording has started or stopped.

<u>Voice</u>

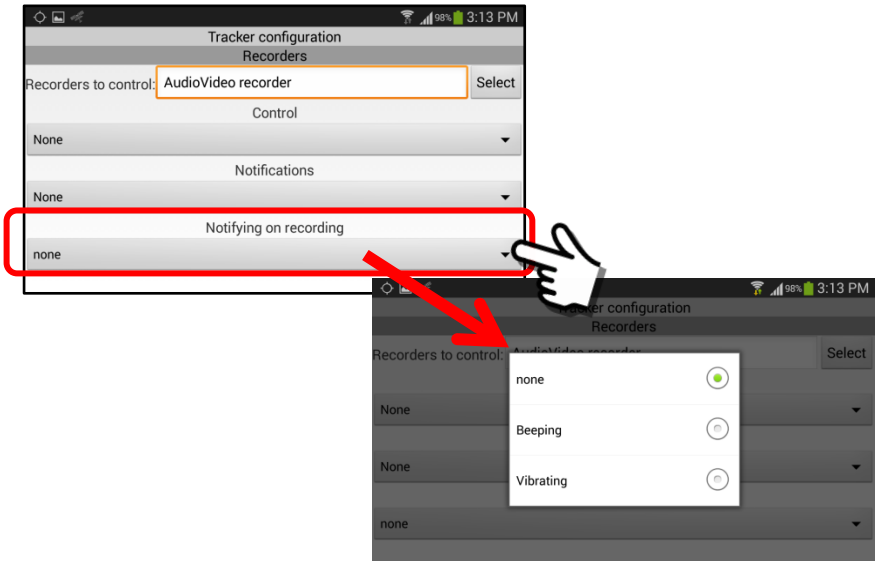
This feature provides a voice notification that says ”Recording has started” and “Recording has finished”.

<u>Vibration (2 beats) and voice</u>

This feature is a combination of BOTH the vibration and voice notifications.

Notifying on Recording

The default is “none” which means as the recording is ongoing there is no notification to the user that the recorder is “on”. This section provides options to the user for notification that the recorder is active.



None

No notification that the recorder is active.

Beeping

When activated the “beeping” option provides a short “beep” tone once every 10 seconds as long as the recorder is active. This alerts the user that the recorder is “on”.

Vibrating

When activated, the vibration option provides a short 1 second vibration event once every 10 seconds as long as the recorder is active. This is to alert the user that the recorder is “on”.

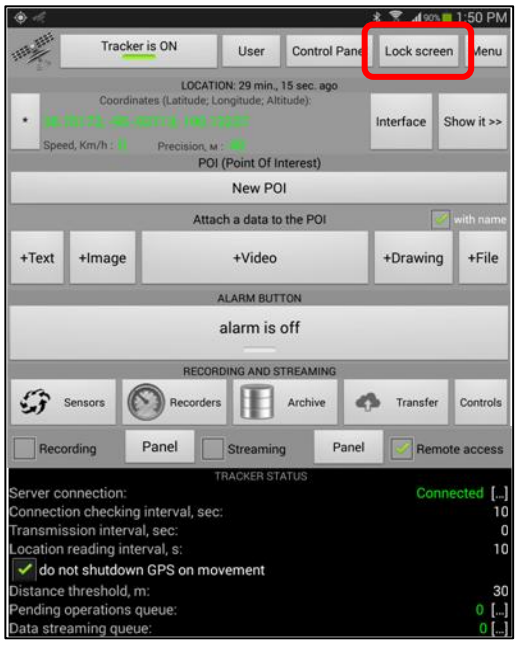
15.2.5. The “Lock screen” button

Overview:

The “Lock Screen” feature of the Tracker Panel dims the Tracker Panel display to conserve battery life and to make sure that buttons on the Tracker Panel are not inadvertently clicked. This section will describe the “Lock Screen” feature and associated screens.

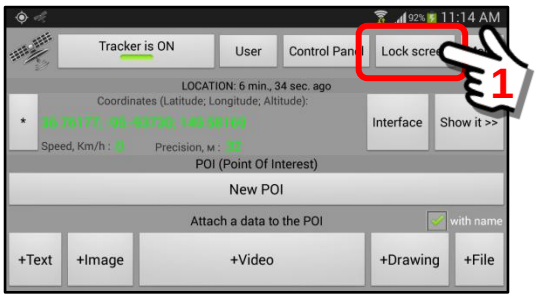
Tracker Panel – “Lock Screen” Button:

The “Lock Screen” Button is located at the top, right hand side of the Tracker Panel screen.

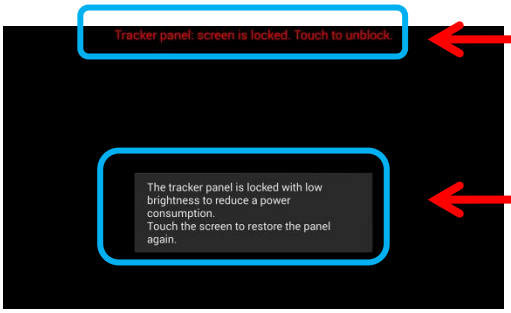


Description of the “Lock Screen” feature:

1. ***To activate the “Lock Screen” feature.***
   Click on the “Lock Screen” Button.



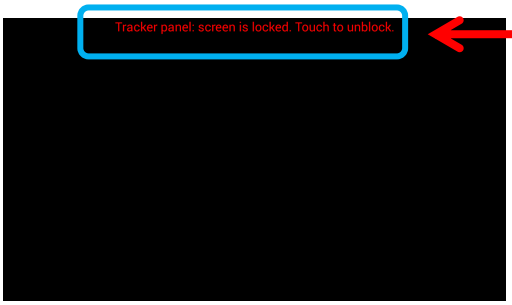
The screen will reduce brightness and “dim” as shown below. A message will appear indicating that the screen is at a reduced brightness phase.



Message in RED text … “Tracker panel screen is locked. Touch to unblock”.

This message will display for 4 seconds and then fade out.

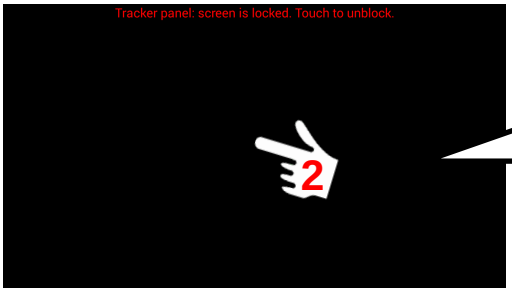
When the screen has gone “dark”, the red text will remain as a reminder that this is an active panel that is in a state of reduced brightness.



Message in RED text … “Tracker panel screen is locked. Touch to unblock”.

This is a reminder that the Tracker Panel is active.

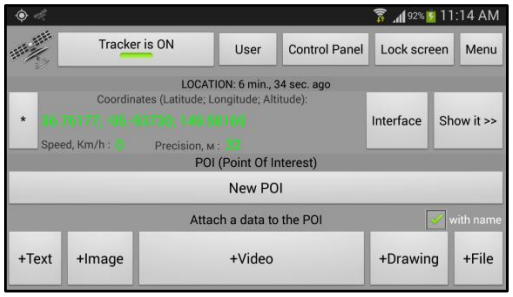
Touch the screen anywhere to unlock the Tracker Panel. Click “Yes” on the Confirmation box to re-open the Tracker Panel.



Click anywhere on the screen to unlock the Tracker Panel.

After clicking on the display screen to unlock the Tracker Panel, the confirmation box will display for 10 seconds. If the user has not made a selection within 10 seconds, the screen will go dark again.

Once the Tracker Panel has been re-established, it will go “dark” again if no actions take place for 30 seconds.



2. ***Situations where the “dimmed” screen does not fully restore.***
Depending on the device manufacturer, some mobile devices (and Tablets) do not fully restore the screen brightness after a timeout event. It appears that the screen is only restored to half-brightness. This has something to do with the auto-dimming features of the mobile device that are in conflict with the SentryMDU dimming feature. If this situation occurs, simply use the “back” button on the device to navigate to another SentryMDU screen and the desired screen brightness will return.

15.2.6. The “Menu” button

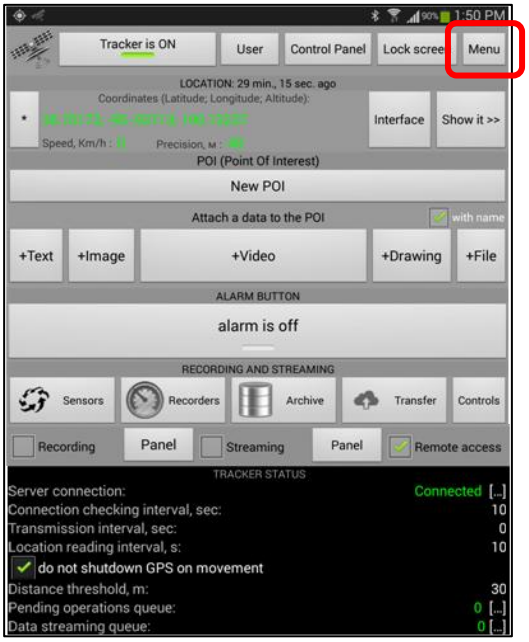
Overview:

The “Menu” Button on the Tracker Panel provides access to configuration settings, the device profile and log messages. The configuration options in this section apply primarily where the mobile device is used as a Body Cam, a vehicle “Dash Cam” and other operations where the recording is local, voice or Tap Command activated. In addition, settings for the Video-Phone when used for “unattended” remote operation are also contained in this section. The “Log Messages” are primarily a troubleshooting resource used by software developers and not general users.

This section will describe these features.

Tracker Panel – “Menu” Button:

The “Menu” Button is located at the top, right hand side of the Tracker Panel screen.



Description of the Menu Button functions and features:

The Menu Button will launch a secondary menu that has 5 options:

1. **Configuration**
2. **Device Profile**
3. **Voice Recognition**
4. **Object Recognition**
5. **Log**

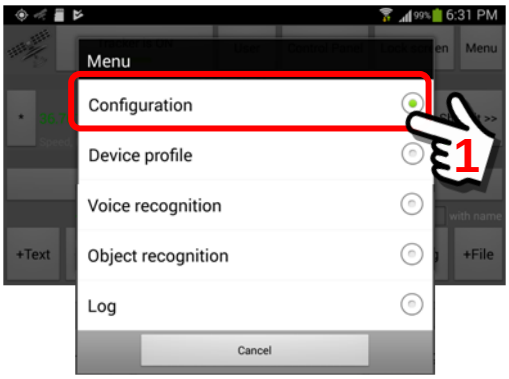
These five options will be described in this section.

1. ***Configuration Section***

This section will outline the configuration options that are available for the sensor recorder feature. There are 4 primary groups of settings that will be covered below.

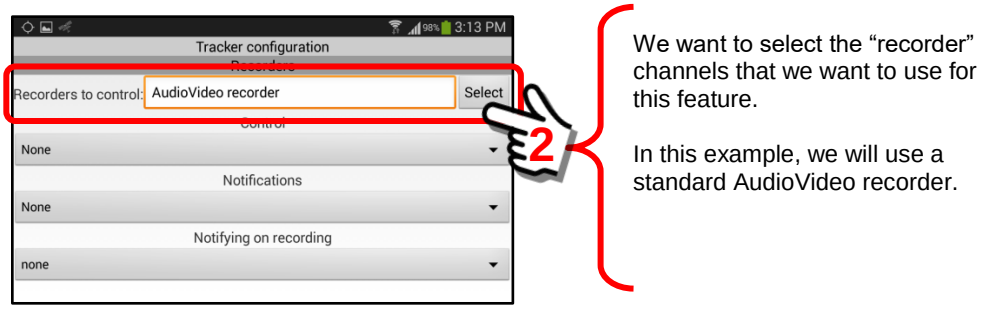
a. Select the recording channel to use.
b. Select the “Control” protocol for the recorder.
c. Select how to be notified that the recording is active.
d. Select if you want to be notified during recording that the recorder is “on” (Beep or vibration).

Select the “Configuration” menu choice.



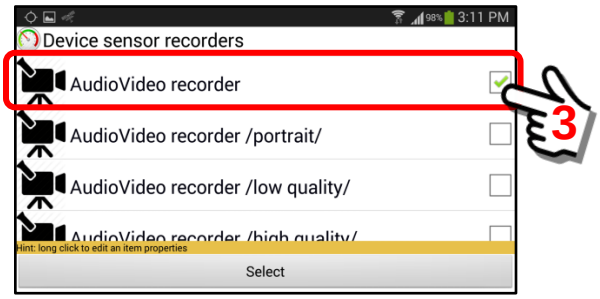
<u>Selection of Recorder to control</u>

Click the “Select” button on the Configuration Panel.

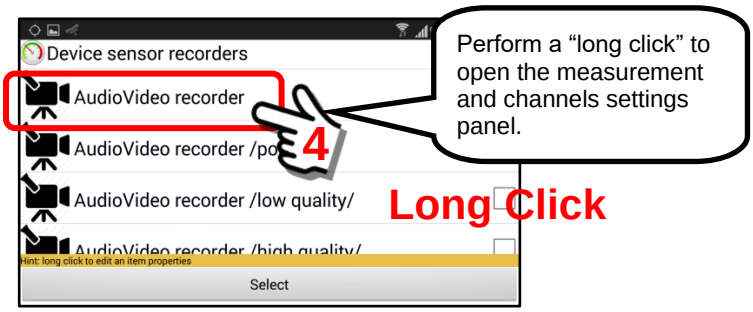


Clicking on the “Select” Button will open a listing of the available Device Sensor Recorders. The “AudioVideo recorder” is shown as “checked” (default). This is where a user can select any other pre-configured sensor recorders.

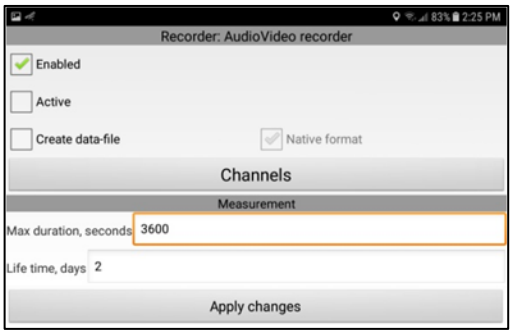
In our example, we will select the “AudioVideo recorder” option.



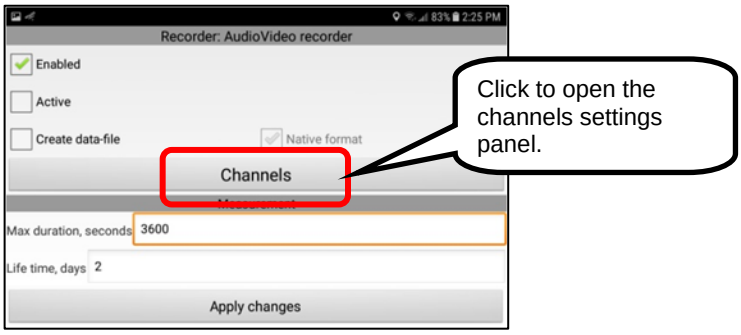
To review the video parameters for the selected “AudioVideo recorder”, perform a “long click” on the sensor name.



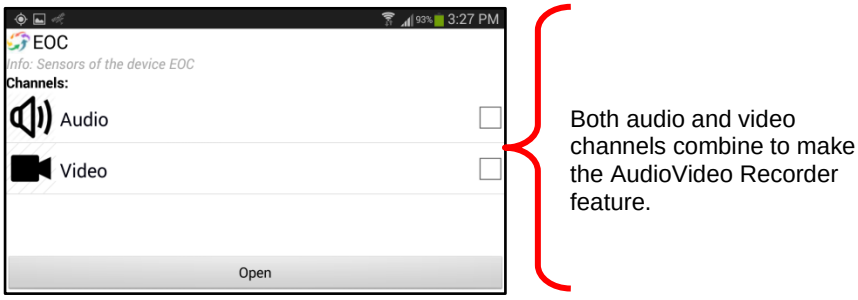
This panel shows the current settings for the AudioVideo recorder. A detailed discussion of these settings are in **Section 10.19.2**.



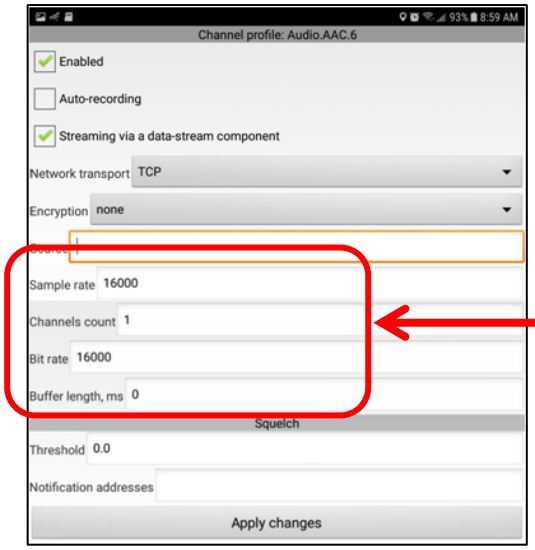
To review the individual settings for both the Audio and Video channels, click on the “Channels” Button.



Depending on the type of recorder used, the channels will be listed as shown. In this example we have BOTH an Audio and Video.

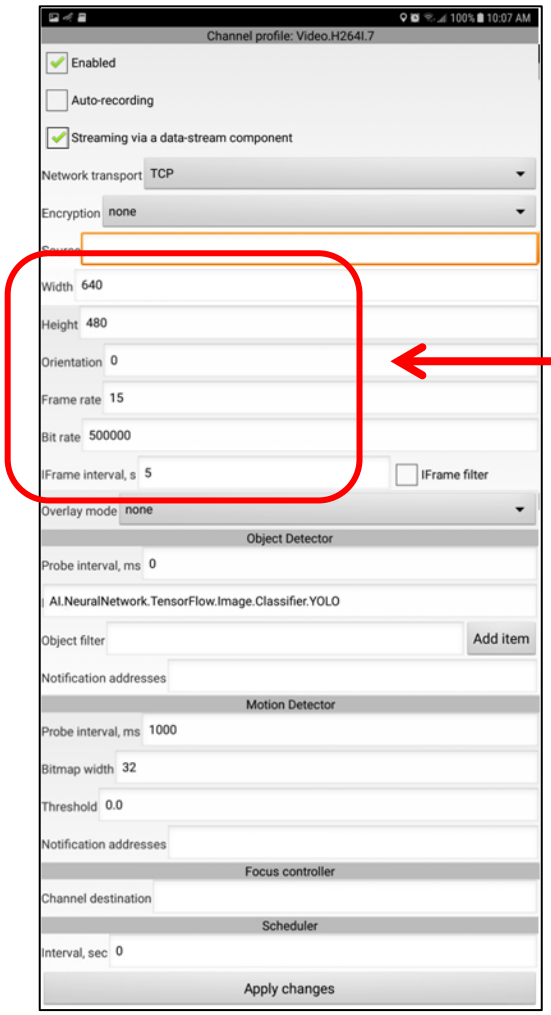


To view the “Audio” configuration settings, perform a “long click” on the Audio text block. The parameters menu will be displayed.



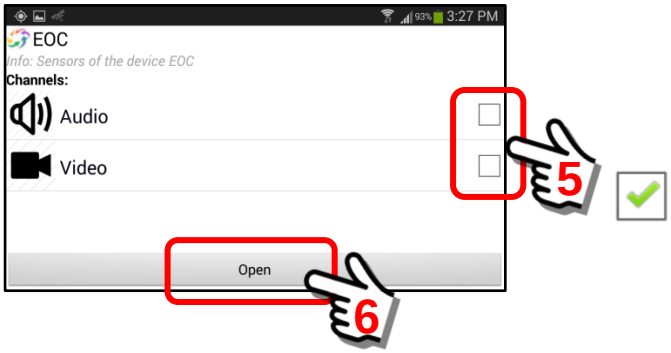
Audio parameters shown. Generally, the defaults are “OK”.

To view the “Video” configuration settings, perform a “long click” on the Video text block. The parameters menu will be displayed



Video parameters shown. Adjust these to fit the capabilities of your particular mobile device and available bandwidth.

To “test” the configuration, put “checks” in each of the checkboxes and click “Open” to launch the audio-video streaming.

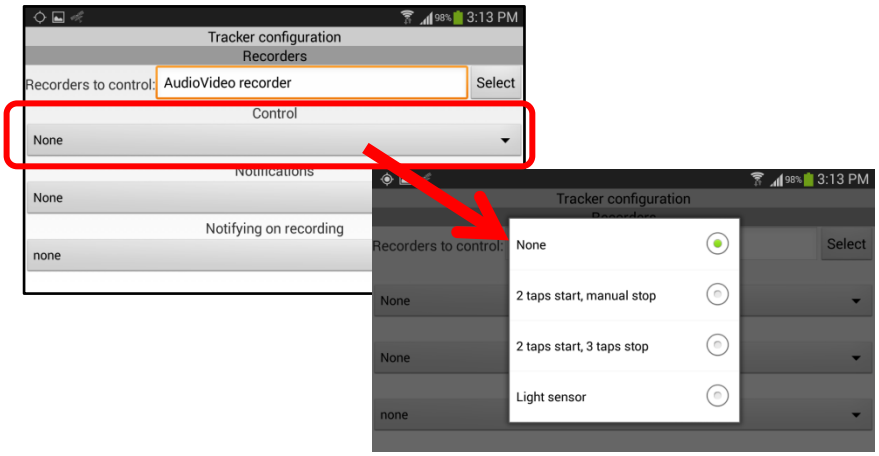


The audio-video output will be displayed on your device. The parameter settings for bitrate, framerate and video resolution will all impact the “smoothness” of the video.

Control Features

The default is “None”, no control. In combination with the “Tap Sensitivity” Controls found on the Main Configuration Panel, these control features allow a user to turn the recording features on-off with various combinations of “tap” commands.

> **Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, the Tap Command function will NOT work.**



None

Default, no control features activated.

2 taps start, manual stop

This option requires two “taps” on the device to turn the recording “on”. However, the recording must be turned “off” manually. This feature would most often be used in Body Cam applications where a User would tap the phone to start recording (ie steps out of a car) but then does not want the device to accidentally turn off if accidentally “tapped”. Want to manually turn off the recording function. Note that the “tap sensitivity” will have to be set on the device Main Configuration Panel.

2 taps start, 3 taps stop

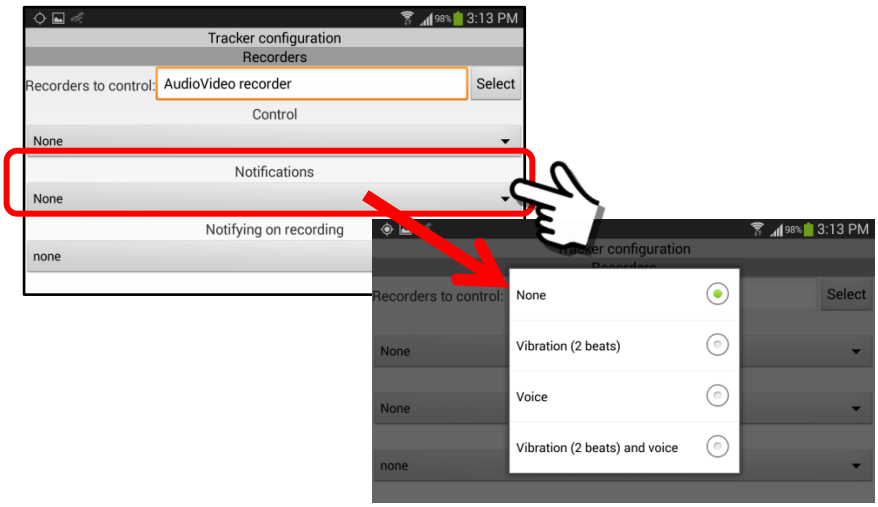
This option requires two “taps” on the device to turn the recording “on” and three taps to turn the device “off”. This feature would most often be used in Body Cam applications where a User would tap the phone to start recording (ie steps out of a car) and then tap again to turn off the device. Note that the “tap sensitivity” will have to be set on the device Main Configuration Panel.

Light sensor

This feature allows the device to start recording when the light sensor detects a “change” in intensity. For example, this feature could be used if the mobile device was covertly installed in a dark room. If someone came in and turned a light “on”, this can trigger the start of recording.

Notifications

The default is “none”, no notifications to the user that recording has started or stopped. This set of options will allow a user to receive a “vibration”, a voice announcement or a combination of the two.



None

No notification features are activated.

Vibration (2 beats)

This feature provides two beats of vibration feedback lasting 1 second each. This will alert the user that recording has started or stopped.

Voice

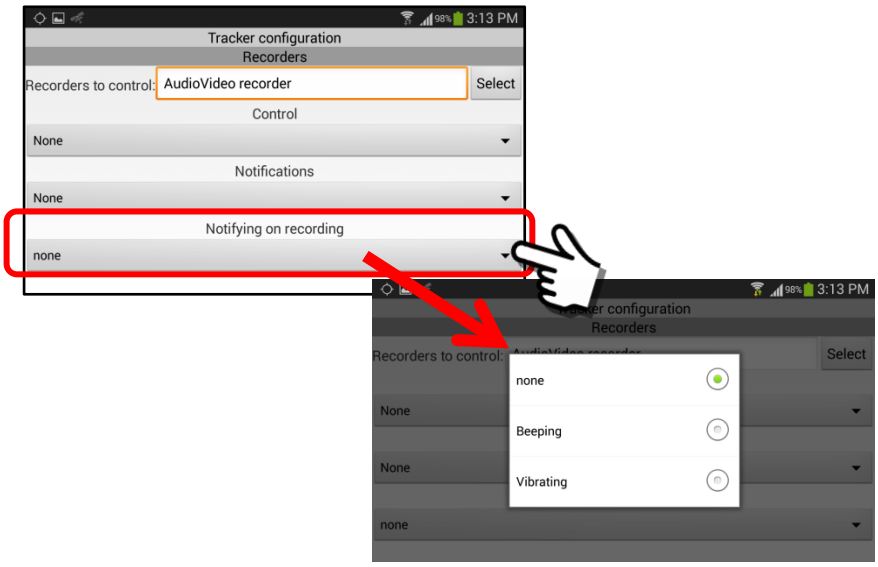
This feature provides a voice notification that says ”Recording has started” and “Recording has finished”.

Vibration (2 beats) and voice

This feature is a combination of BOTH the vibration and voice notifications.

Notifying on Recording

The default is “none” which means as the recording is ongoing there is no notification to the user that the recorder is “on”. This section provides options to the user for notification that the recorder is active.



None

No notification that the recorder is active.

Beeping

When activated, the “beeping” option provides a short “beep” tone once every 10 seconds as long as the recorder is active. This alerts the user that the recorder is “on”.

Vibrating

When activated, the vibration option provides a short 1 second vibration event once every 10 seconds as long

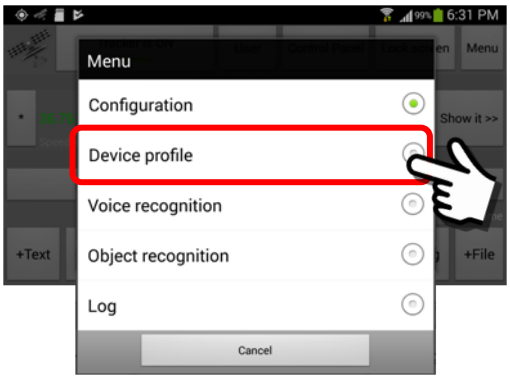
as the recorder is active. This is to alert the user that the recorder is “on”.

2. ***Device Profile Section***

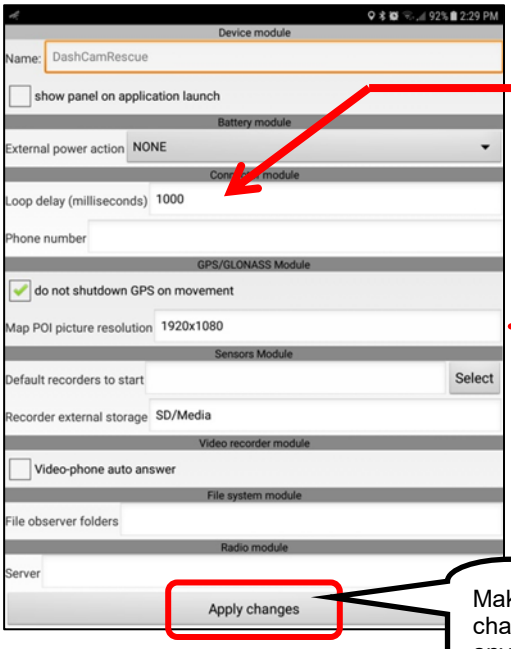
The “Device Profile” menu option allows a user to set/change some of the parameters that are normally set on the SentryMDU Data Server. In addtion, user settings for the remote “unattended” display of the Video-Phone feature are included in this Panel.

> **Important Note:** If the “*Video-Phone Auto Answer*” option is activated, it will allow a remote device to initiate a two-way audio/video channel automatically with no action required on the part of the receiving device.

Typically, the defaults are sufficient.



Click on the “Device Profile” menu option.



First Responders should change the Loop Delay to 250 milliseconds from the default of 10,000 ms. This example shows a change to 1,000 ms.

Device Module Menu Panel

Make sure to click the “Apply changes” Button if you make any changes.

The following items describe the Device Module features.

☑ Show panel on application launch

This "checkbox" is unchecked by default. This feature is typically only used with the Video-Phone feature when it is desired to establish a two-way audio/video session with an unattended remote mobile device and you would like the display to be "blank" when not in use.

When active, this will automatically display the **Tracker Panel** when the App is launched. By design, the Tracker Panel screen will automatically "dim" after two minutes. This allows the device to be left "on" 24/7, but with the screen darkened. When a video-phone call is initiated from another device, the screen will come to life.

This feature can allow friends and family members to initiate and control video-phone sessions with people that are developmentally disabled, bed-bound, have dementia/memory issues or are technically challenged.

Name

Name of the User's "Tracker Alias" name on the device. If the Tracker Alias name is filled in on the Main Configuration Panel, it will be displayed here (shown as DashCamRescue above), otherwise the field will be "blank".

External power action

The Battery Module section is where we designate if a recording "event" is to start-stop when the device is plugged into a power source (ie vehicle power source) or a wireless charging adapter.

The Sentry MDU System monitors whether or not the device is being "charged" by an external power source. The "External Power Action" menu choice provides two options.

1. None (the default, no action is taken)
2. Start/Stop sensor recorders

The default setting is "None" (no action) as shown above.

Loop delay (milliseconds)

The Sentry MDU System uses connection threads to process both incoming and outgoing operations. Priority is given to incoming operations because these are commands a client user sends to the mobile device. The

loop delay is the measure of how often the connection thread processes the OUTGOING operations queue. The default setting is 10,000 milliseconds (10 seconds). Depending on how the Sentry MDU system is used, this number may be reduced. The setting you use should be a balance between load on the mobile device, battery life and application needs. The example above shows a setting of 1,000 milliseconds. For First Responders, we recommend a setting of 100 – 250 milliseconds.

Phone number

This field is "blank" by default. If you did NOT enter a phone number during initial registration, you may enter one here. This will cause the "Call" Button to be displayed on the Mobile Object Panel which will allow "other" Users to call you at the number provided. **The number does NOT display on the User Information Panel.**

☑ Do not shutdown GPS on movement

This "checkbox" is checked by default. In normal operation a User **does want** the GPS sensor to continue providing updates when the device is moved. If "unchecked" then the GPS sensor will not provide new location data if the device is moved.

Map POI picture resolution

This is the resolution of the image that will be displayed as a "Point-of-Interest" on the mobile device (and/or Sentry MDU Manager desktop application). This is a user preference. The default is 1920x1080. Typically, this resolution should match the resolution of the screen on the mobile device.

Default recorders to start

This is a future enhancement that includes the ability to remotely control the Sentry MDU recording feature via a Bluetooth device. This field is for the remote control of "default recorders" that are specified. Leave this field "blank" for now.

Recorder external storage

This is an optional feature that allows the configuration of an external SD Card to use for file storage. This is most often used by the SentryMDU System to automatically store the recording of audio-video files. If your device accepts an SD Card you would show it here. This can often be a replacement for Cloud storage. See **Sections 5.8, 5.9** for configuration details.

☑ Video-phone auto answer

This “checkbox” is unchecked by default. In normal operation a User **does NOT want** the video-phone on their mobile device to be answered “automatically”.

This option would typically be used if a remote user does not have sufficient dexterity or computer skills to initiate a remote video-phone session on their own. This can allow friends and family members to initiate and control remote video-phone sessions with people that are bed-bound, developmentally disabled, technically challenged or have dementia/memory issues.

This would be “checked” on the receiving device.

File observer folders

The Sentry MDU application has a method of monitoring SD-Card folders for adding, removing or changing files. If we set the “File observer folder” to a default camera folder (something like /sdcard/DCIM/100MEDIA) the Sentry MDU system will monitor all media files coming into that folder (jpg, png, mp4) and automatically attach them to a User Current Activity category. Unless you are a “Power User” we recommend this field be left blank.

Server

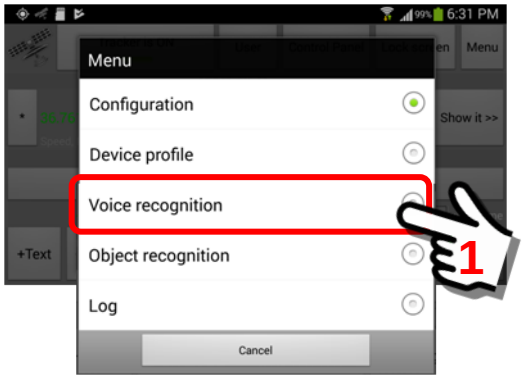
The Sentry MDU System has a method of utilizing a USB enabled Software Defined Radio (SDR). This can allow the SentryMDU System to function as a Radio Frequency Scanner and monitor a variety of frequency bands (First Responder, Aircraft, etc.). This feature is currently in the Beta stage. This is an “undocumented” feature. Additional documentation is available on our website.

3. ***Voice Recognition (CMU.Sphinx package download)***

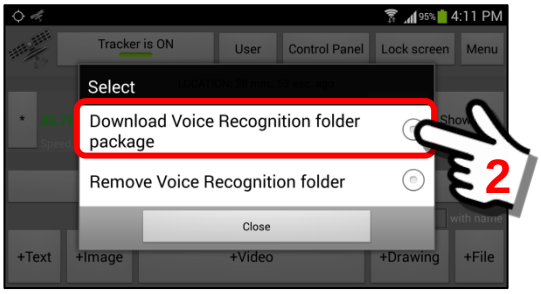
By default, the Voice Commands feature is not visible on the Main Configuration Panel. This option requires that the “CMU.Sphinx” voice recognition engine is installed in the application folder.

By default, we do not install the CMU.Sphinx module due to its size (15Mb). However, **it is free to download/install** and this section of the User Guide will show how to install this option. The Voice Commands option, when checked, will allow a user to control the start and stop of the various “Recorders” by voice command.

Click on the Voice Recognition Menu option.



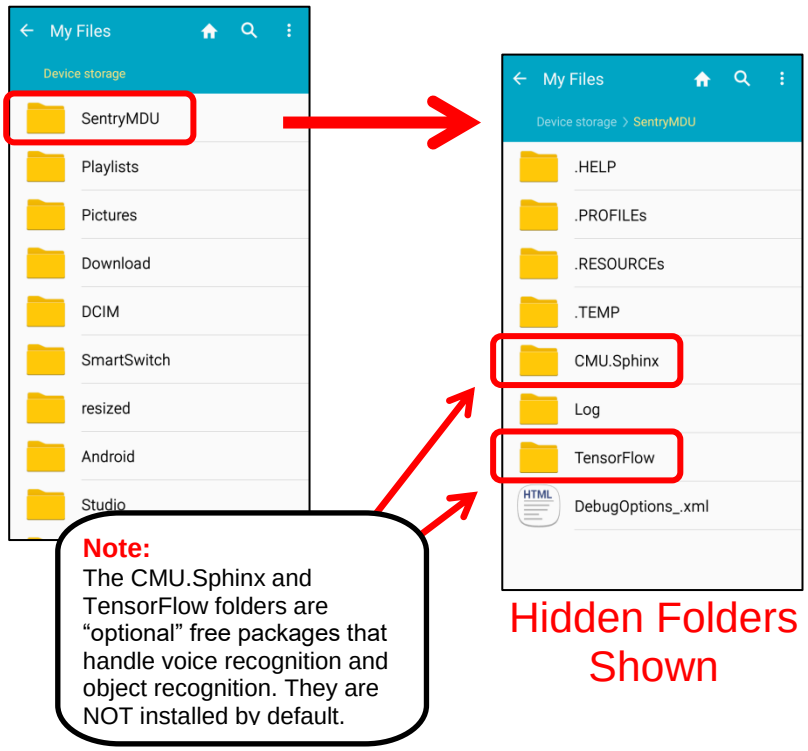
To download and install the CMU.Sphinx package, click on the menu option as shown below.



The CMU.Sphinx package will be installed as shown on the file listing.

The *Voice Recognition* package, when installed, will create the **CMU.Sphinx Folder** in the SentryMDU directory.

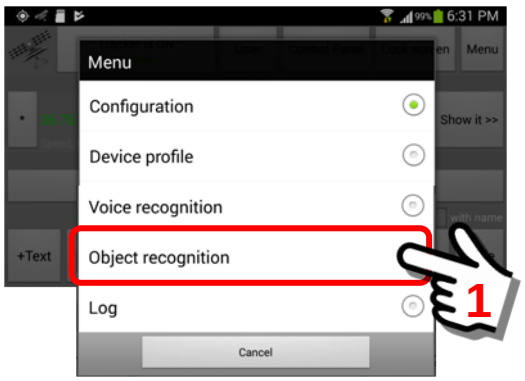
Example screens shown below are from a Samsung Galaxy smartphone. Your screens may look somewhat different



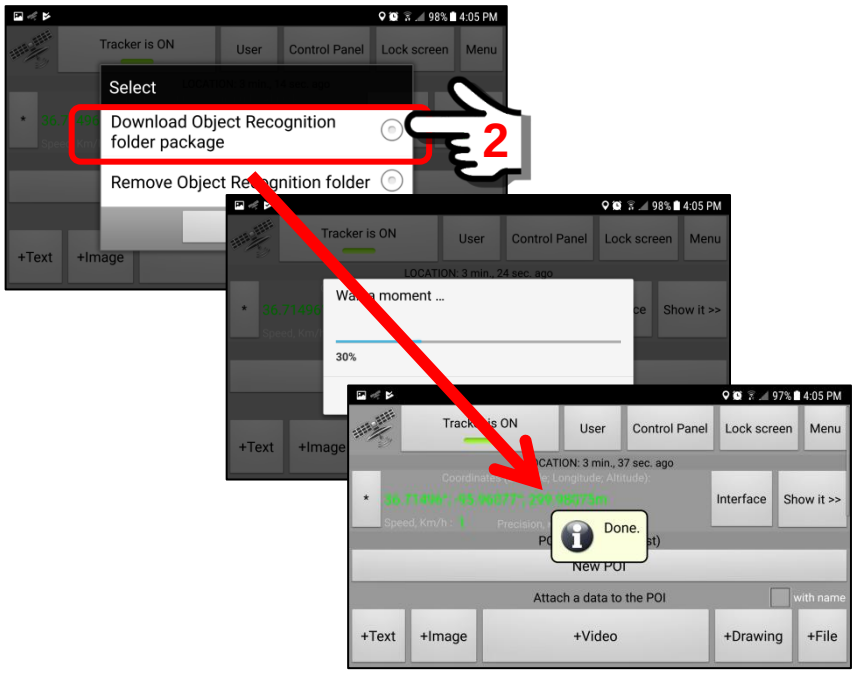
4. ***Object Recognition (Tensor Flow package download)***
By default, the Object Recognition and Voice Recognition packages are not installed because they are LARGE packages. If we included these optional packages in the SentryMDU App, it would push the initial download to 100+ MB. Therefore, since many users may not have a need for the advanced features found in the *Voice Recognition* and *Object Recognition* packages, we have decided to make them optional. They are free to download.

This section of the User Guide will show how to install the *Object Recognition* package (utilizing A.I., artificial intelligence technology), and when installed, it will create the **TensorFlow Folder**.

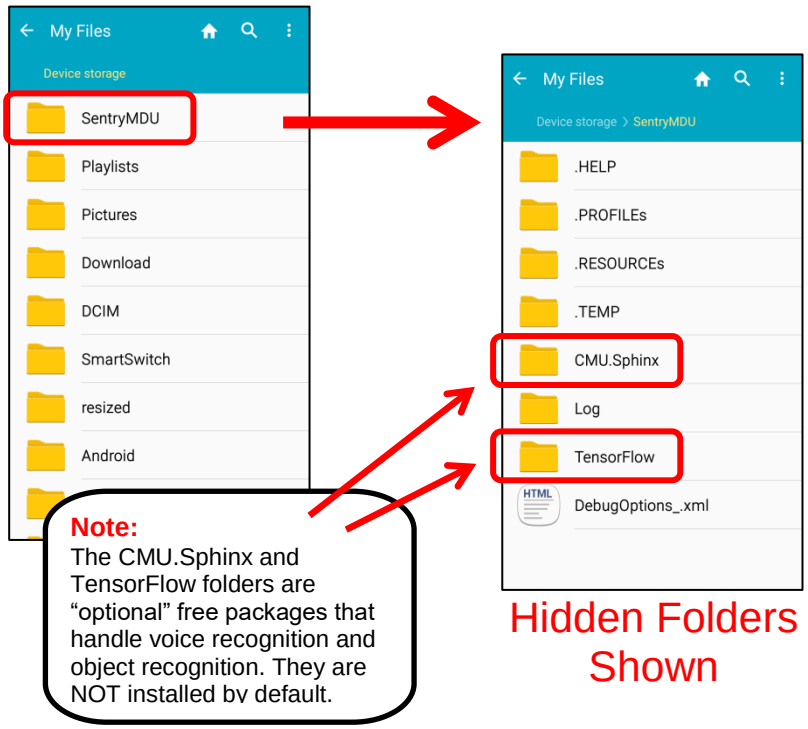
Click on the Object Recognition Menu option.



To download and install the TensorFlow package, click on the menu option as shown below.



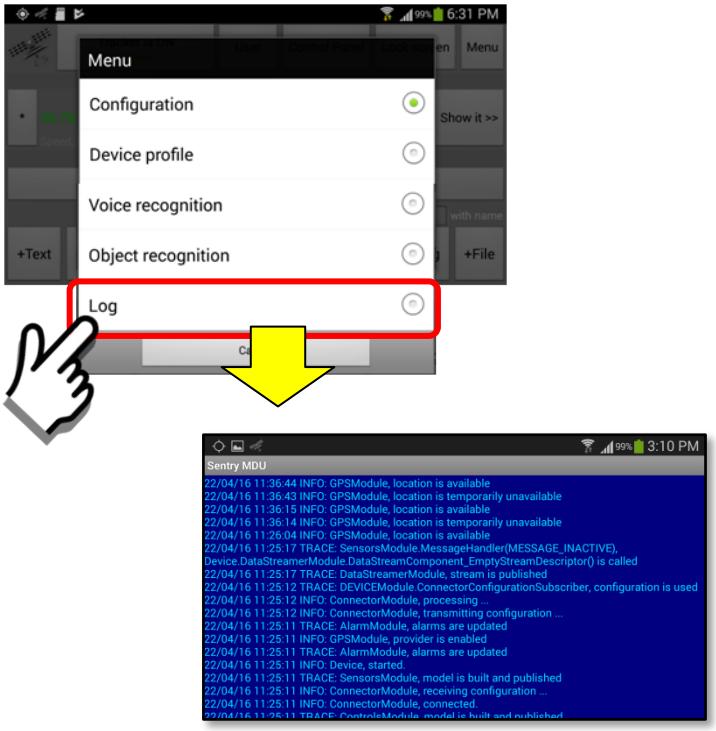
The *Object Recognition* package, when installed, will create the **TensorFlow Folder**. Example screens shown below are from a Samsung Galaxy smartphone. Your screens may look somewhat different



5. *Log File Section*

The Sentry MDU System maintains a “Log File” of the various processes on the mobile device. To assist in troubleshooting any issues, we occasionally use the information in these log files. Generally, this information is only used by developers or software engineers and is NOT needed by general users.

A sample of a log file is shown below.



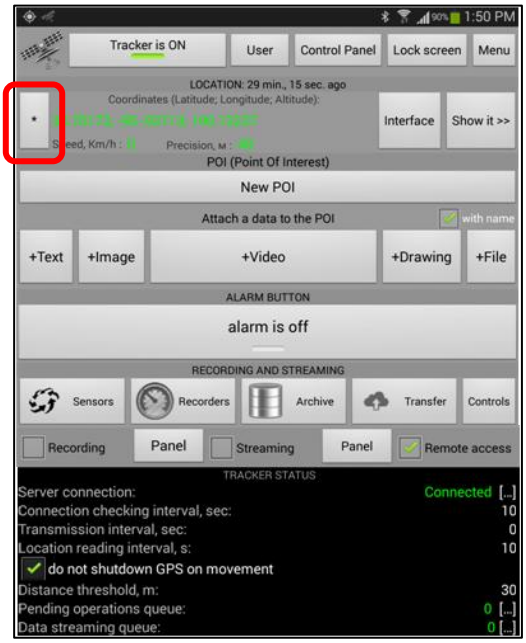
15.2.7. The Asterisk Button (*)

Overview:

The Asterisk Button (*) forces the mobile device to rescan available GPS/GLONASS satellites and get a “new” GPS fix. This section will describe what a user will see when using this feature.

Tracker Panel – Asterisk (*) Button:

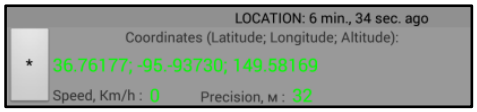
The asterisk button is located on the top left side of the Tracker Panel, just below the satellite icon.



Description of the GPS/GLONASS satellite rescan feature:

1. ***Screen display of location features***

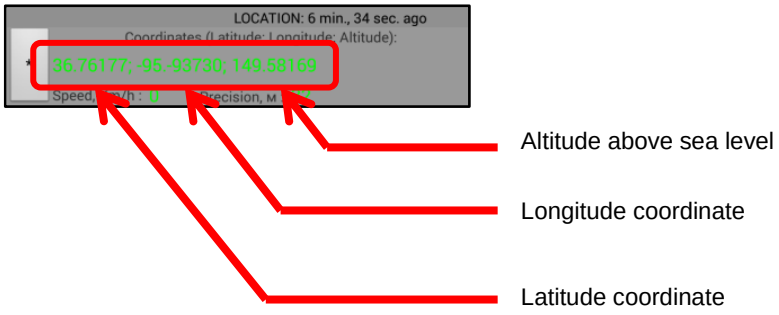
   This section will describe the location information that is available on the Tracker Panel.



<u>Location</u>

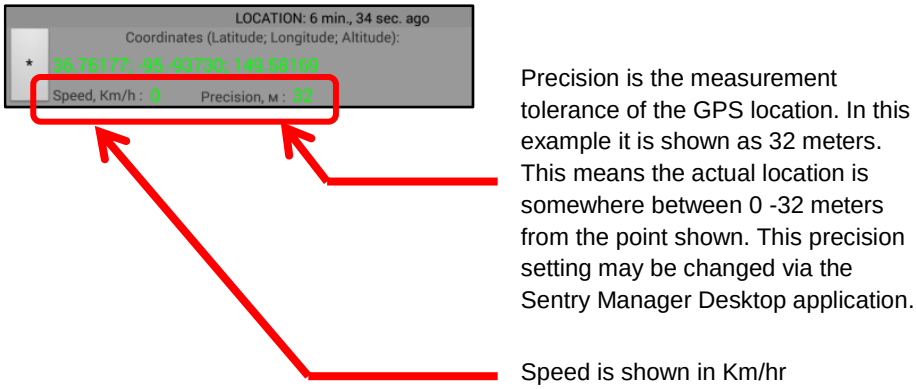
This describes the timeframe since the last location scan of data from the GPS/GLONASS satellites.

GPS Coordinates



These are the GPS coordinates as returned by the satellite receiver in the mobile device.

Speed and Precision

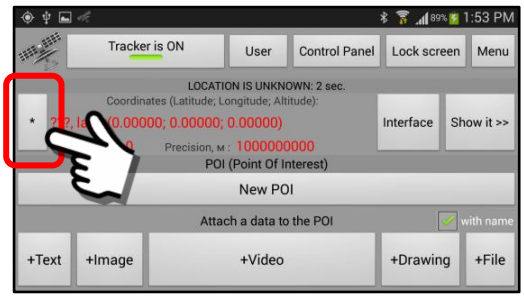


The GPS coordinates, speed and precision are all affected by the user location, the number of satellites that are “visible” to the mobile device, the signal strength, and the quality of hardware on the mobile device. Generally, higher quality mobile devices will have better antennae design and more sensitive GPS receivers.

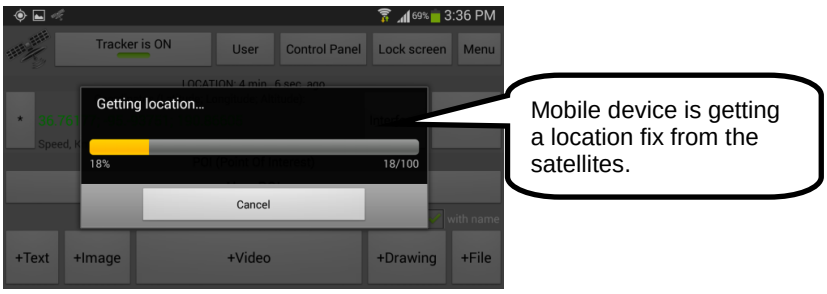
2. ***Click the asterisk (*) button to rescan satellites***
Clicking the asterisk button will rescan available GPS/GLONASS satellites to get a new fix. It generally requires at least 3 satellites to get a fix and more is better. Your location, time of day and whether or not you are inside a “structure” can all affect the ability of the mobile device to acquire a satellite signal.

This is what the screen looks like when you do not have a location fix.

To update the device location (rescan), click on the asterisk (*) button.



A progress bar will appear as the mobile device is scanning for signals from the satellites. Depending on the number of available satellites this scan may take from 1 – 3 minutes. If the device is unable to find sufficient satellites to determine a location, the process will time out after 5 minutes.



Once the location has been determined, the red text will turn green.

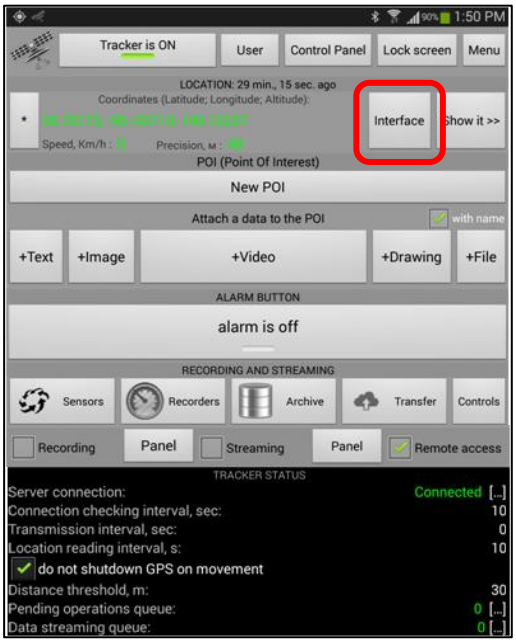
15.2.8. The “Interface” button

Overview:

The “Interface” Button on the Tracker Panel provides access to the Mobile Object panel for this mobile device. The Object Panel is covered in detail in **Section 10** of this guide. This section simply shows how to get access to the Object Panel from the Tracker Panel.

Tracker Panel – “Interface” Button:

The “Interface” Button is located on the upper right hand side of the Tracker Panel.



Description of the Interface Button feature:

1. ***Click to open the Mobile Object panel for this user.***
   This option provides an easy way to gain access to your own Mobile Object panel from the Tracker Panel.

In this example, we are the User = EOCdirector. Notice that the Mobile Object panel identifies the Name = Me. This indicates that it is YOUR object panel.

15.2.9. The “Show it >>” button

Overview:

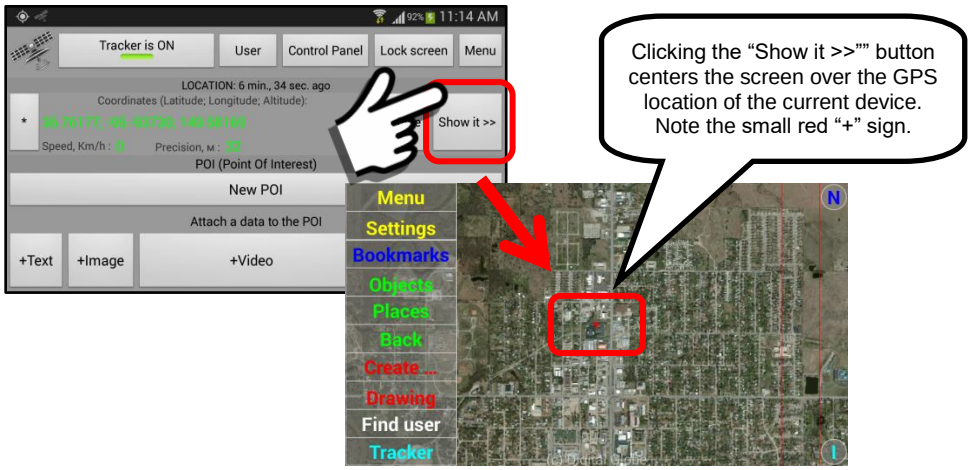
The “Show it >>” Button on the Tracker Panel will show the current GPS location of the mobile device. This feature is useful if a user wants to know their current location. When the “Show it >>” Button is clicked, the display will jump to the Main Map screen with the screen “centered” over the current GPS location of the mobile device. This section will illustrate this functionality.

Tracker Panel – “Show it >>” Button:

The “Show it >>” Button is located on the upper, far right hand side of the Tracker Panel screen.

Description of the “Show it >>” feature:

1. ***Click on the “Show it >>” Button.***
   To locate our current location, click on the “Show it >>” Button. The screen will jump to the current GPS location of our mobile device.



15.2.10. The “New POI” button

Overview:

The Sentry MDU System has the ability to store and display “points-of-interest” that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then “attach” text, pictures, videos, drawings and files to this POI. For example, a user could designate a particular landmark (ie a building) as a POI. Then, attached to this point-of-interest could be pictures of the building, floor plans, door access codes, a personnel call list and more.

This section will describe how to set up and use a point-of-interest.

Tracker Panel – “New POI” Button:

The “New POI” Button is located in the center of the Tracker Panel screen.

Description of the “New Point-of-Interest” feature:

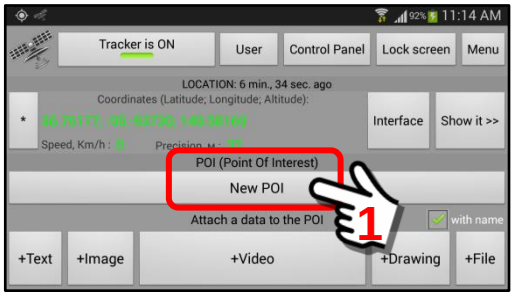
1. ***What a “point-of-interest” (POI) looks like.***
   When a “POI” (Point-of-Interest) is created, it is designated with a small red flag. In the Illustration below, the POI is shown as “1976 Kelmark GT”.

2. *Creating a POI (Point-of-Interest)*

A point-of-interest is a GPS location on the map that you would like to save for future reference. When a POI is created, by "default" the map location will be accessible by all users within your security domain. Options do exist for making the POI "private" where only the user that created it can view it.

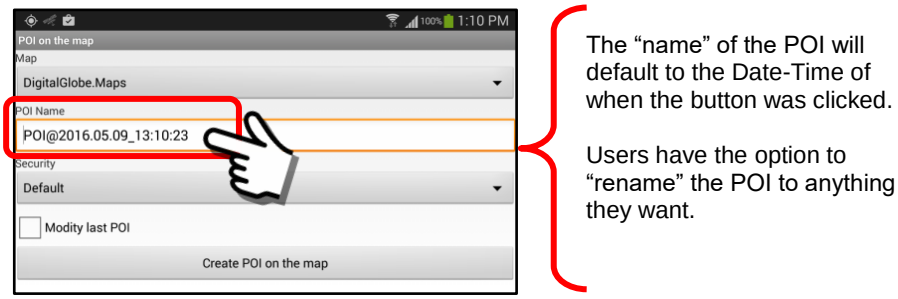
The example below will illustrate how to create a POI from the Tracker Panel.

Click on the "New POI" Button located in the center of the Tracker Panel.



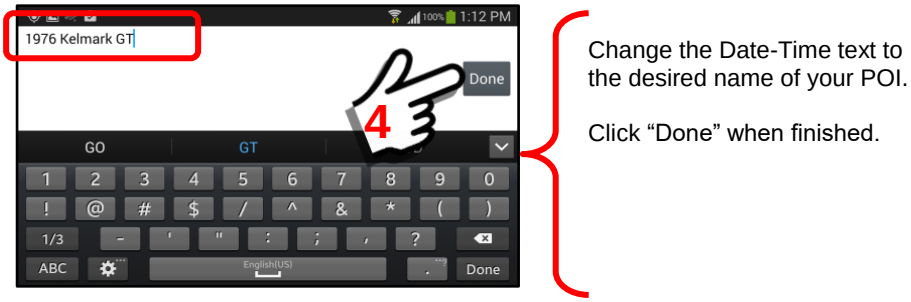
When a POI is created, the GPS location used is the location of the user that is creating the POI. As illustrated below, the user EOCdirector is creating a POI at his current location.

When the "New POI" Button is clicked, a POI Panel is opened that will allow a user to select the type of map to use when the POI is displayed, a place to enter a "name" for the POI and the security settings desired (Private or Public).

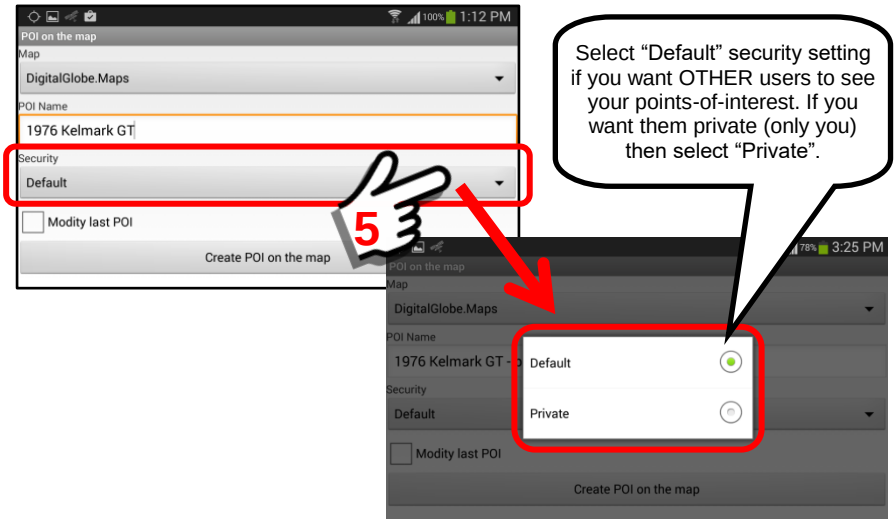


In our example, we want to change the POI Name to something more than date and time. Click on the POI text and a screen keyboard will open as shown below.

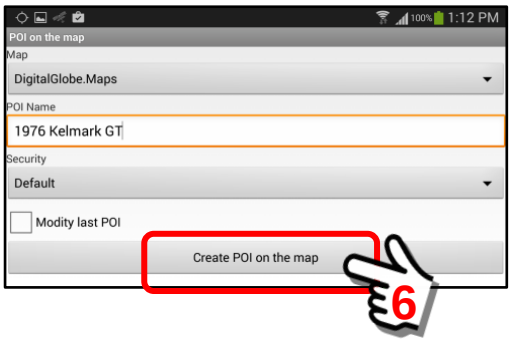
Enter “new” text for the name of your POI (point-of-interest). In this example, we are using “1976 Kelmark GT”



The “new” name, “1976 Kelmark GT” is now entered in the POI Name field. Next, click on the Security heading and select either the Default (Public, everyone can see it) or Private (only you can see it).



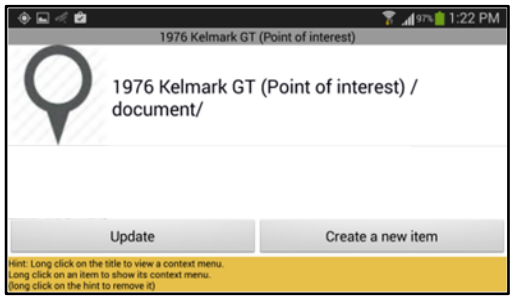
When you are ready to create the POI (point-of-interest) click on the “Create POI on the map” Button.



A point-of-interest marker is now created on the map screen. If the action is successful, you will see a message “POI is added” appear for about 5 seconds on the Tracker Panel.

This is what the Point-of-Interest marker looks like once created on the screen.

Clicking on the POI marker opens the “1976 Kelmark GT” information folder so the user can see pictures, videos, files and other reference materials for this point-of-interest.



In this example, we have only created the Point-of-Interest, we have not attached any pictures or reference materials to it. We will do that in the next section.

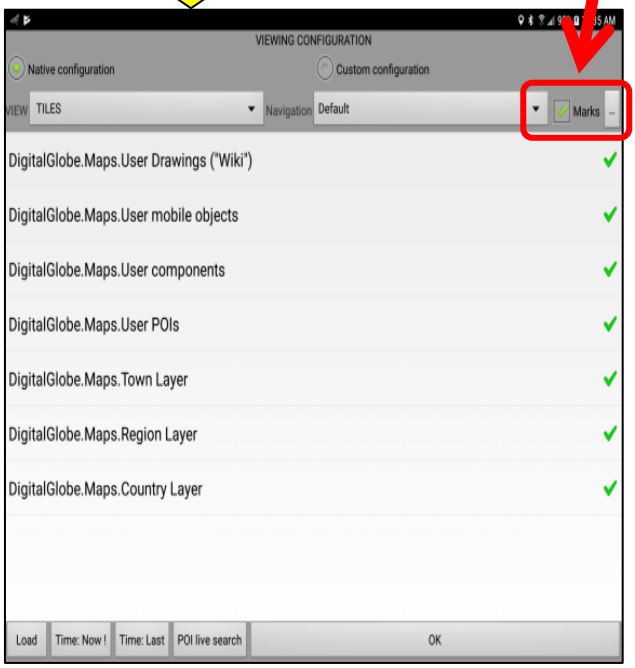
Important note about displaying Points-of-Interest

By default, POI's are displayed after they are created and will be displayed to all users in the same security domain. By design, this allows one person to create a POI and it is available to other users.

However, the POI's may be "turned off" if you do not want them displayed on the screen. Please see **Section 8.8** of this Guide for details on configuring which Layers and Marks you would like displayed on the screen.

Default is "checked" where POI's are displayed.

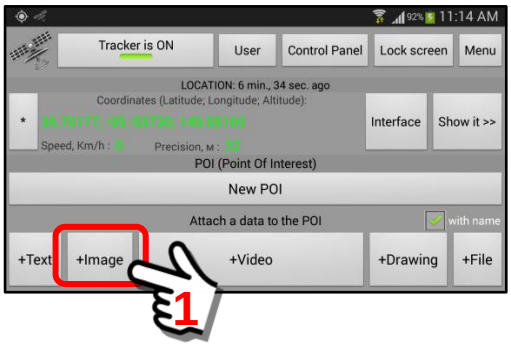
Unchecking the "Marks" checkbox will hide the POI's so they are NOT displayed.



Selection of map types and whether to display icons, points-of-interest and mobile objects

3. ***Attaching information to the POI (ie text, videos, pictures, files).*** Once a POI has been created, we may attach pictures, text, videos, drawings, etc to the location. This section will illustrate how to do that.

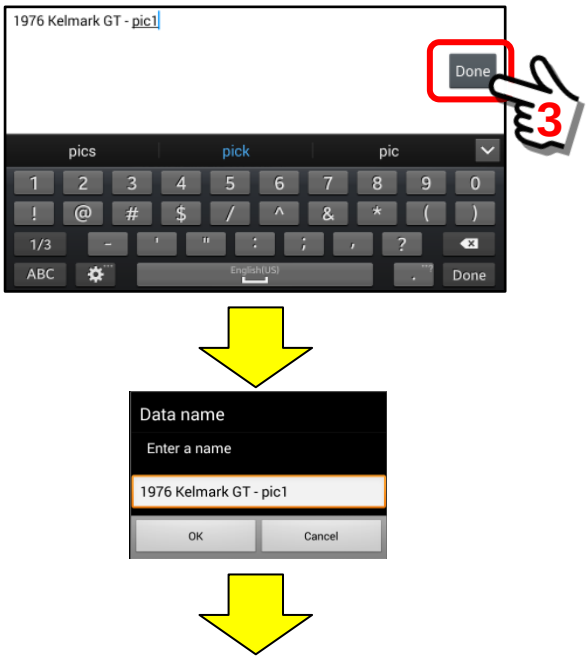
In this example, we will attach an “image” (picture) of the 1976 Kelmark GT that is parked in a field behind the building. Begin by clicking on the “Image” Button located on the left side of the Tracker Panel.



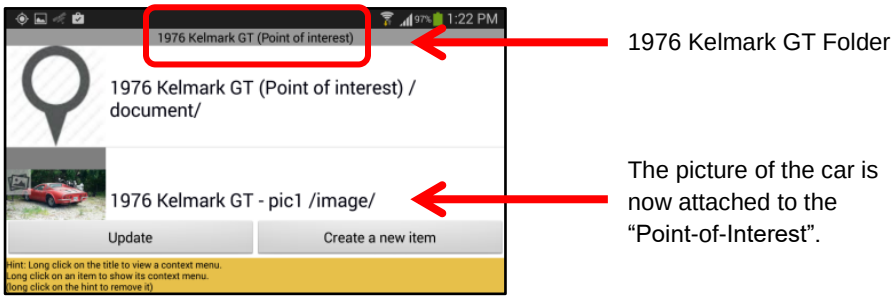
Click on the Image Button and it will open the camera feature on the mobile device. Use the camera to take a picture of what you want to be attached to the POI. In our example, we are taking a picture of the 1976 Kelmark GT sports car.

Once we “SAVE” the picture, it will prompt us for a Name that this picture will be stored under in the folder. Click in the text entry field and a screen keyboard will appear.

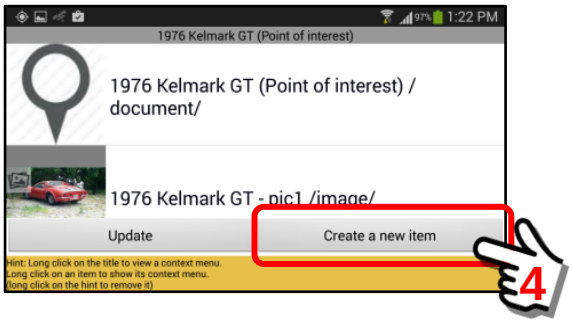
On the screen keyboard, enter a name or description of the picture that will be attached to the POI. In our example, we will name the picture “1976 Kelmark GT – pic1”.



When added, the “new” picture is now added to the data folder of the 1976 Kelmark GT point-of-interest.



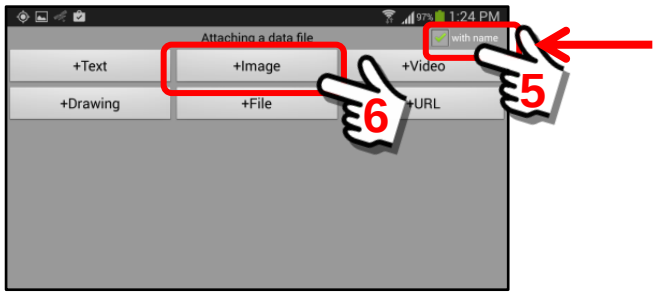
To further illustrate, we are going to add one more picture to the 1976 Kelmark GT point-of-interest folder. To do that, click on the “Create a new item” Button.



The “Create a new item” Button will open a panel used for attaching various information types to a point-of-interest. In this example, we will add another “Image” (picture) to the POI folder.

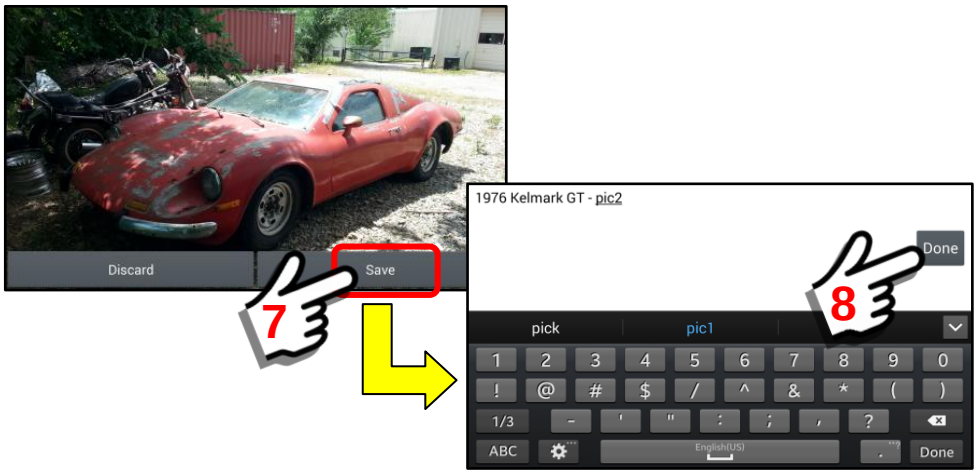
First, decide if you want to create a “name” for the new picture, or do you want the system to make up a name (you can always rename it later).

Click on the “Image” Button located on the panel.

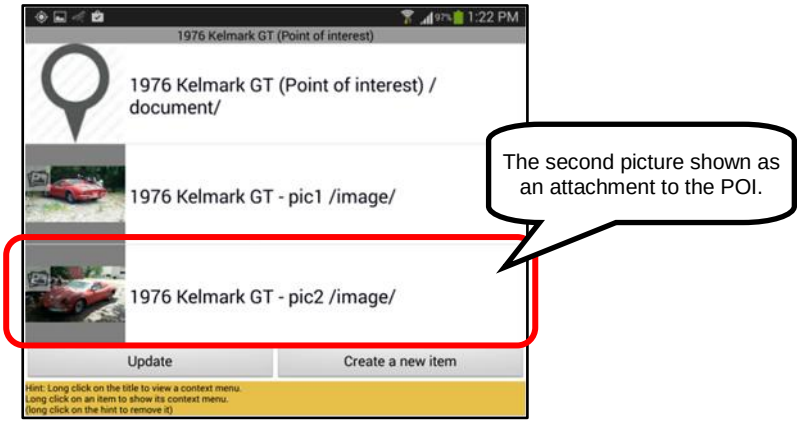


By default, SentryMDU will ask you to create a “Name” for the item. If you want the system to create a name, then “uncheck” this box.

Take a picture using the camera on the mobile device. Save the picture and create a “name” as shown previously.



The second picture is now saved in the POI Folder for “1976 Kelmark GT” as shown below.

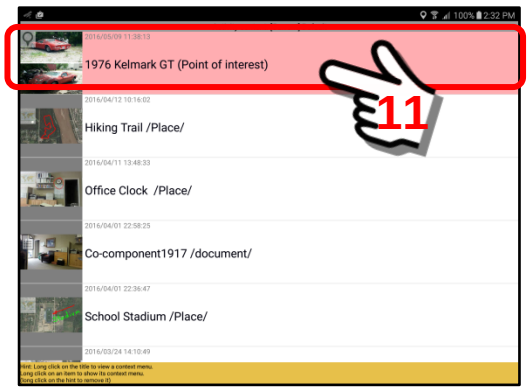


Now that we have added two pictures to the POI folder, we want to illustrate how to add a “Drawing” object” to the POI folder.

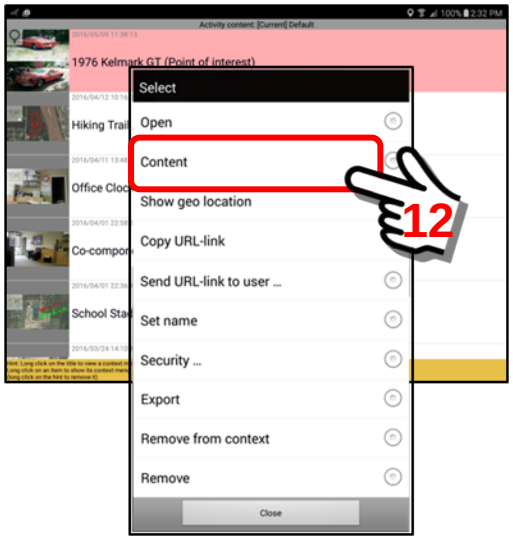
We will start at the main user content menu. At the Main Map Screen, click the User Information Icon located in the lower right hand side.

On the Content Panel, select the point-of-interest (POI) item that you want to add the Drawing Object to.

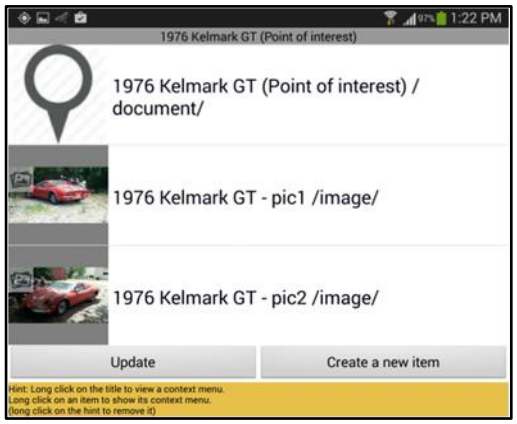
Perform a “Long Click” to open a menu panel of options.



From the list of options, click on the “Content” Option to view the existing content for this POI.



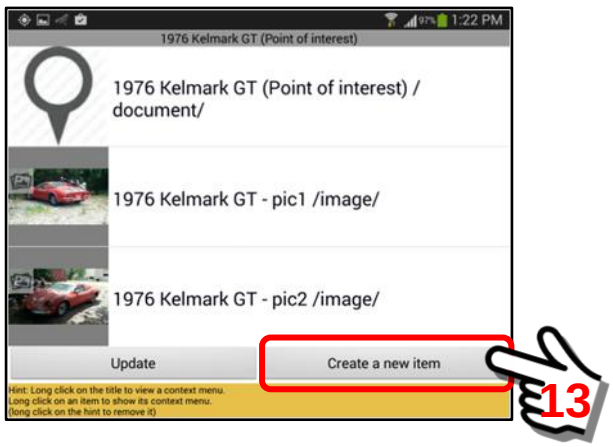
The system will open the “1976 Kelmark GT” point-of-interest object showing all attachments.



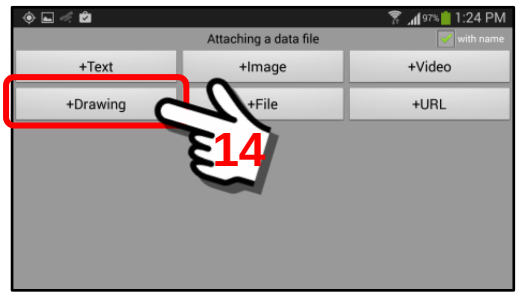
In this example, we have the Point-of-Interest GPS location and the two pictures we have attached.

In this example, we want to attach another image (picture) using the Drawing Tools so that we may make notes on the image.

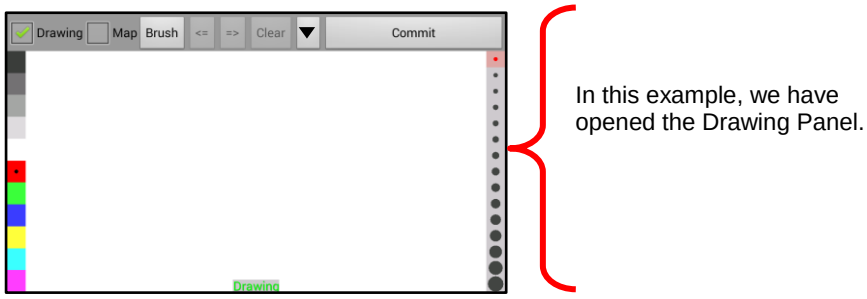
Click on the “Create a new item” Button.



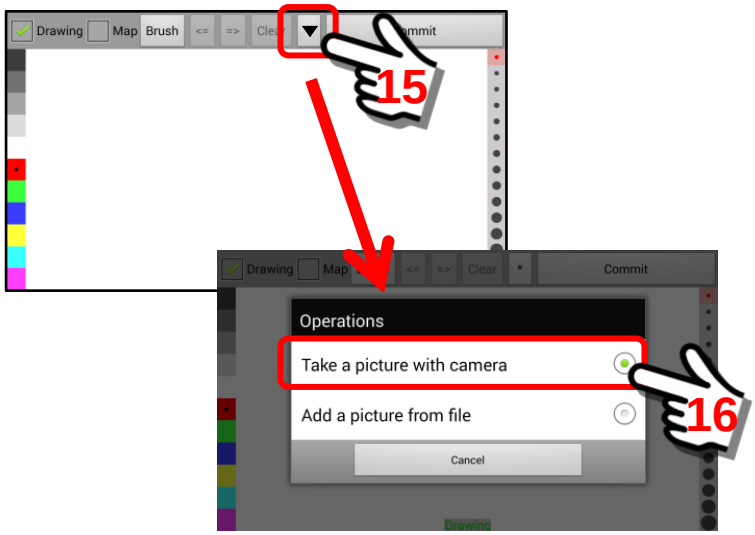
Click on the Drawing Button.



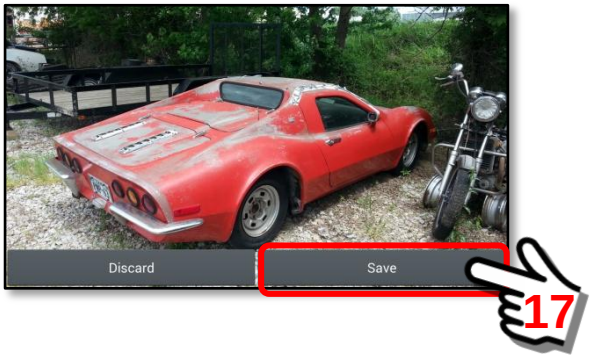
A blank Drawing Panel will open. From the drawing panel a user can create a drawing, take and edit a picture and more. For this illustration we will take a picture, make notes on it and attach it to the POI.



Click on the Operations Button (▼) and select the option “Take a picture with the Camera”.



Using the camera on the device, take a picture. In our example, we are taking another picture of the 1976 Kelmark GT sports car.



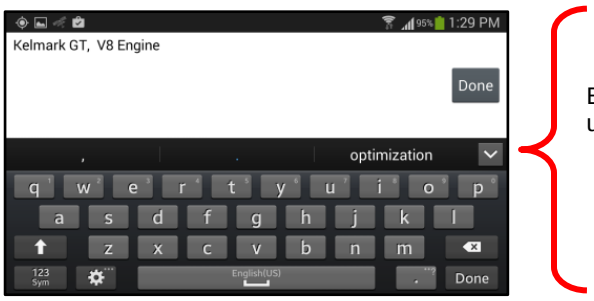
When the picture is “saved” it will be copied to the Drawing Panel for further editing.

Use the drawing tools to draw and make notes on the picture.

When finished, click the “Commit” Button to save the picture as an attachment to the point-of-interest (POI).

Once the picture is processed, the system will prompt for a “name” for the stored data. Click in the data field to launch the keyboard panel.

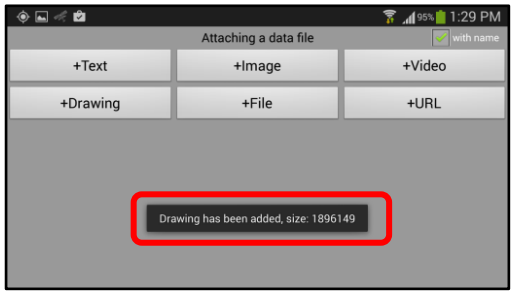
In our example, we will name the picture “Kelmark GT, V8 Engine”. Use the on-screen keyboard to enter the text name.



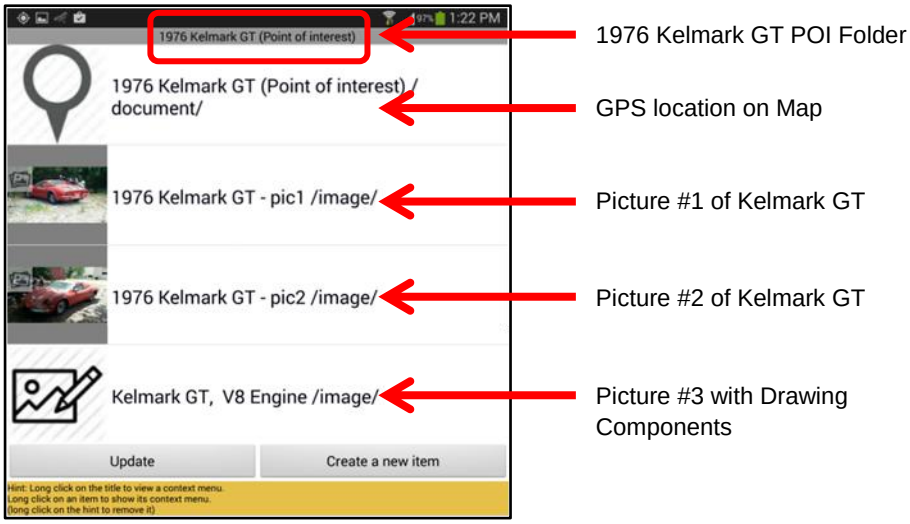
Enter a name for the attachment using the on-screen keyboard.

When finished with the name of the picture/drawing to attach to the point-of-interest, click “OK”.

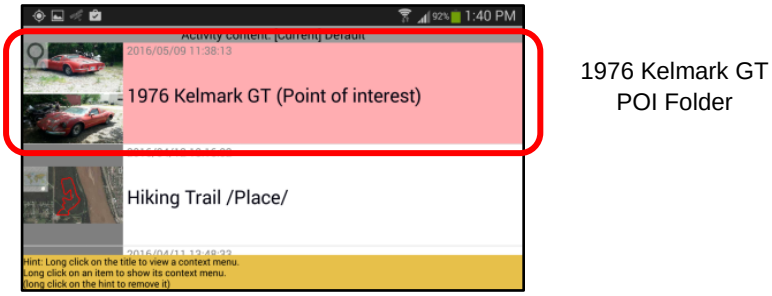
The system will provide a message that the operation was successful as shown below.



The screen below shows the various components (attachments) to the point-of-interest “1976 Kelmark GT”.

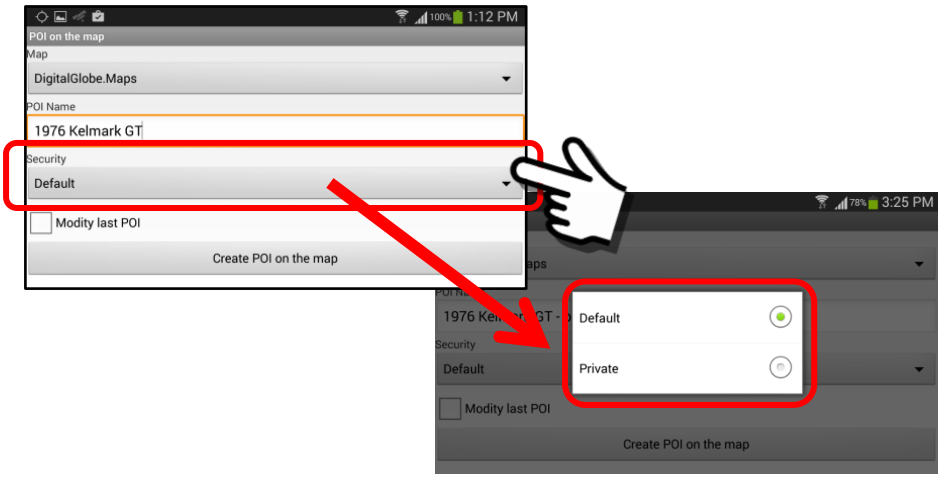


When displayed in the Content Folder, the POI will display as follows.



4. ***Public and Private POI’s.***

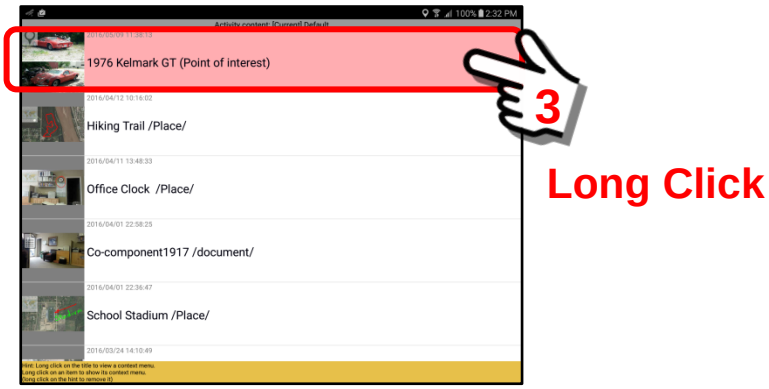
The Security heading allows a User to select either the Default (Public, everyone can see it) or Private (only you can see it) option.



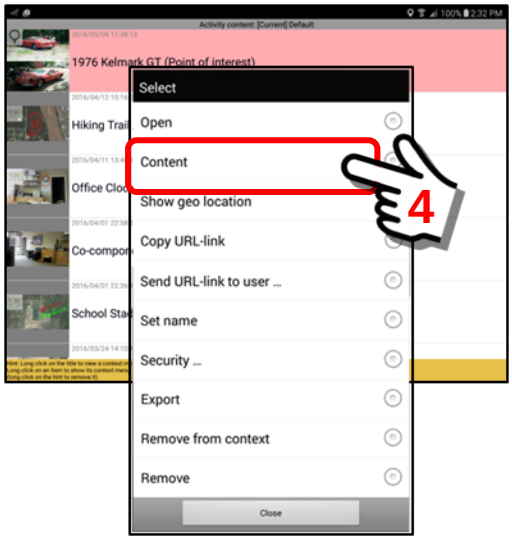
5. ***Deleting one of the POI attachments from the list.***
This example will illustrate how to delete one of the POI attachments but NOT the whole point-of-interest folder. This is useful when the information on a POI needs to be updated.

On the Content Panel, select the point-of-interest (POI) item that you want to modify by removing an attachment.

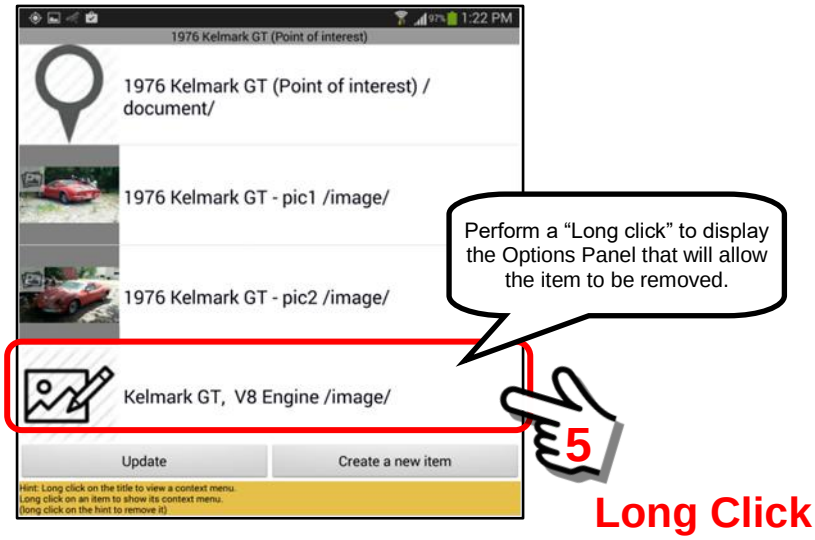
Perform a “Long Click” to open a menu panel of options



From the list of options, click on the “Content” Option to view the existing content for this POI.

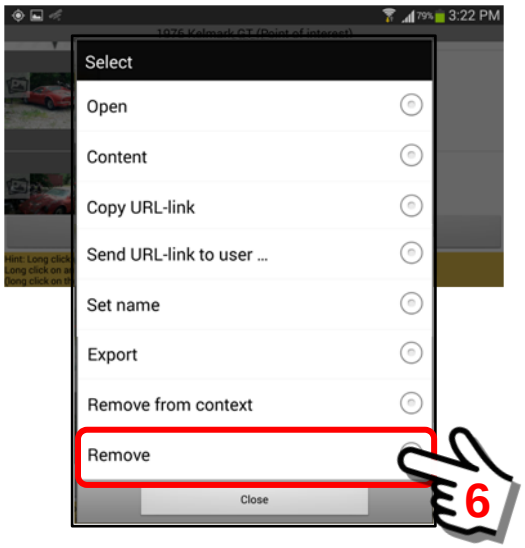


The Content for this particular point-of-interest is displayed, showing the GPS location and 3 images. Perform a “Long click” on the attachment that you would like to remove. For this example, we will remove the V8 Engine image file.



The Options Panel will allow that attachment to be removed.

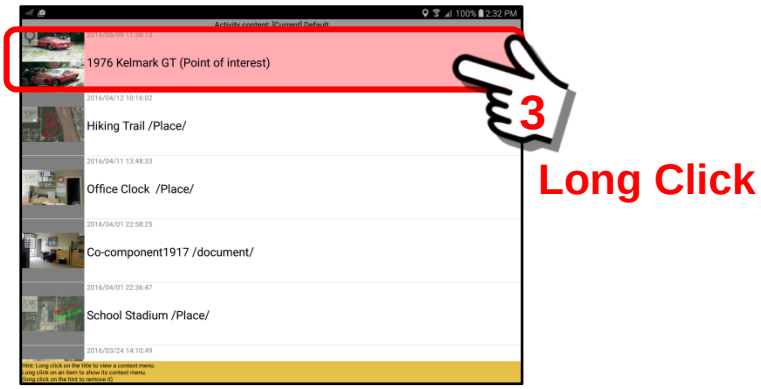
The Options Panel will be displayed. Click on the “Remove” menu option to delete the item.



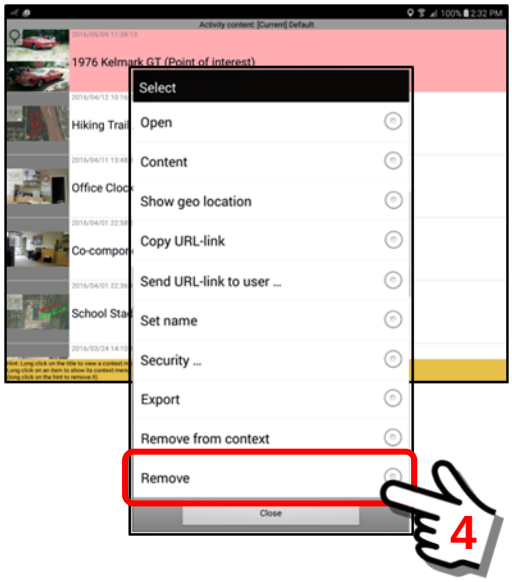
6. ***Deleting a POI that is no longer needed.***
All points-of-interest (POI’s) are stored in the Content Section of the User Information panel. To delete a POI that is no longer needed, we will go to that panel as follows.

On the Content Panel, select the point-of-interest (POI) item that you want to delete.

Perform a “Long Click” to open a menu panel of options



Select the “Remove” option on the menu. The designated POI and all attachments will be removed from the system.



15.2.11. The "+Text" button

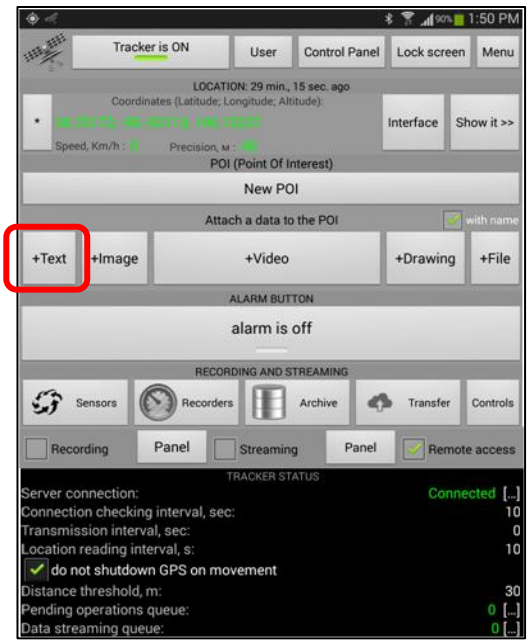
Overview:

The Sentry MDU System has the ability to store and display "points-of-interest" that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then "attach" text, pictures, videos, drawings and files to this POI.

This section will describe how to add TEXT to a point-of-interest.

Tracker Panel – "+Text" Button:

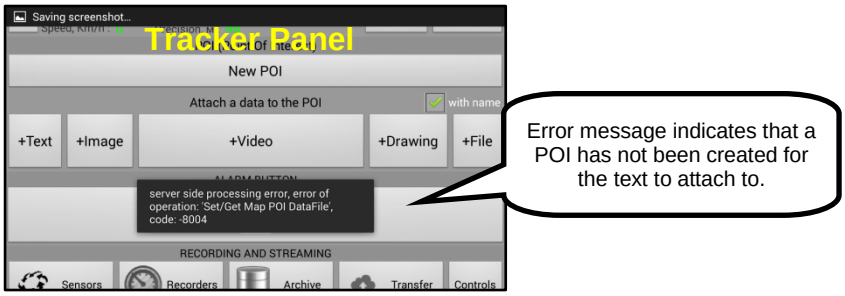
The "+Text" Button is located in the center, left side of the Tracker Panel screen.



Description of the "+Text" feature:

1. ***When to use the "+Text" Button.***
   The "+Text" Button is used when a new point-of-interest has been created (GPS location) and attachments are to be immediately added to the POI Folder.

   If the "+Text" Button is used when a new POI has not just been created, the system will display an error message.

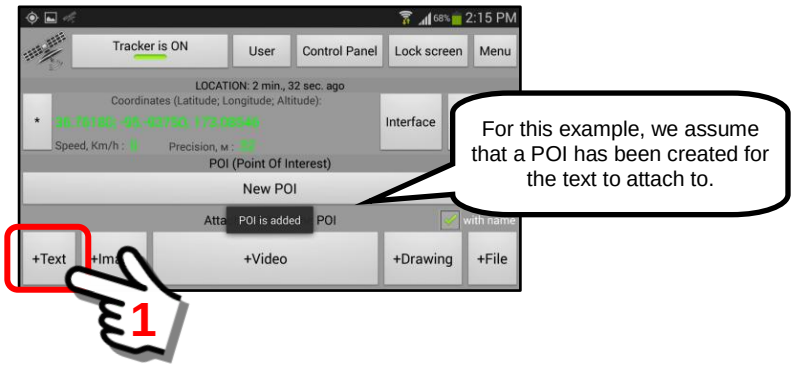


2. ***Using the "+Text" feature.***

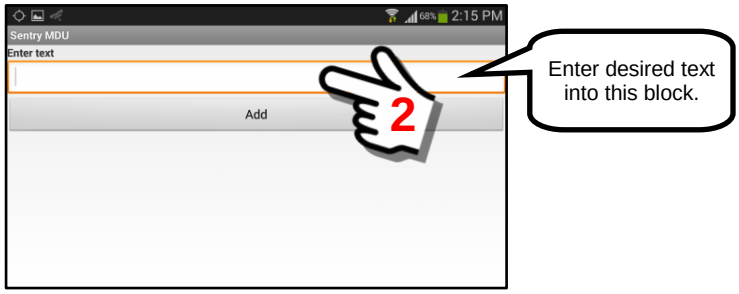
After the POI has been created (GPS location), a user may then attach "text" notes to the point-of-interest. The system will provide an on-screen keyboard for the entry of text.

In this example, we are assuming we have already created a "Building Access Codes" point-of-interest (POI).

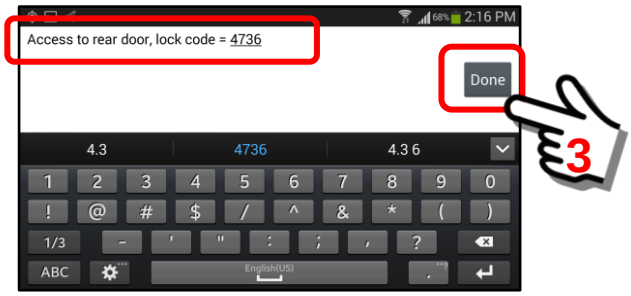
Click on the "+Text" Button.



A text entry panel will open. Click in the orange box area and the on-screen keyboard will be displayed to enter the text.



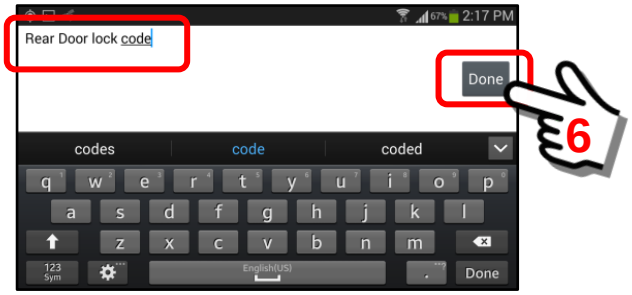
Enter the text. In this example, we are entering text to show the Access Code for the lock on the rear door of the building. When finished, click "Done".



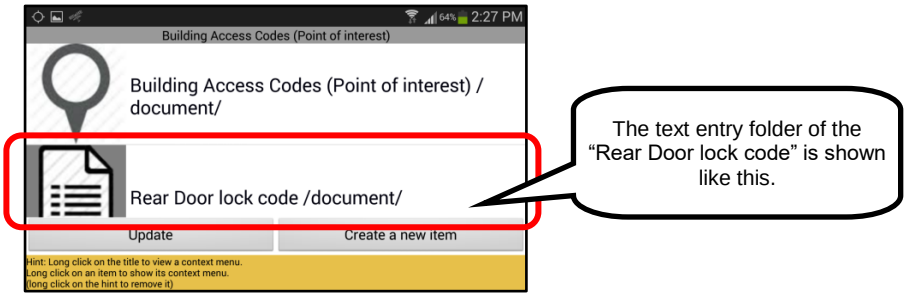
When finished typing, the text is shown in the data entry box of the text entry panel. Click the “Add” Button to save the text.

Once you “add” the text, the system will prompt for a name for this text entry. Click on the box and enter a name.

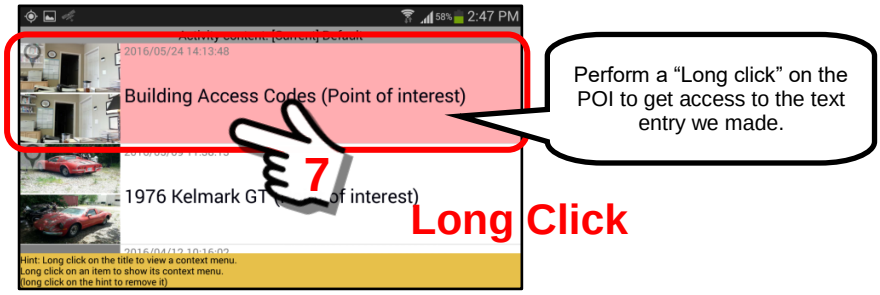
In the example, we will call this text entry “Rear Door lock code”. Click “Done” when finished.



As shown below, the “Rear Door lock code” text attachment is shown as a “document” (text document) in the Building Access Codes point-of-interest.

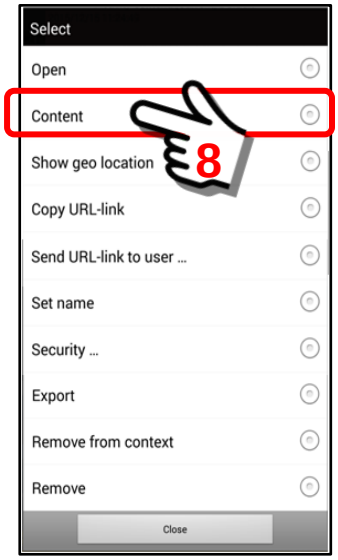


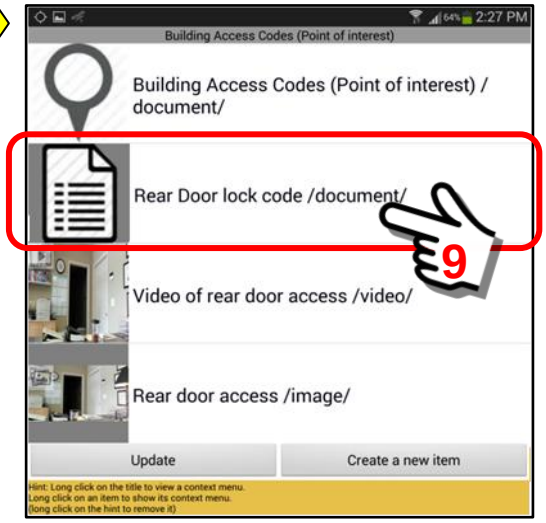
To view the “text” attachment we have just created, perform a long click on the POI and select the “Rear Door lock code” document.



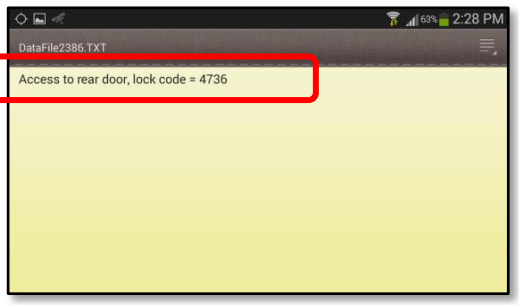
Select the “Content” option to view the content contained in the “Building Access Codes” point-of-interest.

Click on the Content Menu Option, then select the document.





This is the Text Document that we created that is attached to the point-of-interest that has the lock code for the back door of the building.



15.2.12. The "+Image" button

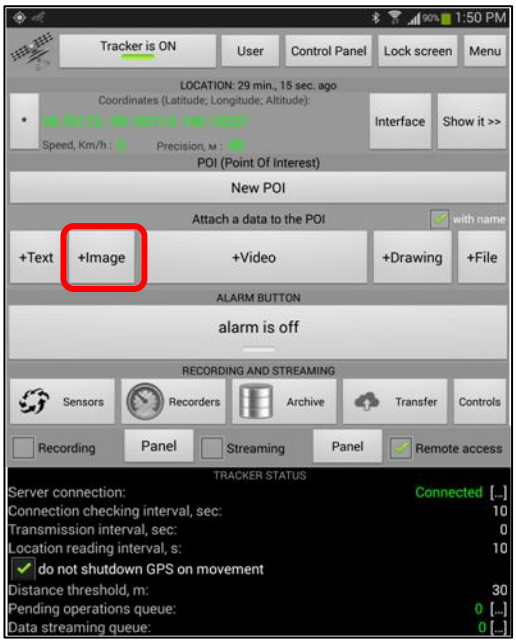
Overview:

The Sentry MDU System has the ability to store and display "points-of-interest" that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then "attach" text, pictures, videos, drawings and files to this POI.

This section will describe how to add IMAGES to a point-of-interest.

Tracker Panel – "+Image" Button:

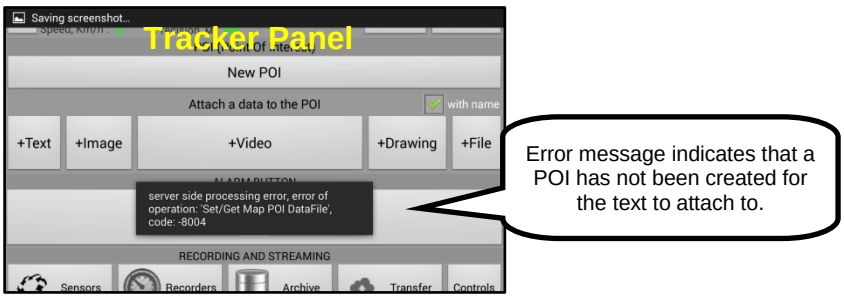
The "+Image" Button is located in the center, left side of the Tracker Panel screen.



Description of the "+Image" feature:

1. ***When to use the "+Image" Button.***
   The "+Image" Button is used when a new point-of-interest has been created (GPS location) and attachments are to be immediately added to the POI Folder.

   If the "+Image" Button is used when a new POI has not just been created, the system will display an error message.

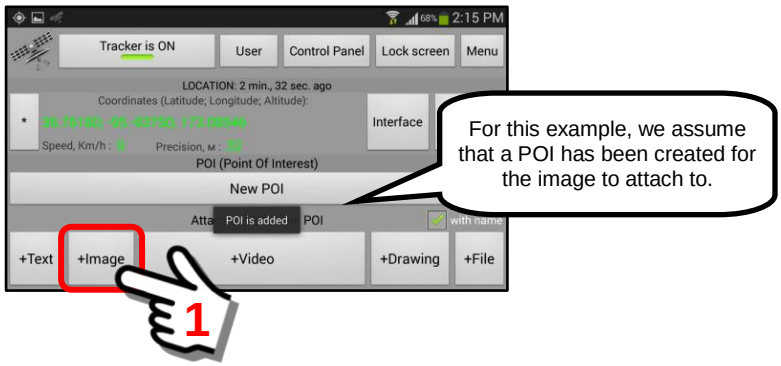


2. ***Using the "+Image" feature.***

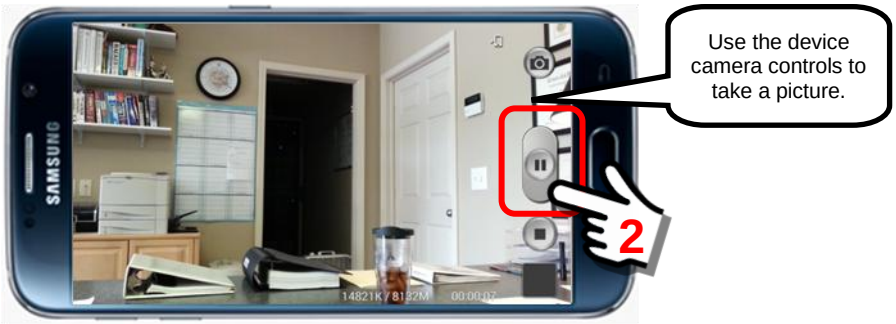
After the POI has been created (GPS location), a user may then attach images to the point-of-interest. The system will use the camera feature of the mobile device to take pictures.

In this example, we are assuming we have already created a "Building Access Codes" point-of-interest (POI).

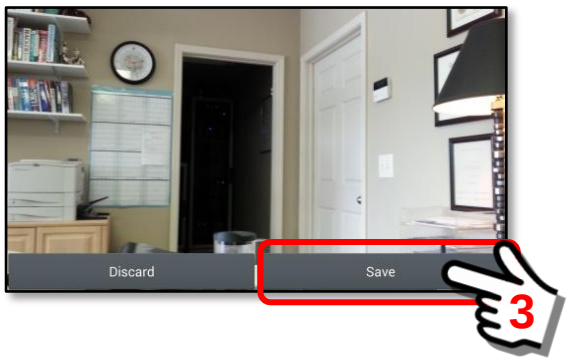
Click on the "+Images" Button.



The camera feature on the device will open. Take a picture as you would normally.



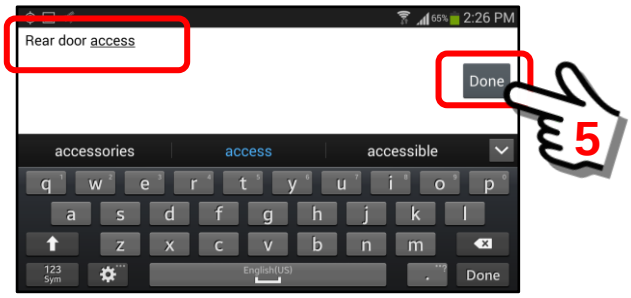
Take the picture. In this example, we are taking a picture to show the rear door of the office. When finished, click "Save".



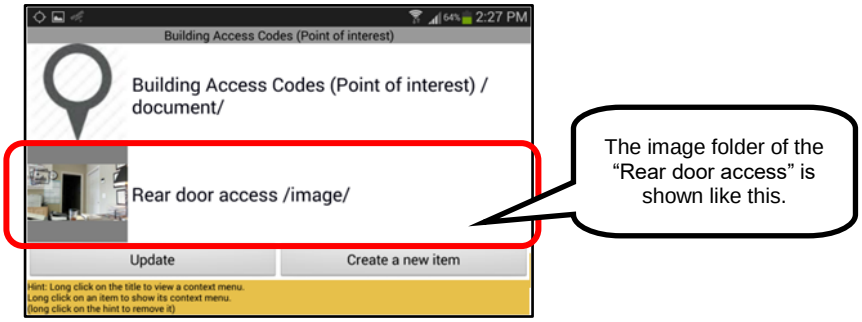
When the picture is “saved” the system will prompt for a name to store the image as.

Click on the box and enter a name.

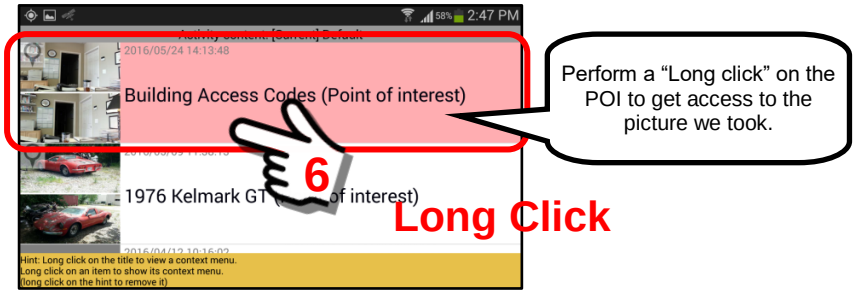
In the example, we will call this picture file “Rear door access”. Click “Done” when finished.



As shown below, the “Rear door access” image attachment is shown as an “image” (/image/ file) in the Building Access Codes point-of-interest.

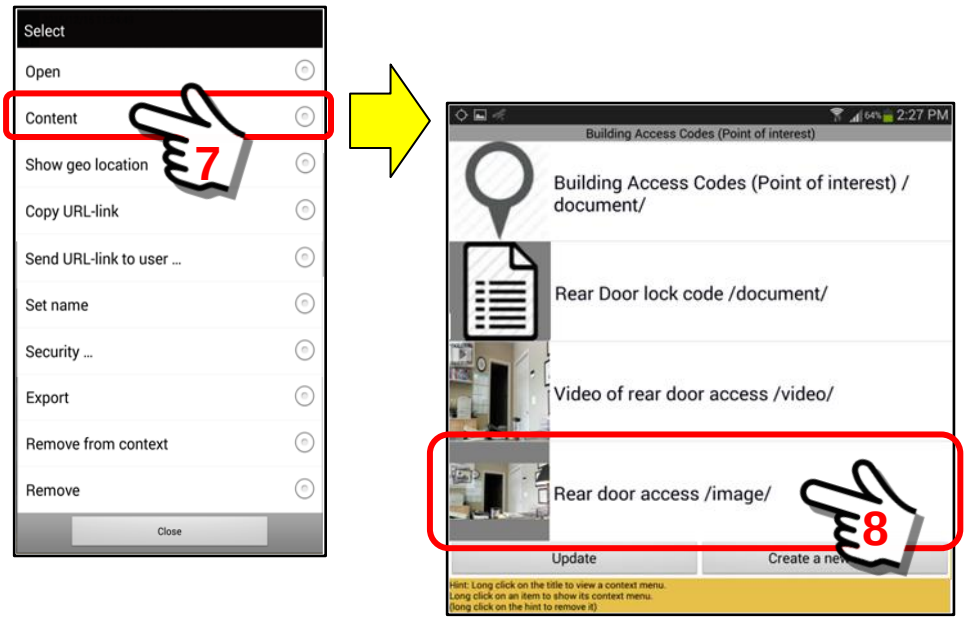


To view the “image” attachment we have just created, perform a long click on the POI and select the “Rear door access” image.

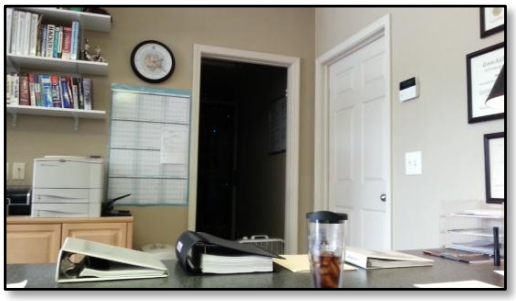


Select the “Content” option to view the content contained in the “Building Access Codes” point-of-interest.

Click on the Content Menu Option, then select the /image/ item.



This is the picture that we took of the “Rear door access” that is attached to the point-of-interest.



15.2.13. The “+Video” button

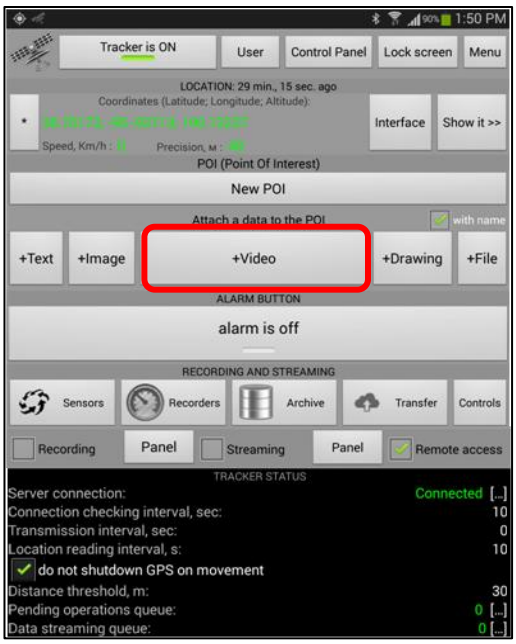
Overview:

The Sentry MDU System has the ability to store and display “points-of-interest” that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then “attach” text, pictures, videos, drawings and files to this POI.

This section will describe how to add VIDEO to a point-of-interest.

Tracker Panel – “+Video” Button:

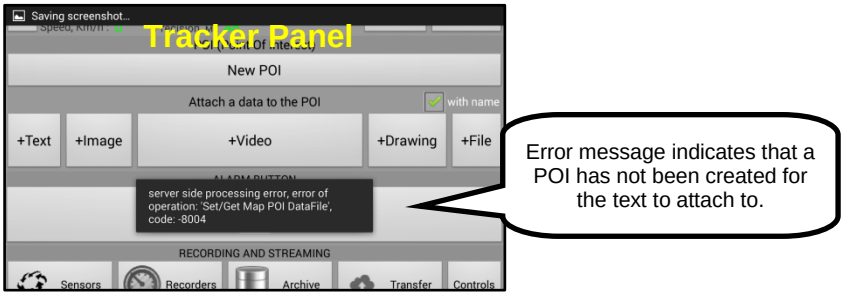
The “+Video” Button is located in the center of the Tracker Panel screen.



Description of the “+Video” feature:

1. ***When to use the “+Video” Button.***
   The “+Video” Button is used when a new point-of-interest has been created (GPS location) and attachments are to be immediately added to the POI Folder.

   If the “+Video” Button is used when a new POI has not just been created, the system will display an error message.

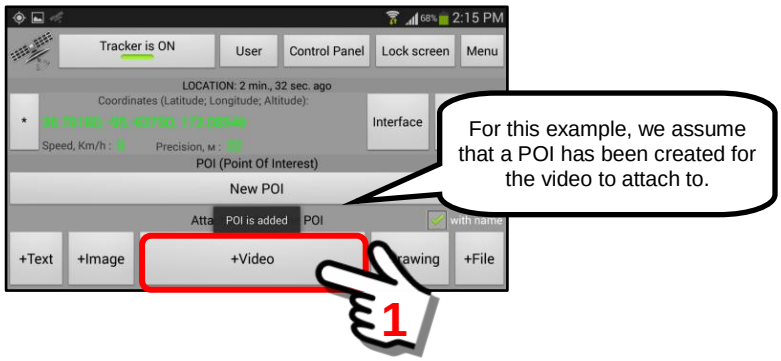


2. ***Using the "+Video" feature.***

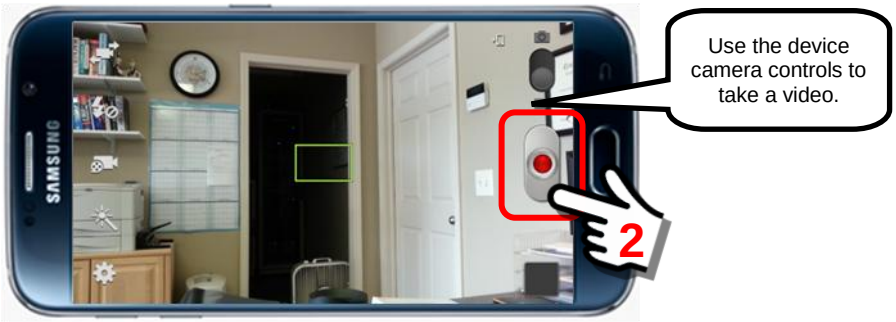
After the POI has been created (GPS location), a user may then attach a video to the point-of-interest. The system will use the camera feature of the mobile device to take video movies.

In this example, we are assuming we have already created a "Building Access Codes" point-of-interest (POI).

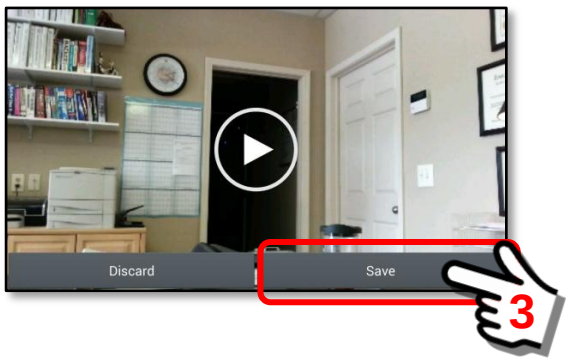
Click on the "+Video" Button.



The camera feature on the device will open. Take a video as you would normally.



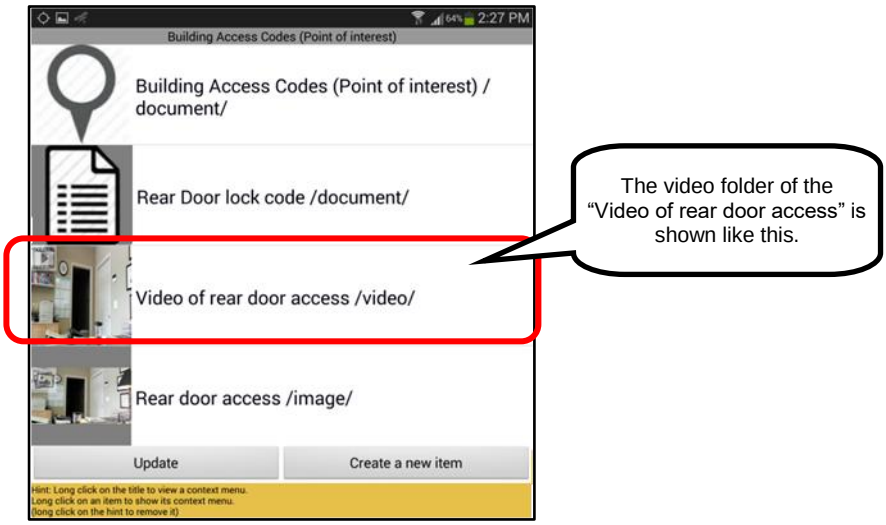
Take the video. In this example, we are taking a video to show the rear door of the office. When finished, click "Save".



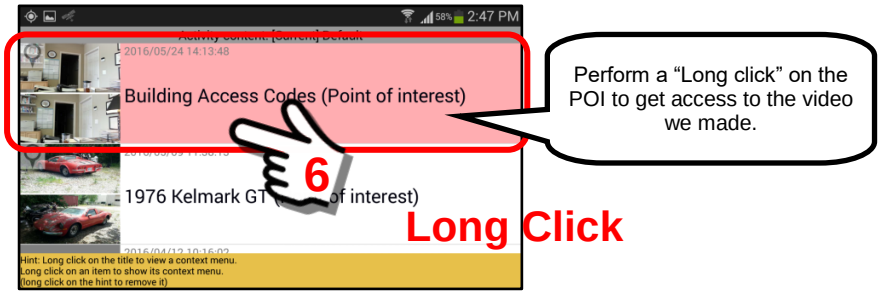
When the video is “saved” the system will prompt for a name for the video file. Click on the box and enter a name.

In the example, we will call this video file “Video of rear door access”. Click “Done” when finished.

As shown below, the “Video of rear door access” video attachment is shown as a “video” (/video/ file) in the Building Access Codes point-of-interest.

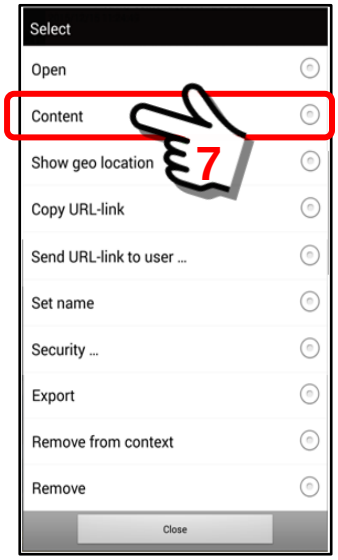


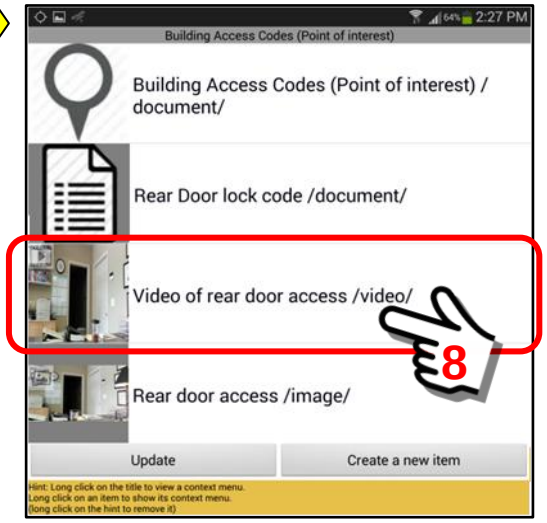
To view the “video” attachment we have just created, perform a long click on the POI and select the “Video of rear door access” video.



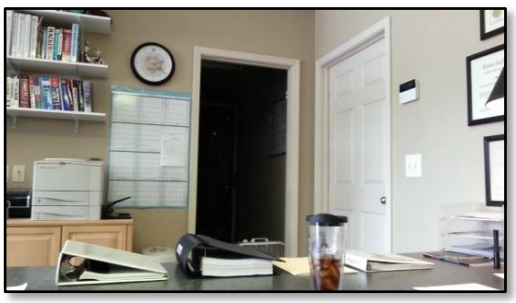
Select the “Content” option to view the content contained in the “Building Access Codes” point-of-interest.

Click on the Content Menu Option, then select the /image/ item.





This is the video that we took of the “Video of rear door access” that is attached to the point-of-interest.



15.2.14. The "+Drawing" button

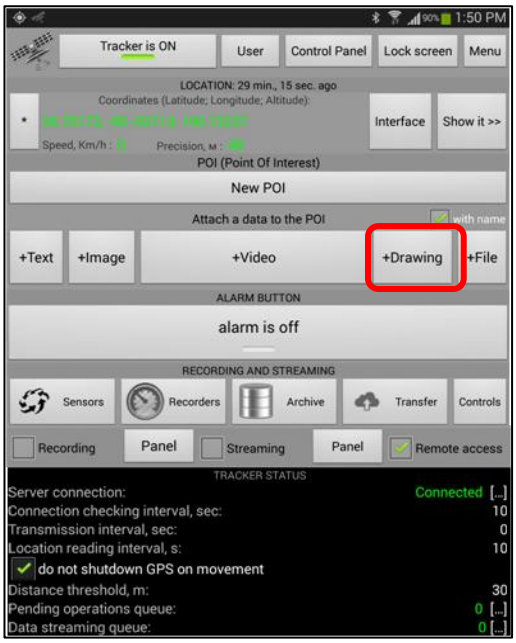
Overview:

The Sentry MDU System has the ability to store and display "points-of-interest" that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then "attach" text, pictures, videos, drawings and files to this POI.

This section will describe how to add a DRAWING to a point-of-interest.

Tracker Panel – "+Drawing" Button:

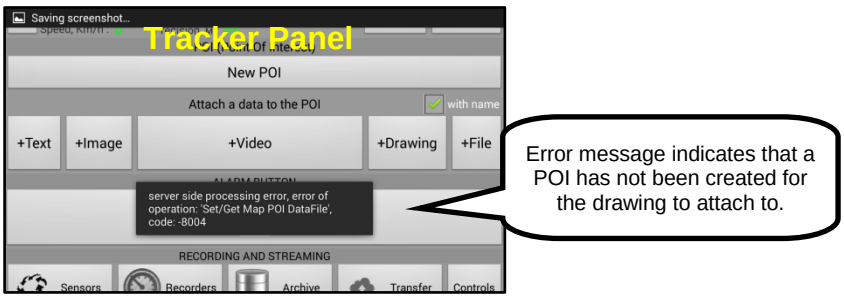
The "+Drawing" Button is located in the center, right side of the Tracker Panel screen.



Description of the "+Drawing" feature:

1. ***When to use the "+Drawing" Button.***
   The "+Drawing" Button is used when a new point-of-interest has been created (GPS location) and attachments are to be immediately added to the POI Folder.

   If the "+Drawing" Button is used when a new POI has not just been created, the system will display an error message.

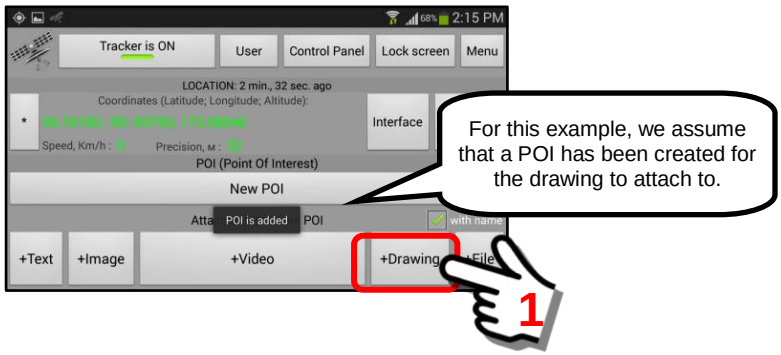


2. ***Using the "+Drawing" feature.***

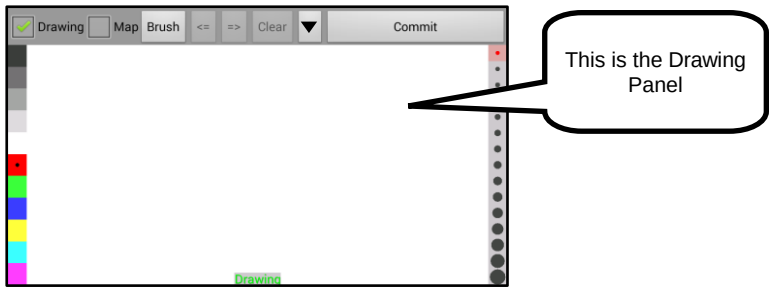
After the POI has been created (GPS location), a user may then attach a drawing to the point-of-interest. The system will use the camera feature of the mobile device to take video movies.

In this example, we are assuming we have already created a "Building Access Codes" point-of-interest (POI).

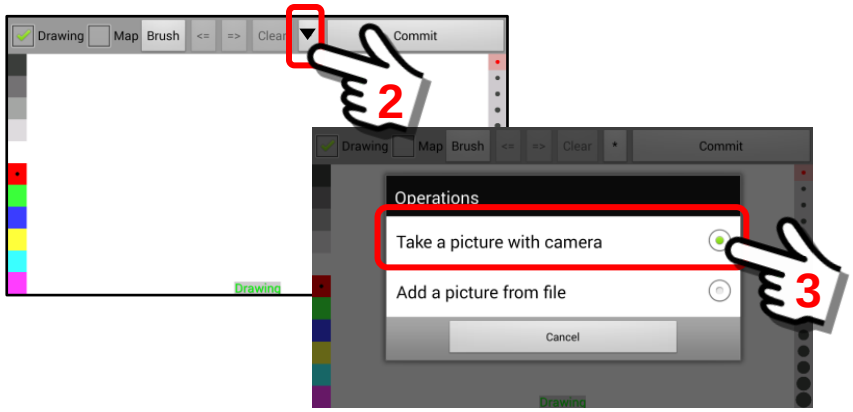
Click on the "+Drawing" Button.



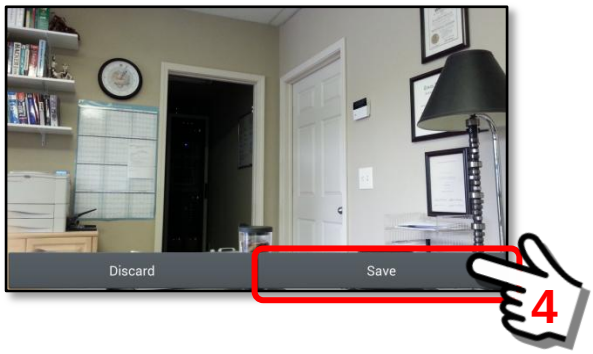
The drawing feature of the SentryMDU App will open. For our example, we will take a picture and then "draw" on the picture using the drawing tools..



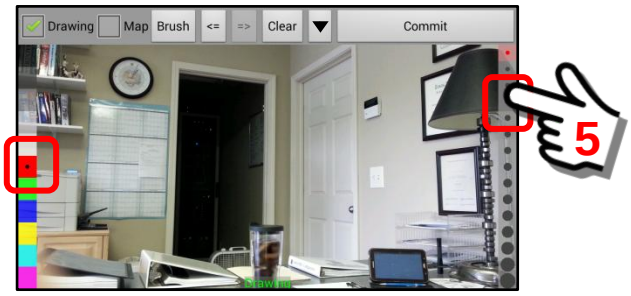
Click on the Operations Button (▼) and select the option "Take a picture with the Camera".



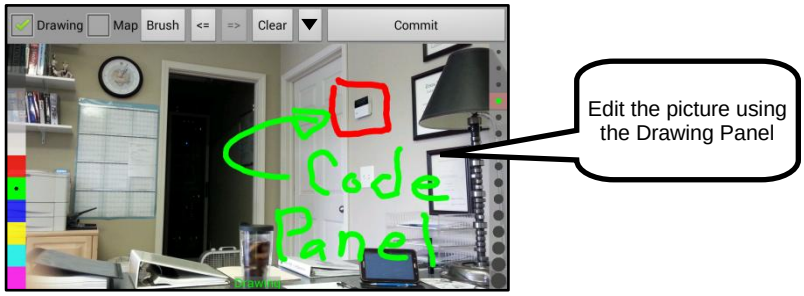
When the picture is “saved” the system will place the picture on the Drawing Canvas for editing.



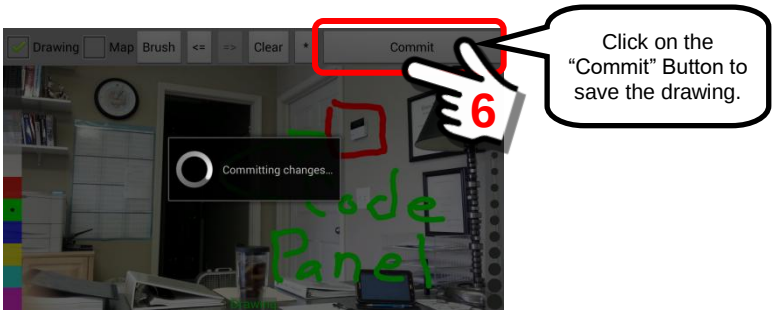
In the example, we will draw on this picture. See other sections of this guide on setting colors line thickness.



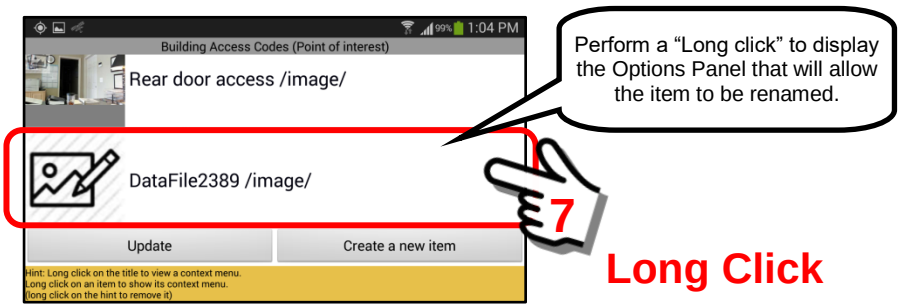
As shown below, edit the picture and make notes about the location of the access code panel.



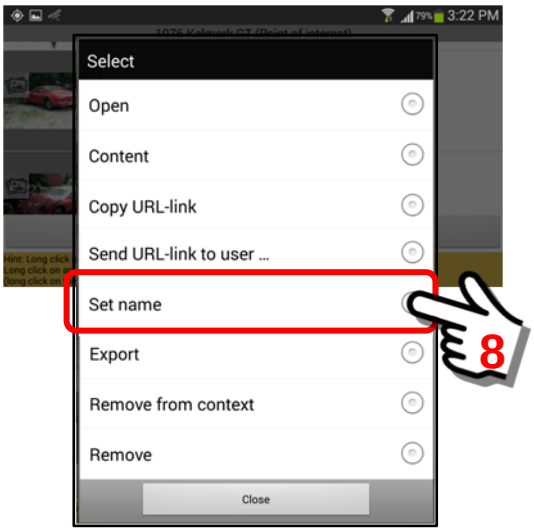
When finished, click on the “Commit” Button to save the changes.



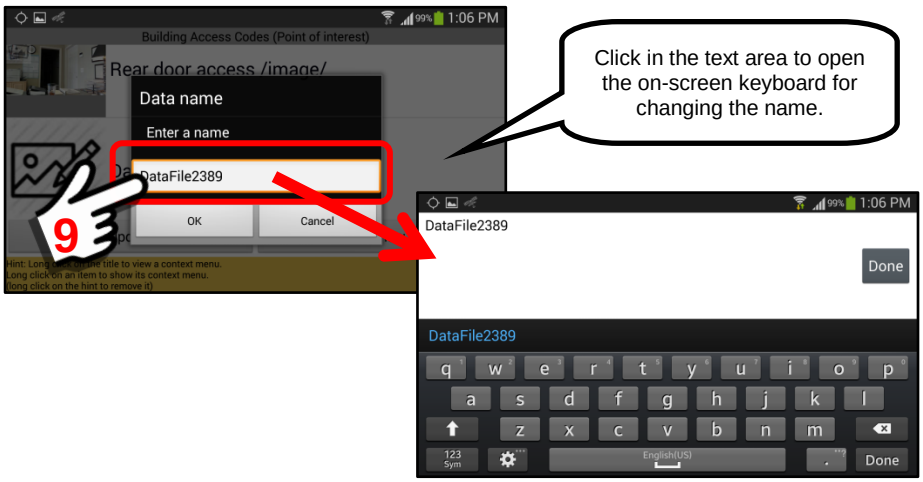
The Drawing is now saved as an attachment to the point-of-interest. In this example, the system creates a default name as “DataFile2389”. We want to change the name to something more descriptive.



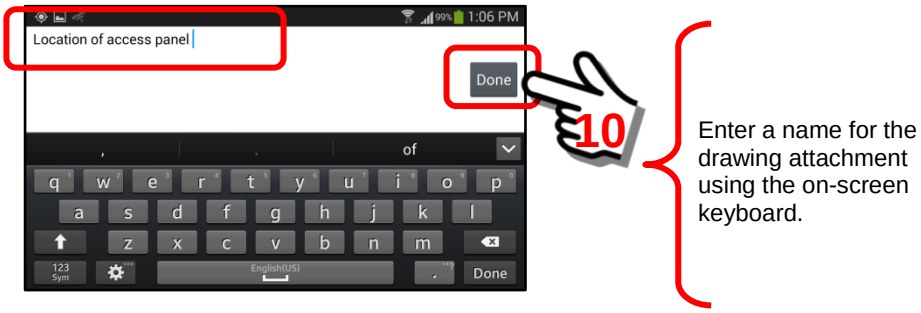
A “Long click” on the DataFile2389 name will open the options panel. Select the “Set name” menu option.



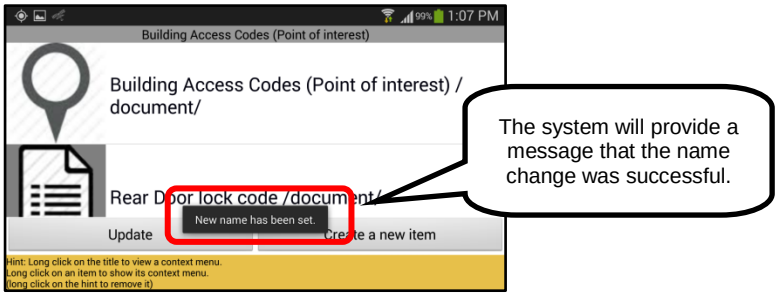
Clicking on the “Set name” option will open a Data Name entry box with the default name shown (DataFile2389).



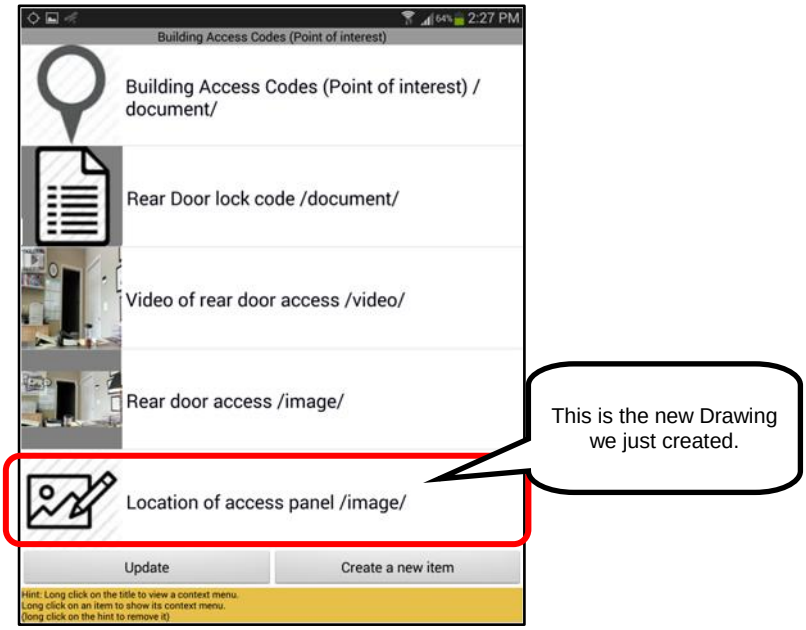
In this example, we will change the name of the drawing from “DataFile2389” to “Location of access panel”. Click “Done” when finished.



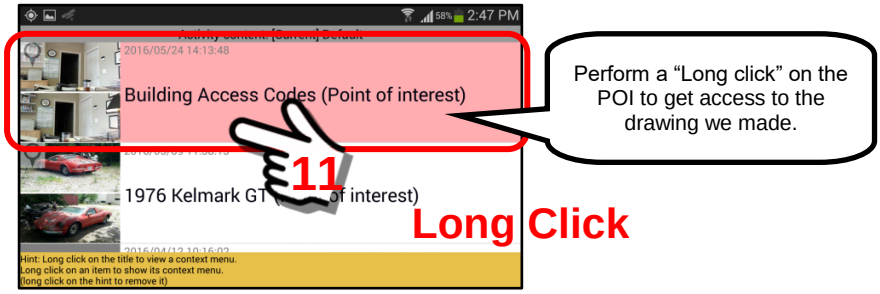
When finished changing the name, the screen will return to the content list for the “Building Access Codes” point-of-interest (POI).



Below is a view of the completed point-of-interest folder with attachments.

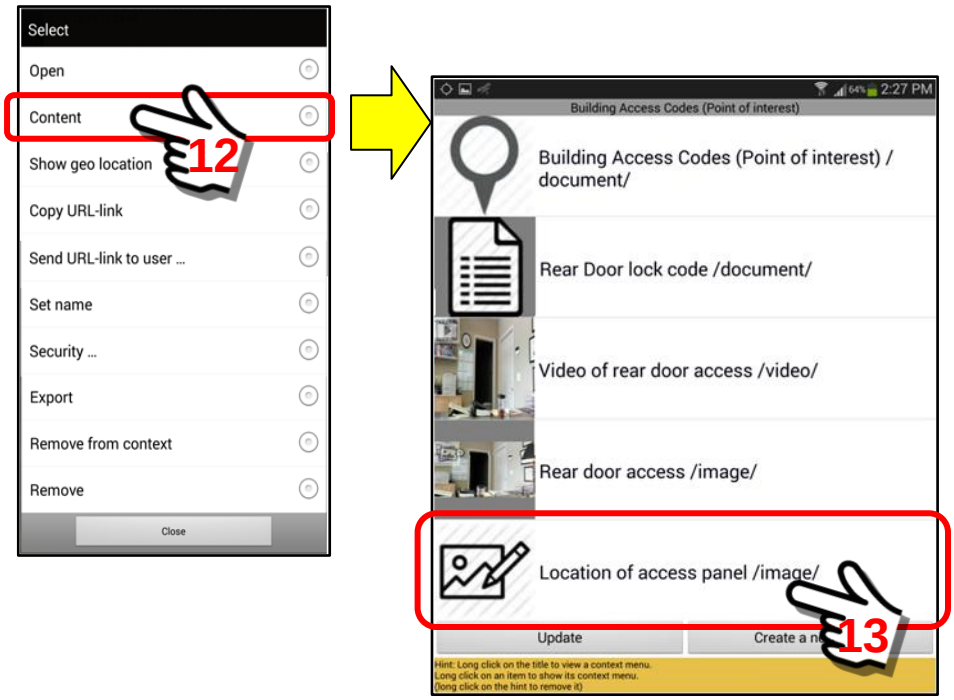


To view the “drawing” attachment we have just created, perform a long click on the POI and select the “Location of access panel” image.



Select the “Content” option to view the content contained in the “Building Access Codes” point-of-interest.

Click on the Content Menu Option, then select the /image/ item.



In this example, the drawing attachment with the colored text illustrates the “+Drawing” feature.

15.2.15. The “+File” button

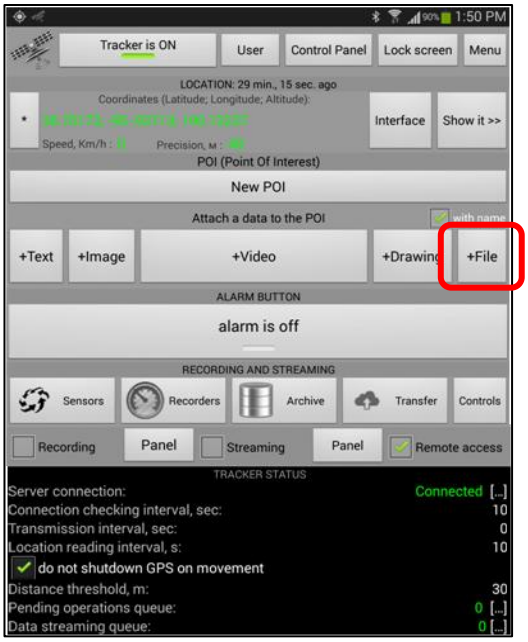
Overview:

The Sentry MDU System has the ability to store and display “points-of-interest” that a User would like to identify on a satellite or map image screen. Once a point of interest is created a user may then “attach” text, pictures, videos, drawings and files to this POI.

This section will describe how to add a FILE reference to a point-of-interest.

Tracker Panel – “+File” Button:

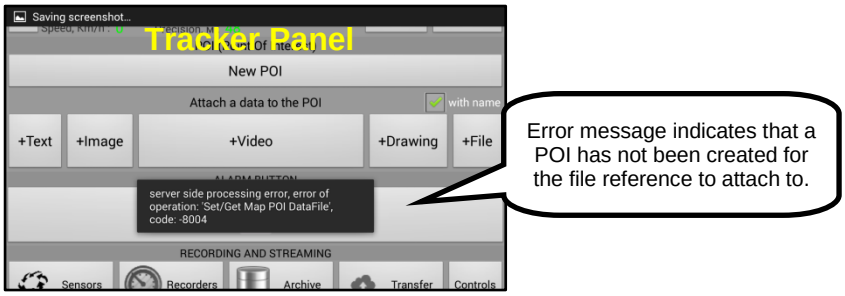
The “+File” Button is located in the center, right side of the Tracker Panel screen.



Description of the “+File” feature:

1. ***When to use the “+File” Button.***
   The “+File” Button is used when a new point-of-interest has been created (GPS location) and attachments are to be immediately added to the POI Folder.

   If the “+File” Button is used when a new POI has not just been created, the system will display an error message.

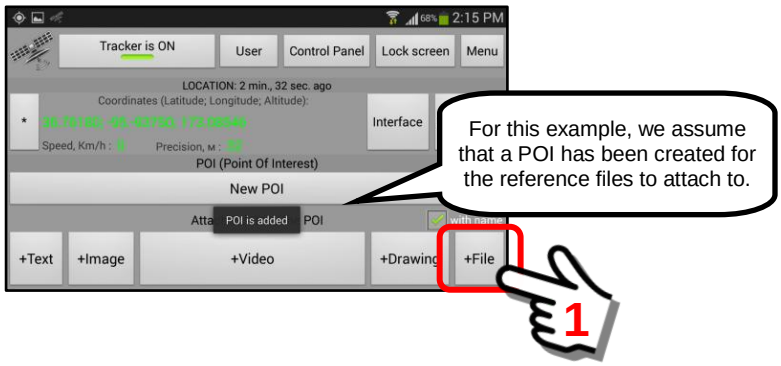


2. ***Using the "+File" feature.***

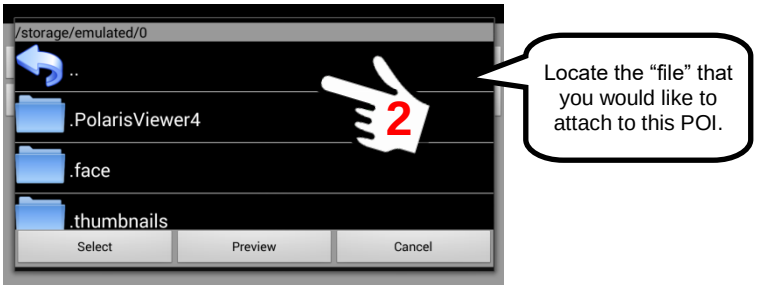
After the POI has been created (GPS location), a user may then attach reference "files" to the point-of-interest. The system will provide an on-screen keyboard for the entry of text.

In this example, we are assuming we have already created a "Building Access Codes" point-of-interest (POI).

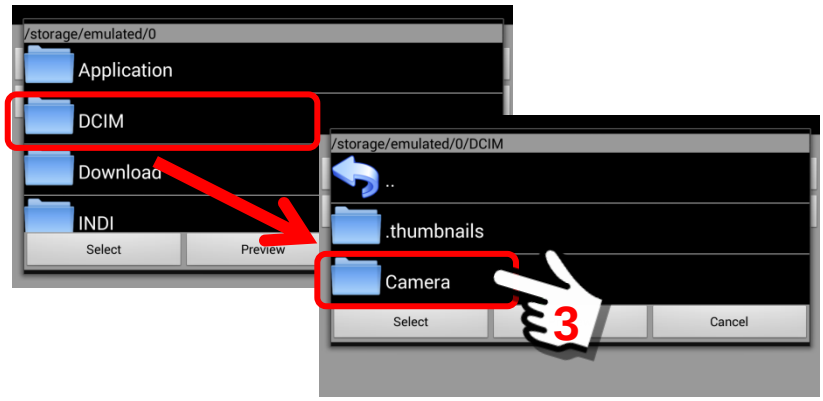
Click on the "+File" Button.



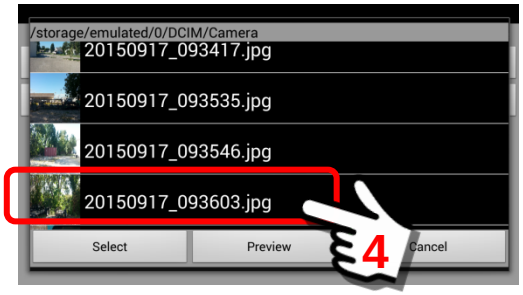
A file manager panel will open. A list of folders on the mobile device will be displayed. Navigate the folders until the desired file is located.



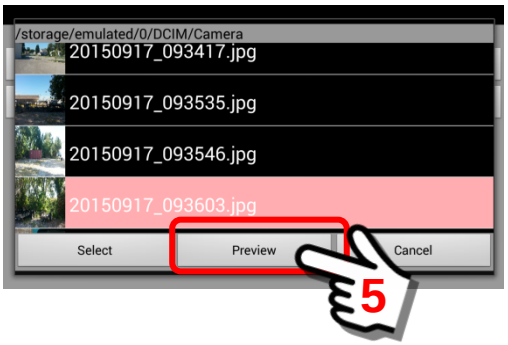
In this example, we are going to select a picture that was taken previously with the camera. We navigate to the DCIM/Camera folder.



Locate the picture that we want to attach. In this example we will attach the following image.

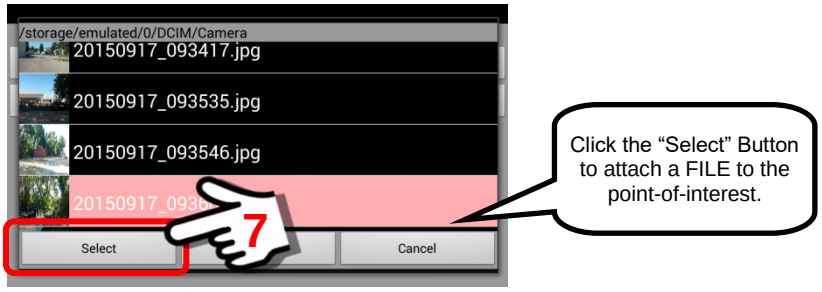


Before we attach the image, we will “preview” the picture to make sure it is the image we want. Select the image and then click on the “Preview” Button.

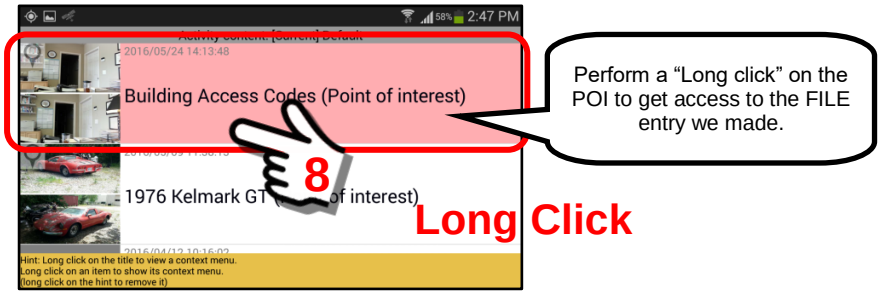


In the example, we see the picture that was in the DCIM/Camera folder on the mobile device. When finished reviewing, click the “back” button on the device to return to the selection screen.

To select the picture, click on the “Select” Button with the desired file highlighted as shown below.

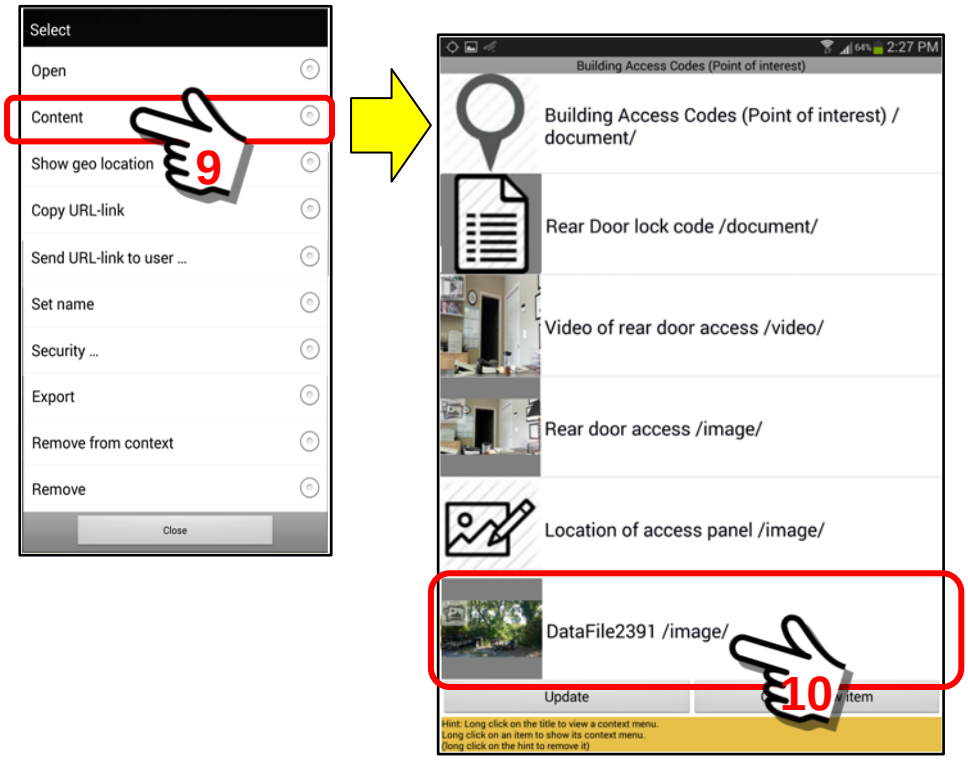


To view the “file” attachment we have just created, perform a long click on the POI and select the “DataFile2391” document.



Select the “Content” option to view the content contained in the “Building Access Codes” point-of-interest.

Click on the Content Menu Option, then select the document.



This is the File that we created that is attached to the point-of-interest that has the picture for the back of the building.

15.2.16. The “Alarm” button (Desktop Client Required)

Overview:

The Sentry MDU System has the ability to store “alarm points” that a User would like to set. The alarm feature can trigger an event notification depending on the parameter that is being monitored. The Alarm Feature may be used to monitor device parameters such as battery charge, acceleration, or the light sensor but may also be used as a geo-fence monitor. A geo-fence is a “user defined” boundary (geographical polygon on a map) that uses GPS coordinates to determine when a mobile device moves in or out of the boundary area. The Sentry MDU System via the Sentry MDU Manager Desktop Client, allows a user to create geofencing of all sizes and shapes.

This section will describe how to use the various Alarm Features of the Sentry MDU System.

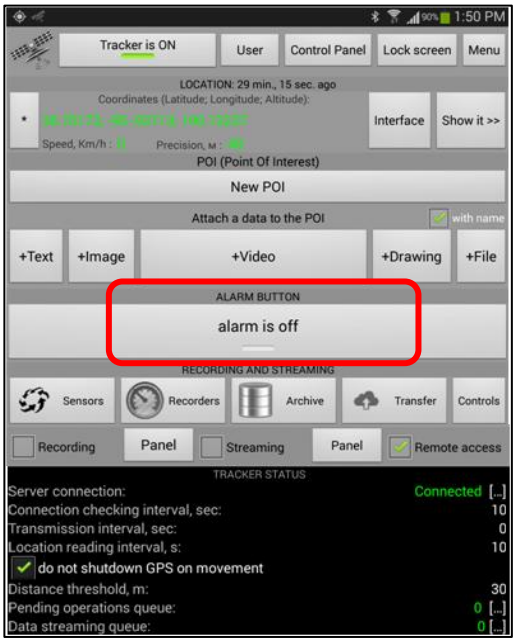
Important Note: As explained in previous sections, the Sentry MDU System is comprised of 3 layers of technology.

a. **Sentry MDU Data Server**
b. **Sentry MDU Manager Desktop Client**
c. **Sentry MDU App**

Access to the Sentry MDU Manager Desktop Client is REQUIRED in order to configure and administer the alarm features. This section will cover only the Sentry MDU App features. The Sentry MDU Manager user guide will have details on alarm configuration for that platform.

Tracker Panel - Alarm Button:

The Alarm Button on the Tracker Panel is exclusively for turning the Desktop Client Geo-Fence feature on and off (see **Section 9.26** for Mobile Device controlled Geo-Fence options).

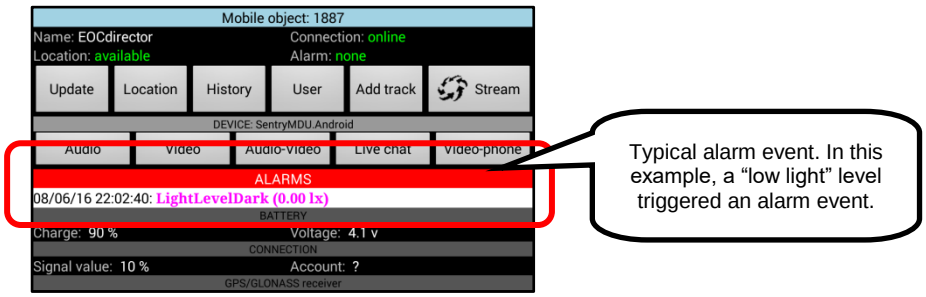


Description of the Alarm Feature:

1. ***General alarm conditions that can be monitored.***
   Most current mobile devices (phones) are loaded with sensors. The Sentry MDU System allows these sensors to be monitored and trigger points configured so that a user may be notified when a trigger point has been reached. In addition, multiple trigger points may be specified for a particular sensor so that notifications may be "staged" … such as Normal, Low, Critical, etc.

   The sensors available for monitoring will depend on your particular mobile device hardware. Typically, the following parameters may be monitored.
   a. Battery Charge Level
   b. Cellular Signal Strength
   c. Light / Dark (light sensor)
   d. Acceleration
   e. Others depending on device

   The following screen is a typical display of an alarm event.



   The trigger points for these alarm events are configured using the Sentry MDU Manager Desktop Client. If you do not have access to the Desktop Client then these alarm features will not be available to you.

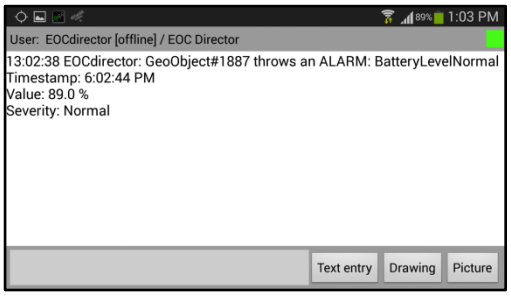
   Note: The "Alarm Button" is used exclusively for the Geo-Fence feature. The alarm points for the sensors shown above cannot be changed from the mobile device. Access to the Sentry MDU Manager Desktop Client is REQUIRED in order to configure and administer the alarm features.

2. ***General alarm notification.***
   As shown above, when a general alarm parameter is triggered, a red alarm block will be displayed on the Mobile Object Panel. This alarm block will remain until the condition has been corrected on the mobile device.

In addition to the red Alarm Block, a notification “message” will be sent to the Sentry MDU Messaging feature on the device. The mobile device will emit a “tone” alert (depends on phone volume settings) and the device notification bar will display a SentryMDU Icon indicating that a message has been received.

SentryMDU Icon is shown on the Notification Bar indicating that a message is waiting.

Since the SentryMDU System runs as a background process on the mobile device, it can still receive alarm message “alerts” even while the phone is used for other functions (ie a phone). Click on the SentryMDU Icon and the SentryMDU App will open and the Alarm Message will be displayed, as shown below.

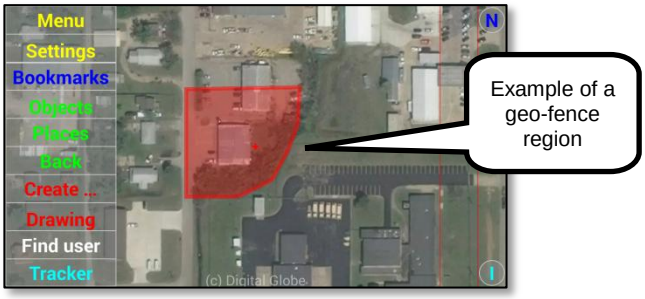


Message that is sent when the alarm parameter has been triggered.

In this example, the message indicates that the Battery Charge Level is “Normal”, at 89%.

3. ***Example – Using a “Geo-Fence” to monitor user locations.***

The Sentry MDU System has a geo-fence feature. This feature will allow a User or System Administrator (with the appropriate security access) to create a geographical region on a map screen that will trigger an alarm event if another user on the network goes into or out of this region. An illustration of a geo-fence region is shown below.



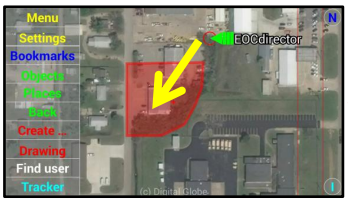
The geo-fence region is created with the Sentry MDU Manager Desktop Client (MS Windows based program). This desktop client is used to administer the SentryMDU Data Server and provide advanced functionality not available on the mobile device.

Organizations that license the SentryMDU System will generally have several instances of the Desktop Client running within their organization. See your System Administrator for access to your groups Desktop Client.

> **Note: Access to the Sentry MDU Manager Desktop Client is REQUIRED in order to configure this geo-fence feature and administer the associated alarm features. The mobile device only has the option to turn the geo-fence feature on or off.**

<u>A geo-fence region has three (3) alarm options available.</u>

a. Alarm when a mobile device goes inside the fence.



Alarm is triggered when device goes from outside the fence to inside the fence.

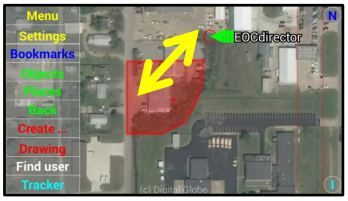
Device can go from inside to outside with no alarm, but once outside, if tries to go inside again, then it will alarm.

b. Alarm when a mobile device goes outside the fence.

Alarm is triggered when device goes from inside the fence to outside the fence.

Device can go from outside to inside with no alarm, but once inside, if tries to go outside, then it will alarm.

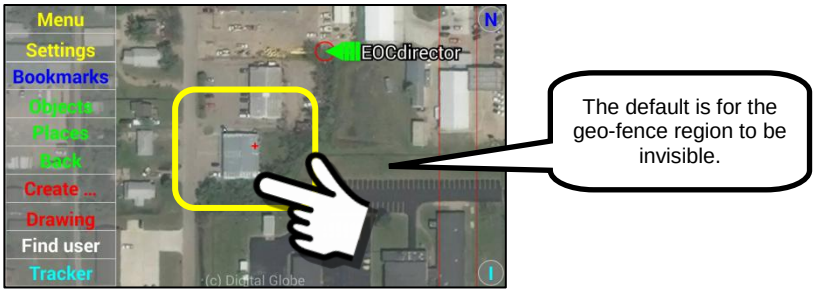
c. Alarm when a mobile device goes inside or outside.



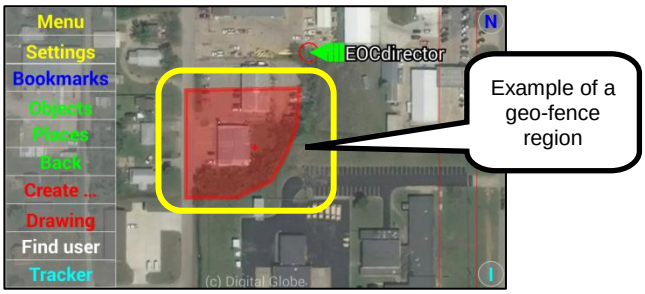
Alarm is triggered when device goes from inside the fence to outside the fence or from outside the fence to inside the fence (both ways).

A geo-fence region is created using the drawing tools on the SentryMDU Manager Desktop Client. A region can take almost any shape. In addition, an unlimited number of regions can be created and regions can overlap.

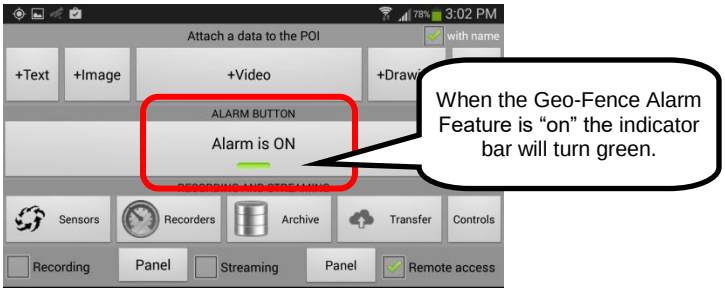
The default display mode of a geo-fence region is “invisible” to the user on the mobile device. An example is shown below.



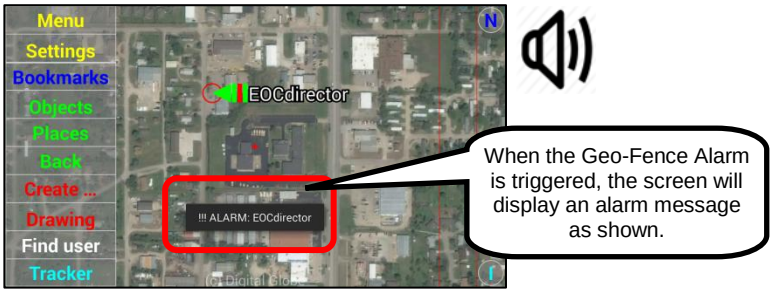
However, if a user does a “light tap” on the screen, if a geo-fence has been designated, it will be displayed for the user to see. Another “tap” on the screen and the geo-fence region will be hidden again.



To activate the geo-fence alarm feature, perform a “Long click” on the Alarm Button. When activated, the text will change from “Alarm is off” to “Alarm is ON” and the indicator bar will turn green.



When a geo-fence alarm event occurs, the mobile device will sound an “alert” tone and display an alarm message for 5 seconds on the device screen. This will alert the user of the mobile device that they have triggered a geo-fence alarm.



In addition to the tone “alert” and alarm message when a geo-fence event occurs, the Sentry MDU System provides for 3 additional notification options. These options are as follows:

a. SMS text messaging to one (or more) phone numbers
b. Automated email message to one (or more) email addresses
c. Sentry MDU System internal “mailbox” notification

In order to configure and administer these options a User must have access to the Sentry MDU Manager Desktop Client program. Refer to the Sentry MDU Manager User Guide for details on setup and administration of these options.

15.2.17. The “Sensors” button

Overview:

The “Sensors” button provides a user access to the setup, configuration and testing of individual sensors on the mobile device. Depending on the type of mobile device the sensors may include:

a. Audio (microphone sensor)
b. Video (2 camera sensors, front and back)
c. Geo-location (GPS / GLONASS Satellite sensor)
    i. Geo-Coordinates
    ii. Altitude (meters)
    iii. Speed (Km/hr)
d. Temperature (internal device temperature, C)
e. Barometric Pressure
f. Light Sensor
g. Acceleration
h. Magnetic Field
i. Gyroscope
j. Cellular Network Signal Strength
k. Battery Indicators (Voltage, Charging, % Charge remaining)

All of these sensors may be monitored and/or recorded either locally or remotely. Information may be collected and stored for future analysis.

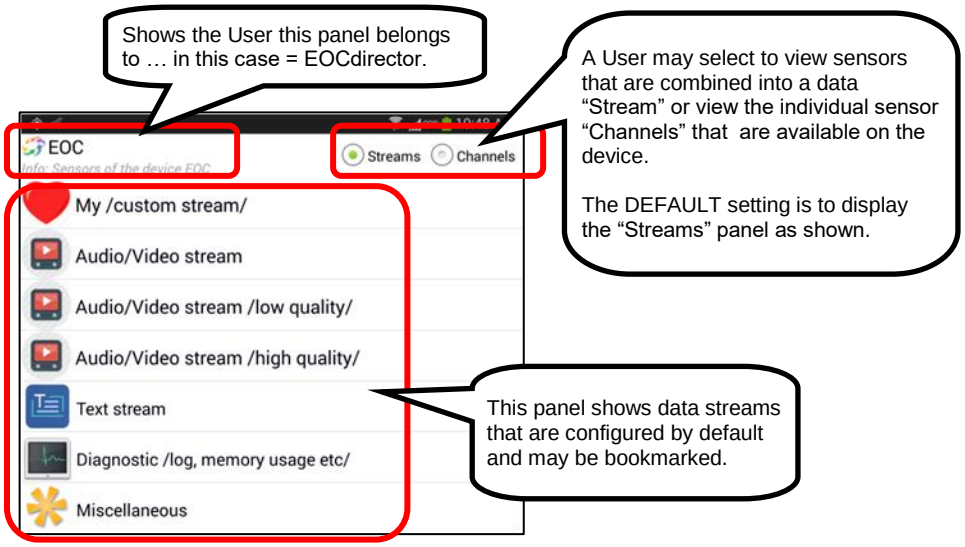
Tracker Panel – “Sensors” Button:

The “Sensors” Button is located on the left-lower side of the Tracker Panel. This button will allow user access to the sensor setup, configuration, testing and use on the local mobile device.

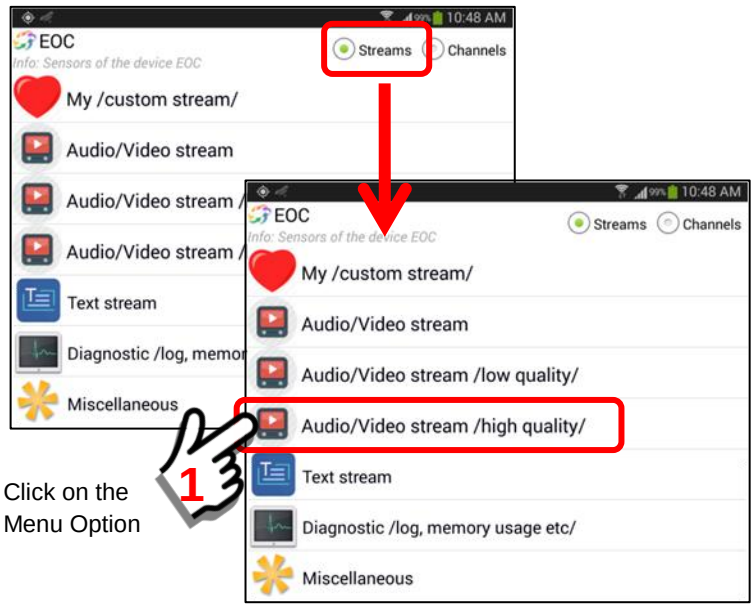
This “Sensors” Button, located on the Tracker Panel, is the primary method for a User to configure their mobile device. Although the Sensors Button on the Mobile Object Panel may be used (accesses many of the same functions), the Sensors Button on the Tracker Panel is the preferred location for configuring the sensors.

Description of the Sensors function and features:

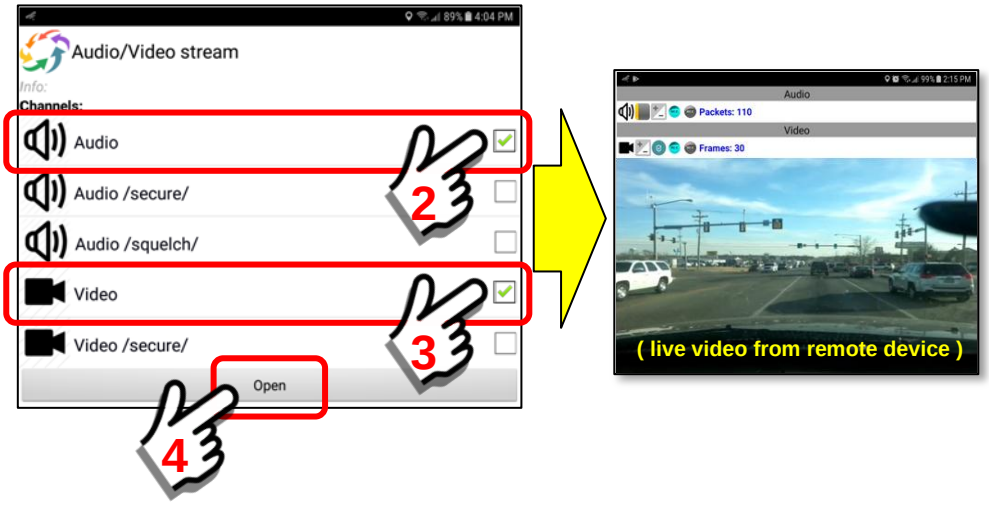
1. ***Parts of the Sensors Panel***
   A click on the “Sensors” Button from the Mobile Object Panel opens a Sensors Panel. The parts of the Sensors Panel are identified as follows:



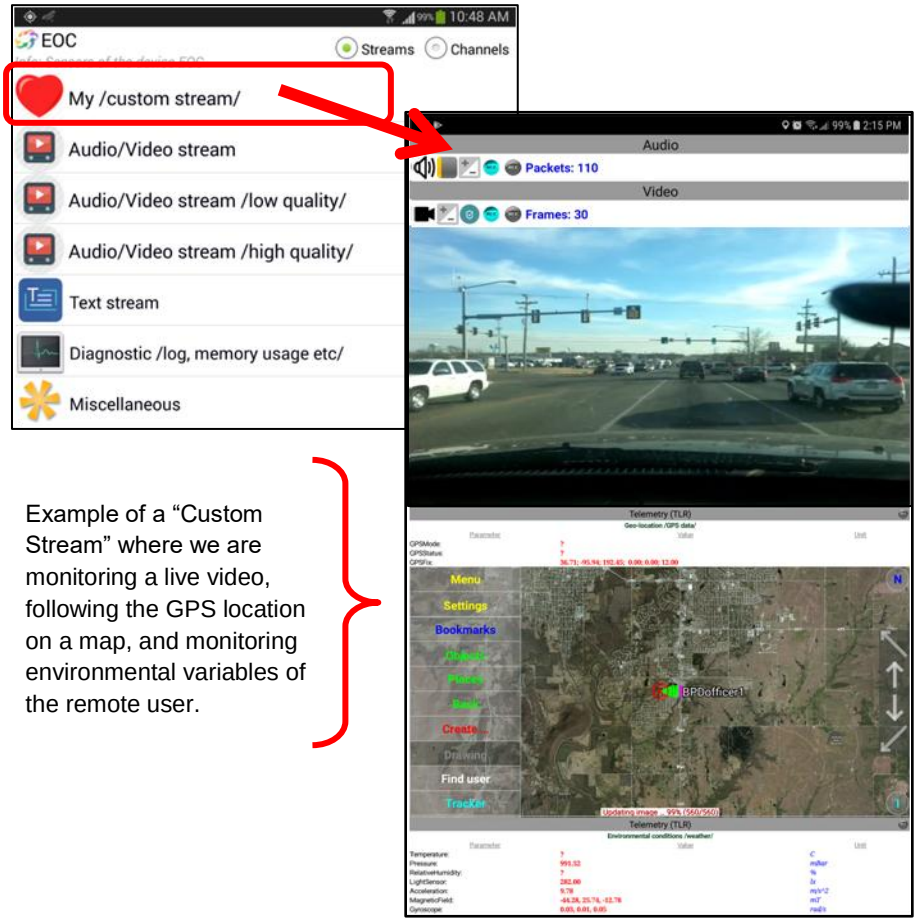
2. ***Review of the Streams option.***
   The “streams” option enables a user to launch a viewer that streams the data from a remote device to a local mobile device. The viewer has been “pre-configured” with specific channels. Simply “select” the desired channels and click “Open” to begin monitoring.



Select the Audio-Video stream channels that you would like to monitor. Click the “Open” Button when you are ready to view the audio-video panel for the remote device.

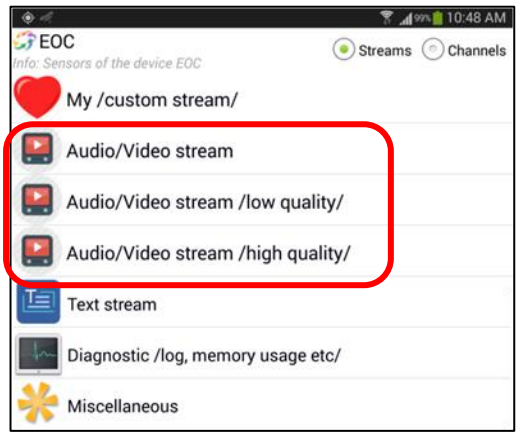


At the top of the list is a user created “custom stream” option. This is called “My /custom stream/” and it can be a pre-configured data stream that includes channels of the user’s choosing.



Example of a “Custom Stream” where we are monitoring a live video, following the GPS location on a map, and monitoring environmental variables of the remote user.

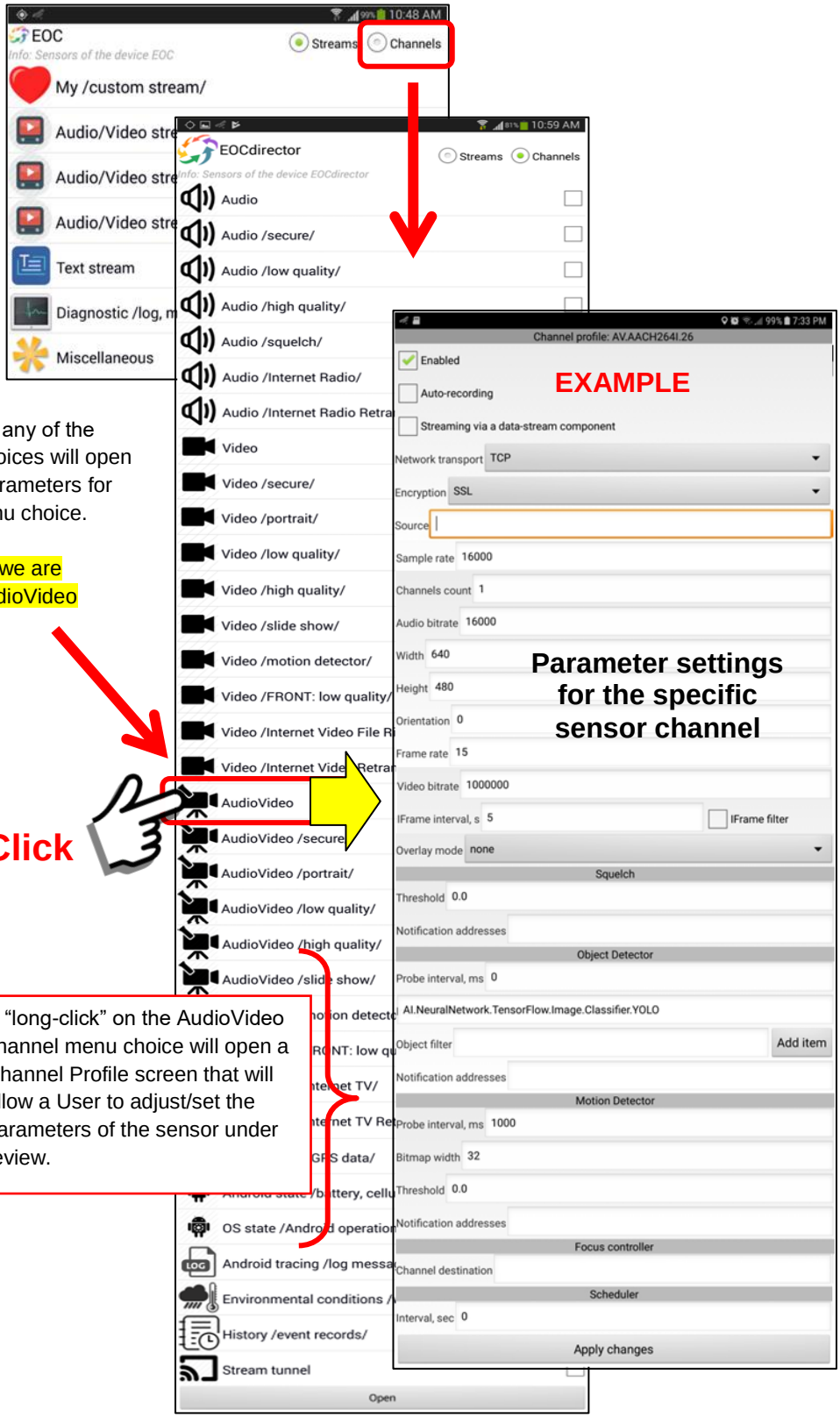
Additional pre-configured menu options are also available. These can include “lower quality” video, in the event insufficient network bandwidth is available, or “high quality” if bandwidth is not an issue. These options are shown below:



In addition to audio-video data, the system can provide information on the “state of operation” of a remote device. Things that can be monitored are battery health, cellular signal strength, device memory usage and more. All of the sensor data may be monitored and/or recorded for future analysis.

3. ***Review of the Channels option.***

The “Channels” option allows a user to select, view and change the settings of the sensor parameters for all aspects of the mobile device.



A “long-click” on any of the sensor menu choices will open a screen with parameters for that specific menu choice.

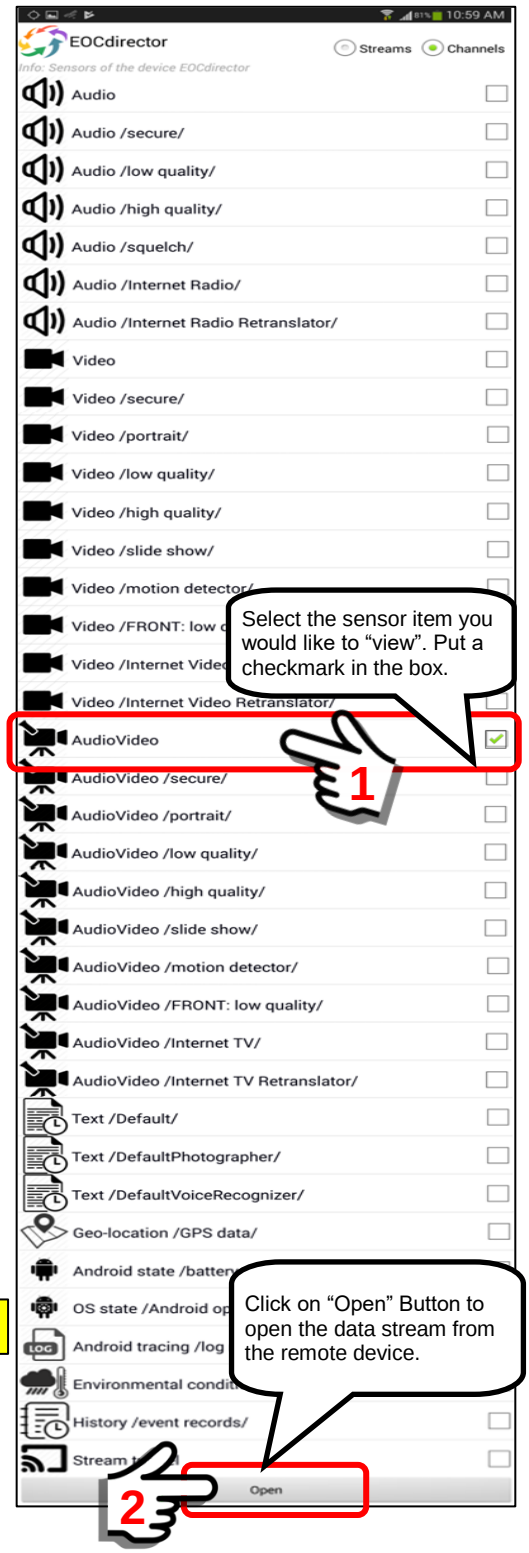
In this example, we are selecting the AudioVideo choice.

A “long-click” on the AudioVideo channel menu choice will open a Channel Profile screen that will allow a User to adjust/set the parameters of the sensor under review.

In addition to setting parameters for a particular sensor, a User may "test" the sensor and view the data transmitted (audio, video, environmental sensors, etc.) in order to verify everything is set correctly. This section allows a User to manually access the sensors on another user's mobile device (assuming security access).

The procedure is shown below.

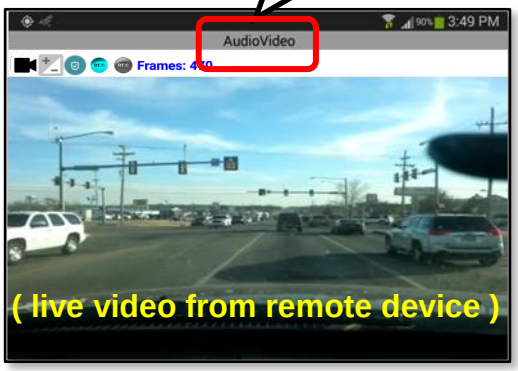
For our example, we will use the same AudioVideo menu choice as previously.



Select the sensor item you would like to "view". Put a checkmark in the box.

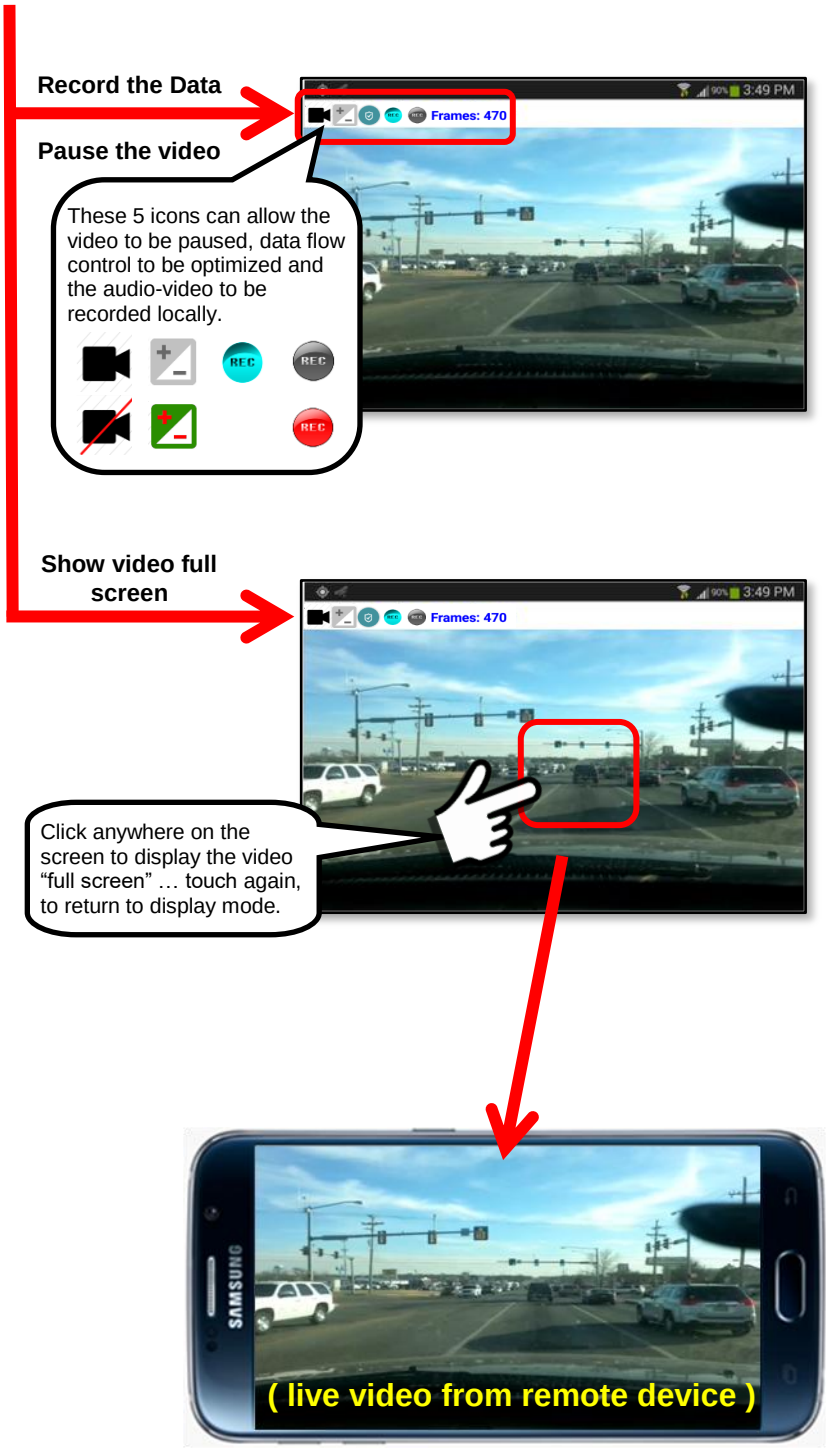
Click on "Open" Button to open the data stream from the remote device.

Testing the AudioVideo output from this sensor (camera + microphone)

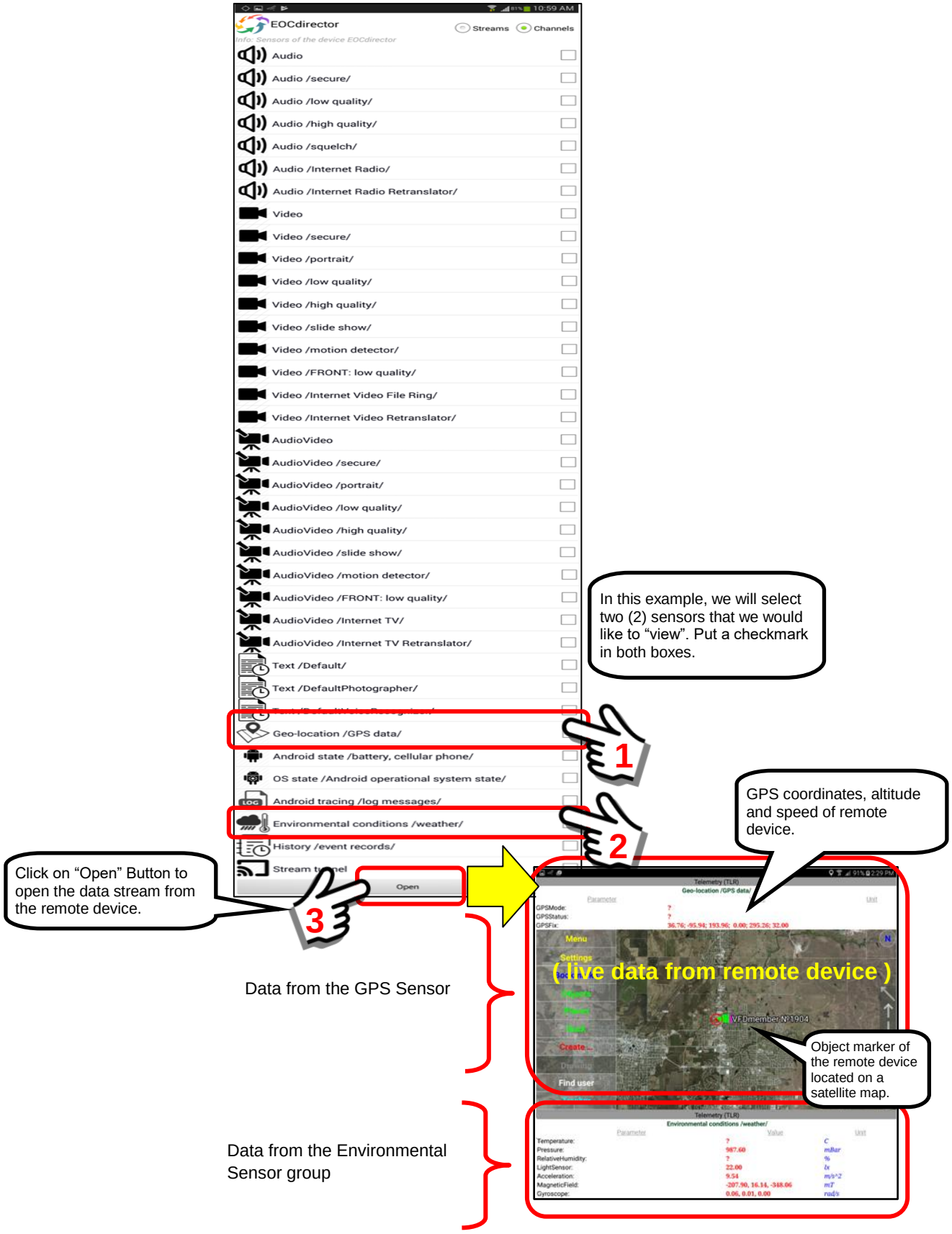


If all of the sensor parameters are set correctly, you should see an image appear.

Additional features are now available once the audio-video screen is displayed. Other sections of this guide have a detailed description of these functions.



We will now do an example of selecting two (2) sensor groups to be displayed at the same time.



Users have the option to display multiple sensors at the same time. The only limitation is that you may NOT request duplicate sensor data. For example, you may not request two video sensor channels or two audio sensor channels at the same time (you may do one of each).

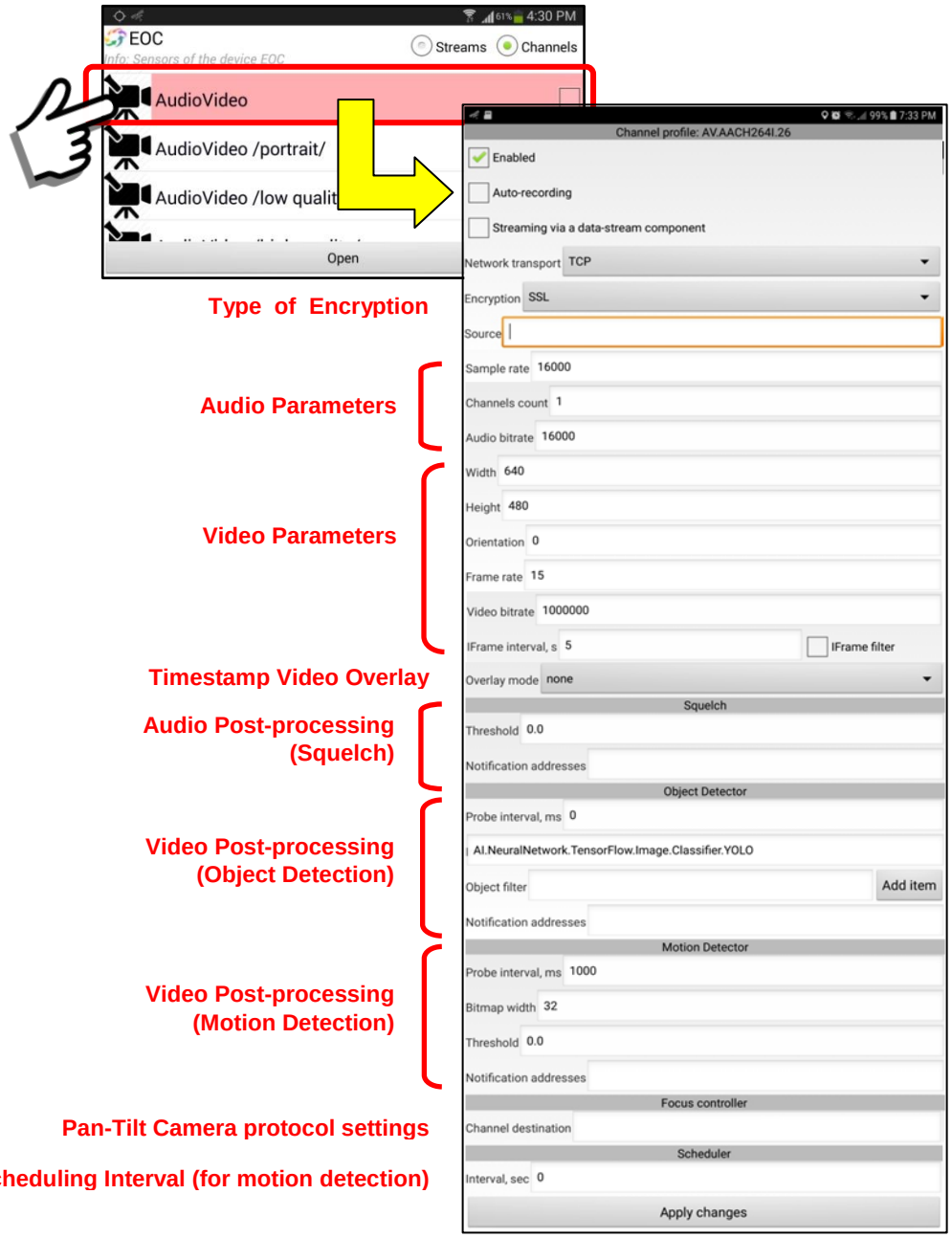
Important Note for Audio-Video: Since each channel has different parameters (settings) but access the same camera on the remote mobile device, a duplicate request will confuse the program and cause an error.

4. *Channel Configuration Overview*

The Sentry MDU System provides access to the sensors through various pre-configured “channels”. The default settings we have selected should work for most devices. However, since hardware specifications may be different for different manufacturers, we allow users to change/customize the channel parameters as they wish.

Since the “streams” outlined in the Streams Section are made up from groups of sensor “channels”, we will cover the sensor channels first.

The following example will identify and explain how the sensor parameters are used to create a combined Audio-Video Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

TCP is the default network transport protocol that is used for most Sentry MDU features. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

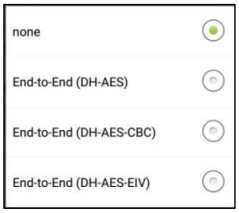
See **Section 5.6** for details.

e. Encryption

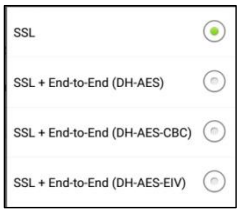
The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

The “Source” data entry location is for specifying a data source for the channel. In our example of the Audio channel recorder, when the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications.

h. Channels count

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio Bitrate

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications.

j. Width

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve

bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Video Bitrate

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 2000000 bps should work for most applications and is a good starting point for testing. For those on dedicated

(non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

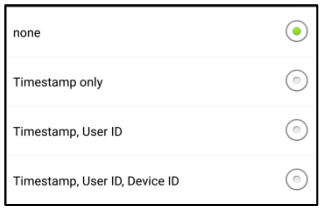
p. iFrame filter

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



r. Squelch - Threshold

The squelch feature is an attempt to mute the audio output in the absence of sufficient audio amplitude in the transmission. As used in the SentryMDU System, we remove pauses and periods of silence from the data stream in an effort to reduce buffering and lag time. A sound artifact must exceed a set threshold before it will be output by the mobile

device. The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

The notification feature allows a User to send other Users a “message notification” when a trigger event occurs. In the case of the Audio “squelch” parameter, if a sound signal exceeds the set threshold, a message notification can be sent.

t. Object Detector - Probe interval, ms

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

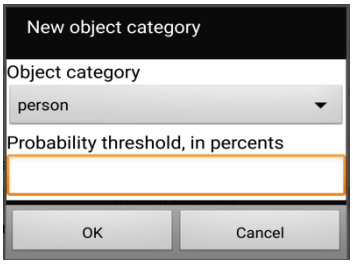
A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is

recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller - Channel Designation

The “default” = No Entry.
The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

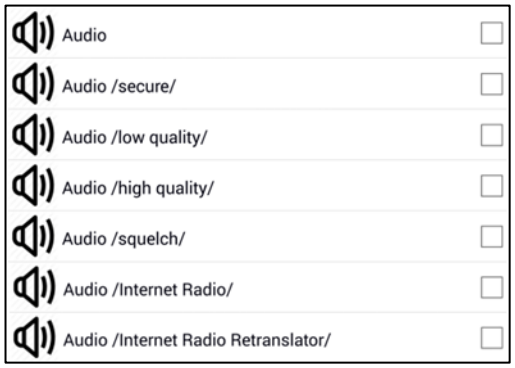
In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

cc. Scheduler – Interval Sec

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

5. *Audio Sensors*

The Sentry MDU System has seven (7) pre-configured audio sensor channels. Each channel may be customized by the User with the parameters most compatible with their mobile device. This section will describe each channel and the corresponding “default” settings.

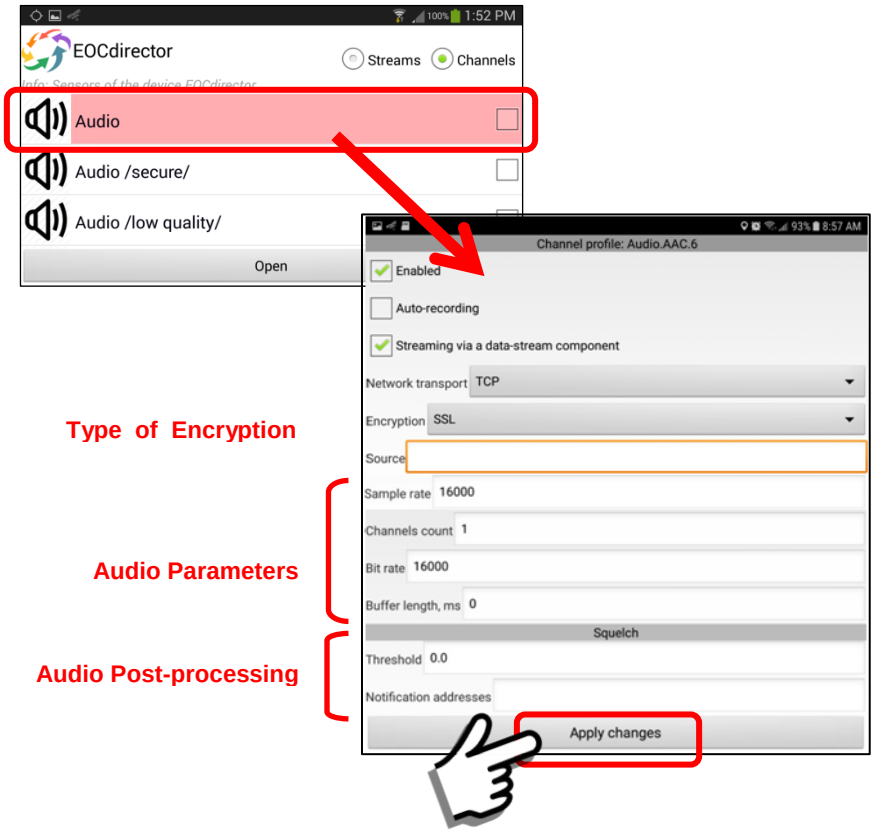


Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.

Audio

This is the standard quality audio channel you will see used most often. It provides a good balance between quality audio and bandwidth usage. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “checked”

In most applications where audio-video streaming is used, this “Audio” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the audio channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

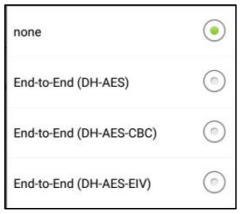
e. Encryption

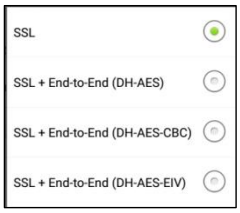
Factory default setting = “None”

If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>





f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

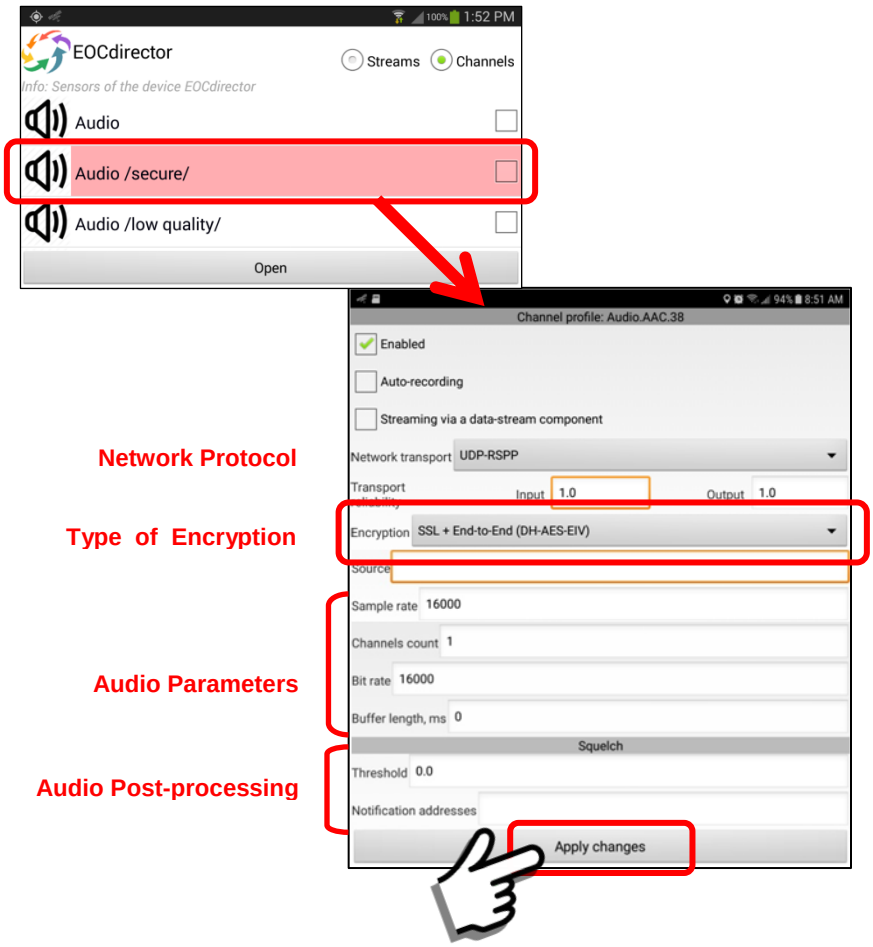
“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /secure/

This is the standard quality audio channel with an “encryption” setting. It provides a user the ability to pre-configure an encryption type for this audio channel. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”.

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Audio” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the audio channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “UDP-RSPP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

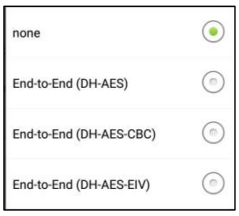
e. Encryption

Factory default setting = “SSL + End-to-End (DH-AES-EIV)”

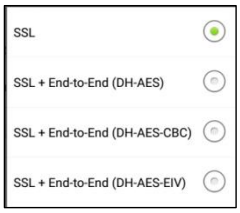
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

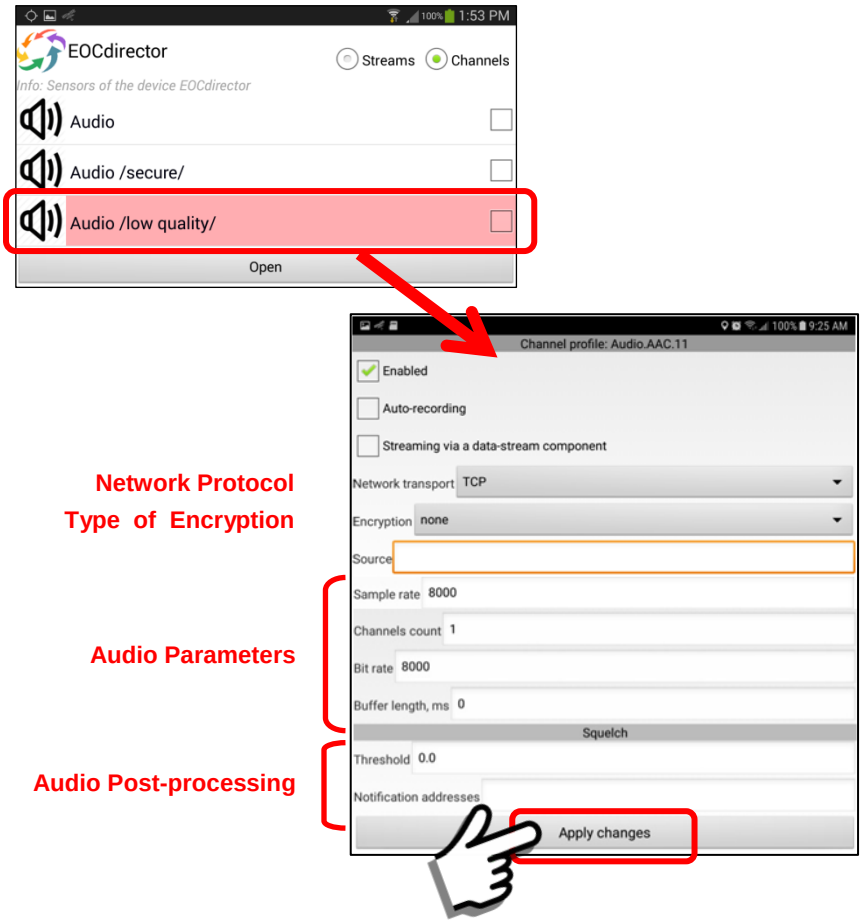
“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /low quality/

This is a pre-configured “low quality” audio channel that can be used when internet bandwidth is low or unstable. It provides a standard telephone level of audio fidelity that will minimize data requirements. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, we do NOT use this “Audio” channel for streaming. We recommend that this channel NOT be selected (unchecked). When “unchecked” this indicates that this audio channel will not be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

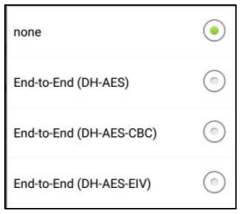
e. Encryption

Factory default setting = “None”

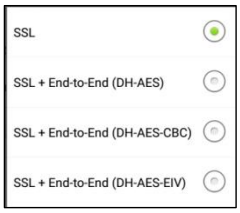
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 8000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 8000 Hz will work as a “low quality” audio sample rate if needed.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 8000

This is the data transfer rate in “bits-per-second” of the audio data. A setting of 8000 bps should work fine for applications where “voice quality” audio coming from the microphone is acceptable.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

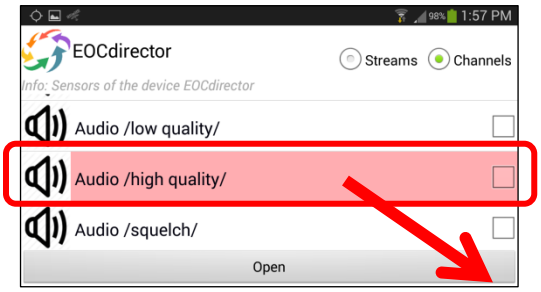
“MBIM:123,345,567” …… 3 users to notify

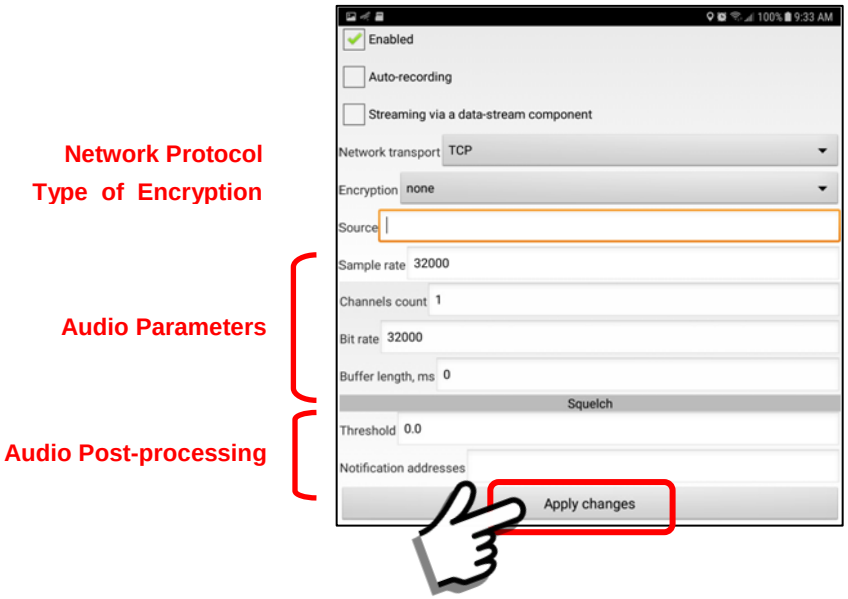
“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /high quality/

This is a pre-configured “high quality” audio channel that can be used when internet bandwidth limitation is not a factor. It provides a high level of audio fidelity. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.





The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, we do NOT use this “Audio” channel for streaming. We recommend that this channel NOT be selected (unchecked). When “unchecked” this indicates that this audio channel will not be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

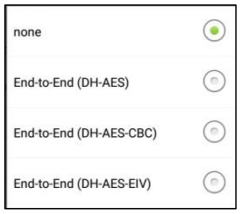
e. Encryption

Factory default setting = “None”

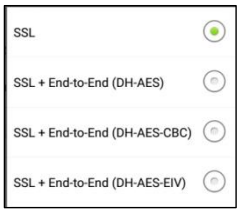
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 32000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 32000 Hz will work as a “high quality” audio sample rate if needed.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 32000

This is the data transfer rate in “bits-per-second” of the audio data. A setting of 32000 bps will work fine for applications where “voice” input coming from the microphone is the primary audio signal.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

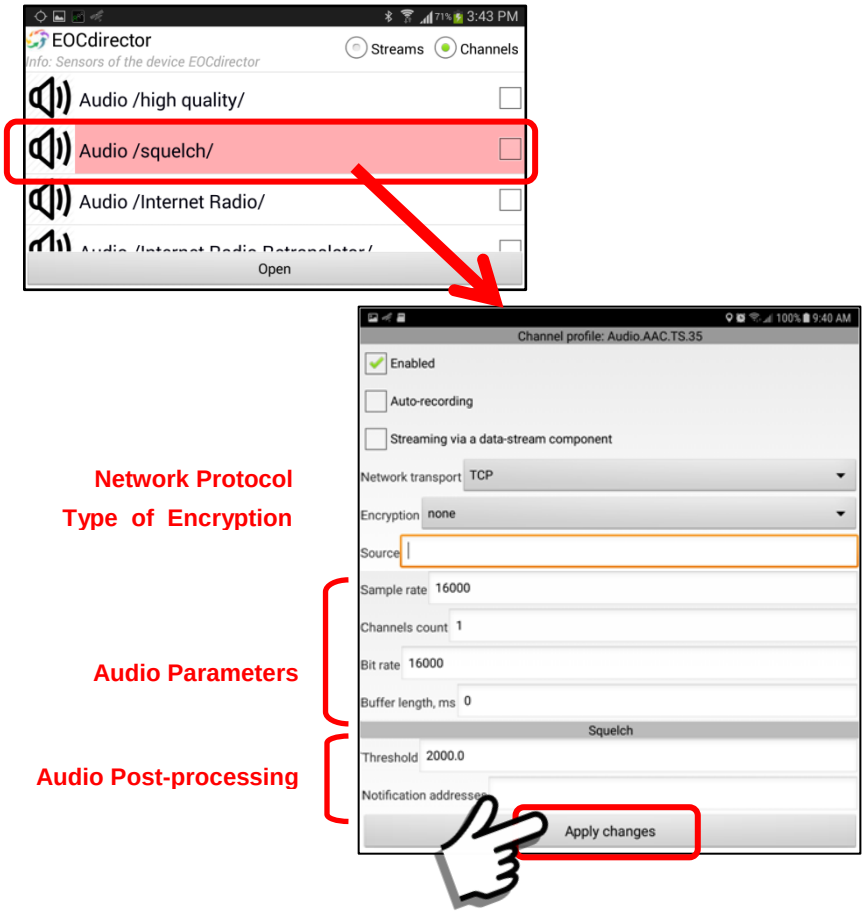
“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /squelch/

This is the standard audio channel with a pre-configured "squelch" setting to reduce potential noise artifacts. This feature would typically be used when monitoring First Responder radio traffic. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = "checked"

When "checked" this indicates that the feature is "enabled" on the device and can be activated by a User. If "unchecked" it cannot be started.

b. Auto-recording

Factory default setting = "unchecked"

When "checked" this indicates that whenever this sensor is activated it will "automatically" record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, we do NOT use this “Audio” channel for streaming. We recommend that this channel NOT be selected (unchecked). When “unchecked” this indicates that this audio channel will not be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

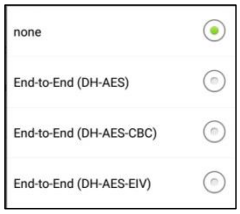
e. Encryption

Factory default setting = “None”

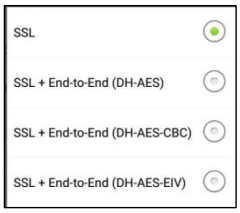
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. A setting of 16000 bps will work fine for applications where “voice” input coming from the microphone is the primary audio signal.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 2000.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

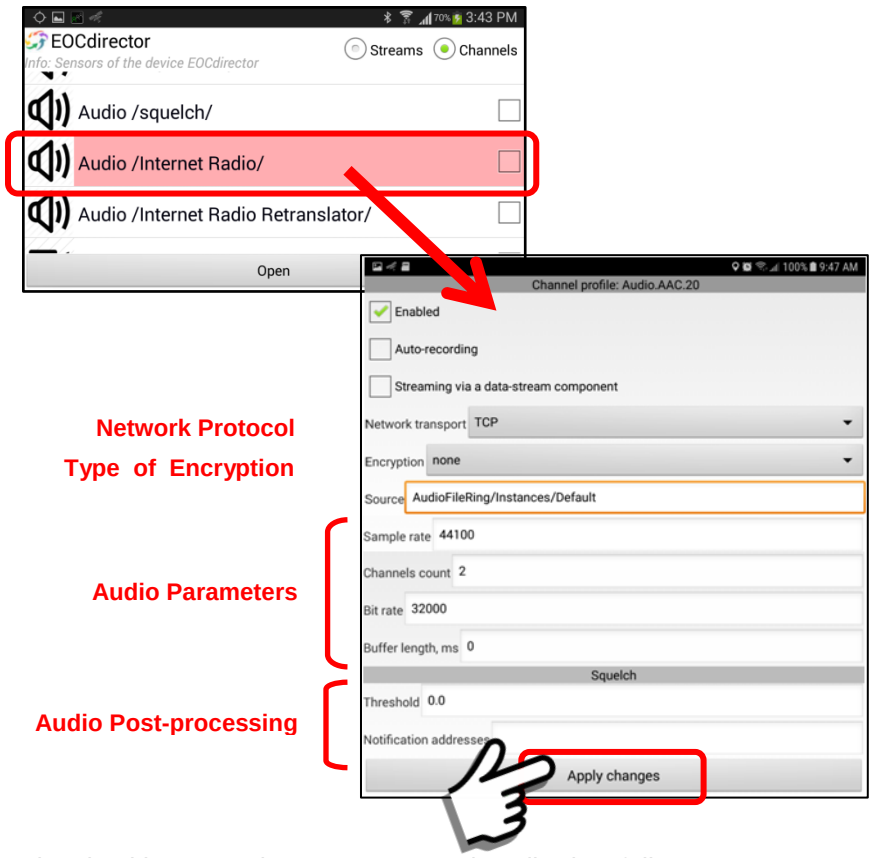
This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /Internet Radio/

This is a pre-configured “internet radio” audio channel that will play a single file or group of files located in a folder on the local device. No external links are allowed.

When the channel is activated, the program will play the files in the “Data” folder one after another in the order in which the files were created (file creation date-time). Allowed audio types are *.mp3 and *.aac.

The files, located on the mobile device, will continue playing (never ending loop) until stopped. This audio channel profile provides a 2-channel (stereo) level of audio fidelity. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, we do NOT use this “Internet Radio” channel for streaming. We recommend that this channel NOT be selected (unchecked). When “unchecked” this indicates that this audio channel will not be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

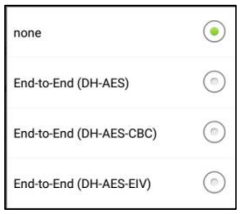
e. Encryption

Factory default setting = “None”

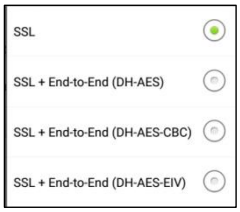
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"AudioFileRing/Instances/Default"

The "Source" data entry location is for specifying a data source for the channel. In this example, the "source" is an audio file (ie mp3, aac) located in a "Data" folder on the mobile device.

Default folder location:

<Current-Profile>Device/SensorsModule/
Channels/Audio.AAC.20/Source/Types/
AudioFileRing/Instances/Default/Data

When the "Source" has an entry (not blank), this indicates that the mobile device is using an audio source other than the internal microphone to provide the audio signal. In this configuration the source may only be a local file. No external links are allowed.

g. Sample Rate

Factory default setting = 44100

This value must be set to the digital sampling rate of the audio file that is to be played. They must be the same. The default of 44100 Hz should work for most applications. If you will be cycling through several files, they must all have the "same" sample rate setting.

h. Channels count

Factory default setting = 2

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 32000

This is the data transfer rate in “bits-per-second” of the audio data. Although mp3 files can have a bit rate of 320kbps, in practical terms, on a mobile device you will not hear any difference if we conserve CPU load and operate at a setting of 32000. This setting should be adjusted to correspond to the file type you will be using.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

I. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

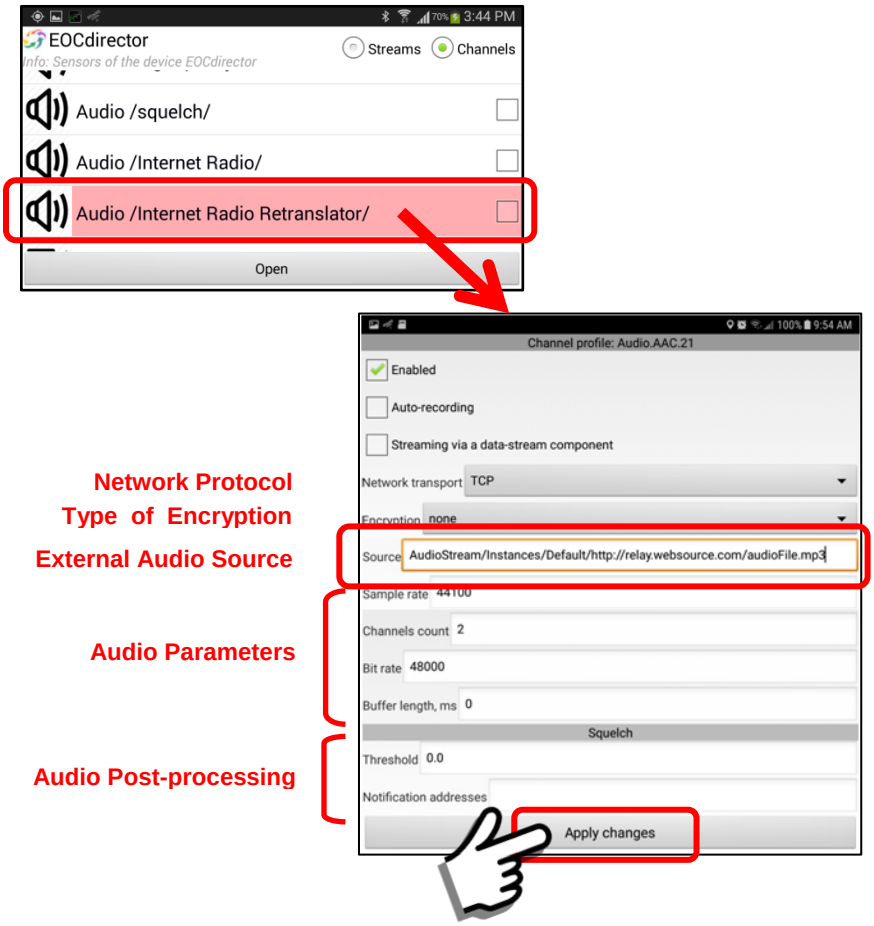
“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

Audio /Internet Radio Retranslator/

This is a pre-configured “internet radio retranslator” audio channel that can be used to play audio files directly from an internet broadcast.

This audio channel reads a data feed from an internet broadcast and uses that as an audio “source”. The audio file (usually an mp3), is streamed from the broadcaster to the mobile device and used as the “source”. It will continue playing until stopped. This audio channel profile provides a 2-channel (stereo) level of audio fidelity. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, we do NOT use this channel for streaming. We recommend that this channel NOT be selected (unchecked). When “unchecked” this indicates that this audio channel will not be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

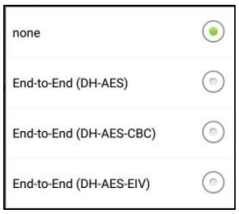
e. Encryption

Factory default setting = “None”

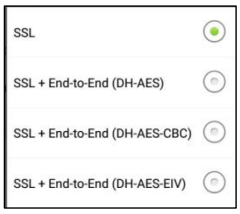
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = "AudioStream/Instances/Default/< some web address >/<someaudiofile.mp3>"

The "Source" data entry location is for specifying an external data source for the channel. In this example, the "source" is an audio file (ie mp3) located at a broadcaster website on the internet.

Default folder location:

<Current-Profile>Device/SensorsModule/Channels/Audio.AAC.21/Profile.xml

When the "Source" has an entry (not blank), this indicates that the mobile device is using an audio source other than the internal microphone to provide the audio signal. In this configuration the source is a network "address string" determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 44100

This is the digital sampling rate setting for the internal audio processor of the mobile device. The default of 44100 Hz in this example is a value that is sufficient for the mp3 audio file that is broadcast. Adjust this number to correspond to the type of data feed you will be using.

h. Channels count

Factory default setting = 2

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

Factory default setting = 48000

This is the data transfer rate in “bits-per-second” of the audio data. Although mp3 files can have a bit rate of 320kbps, in practical terms, on a mobile device you will not hear any difference if we conserve CPU load and operate at a setting of 48000. This setting should be adjusted to correspond to the file type you will be using.

j. Buffer length, ms

Factory default setting = 0

This setting determines how much audio data will be stored in a cyclic buffer of the Audio Player. The default value is 1000ms. If a situation occurs when incoming data exceeds the “Buffer length” value, the oldest packets will be skipped and replaced with new data packets. This only applies to one-way communication situations (such as a radio channel) and not two-way (will always be actual).

k. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

l. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification

feature. If the squelch threshold is exceeded, a notification will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

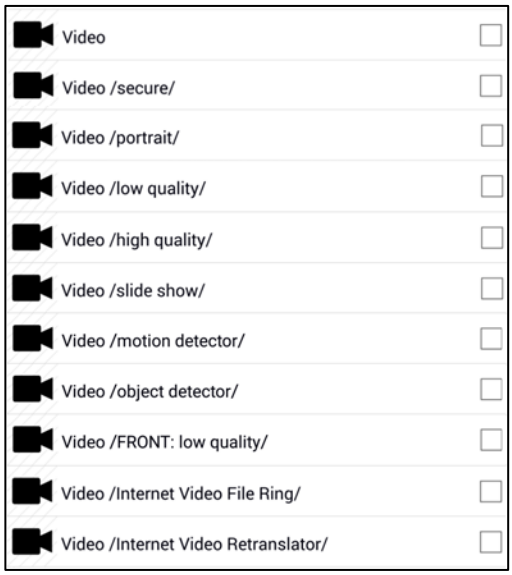
“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

This feature operates identical to the Motion Detector Notification. See **Section 15.5** for an example.

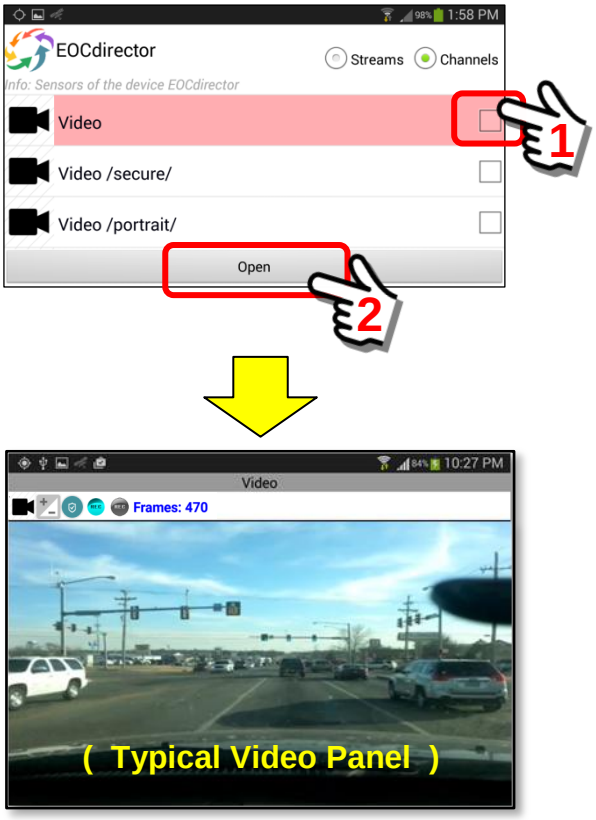
6. *Video Sensors*

The Sentry MDU System has eleven (11) pre-configured video sensor channels. Each channel may be customized by the User with the parameters most compatible with their mobile device. This section will describe each channel and the corresponding “default” settings.



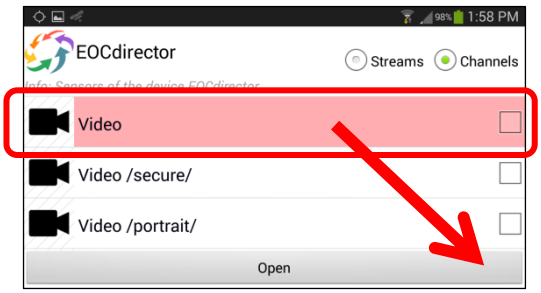
<u>Screen example</u>

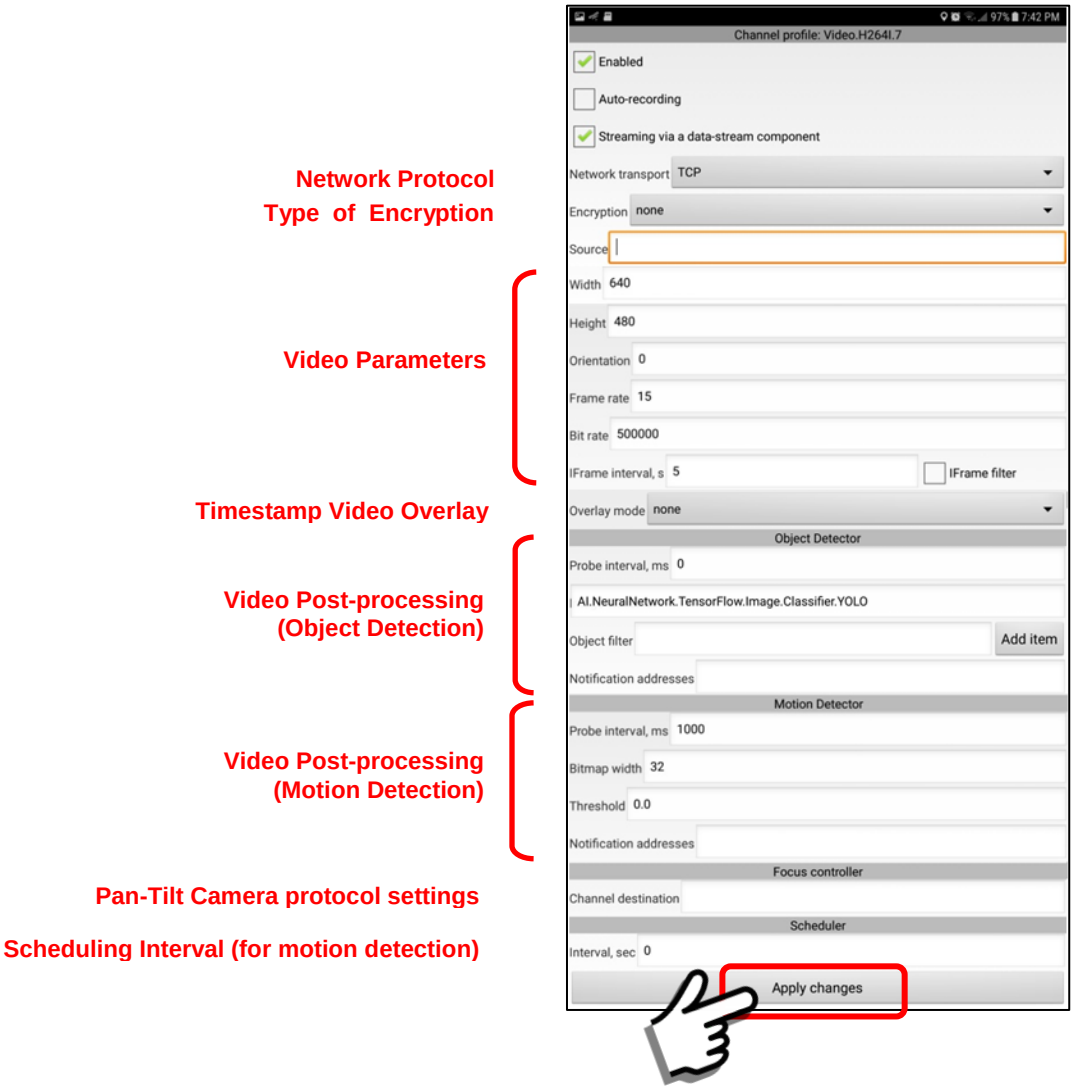
To view a screen example, put a “check” in the checkbox and click the “Open” Button.



Video

This is the standard quality video channel you will see used most often. It provides a good balance between quality video and bandwidth usage. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.





The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “checked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

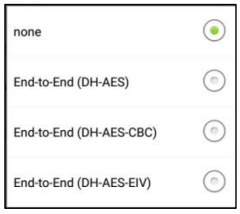
e. Encryption

Factory default setting = “None”

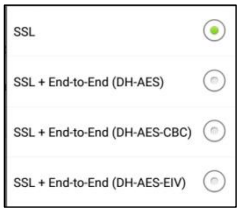
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

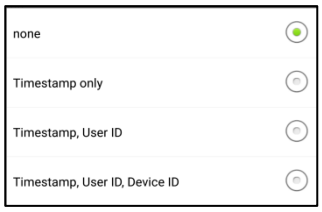
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

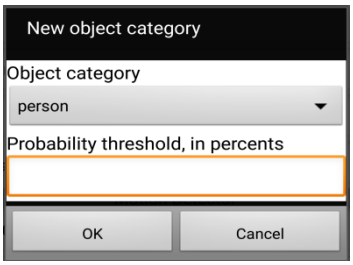
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

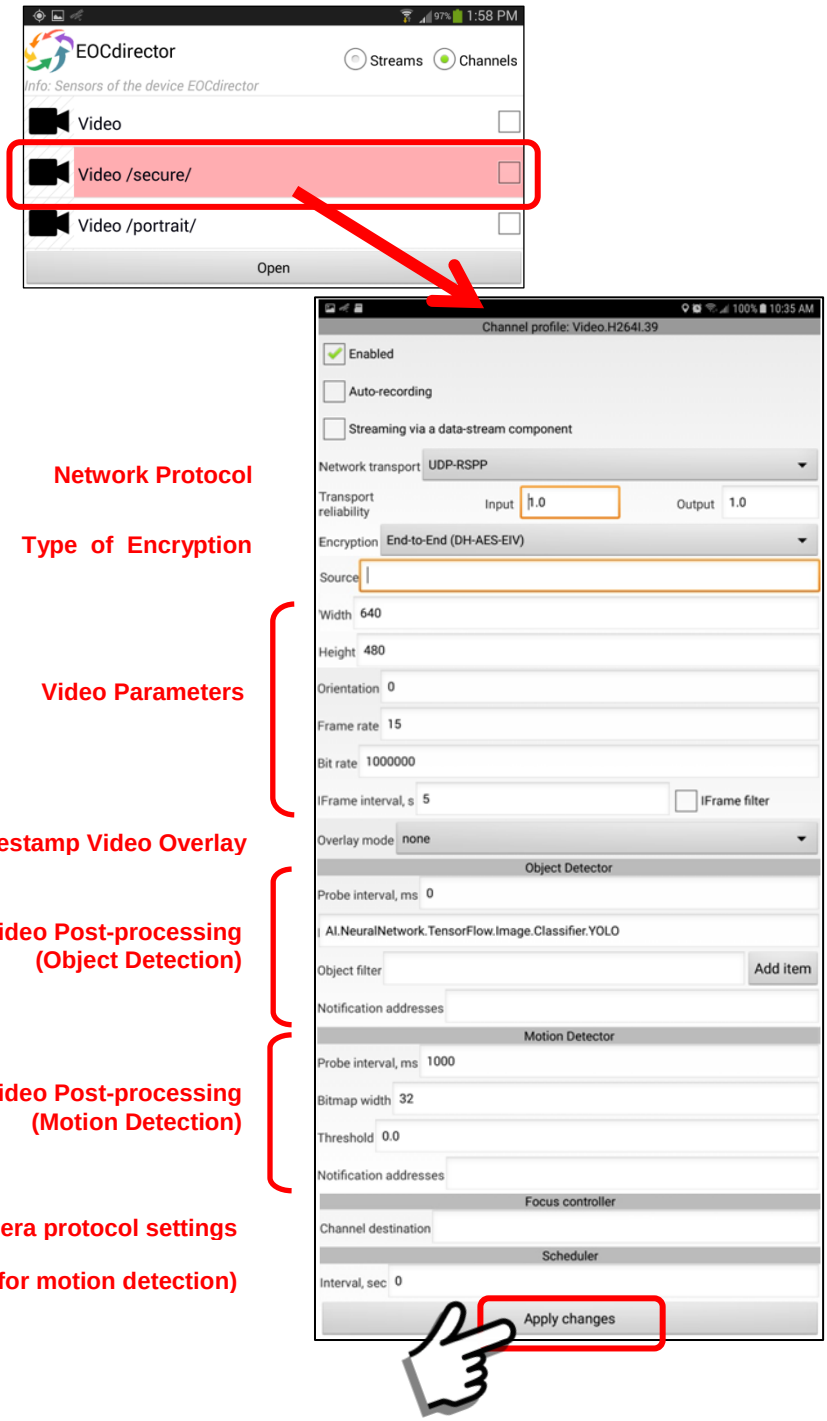
x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /secure/

This is the standard quality video channel with a pre-configured encryption setting. It provides a good balance between quality video and bandwidth usage. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “UDP-RSPP”

As a default setting we typically use UDP-RSPP for a highly secure network protocol. We have also provided the UDP-RTP and TCP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

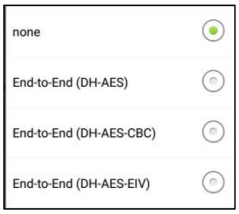
e. Encryption

Factory default setting = “End-to-End (DH-AES-EIV)”

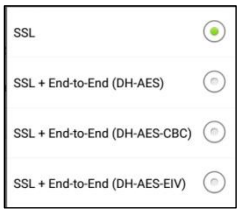
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

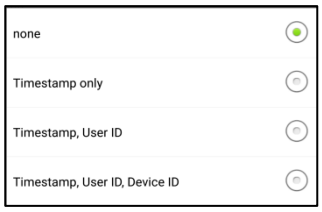
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

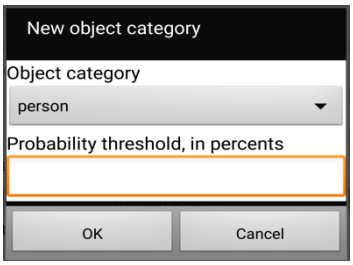
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

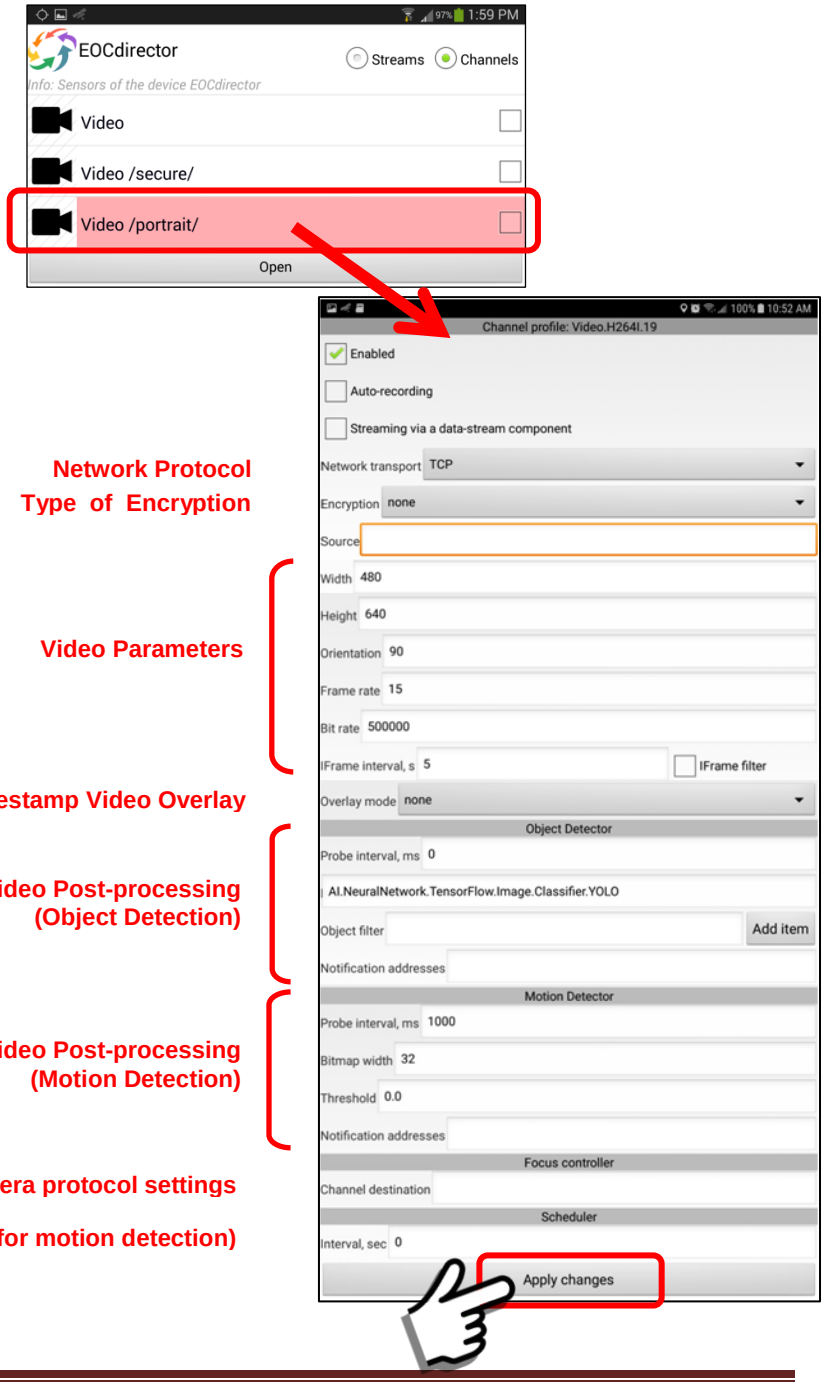
x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /portrait/

This is the video channel that will allow videos to be taken in "portrait" mode (phone is held vertical instead of horizontal). Depending on your hardware, some mobile devices will automatically "rotate" the video recording image for portrait mode. However, if your device does not automatically rotate the image, this Channel Profile allows you to provide settings to rotate the image as desired. You will need to experiment with your particular device to determine the best settings for your application. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

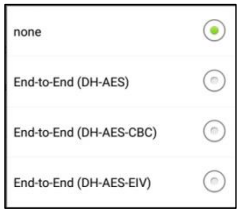
e. Encryption

Factory default setting = “None”

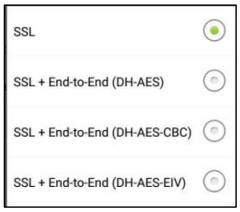
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 480

This is the “width” of the video capture setting for the camera. However, remember that in portrait mode the “width” is actually the “height” relative to the camera sensor, and then we “rotate” the image. Instead of 640x480, we are using 480x640. Video capture settings will depend on the device specifications. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 480x640, 720x1280 up to HD-1080x1920. These settings are very much device dependent. The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 640

This is the “height” of the video capture setting for the camera. However, remember that in portrait mode the “height” is actually the “width” relative to the camera sensor, and then we “rotate” the image. Instead of 640x480, we are using 480x640. Video capture settings will depend on the device specifications. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 480x640, 720x1280 up to HD-1080x1920. These settings are very much device dependent. The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 90

The “Portrait mode” channel profile allows an “Orientation” setting to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “90” which means 90 degrees of rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 500000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 500000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

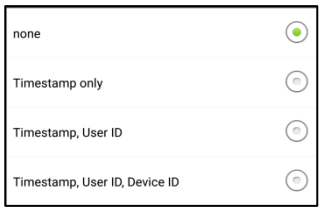
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

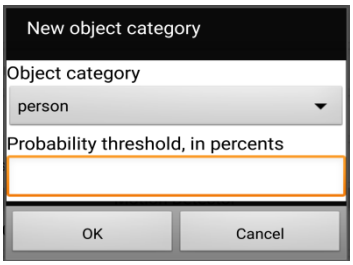
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

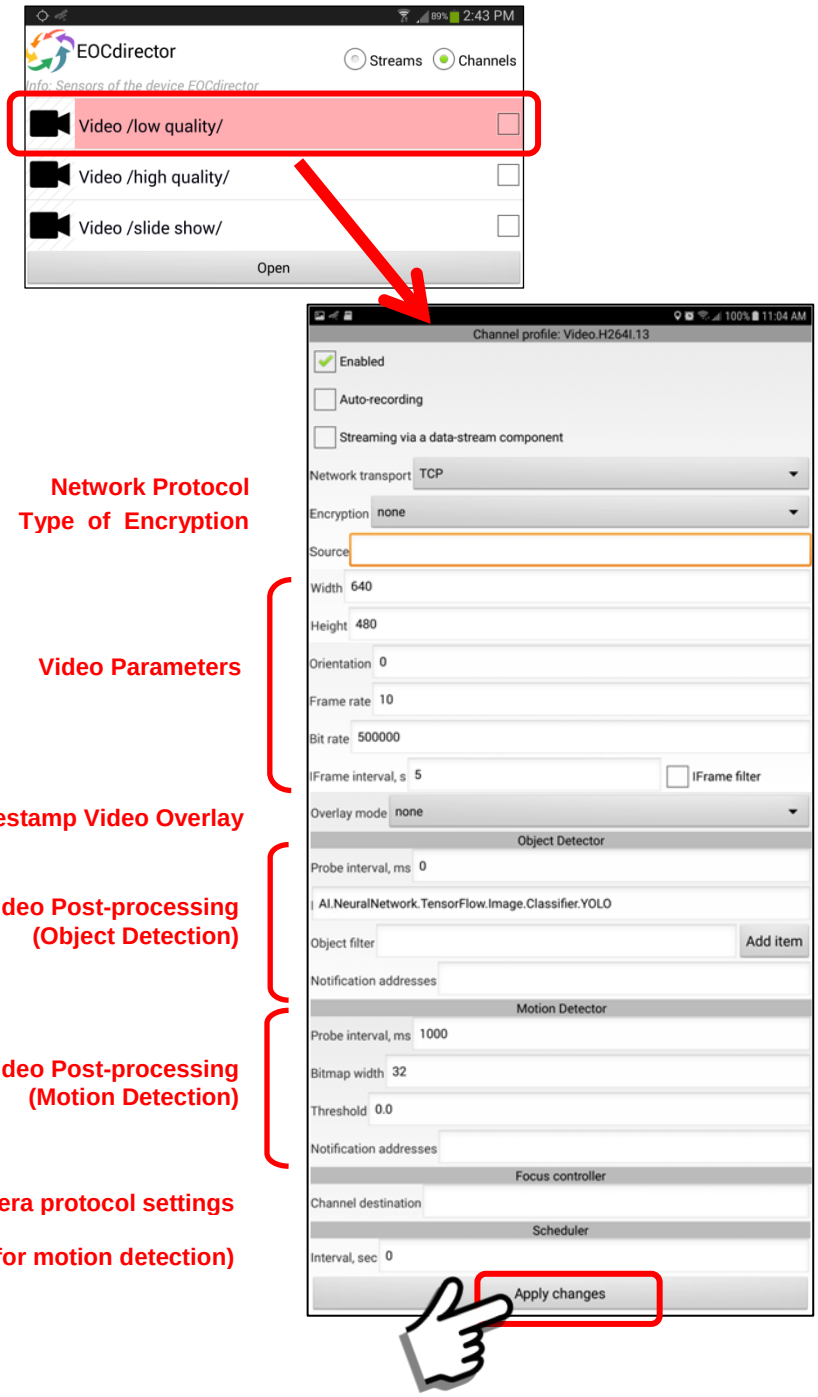
x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /low quality/

This is a “low quality” video channel that can be used when sufficient internet bandwidth is not available to utilize higher quality. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

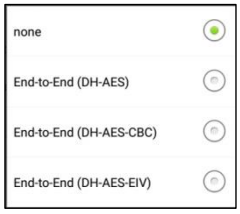
e. Encryption

Factory default setting = “None”

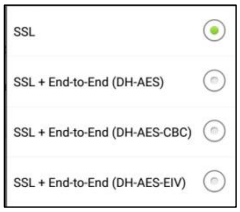
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 10

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 10 fps should work for most “low quality” applications.

k. Bit rate

Factory default setting = 500000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 500000 bps should work for most low quality applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

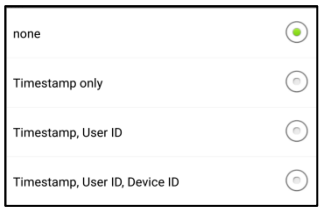
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

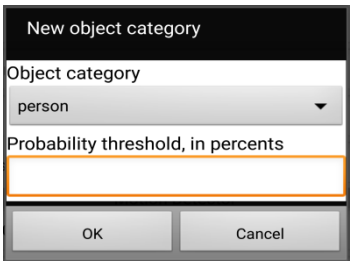
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

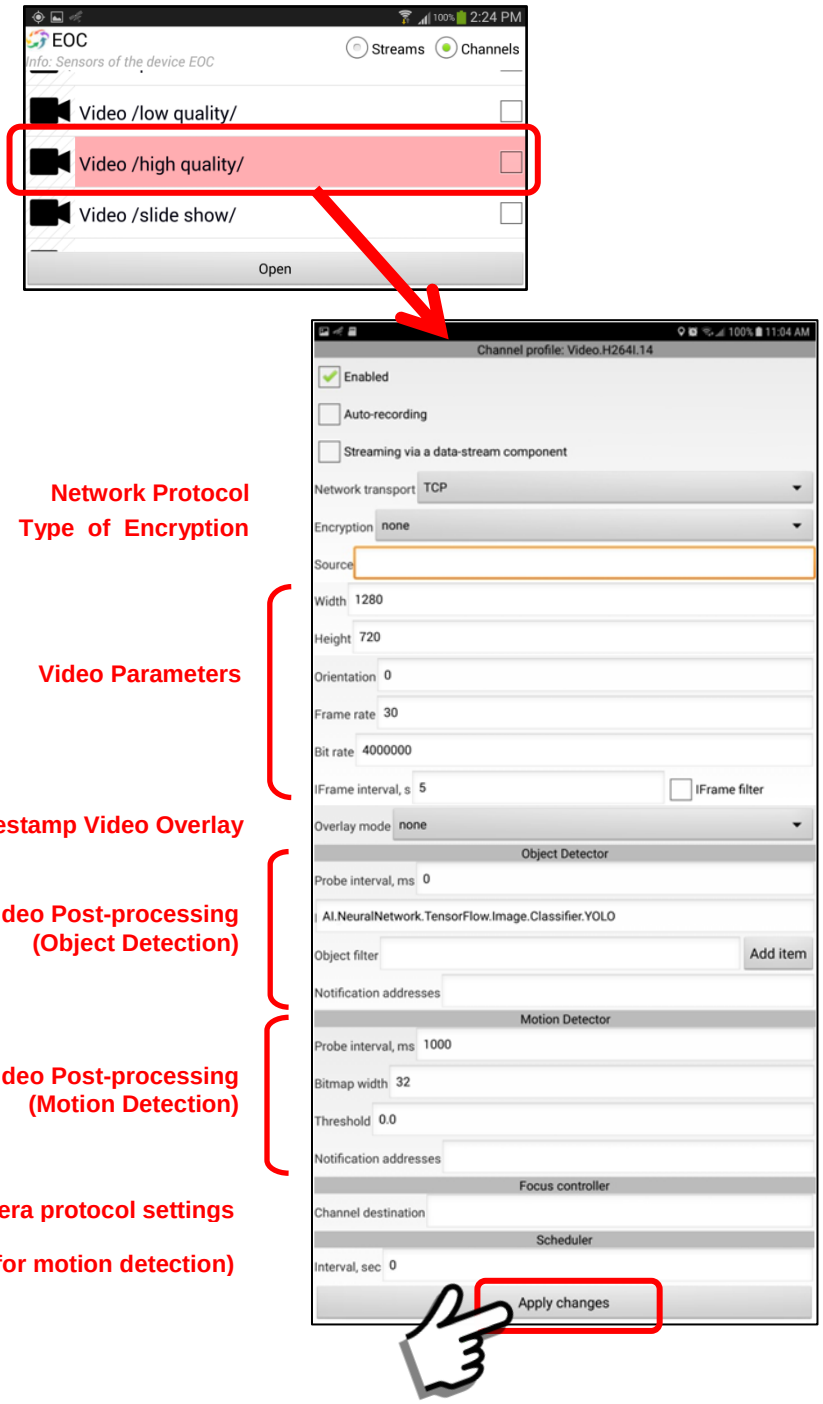
x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /high quality/

This is a “high quality” video channel that can be used when high internet bandwidth service is available to utilize the higher quality. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

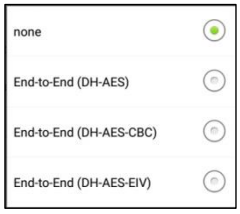
e. Encryption

Factory default setting = “None”

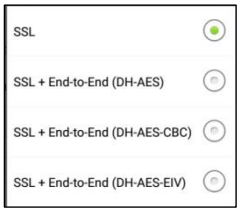
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 1280

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 720

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 30

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 1280x720) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 30 fps will provide very high quality video output.

k. Bit rate

Factory default setting = 4000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 4000000 bps should work for high quality video and is a good starting point for testing. You must have high speed networks for this to work well. Dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20)

the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

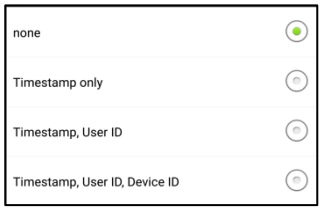
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

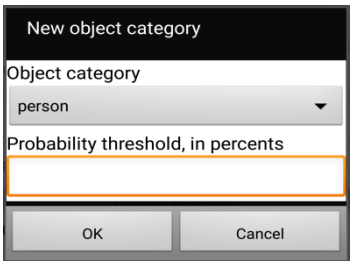
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

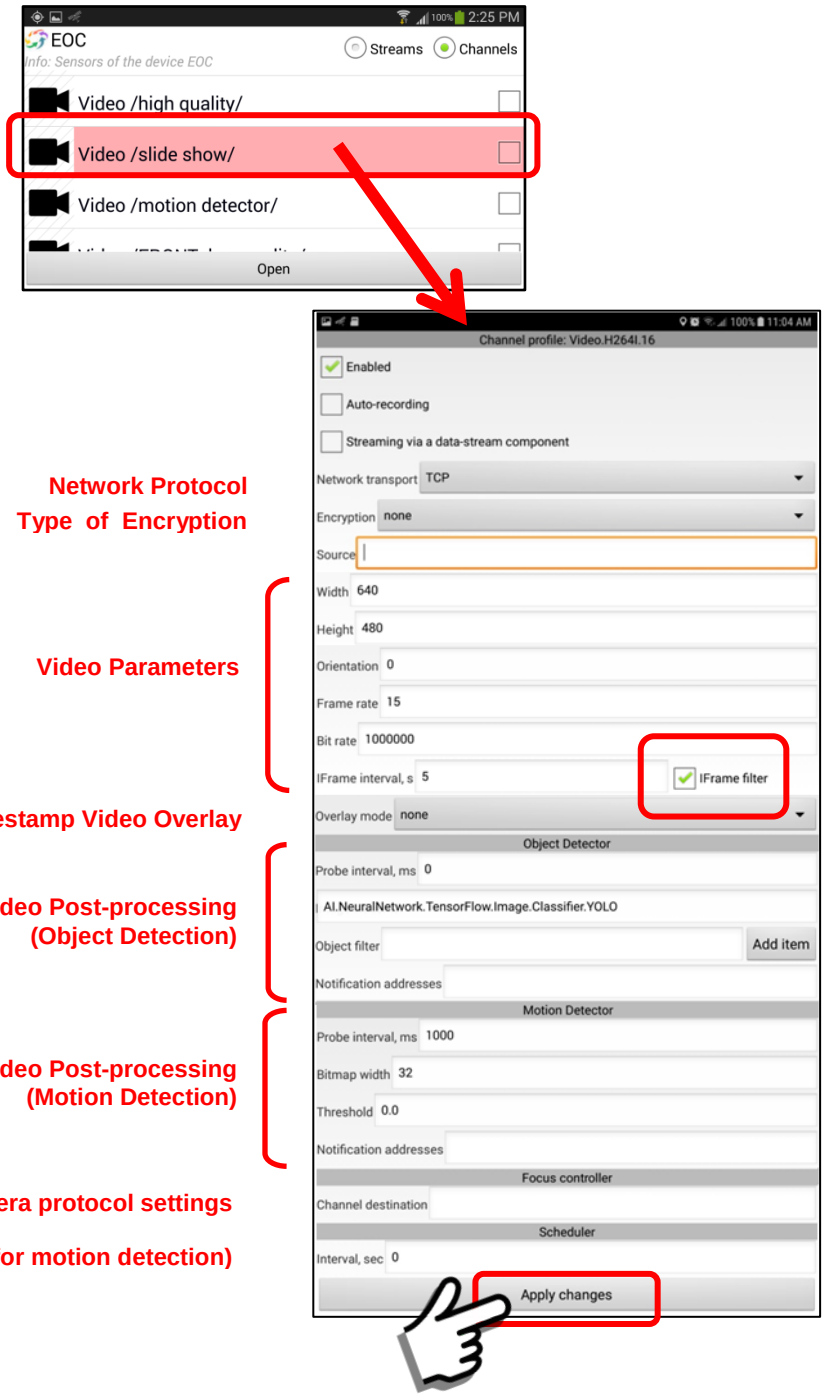
x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /slide show/ (time lapse recording)

This is the video channel you will use to create a “time lapse” recording. Using the iFrame interval and activating the “Frame Filter” will result in a series of “slides” that when taken together in a video clip will show a time lapse record. This pre-configured video channel has parameters that provide a good balance between quality video and file size. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

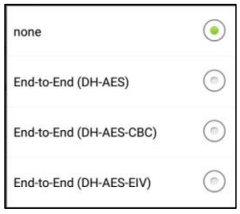
e. Encryption

Factory default setting = “None”

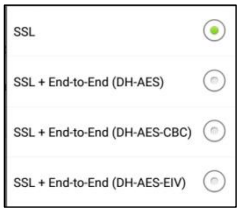
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

For long term (days, weeks) time lapse recordings the default setting of 5 seconds can be adjusted to minutes or hours (600 secs = 10 minutes). Remember that each time it records, it will record a single video “frame” … and the playback will be at 30 frames-per-second. Keep this in mind as you set the desired time lapse interval.

This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data recorded increases. As numbers get larger (ie 20, 100, 600) the video time lapse may lose the desired effect. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “checked”

The default for the “Slide show” function is “checked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “time lapse” recording. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this will appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

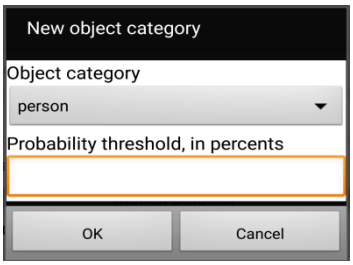
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.

(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

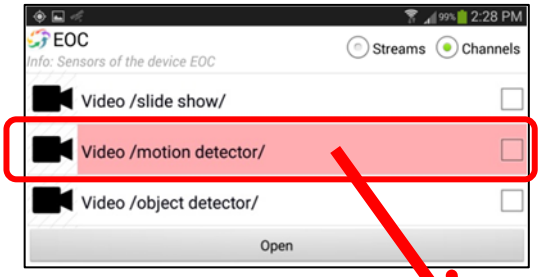
x. Scheduler - Interval sec

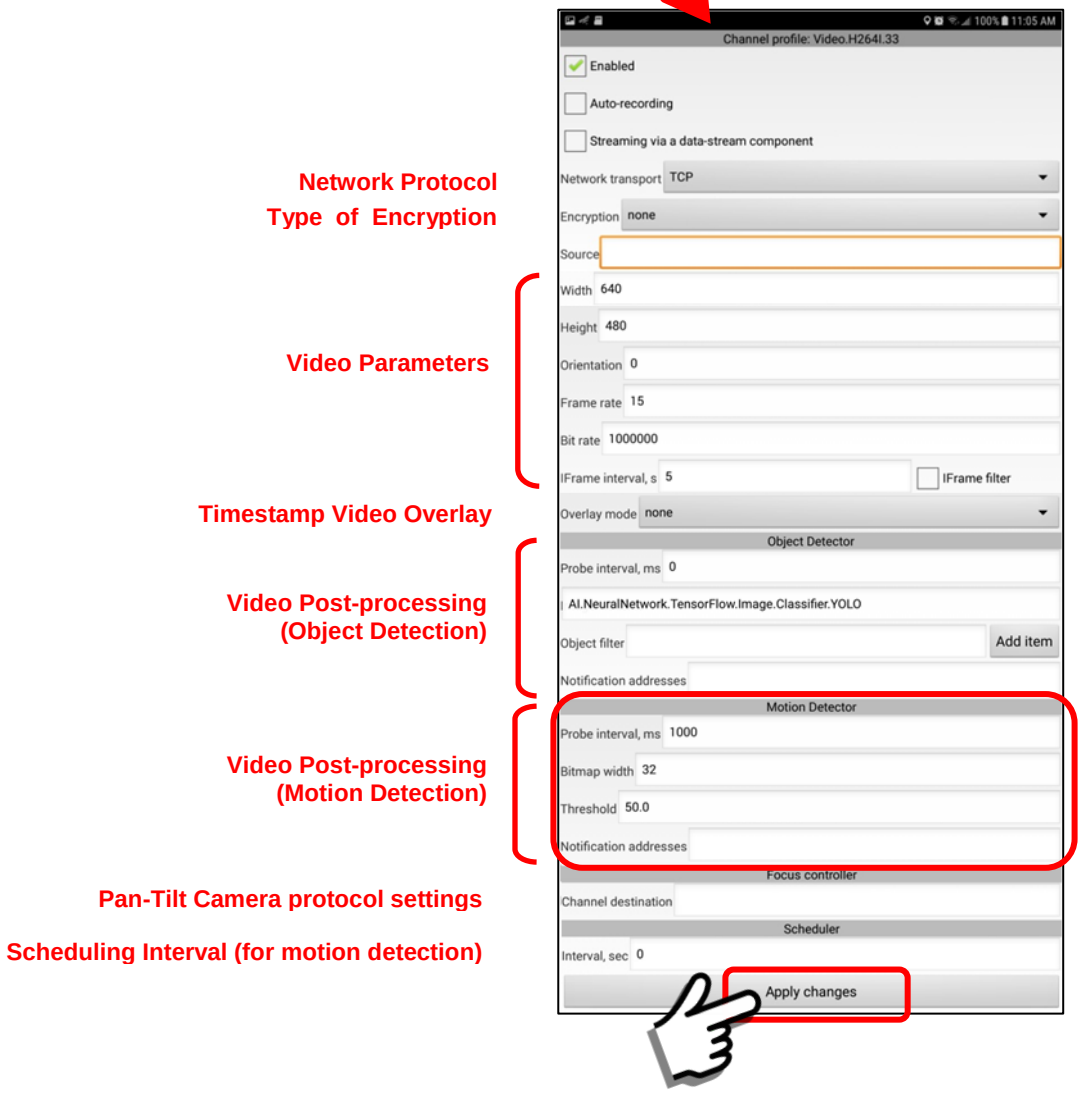
Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /motion detector/

This is a “motion detector” enabled video channel that uses the rear facing camera sensor on the mobile device to detect motion. As a default this sensor uses a medium video resolution of 640x480. However, since in most cases the motion detection is a “recorded” event, any video resolution (up to the limits of the device) may be used. If you make changes to these settings, click the “Apply changes” Button to save the Channel Profile.





The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

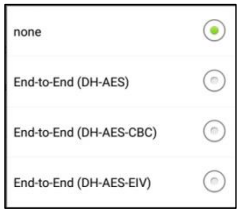
e. Encryption

Factory default setting = “None”

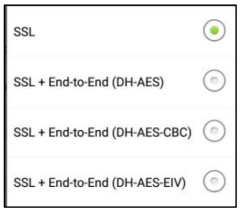
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

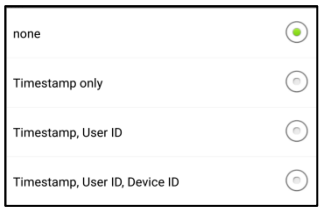
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

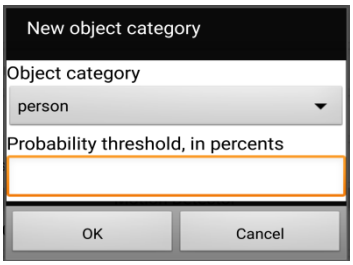
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 50.0

The default is "50.0", this means the motion detector feature is turned "on" and is active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. See **Section 15.5** for a detailed example on using the Motion Detection feature.

Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.

(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

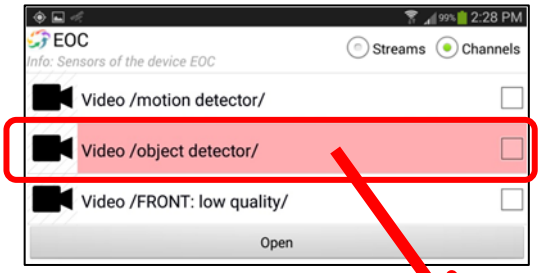
x. Scheduler - Interval sec

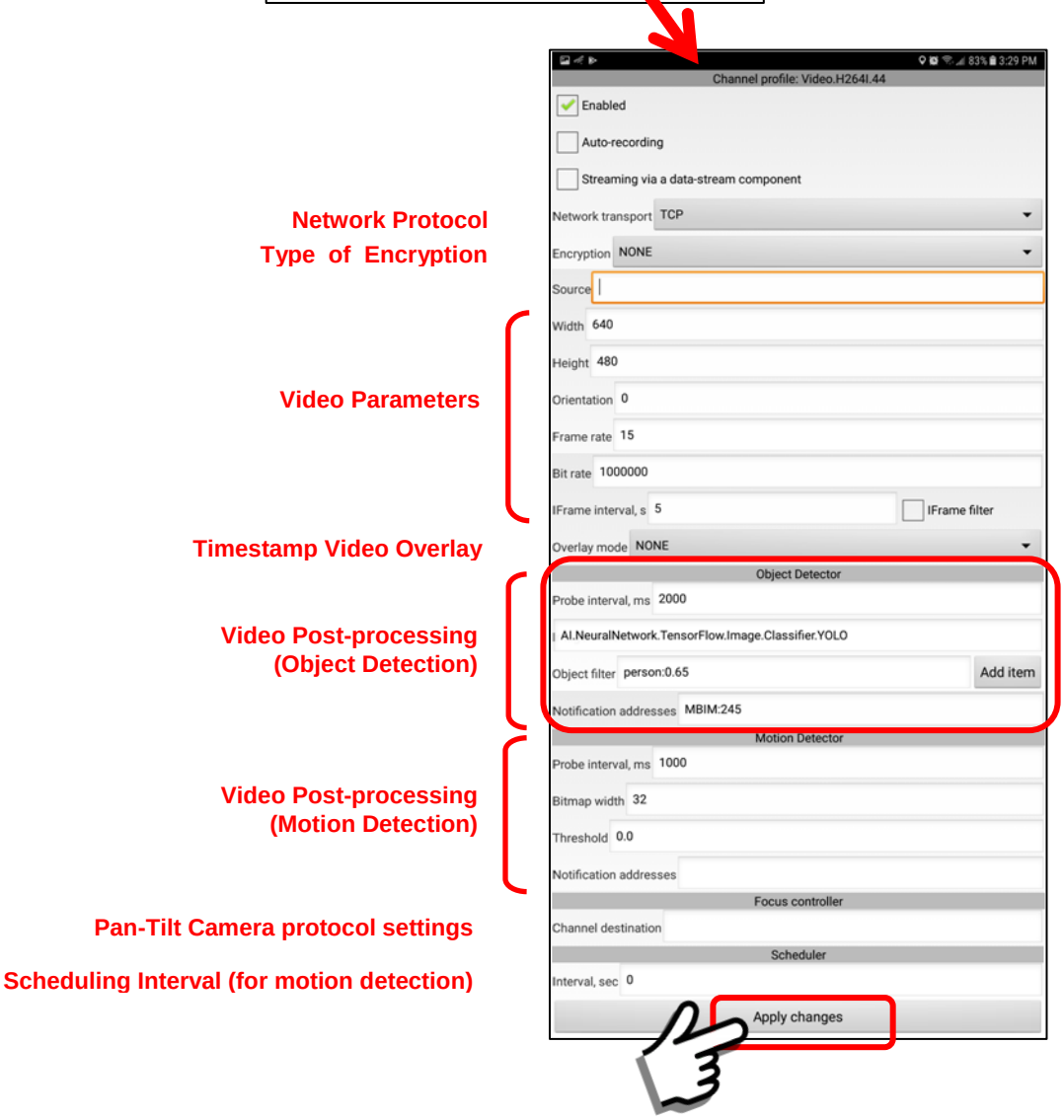
Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /object detector/

This is an “object detector” enabled video channel that uses the rear facing camera sensor on the mobile device to implement “object recognition” using an Artificial Intelligence (AI) engine. As a default this sensor uses a medium video resolution of 640x480. However, since in most cases the object detection is a “recorded” event, any video resolution (up to the limits of the device) may be used. If you make changes to these settings, click the “Apply changes” Button to save the Channel Profile. See **Section 15.11** for a detailed example of this feature.





The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

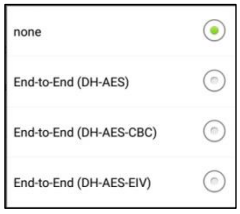
e. Encryption

Factory default setting = “None”

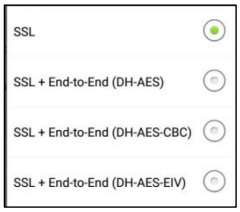
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

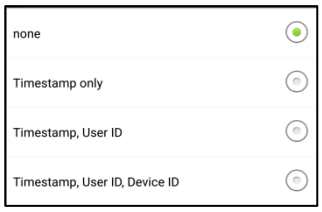
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

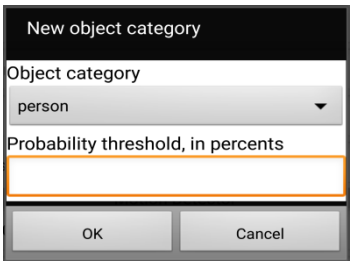
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and is NOT active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. See **Section 15.5** for a detailed example on using the Motion Detection feature.

Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.

(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

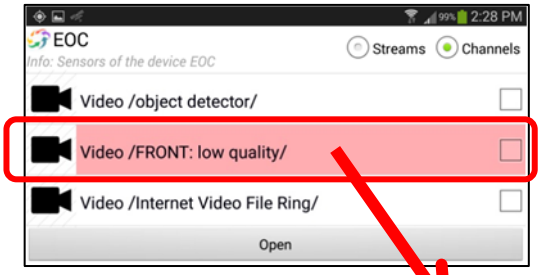
x. Scheduler - Interval sec

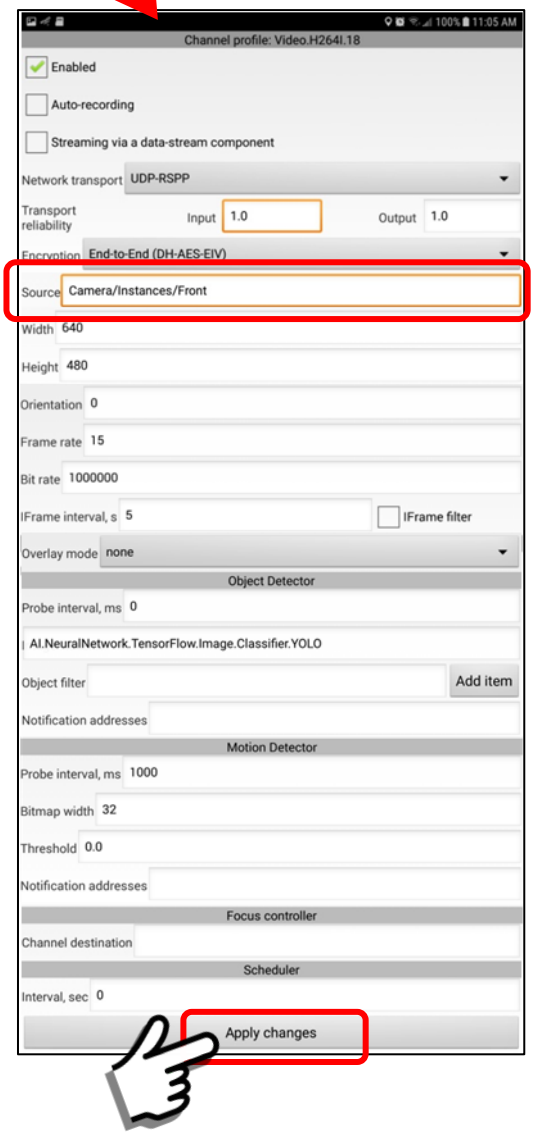
Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /FRONT low quality/

This is a “low quality” video channel that uses the front facing camera sensor on the mobile device. The sensor is only “low quality” in the sense that most front facing camera sensors are 1 – 3 MegaPixel sensors whereas rear-facing camera sensors are generally 8 – 12 MegaPixel sensors. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.





Network Protocol

Type of Encryption

Front Camera Sensor selection

Video Parameters

Timestamp Video Overlay

Video Post-processing (Object Detection)

Video Post-processing (Motion Detection)

Pan-Tilt Camera protocol settings

Scheduling Interval (for motion detection)

The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “UDP-RSPP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

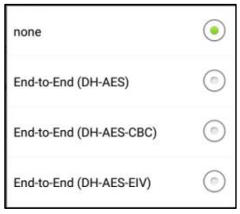
e. Encryption

Factory default setting = “End-to-End (DH-AES-EIV)”

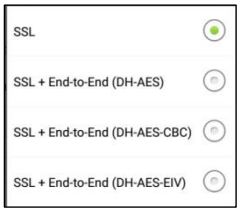
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “Camera/Instances/Front”

The “Source” data entry location is for specifying a data source for the sensor channel. For the FRONT CAMERA application we must specify that the front camera is to be used. When the “Source” is empty, this indicates that the “back” camera on the mobile device will be the source of the video.

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most Front Camera applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most low quality applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

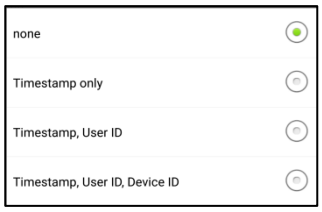
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

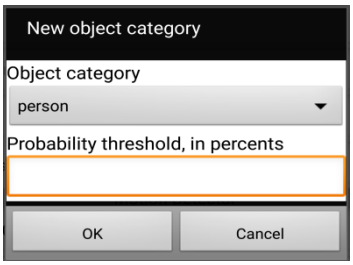
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler - Interval sec

Factory default setting = 0

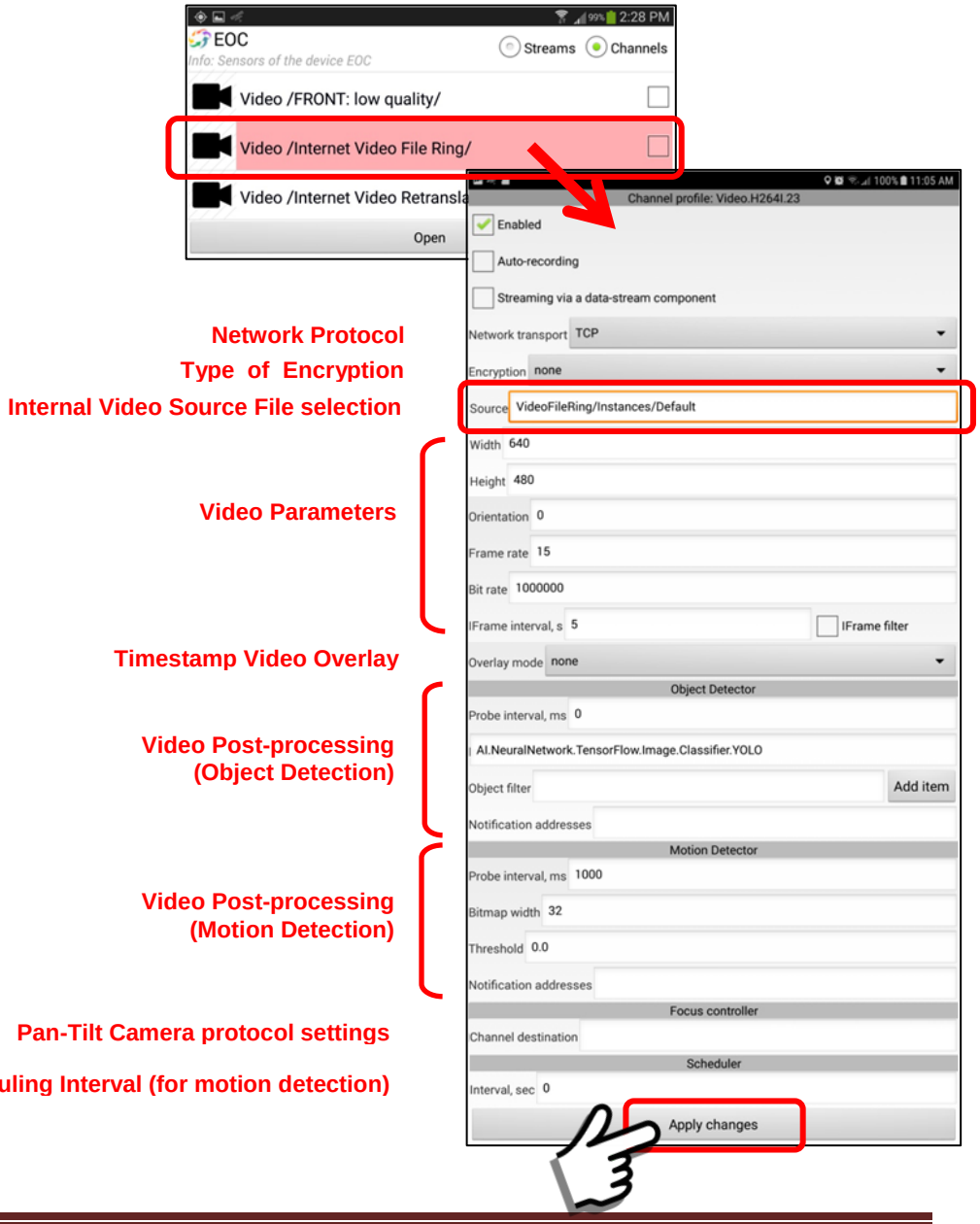
The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /Internet Video File Ring/

This is a pre-configured video channel that will play a single file or group of files located in a folder on the local device. No external links are allowed.

When the channel is activated, the program will play the video files in the “Data” folder one after another in the order in which the files were created (file creation date-time). Allowed video types are *.mp4 and *.3gp. See **Section 10.20, Item 3**, for details on how to add and remove files.

The files, located on the mobile device, will continue playing (never ending loop) until stopped. Please note that if these files are to be played on a “remote” device, bandwidth issues should be considered.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

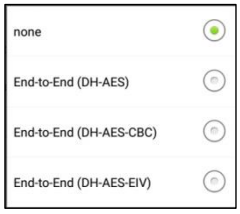
e. Encryption

Factory default setting = “None”

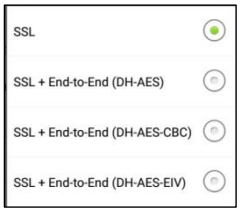
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"VideoFileRing/Instances/Default"

This is a pre-configured "internet video" broadcasting channel that can be used when internet bandwidth limitation is not a factor. This video channel plays video files (ie mp4) similar to an internet broadcasting station. The file, located on the mobile device as the "source", will continue playing (never ending loop) until stopped.

Default folder location:

<Current-Profile>Device/SensorsModule/
Channels/Video.H264I.23/Source/Types/
VideoFileRing/Instances/Default/Data

When the "Source" has an entry (not blank), this indicates that the mobile device is using a video source other than the internal camera to provide the video signal. In this configuration the source may only be a local file. No external links are allowed.

g. Width

Factory default setting = 640

This is the "width" of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to "transmit" due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the "height" of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480,

1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

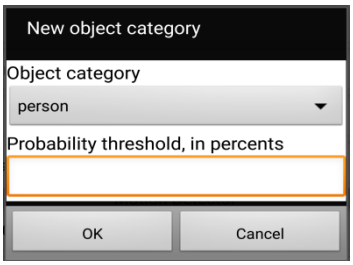
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.

(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler - Interval sec

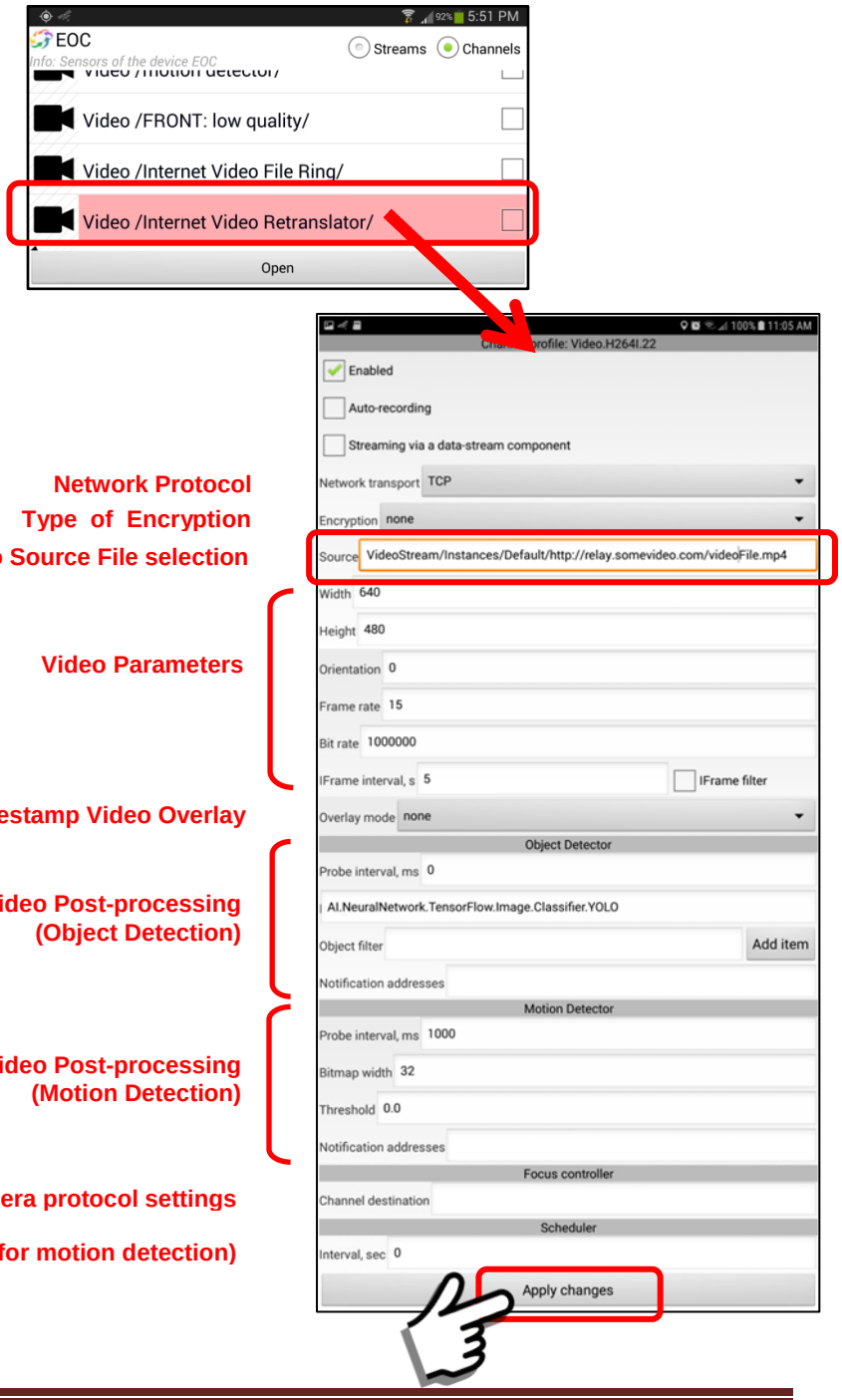
Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

Video /Internet Video Retranslator/

This is a pre-configured “internet video retranslator” video channel that can be used to play video files directly from an internet broadcast.

This video channel reads a data feed from an internet broadcast and uses that as a video “source”. The video file (usually an mp4), is streamed from the broadcaster to the mobile device and used as the “source”. It will continue playing until stopped. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

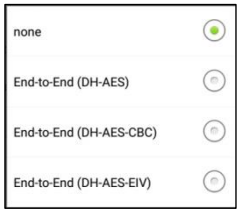
e. Encryption

Factory default setting = “None”

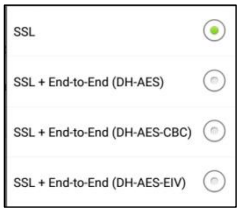
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"VideoStream/Instances/Default/< some web address >/<somevideofile.mp4>"

The "Source" data entry location is for specifying an external data source for the channel. In this example, the "source" is a video file (ie mp4) located at a broadcaster website on the internet.

Default folder location:

<Current-Profile>Device/SensorsModule/Channels/Video.H264I.22/Source/Types/VideoStream/Instances/Default/Data

In the "Data" folder is a Profile.xml file that contains the URL and settings for the .mp4 file to play.

When the "Source" has an entry (not blank), this indicates that the mobile device is using a video source other than the internal camera to provide the video signal. In this configuration the source is a network "address string" determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the "width" of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to "transmit" due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the "height" of the video capture setting for the camera. Video capture settings will depend on

the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated

(non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

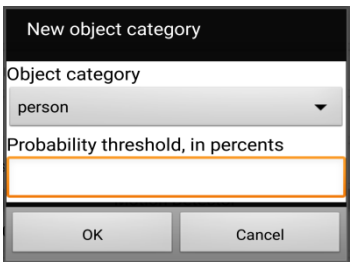
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

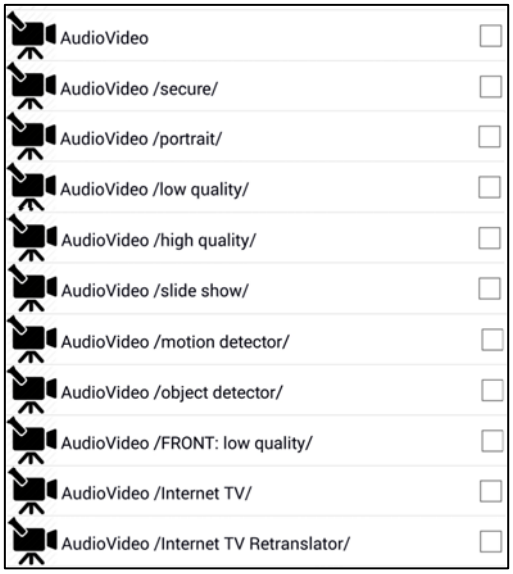
x. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

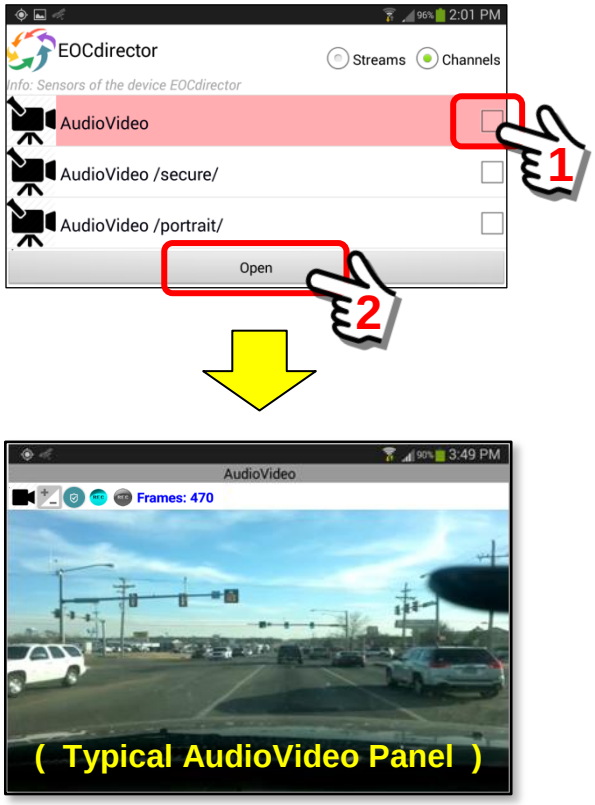
7. *AudioVideo Sensors*

The Sentry MDU System has eleven (11) pre-configured sensor channels that are combined Audio & Video. Each combined channel may be customized by the User with the parameters most compatible with their mobile device. This section will describe each channel and the corresponding “default” settings.



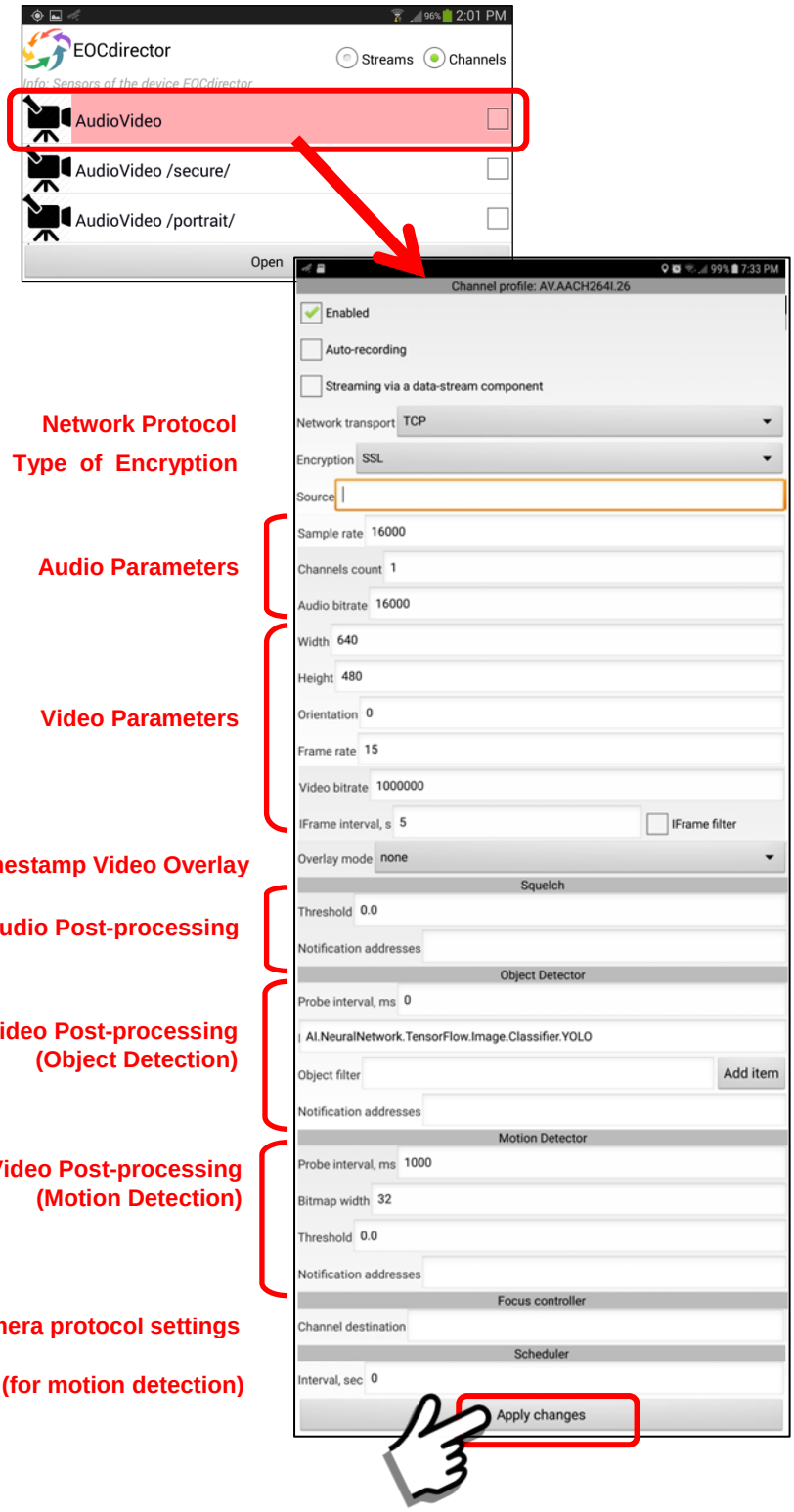
<u>Screen example</u>

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



AudioVideo

This is the standard quality audio-video channel you will see used most often when a combined feature is needed. It provides a good balance between quality audio-video and bandwidth usage. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

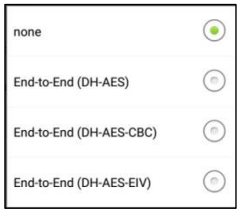
e. Encryption

Factory default setting = “None”

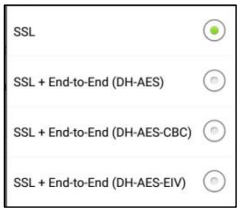
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

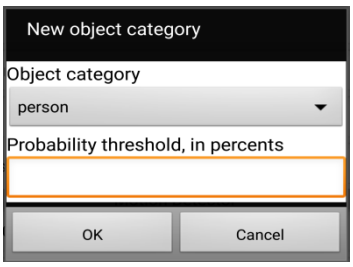
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

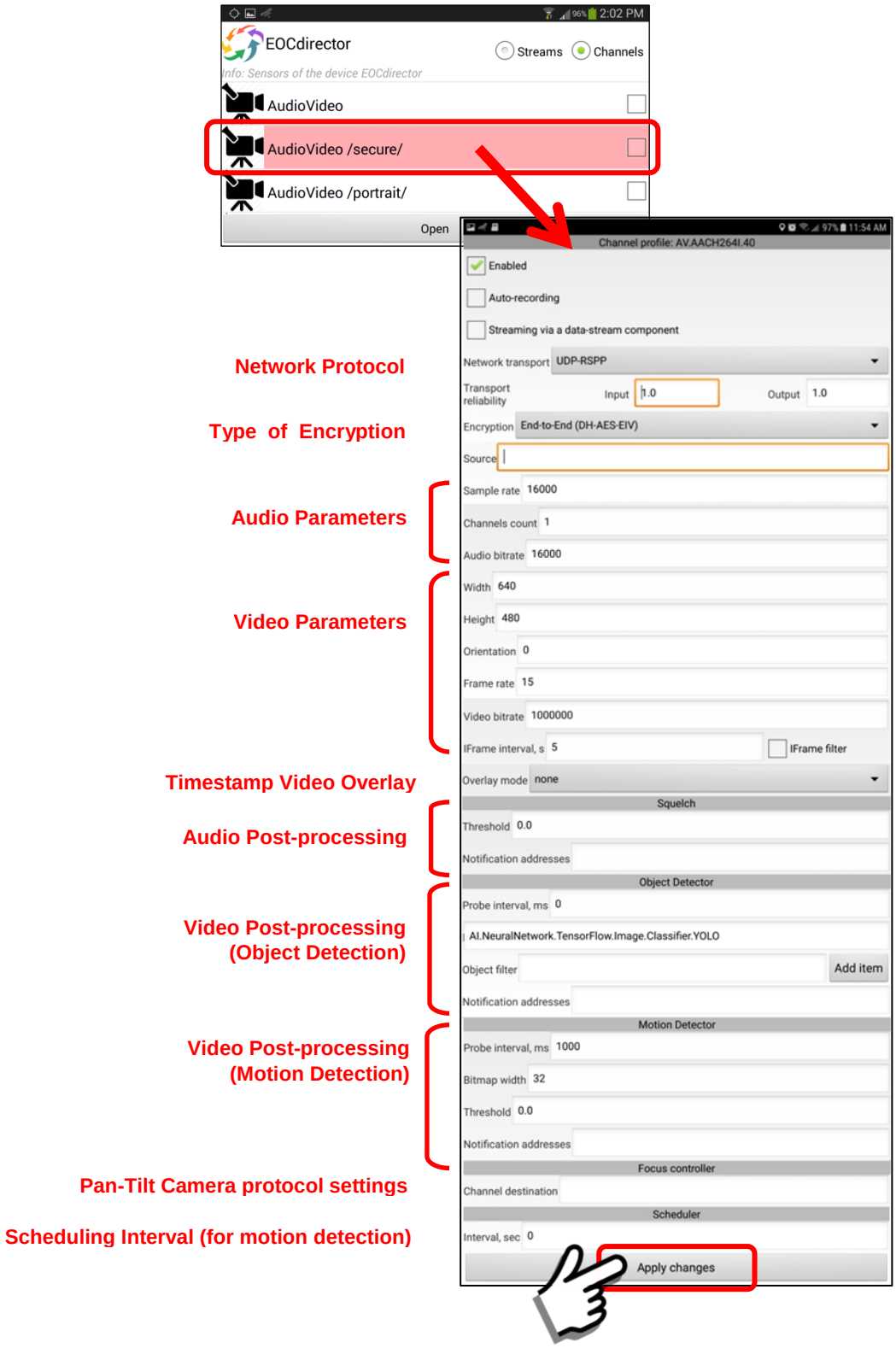
cc. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /secure/

This is the standard quality audio-video channel with a pre-configured encryption type already selected. It provides a good balance between quality audio-video and bandwidth usage. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “UDP-RSPP”

As a default setting we typically use UDP-RSPP for a highly secure network protocol. We have also provided the UDP-RTP and TCP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

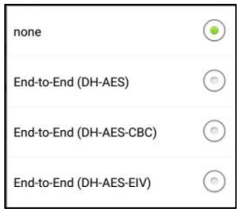
e. Encryption

Factory default setting = “End-to-End (DH-AES-EIV)”

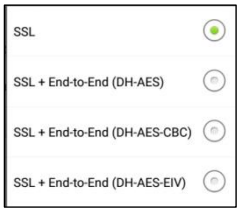
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

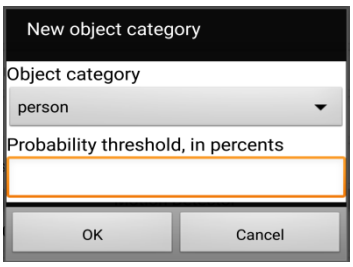
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

"MBIM:123,345,567" …… 3 users to notify
"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

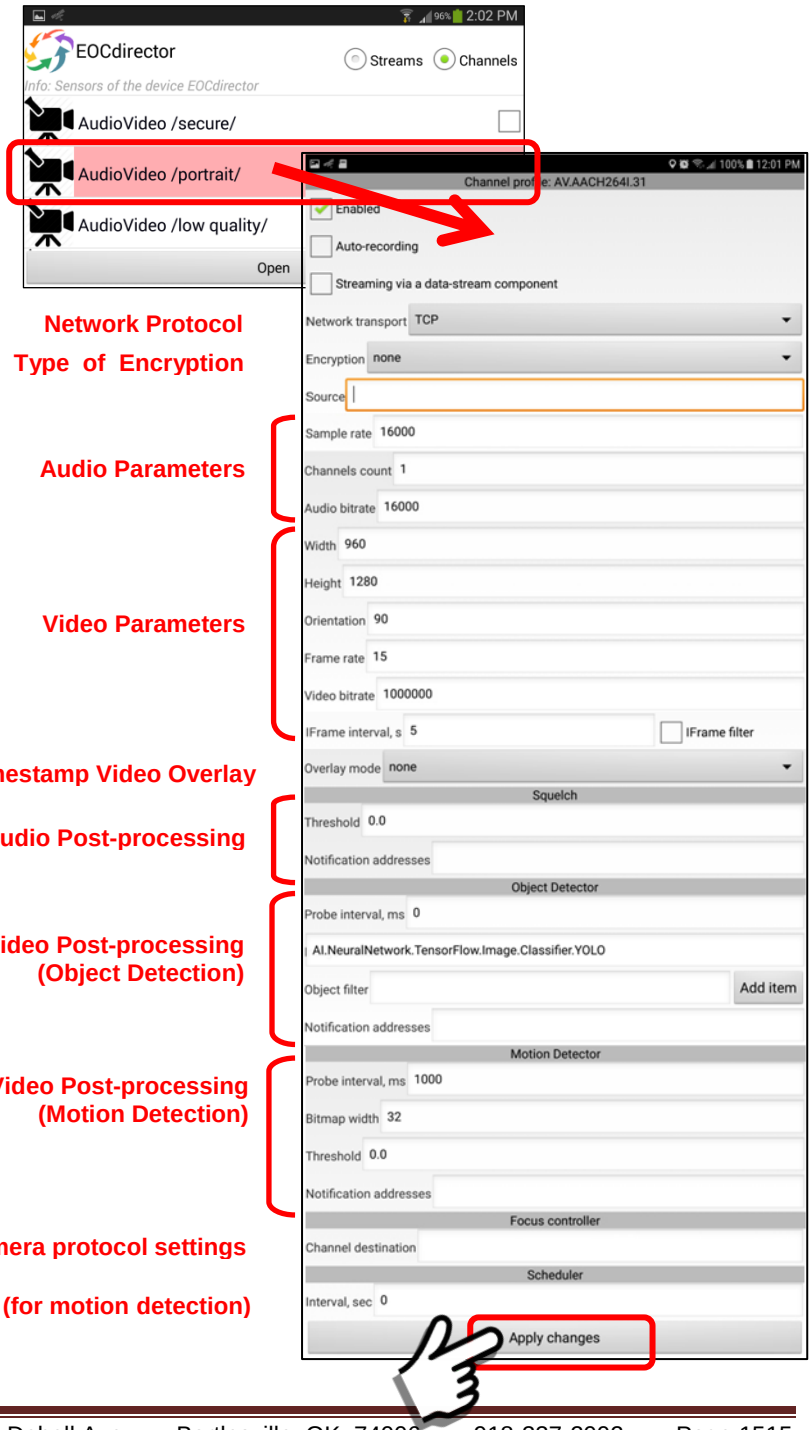
cc. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /portrait/

This is the audio-video channel that will allow videos to be taken in “portrait” mode (phone is held vertical instead of horizontal). Depending on your hardware, some mobile devices will automatically “rotate” the video recording image for portrait mode. However, if your device does not automatically rotate the image, this Channel Profile allows you to provide settings to rotate the image as desired. You will need to experiment with your particular device to determine the best settings for your application. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

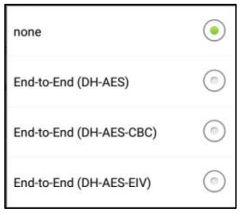
e. Encryption

Factory default setting = “None”

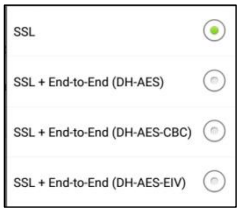
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 960

This is the “width” of the video capture setting for the camera. However, remember that in portrait mode the “width” is actually the “height” relative to the camera sensor, and then we “rotate” the image.

Instead of 1280x960, we are using 96x1280. Video capture settings will depend on the device specifications. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 480x640, 720x1280 up to HD-1080x1920. These settings are very much device dependent. The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 1280

This is the “height” of the video capture setting for the camera. However, remember that in portrait mode the “height” is actually the “width” relative to the camera sensor, and then we “rotate” the image. Instead of 1280x960, we are using 960x1280. Video capture settings will depend on the device specifications. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 480x640, 720x1280 up to HD-1080x1920. These settings are very much device dependent. The Sentry MDU System allows for pre-setting a variety of video quality levels..

l. Orientation

Factory default setting = 90

The “Portrait mode” channel profile allows an “Orientation” setting to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “90” which means 90 degrees of rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum

acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

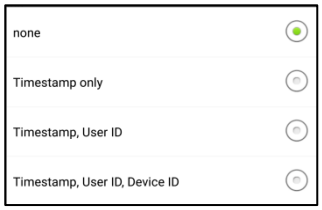
q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only

(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

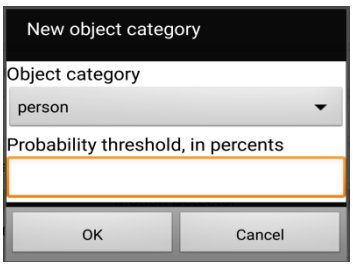
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

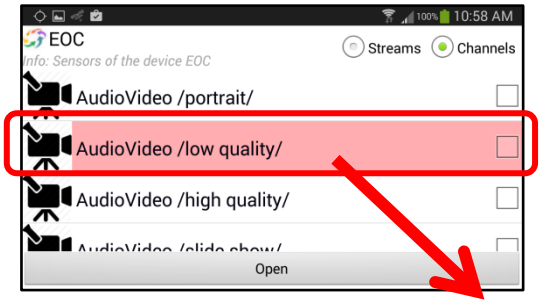
cc. Scheduler - Interval sec

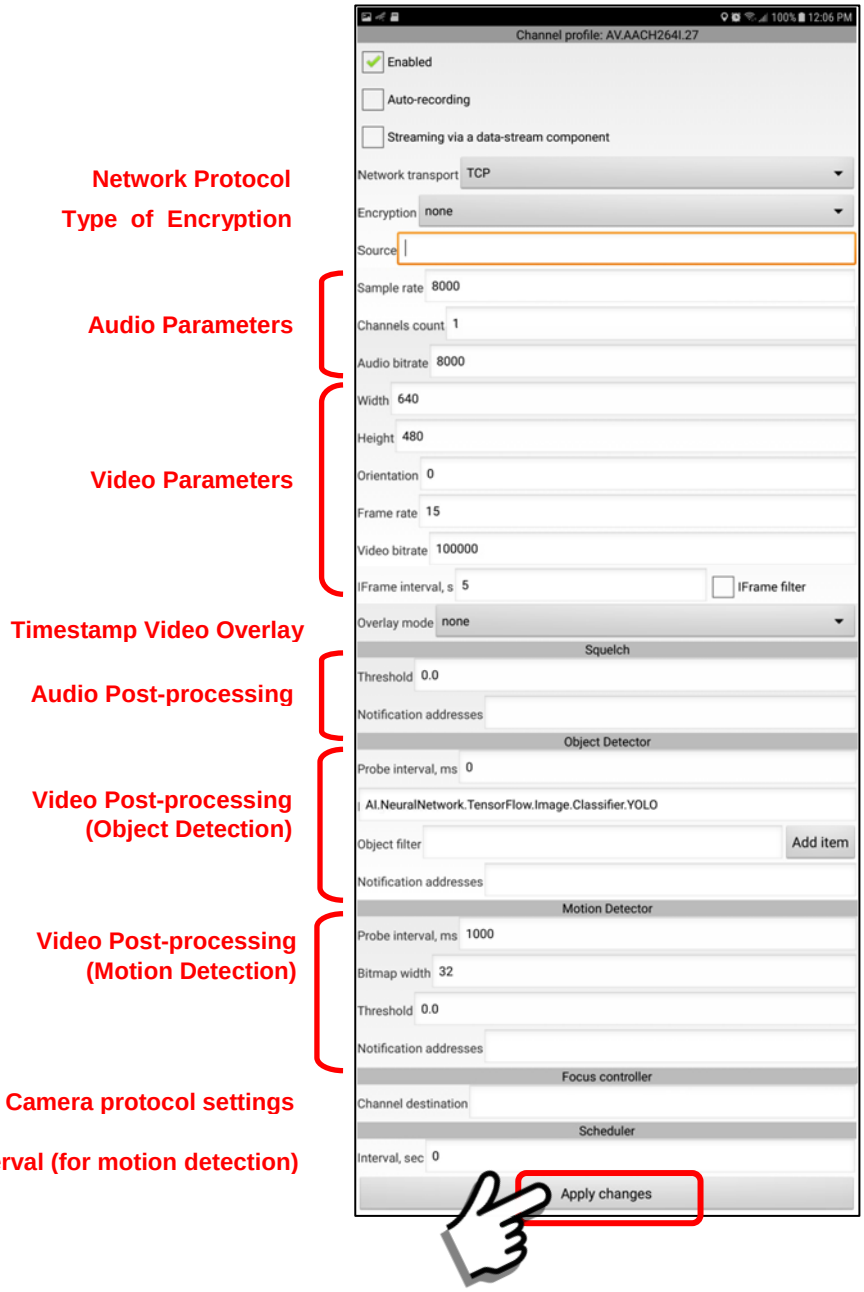
Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /low quality/

This is a “low quality” audio-video channel that can be used when sufficient internet bandwidth is not available to utilize higher quality. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.





The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

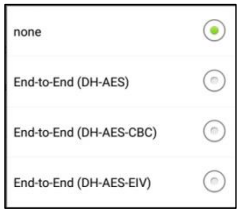
e. Encryption

Factory default setting = “None”

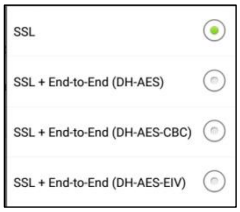
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 8000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 8000 Hz will work as a “low quality” audio sample rate if needed. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 8000

This is the data transfer rate in “bits-per-second” of the audio data. A setting of 8000 bps should work fine for applications where “voice quality” audio coming from the microphone is acceptable.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the

aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be

between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

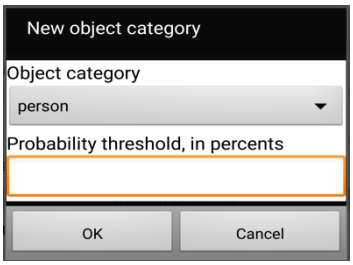
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify
"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

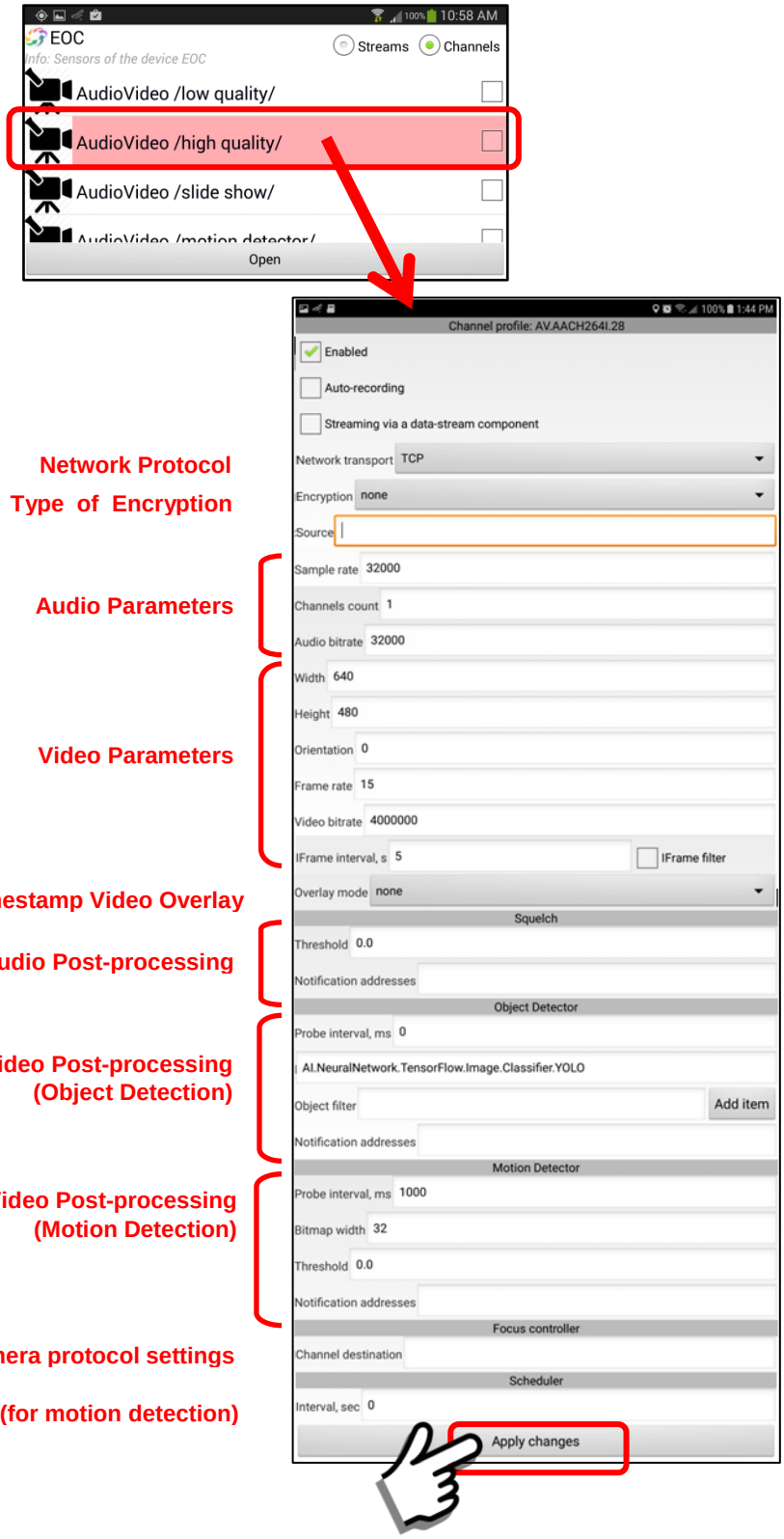
cc. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /high quality/

This is a “high quality” audio-video channel that can be used when high internet bandwidth service is available to utilize the higher quality. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

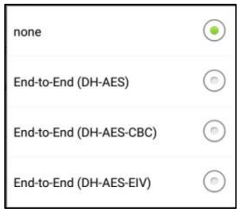
e. Encryption

Factory default setting = “None”

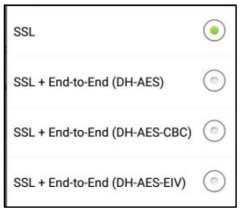
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 32000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 32000 Hz will work as a “high quality” audio sample rate if needed. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 32000

This is the data transfer rate in “bits-per-second” of the audio data. A setting of 32000 bps should work fine for applications where “high quality” audio is desired.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the

aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be

between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 4000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 4000000 bps should provide high quality video and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may even be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

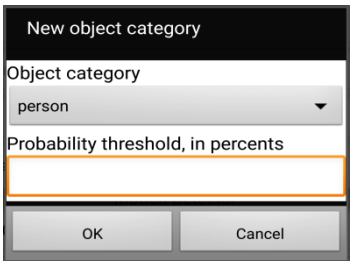
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify
"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

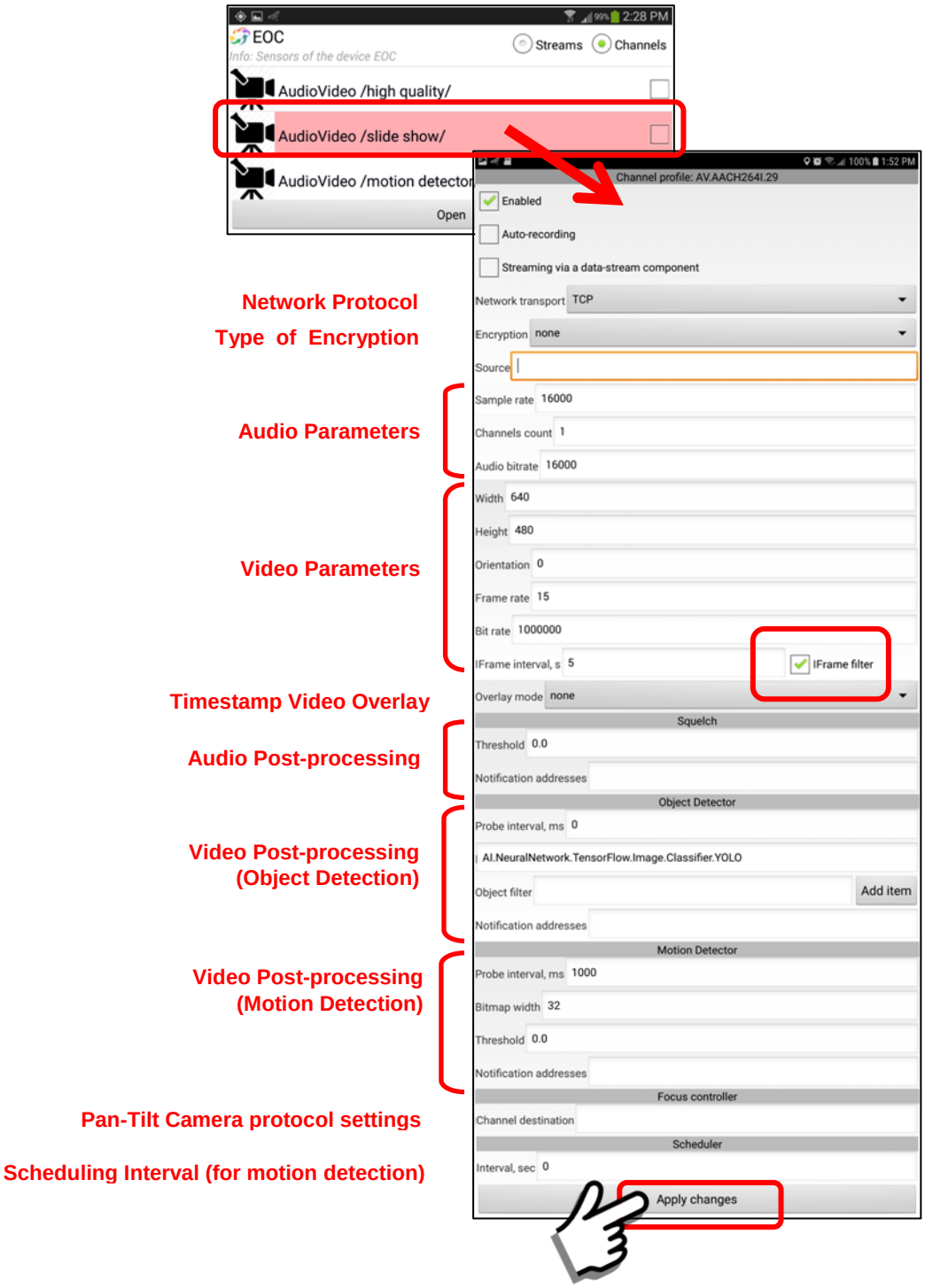
cc. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /slide show/ (time lapse recording)

This is the audio-video channel you will use to create a “time lapse” recording. Using the iFrame interval and activating the “Frame Filter” will result in a series of “slides” that when taken together in a video clip will show a time lapse record. This pre-configured audio-video channel has parameters that provide a good balance between quality video and file size. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

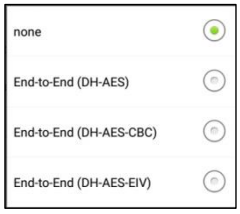
e. Encryption

Factory default setting = “None”

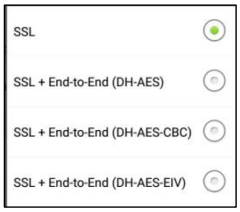
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

For long term (days, weeks) time lapse recordings the default setting of 5 seconds can be adjusted to minutes or hours (600 secs = 10 minutes). Remember that each time it records, it will record a single video “frame” … and the playback will be at 30 frames-per-second. Keep this is mind as you set the desired time lapse interval.

This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data recorded increases. As numbers get larger (ie 20, 100, 600) the video time lapse may lose the desired effect. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “checked”

The default for the “Slide show” function is “checked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “time lapse” recording. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once

every 5 seconds. Played back this will appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

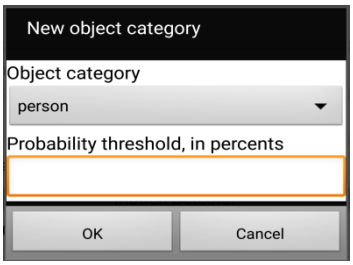
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is "0.0", this means the motion detector feature is turned "off" and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

"MBIM:123,345,567" …… 3 users to notify
"MBIM:478" …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

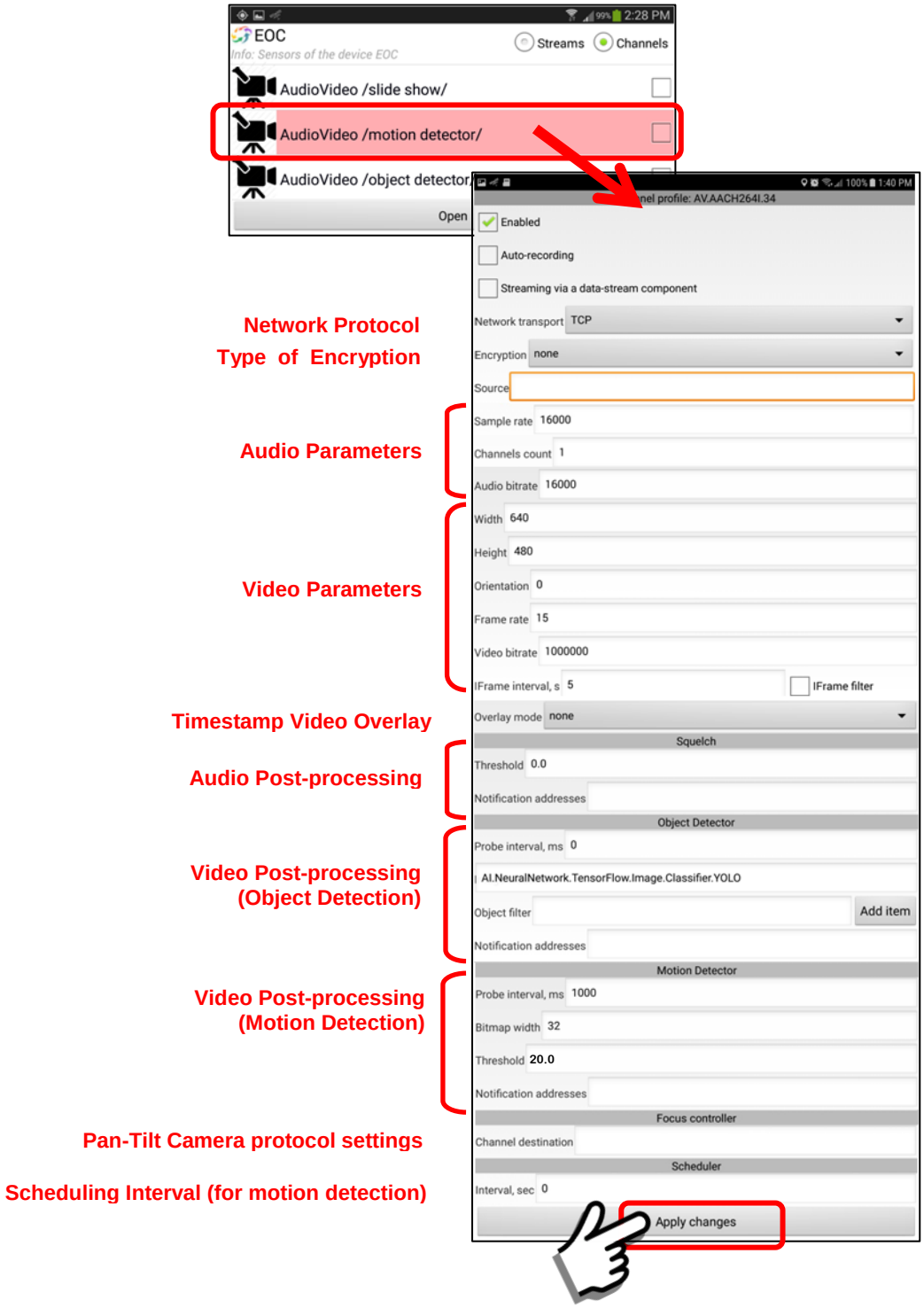
cc. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /motion detector/

This is a “motion detector” enabled video channel that uses the rear facing camera sensor on the mobile device to detect motion. As a default this sensor uses a medium video resolution of 640x480. However, since in most cases the motion detection is a “recorded” event, any video resolution (up to the limits of the device) may be used. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

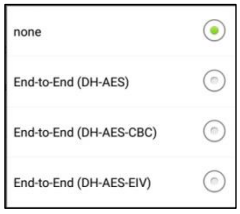
e. Encryption

Factory default setting = “None”

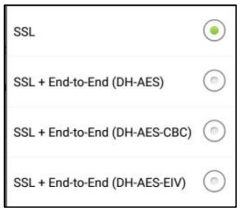
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

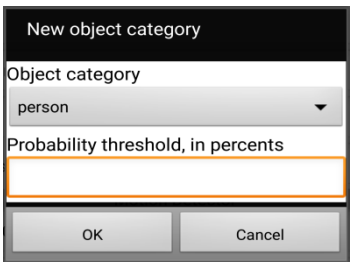
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 20.0

The default is “20.0”, this means the motion detector feature is turned “on” and is active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

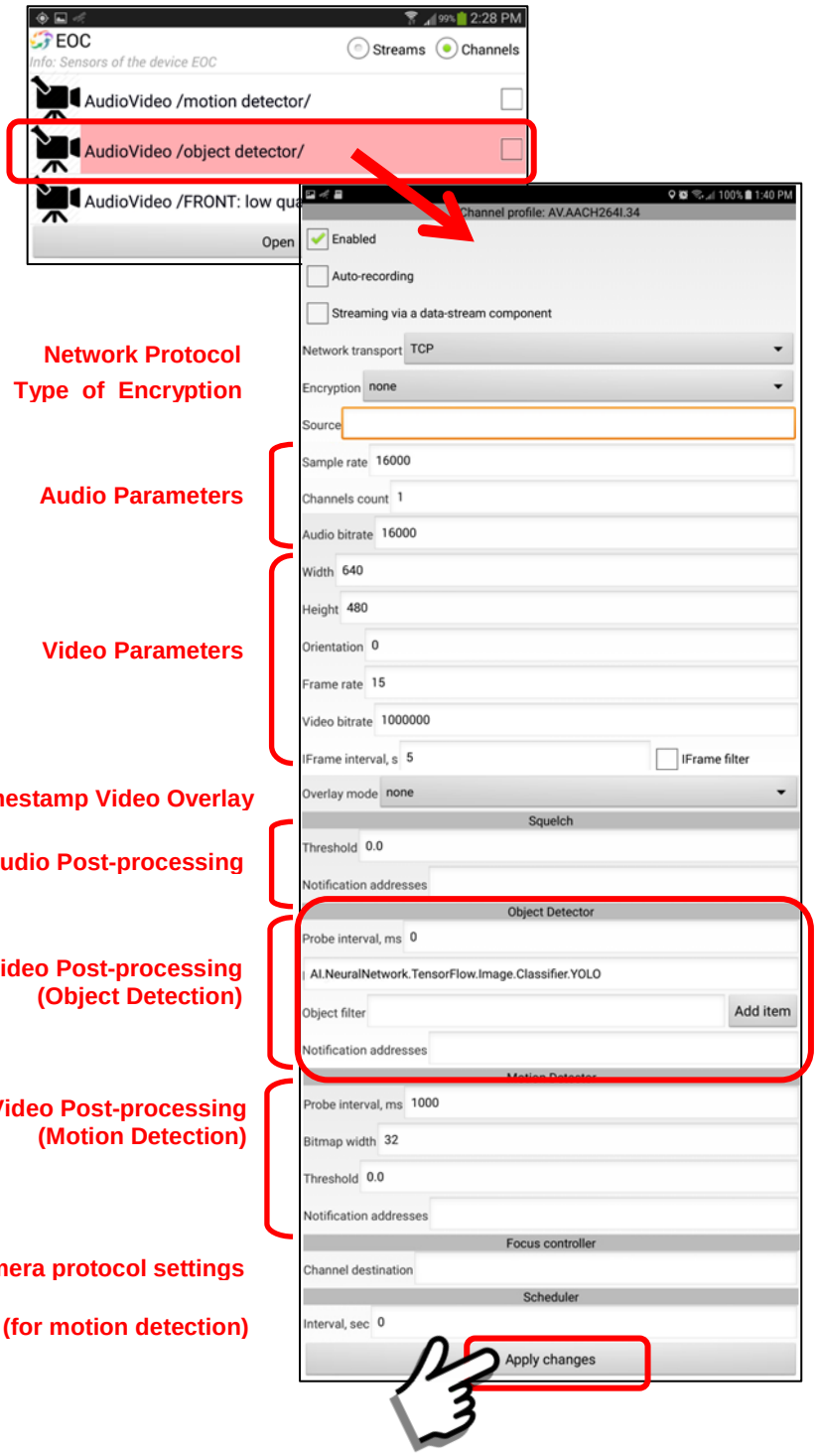
cc. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /object detector/

This is an audio channel and “object detector” enabled video channel that uses the rear facing camera sensor on the mobile device to detect motion. As a default this sensor uses a medium video resolution of 640x480. However, since in most cases the object detection is a “recorded” event, any video resolution (up to the limits of the device) may be used. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

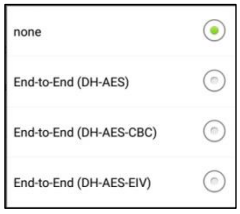
e. Encryption

Factory default setting = “None”

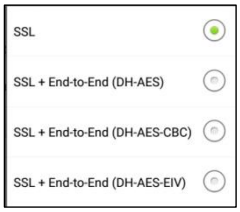
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 16000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 16000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications where the audio is coming from the microphone of the mobile device.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

p. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

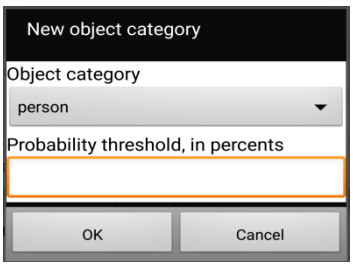
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and is NOT active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

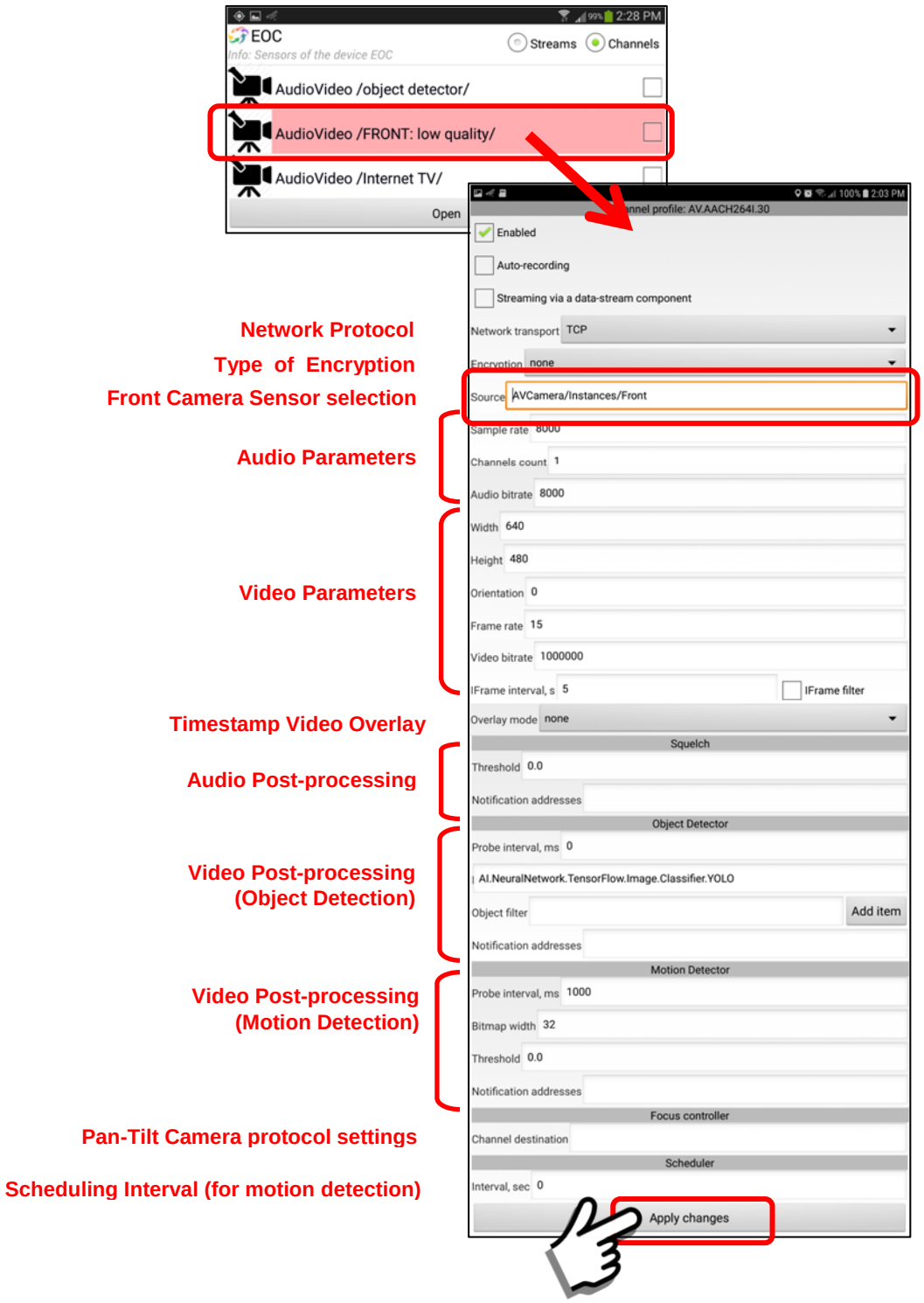
cc. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /FRONT low quality/

This is a “low quality” audio-video channel that uses the front facing camera sensor on the mobile device. The sensor is only “low quality” in the sense that most front facing camera sensors are 1 – 3 MegaPixel sensors whereas rear-facing camera sensors are generally 8 – 12 MegaPixel sensors. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

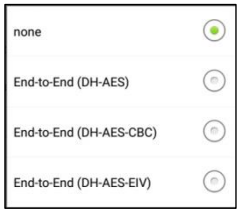
e. Encryption

Factory default setting = “None”

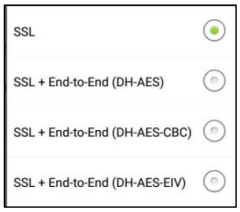
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"AVCamera/Instances/Front"

The "Source" data entry location is for specifying a data source for the sensor channel. For the FRONT CAMERA application we must specify that the front camera is to be used. When the "Source" is empty, this indicates that the "back" camera on the mobile device will be the source of the video.

g. Sample Rate

Factory default setting = 8000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 8000 Hz will work as a "low quality" audio sample rate if needed. To use the Voice Recognition package (optional) it requires a setting of 16000. You can change it to something else but we recommend leaving it at 16000.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is "mono" (1) or "stereo" (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 8000

This is the data transfer rate in "bits-per-second" of the audio data. A setting of 8000 bps should work fine for applications where "voice quality" audio coming from the microphone is acceptable.

j. Width

Factory default setting = 640

This is the "width" of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie

4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The

frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

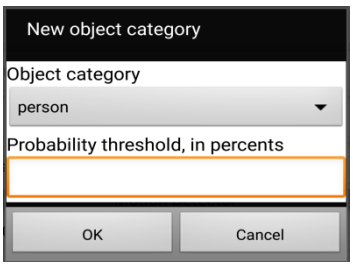
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is

performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

cc. Scheduler - Interval sec

Factory default setting = 0

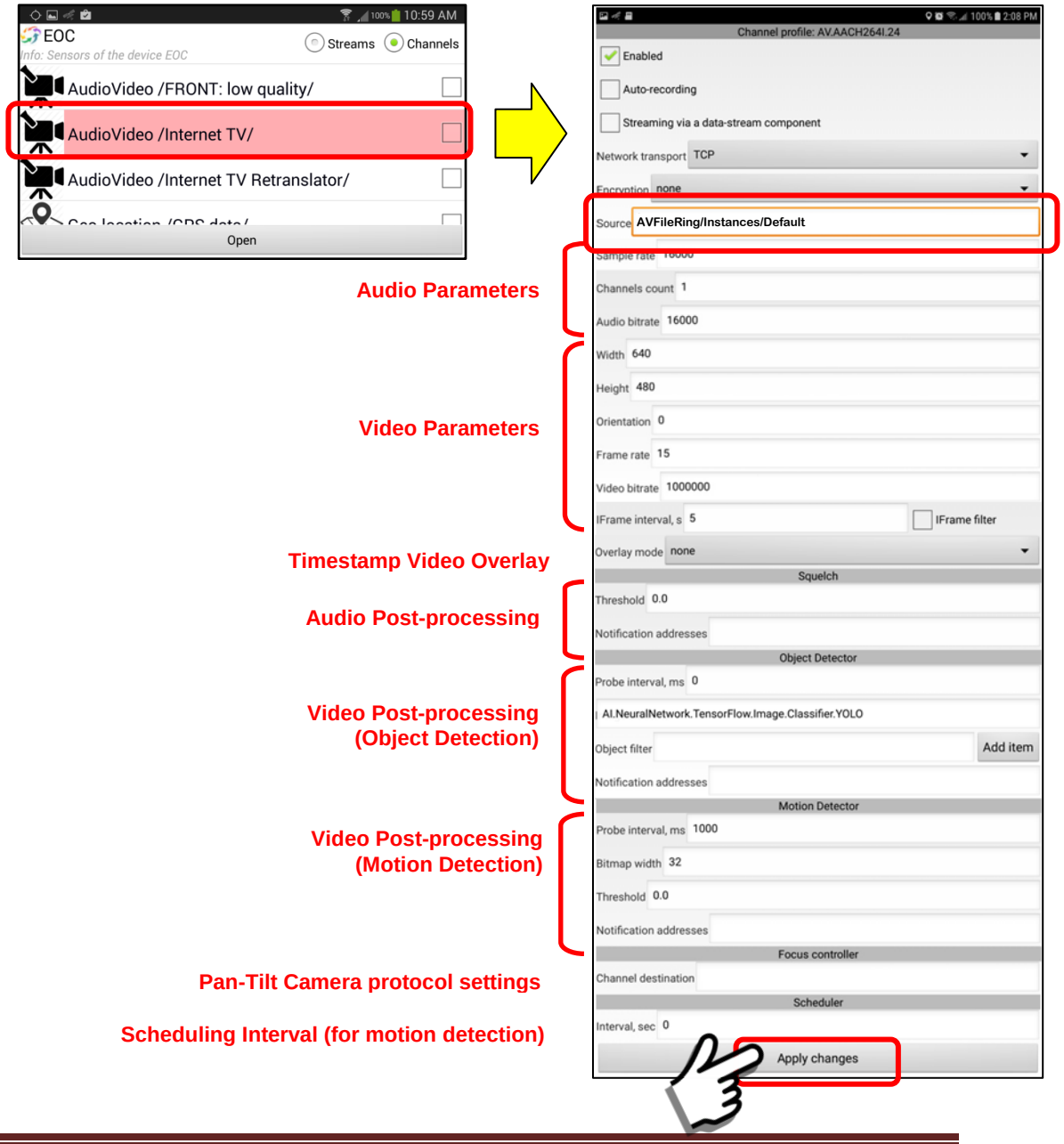
The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /Internet TV/

This is a pre-configured audio-video channel that will play a single file or group of files located in a folder on the local device. No external links are allowed.

When the channel is activated, the program will play the audio-video files in the “Data” folder one after another in the order in which the files were created (file creation date-time). Allowed video types are *.mp4 and *.3gp. See **Section 10.20**, Item 3, for details on how to add and remove files.

The files, located on the mobile device, will continue playing (never ending loop) until stopped. Please note that if these files are to be played on a “remote” device, bandwidth issues should be considered.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

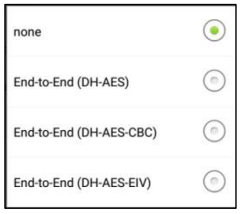
e. Encryption

Factory default setting = “None”

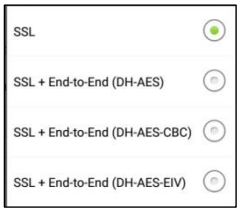
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"AVFileRing/Instances/Default"

This is a pre-configured "internet video" broadcasting channel that can be used when internet bandwidth limitation is not a factor. This channel plays audio-video files (ie mp4) similar to an internet broadcasting station. The file, located on the mobile device as the "source", will continue playing (never ending loop) until stopped.

Default folder location:

<Current-Profile>Device/SensorsModule/ Channels/AV.AACH264I.24/ Source/Types/ AVFileRing/Instances/Default/Data

The Profile.xml file will contain the relative path to the internet URL to be played.
When the "Source" has an entry (not blank), this indicates that the mobile device is using a video source other than the internal camera to provide the video signal. In this configuration the source may only be a local file. No external links are allowed.

g. Sample Rate

Factory default setting = 44100

This value must be set to the digital sampling rate of the data file that is to be played. They must be the same. The default of 44100 Hz should work for most applications. If you will be cycling through several files, they must all have the "same" sample rate setting.

h. Channels count

Factory default setting = 1

The channels count indicates whether an audio source is "mono" (1) or "stereo" (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 32000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 32000 bps should work for most applications where the audio is coming from a pre-recorded file.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the

recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

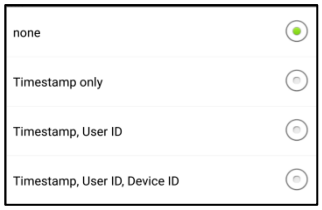
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the

A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

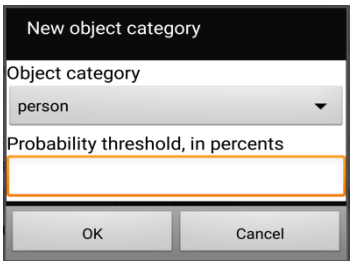
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability

threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.

(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

cc. Scheduler - Interval sec

Factory default setting = 0

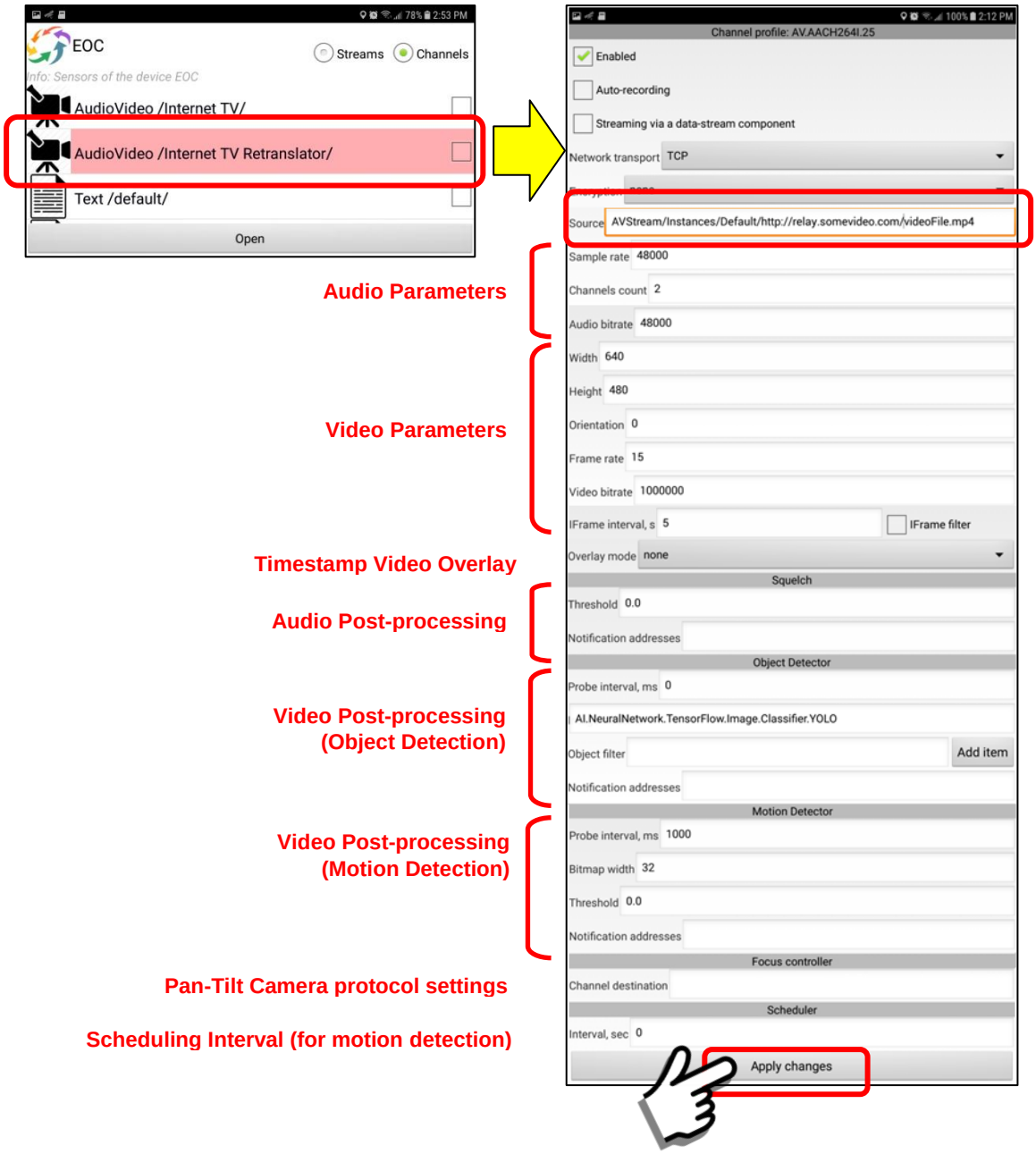
The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

AudioVideo /Internet TV Retranslator/

This is a pre-configured “internet TV retranslator” video channel that can be used to play audio-video (movies) files directly from an internet broadcast.

This channel reads a data feed from an internet broadcast and uses that as an audio-video “source”. Allowed file types are *.mp4 and *.3gp. The audio-video file, is streamed from the broadcaster to the mobile device and used as the “source”. It will continue playing until stopped. This channel profile provides a 2-channel (stereo) level of audio fidelity in addition to the video.

If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this combined audio-video channel is not selected for streaming. We recommend that this channel be deselected (unchecked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with

the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

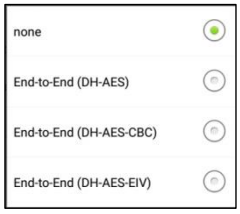
e. Encryption

Factory default setting = “None”

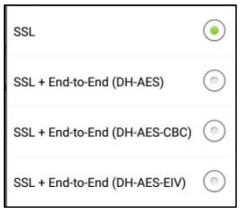
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = "AVStream/Instances/Default/< some web address >/<somevideofile.mp4>". This feature may also show as "AVHLStream/Instances/Default".

The "Source" data entry location is for specifying an external data source for the channel. In this example, the "source" is a video file (ie mp4) located at a broadcaster website on the internet. Allowed file types are *.mp4 and *.3gp.

Default folder location:

<Current-Profile>Device/SensorsModule/Channels/AV.AACH264I.25/Source/Types/AVHLStream/Instances/Default/Data

In the "Data" folder is a Profile.xml file that contains the URL and settings for the .mp4 file to play.

When the "Source" has an entry (not blank), this indicates that the mobile device is using a video source other than the internal camera to provide the video signal. In this configuration the source is a network "address string" determined from other sources (ie website address or remote network connection).

g. Sample Rate

Factory default setting = 48000

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 48000 Hz should work for most applications. You can change it to something else but we recommend leaving it at 48000.

h. Channels count

Factory default setting = 2

The channels count indicates whether an audio source is "mono" (1) or "stereo" (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Audio bitrate

Factory default setting = 48000

This is the data transfer rate in “bits-per-second” of the audio data. The default of 48000 bps should work for most applications where the audio is coming from a pre-recorded movie file.

j. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

k. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

l. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the

recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

m. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

n. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

o. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

p. iFrame filter

Factory default setting = “unchecked”

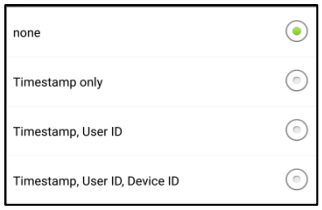
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

q. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



r. Squelch - Threshold

Factory default setting = 0.0

The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

s. Squelch - Notification Addresses

Factory default setting = “blank/empty”

Use of the notification feature requires access to the Sentry MDU Data Server via the Sentry MDU Desktop Client (SentryMDU Manager). Your security credentials must be set up to activate the notification feature. Contact the Sentry MDU Systems Administrator for your group to turn on this feature.

t. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the

A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an "object" in the image that meets the filter selection criteria.

u. Object Detector – AI.NeuralNetwork.TensorFlow ….

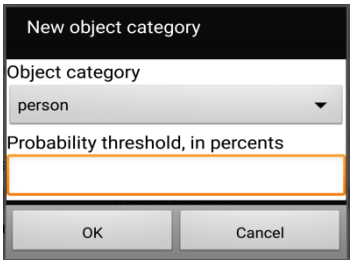
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

v. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

w. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability

threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.
See **Section 15.11** for an example configuration.

x. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

y. Motion Detector - Bitmap width

Factory default setting = 32

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

z. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

aa. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

An example entry would be as follows (no quotes):

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

bb. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

cc. Scheduler - Interval sec

Factory default setting = 0

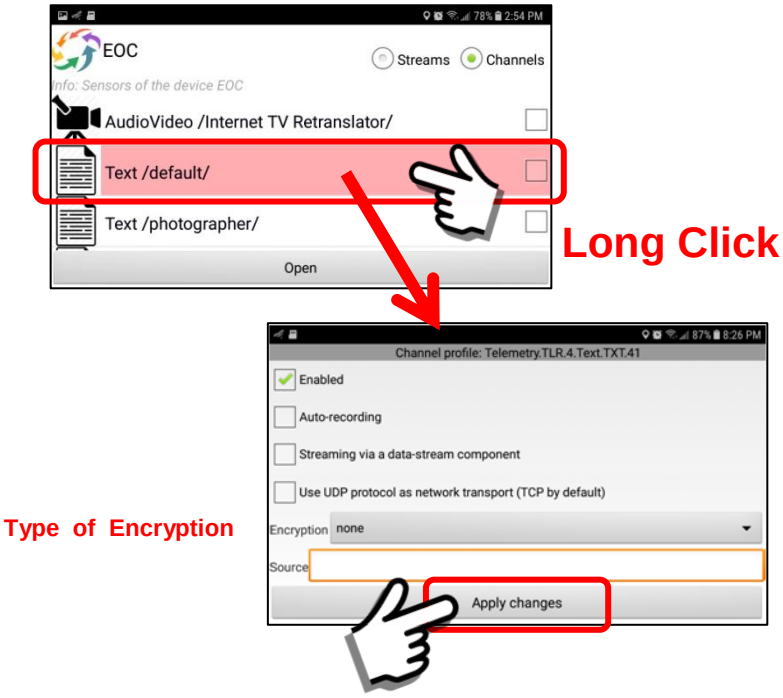
The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

8. ***Text Sensors (Default, Photographer & Voice Recognizer)***
The Sentry MDU System has 3 “text” sensor channels that provide text “output” to the mobile device. This section will describe the channel and the corresponding “default” settings.

Text /default/

The Text /default/ Feature, will provide a continuous stream of “Log message” text for a device. Although you may open the feature directly, it is designed to be used as a “floating window” that has been saved as a bookmark. If you want to monitor the “Log Messages” of a remote device in real-time, you would create a bookmark of the “Text /default/” sensor and launch it on your device as a floating window.

This is the settings panel for the Text Output Feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. **Enabled checkbox**

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the Log Message Data to multiple users. We recommend that this channel be unchecked.

When “checked”, this indicates that the *Text /default/* channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Use UDP protocol as network transport

Factory default setting = “unchecked”

As a default setting we typically use TCP as the default network transport protocol. If you need the additional speed of UDP-RTP and are familiar with configuring and testing this protocol, it is an available option.

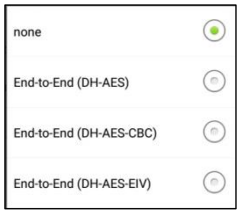
e. Encryption

Factory default setting = “None”

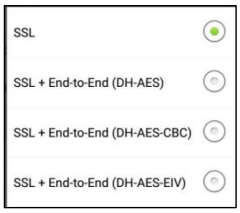
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

<u>Main Configuration Menu (No encryption)</u>



Main Configuration Menu (https/SSL encryption)



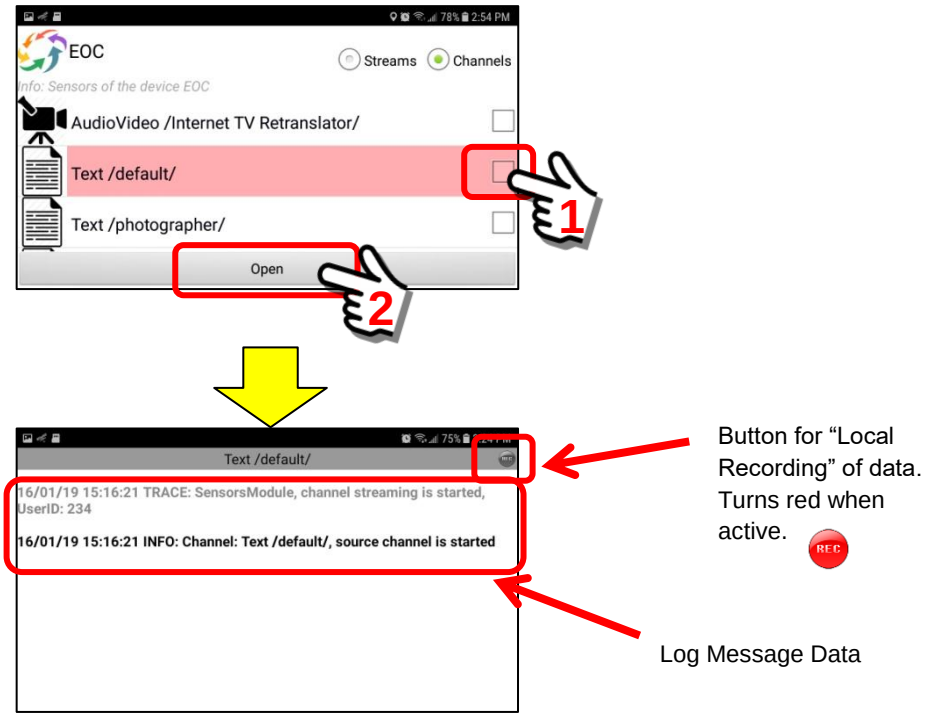
f. Source

Factory default setting = “blank/empty”

The “Source” when blank is for the local device.

Screen example for **Text /default/**

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



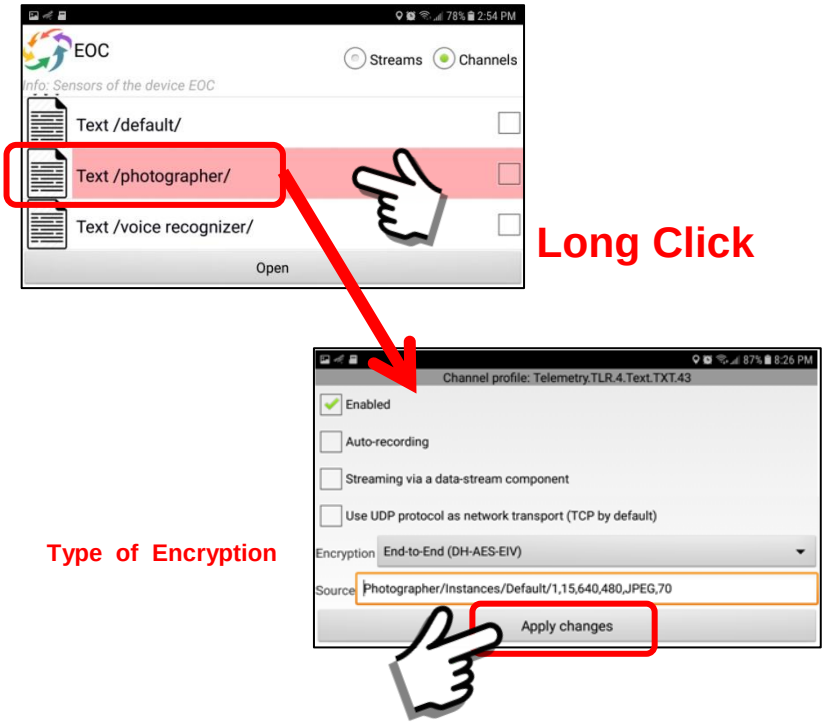
Text /photographer/

The **Text /photographer/** Feature, will provide a continuous stream of “front & back” camera images from a device. Although you may open the feature directly, it is designed to be used as a “floating window” opened on a remote device that has been saved as a bookmark (see **Section 9.13** for details on setting up a Floating Window).

When “enabled” the mobile device will take two pictures. One from the Front and one from the Back. There is a 2 second “delay” between pictures since the camera on the device requires a time period to set the white-balance of the camera sensor. Each time it “switches” camera sensor, there is a 2 second delay … it takes a picture … switches to the other camera sensor (2 sec delay) … takes another picture … then sends the PAIR of pictures … waits 15 seconds (time period can be set by user) and starts the process again … and repeat, as long as the feature is enabled.

If you want to monitor Front & Back Camera Pictures from a remote device in real-time, you would create a bookmark of the “Text /photographer/” sensor and launch it on your device as a floating window.

This is the settings panel for the “Text /photographer/” Feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the Picture Data to multiple users. We recommend that this channel be unchecked.

When “checked”, this indicates that the *Text /photographer/* channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Use UDP protocol as network transport

Factory default setting = “unchecked”

As a default setting we typically use TCP as the default network transport protocol. If you need the additional speed of UDP-RTP and are familiar with configuring and testing this protocol, it is an available option.

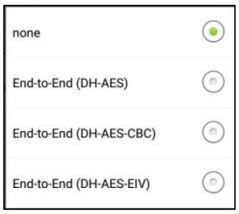
e. Encryption

Factory default setting = “End-to-End (DH-AES-EIV)”

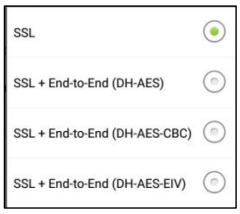
If during initial configuration, the Server Setting is set for “Secure Connections” (see **Section 5.4**) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"Photographer/Instances/Default/1,15,640,480,JPEG,70"

The "Source" data entry location is for specifying a data source and settings format for the sensor channel. For the FRONT and BACK CAMERA application we must specify settings for the feature. You may edit the settings to achieve the time period and picture resolution you desire.

Source String:

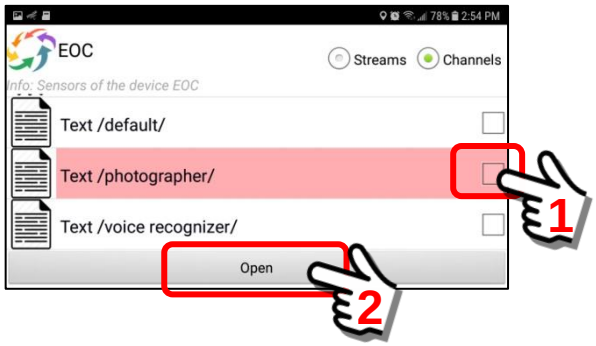
Photographer/Instances/Default/**1,15,640,480,JPEG,70**

Settings encoded in Source string

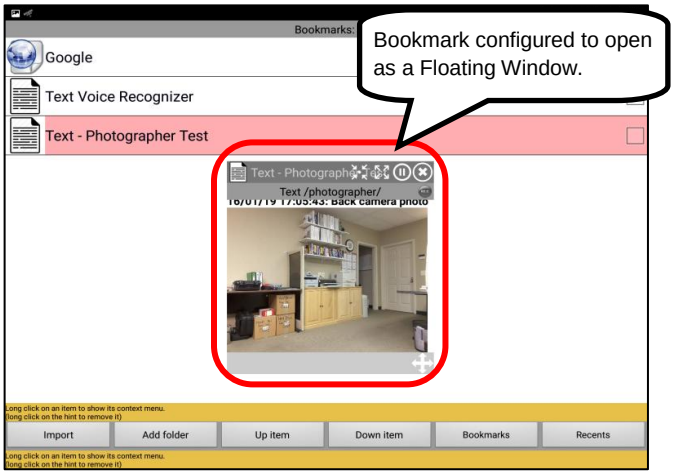
1	Version of the parameters
15	Seconds, interval of the photo loop
640	Width of the photo (pixels)
480	Height of the photo (pixels)
JPEG	Format of the photo (JPEG, PNG)
70	%, quality of photo (optional, JPEG format only)

Screen example for **Text/photographer/**

To view a screen example, put a "check" in the checkbox and click the "Open" Button.

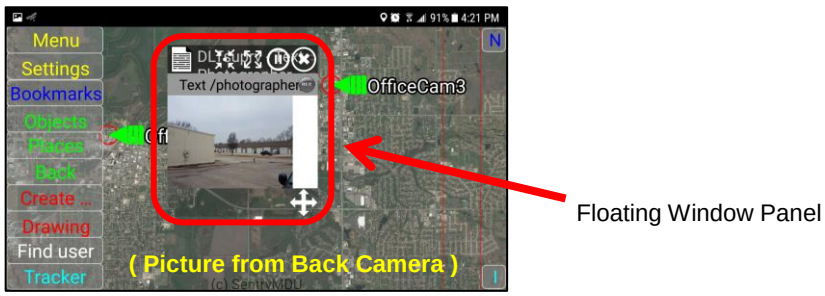


We will see a PAIR of images that change at approximately 15 second intervals. Next, we create a Floating Window on the local device and do a “test”.

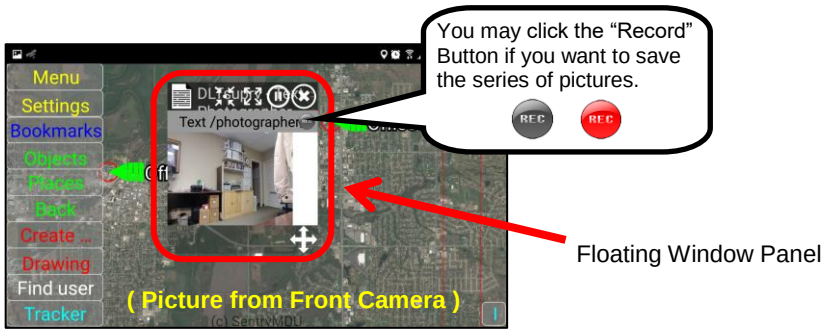


Now, for a real-world test … In this example, we have a mobile device resting against an office building window where the “back” camera is looking out the window, and the “front” camera is looking inside the office room.

On a separate mobile device, we are monitoring the following pictures. Here is an image from the Back Camera.

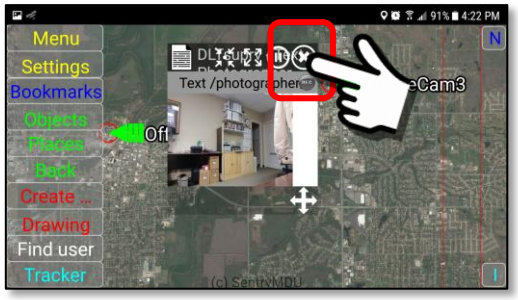


Here is an image from the Front Camera.
Picture PAIR changes on 15 second intervals.



Any recorded pictures will be available in the Data Archive on the local device.

When finished, close the floating window panel.



Text /voice recognizer/

The **Text /voice recognizer/** Feature, will provide a continuous speech-to-text conversion text panel on a mobile device. Although you may open the feature directly, it is designed to be used as a “floating window” opened on a device (see **Section 9.13** for details on setting up a Floating Window).

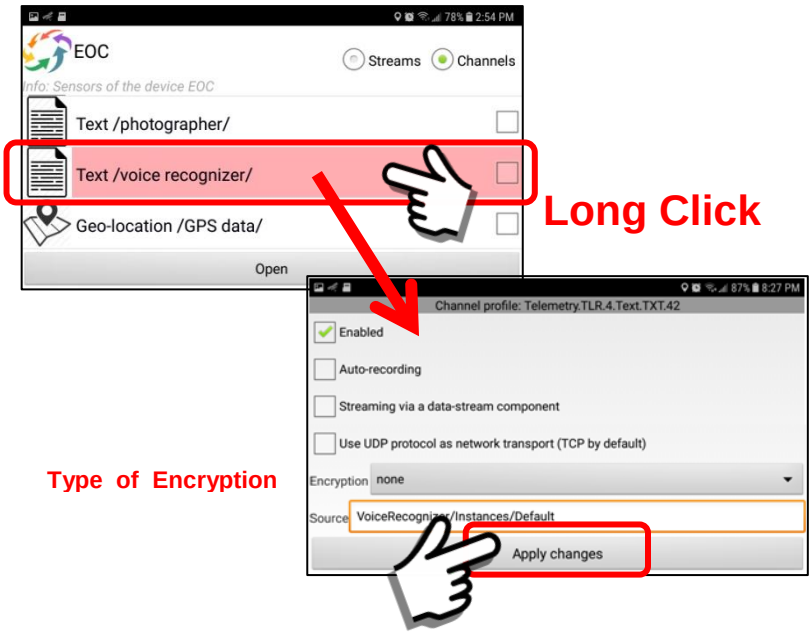
The **Text /voice recognizer/** Feature gives you the ability to make a timestamped transcript of a conversation and store it as a text file on your device.

> **Important Note: Speech-to-text conversion is not an exact science. This features uses the “native” speech-to-text conversion code available in YOUR version of Android. As the Android OS gets better, the accuracy of the speech-to-text conversion will also get better. Currently only English is supported.**

You will have several options available with this feature.

(1) To make a “Text Copy” of the conversation, click on the RECORD Button on the Floating Window Panel.
(2) If you collapse the Floating Window panel to the Notification Bar, recording will stop. However, when restored, the panel will begin processing speech-to-text once again. Click the Record button to begin recording again.
(3) Recorded data is stored in the Data Archive on the local device. It will be marked as a “Text” Data Type.

This is the settings panel for the “Text /voice recognizer/” Feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the Picture Data to multiple users. We recommend that this channel be unchecked.

When “checked”, this indicates that the *Text /voice recognizer/* channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Use UDP protocol as network transport

Factory default setting = “unchecked”

As a default setting we typically use TCP as the default network transport protocol. If you need the additional speed of UDP-RTP and are familiar with configuring and testing this protocol, it is an available option.

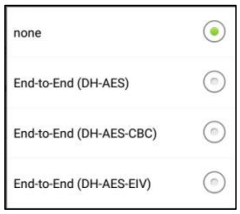
e. Encryption

Factory default setting = “None”

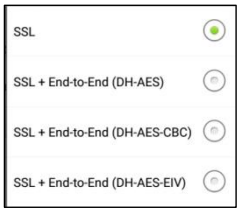
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting =
"VoiceRecognizer/Instances/Default"

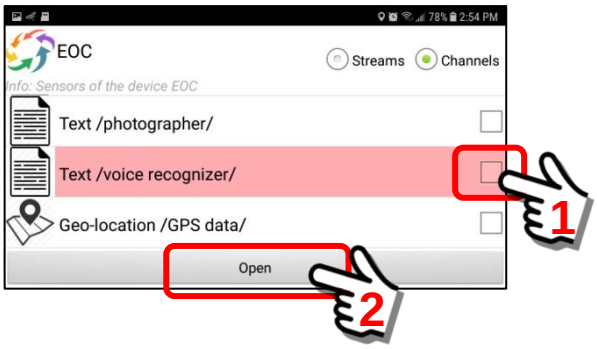
The "Source" data entry location is for specifying a data source and settings format for the sensor channel. Unless you know what you are doing, do not change this default Source.

Source String:

VoiceRecognizer/Instances/Default

Screen example for **Text /voice recognizer/**

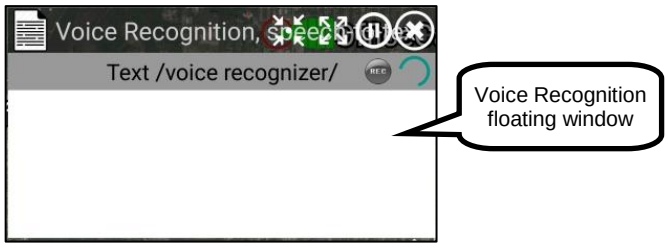
To view a screen example, put a "check" in the checkbox and click the "Open" Button.



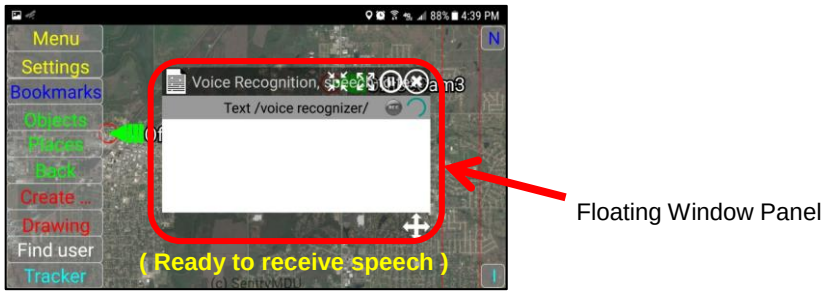
When testing, the screen will only display the top half of the display. The feature is designed to be used as a floating window. The screen below shows the “test” panel. Test now.

Now, for a real-world test … In this example, we have a mobile device resting on a table in a room. We have created a Floating Window panel (**Section 9.13** for details) of the “Text /voice recognizer/” sensor channel. We click to launch the feature.

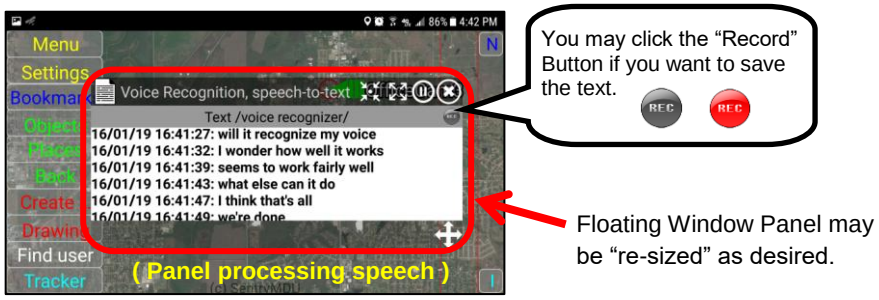
When the panel is first open, it takes a few moments for the device to be initialized and prepared to “listen” (perhaps 5 secs).



As you begin “talking” … the device will process the speech and display it on the screen.

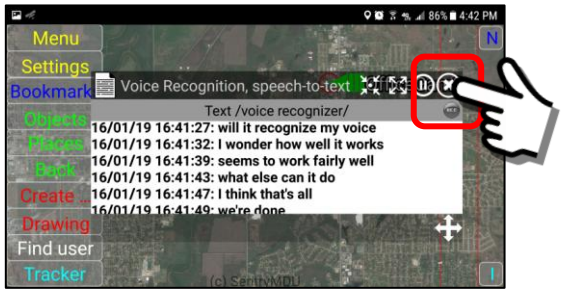


The panel will timestamp the processed text and scroll up as more text is received.



Any recorded text will be available in the Data Archive on the local device.

When finished, close the floating window panel.

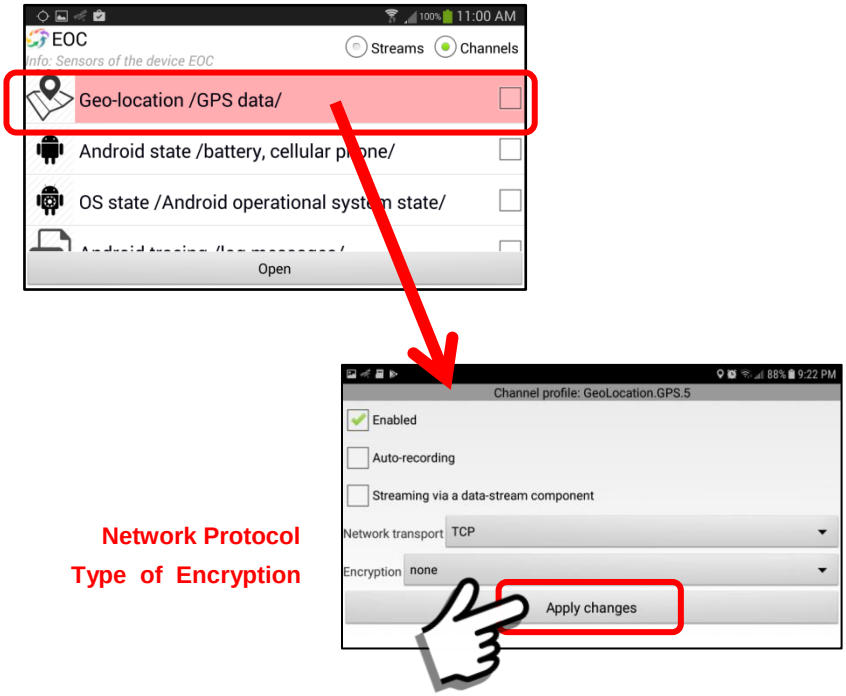


9. *Geo-location Sensors*

The Sentry MDU System has one (1) GPS/GLONASS sensor channel that provides the GPS data to the mobile device. This section will describe the channel and the corresponding "default" settings.

<u>Geo-location /GPS data/</u>

This is the settings panel for the GPS sensor. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



<u>The checkboxes and parameters are described as follows:</u>

a. Enabled checkbox

Factory default setting = "checked"

When "checked" this indicates that the feature is "enabled" on the device and can be activated by a User. If "unchecked" it cannot be started.

b. Auto-recording

Factory default setting = "unchecked"

When "checked" this indicates that whenever this sensor is activated it will "automatically" record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the GPS data. Other configuration options set the GPS reporting interval so streaming is not needed. We recommend that this channel be unchecked.

When “checked”, this indicates that the GPS channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

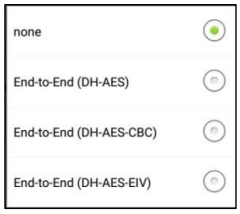
e. Encryption

Factory default setting = “None”

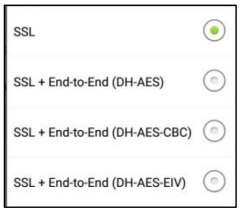
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)

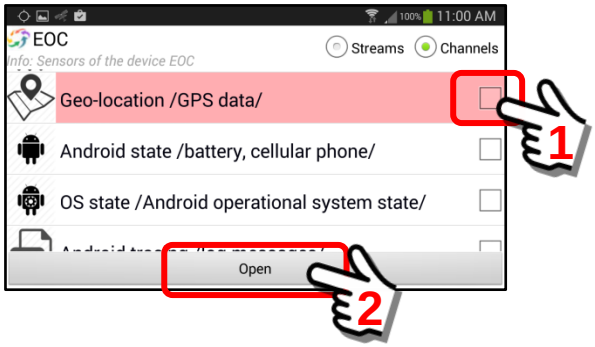


Main Configuration Menu (https/SSL encryption)

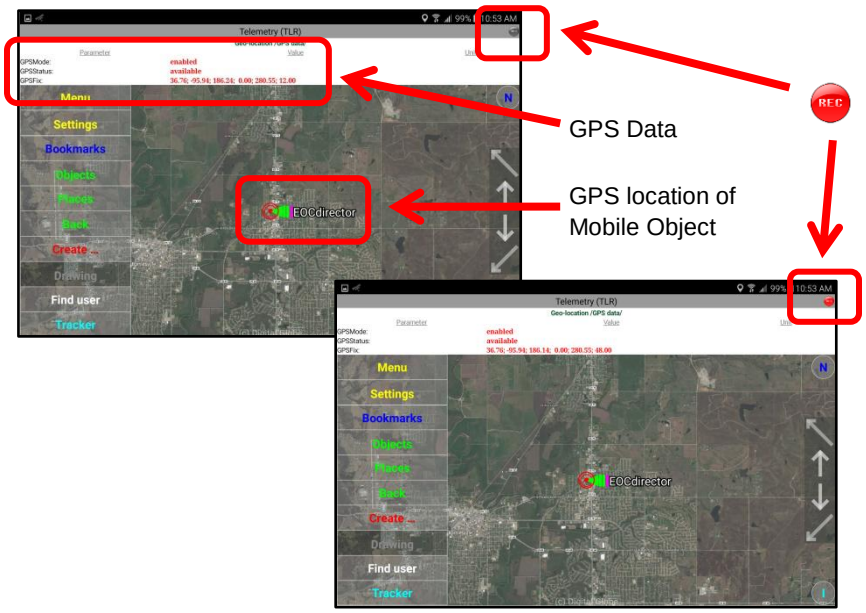


Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



GPS data and User location will be displayed.

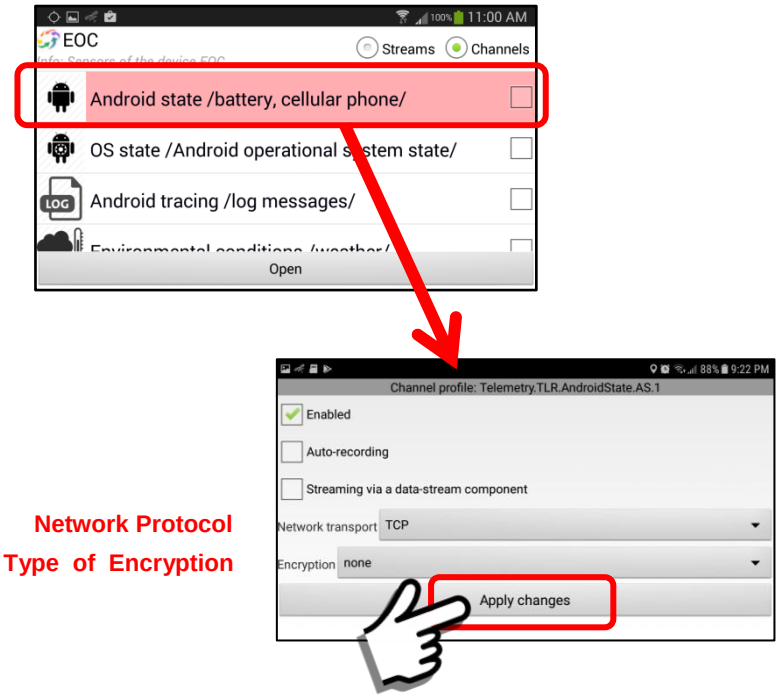


10. *Android state*

The Sentry MDU System has one (1) Battery Condition sensor channel that provides the battery voltage and charging data for the mobile device. This section will describe the channel and the corresponding “default” settings.

<u>Android state /battery, cellular phone/</u>

This is the settings panel for the Battery Condition sensor. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



<u>The checkboxes and parameters are described as follows:</u>

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the battery state data. We recommend that this channel be unchecked.

When “checked”, this indicates that the Battery State channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

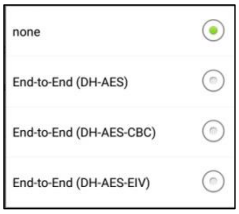
e. Encryption

Factory default setting = “None”

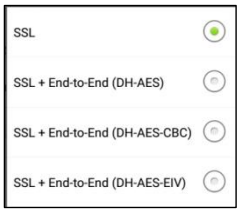
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)

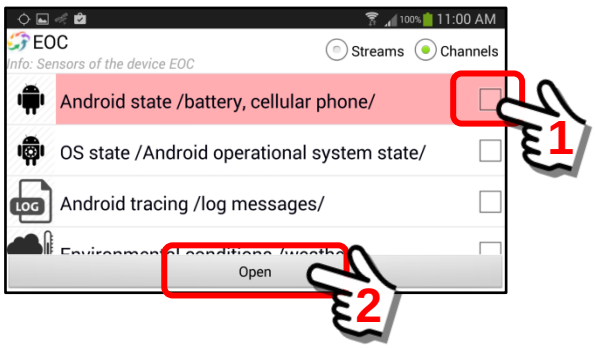


Main Configuration Menu (https/SSL encryption)

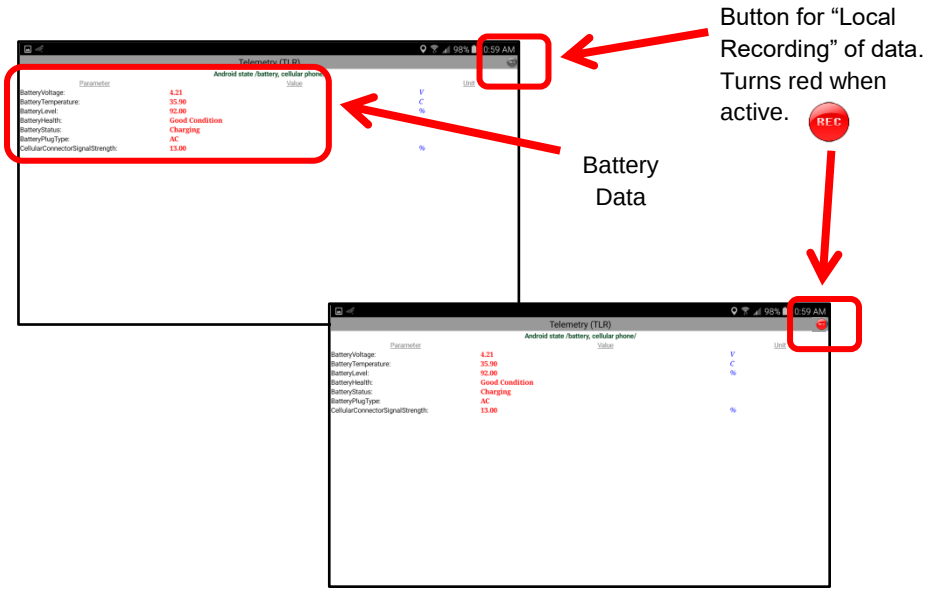


Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



Android state and battery data will be displayed.



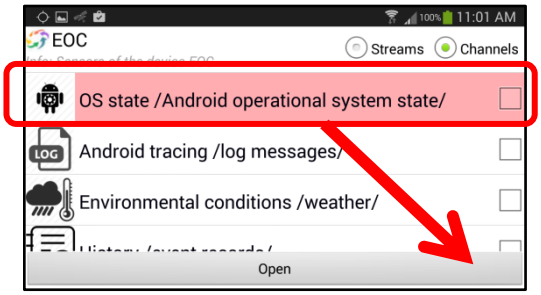
11. *Operating System (OS) state*

The Sentry MDU System has one (1) Operating System parameter channel that provides the CPU and memory usage data for the mobile device.

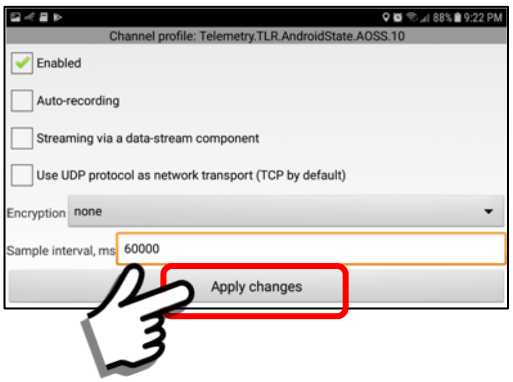
Typically this feature is only used for troubleshooting and development work. This section will describe the channel and the corresponding "default" settings.

<u>OS state /Android operational system state/</u>

This is the settings panel for the OS state sensor. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



Type of Encryption



<u>The checkboxes and parameters are described as follows:</u>

a. Enabled checkbox

Factory default setting = "checked"

When "checked" this indicates that the feature is "enabled" on the device and can be activated by a User. If "unchecked" it cannot be started.

b. Auto-recording

Factory default setting = "unchecked"

When "checked" this indicates that whenever this sensor is activated it will "automatically" record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the operating state data. We recommend that this channel be unchecked.

When “checked”, this indicates that the OS State channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Use UDP protocol as network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. If you need the additional speed of UDP-RTP and are familiar with configuring and testing this protocol, it is an available option.

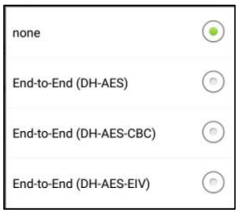
e. Encryption

Factory default setting = “None”

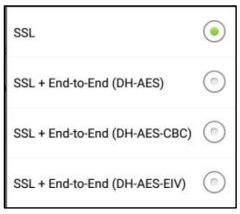
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



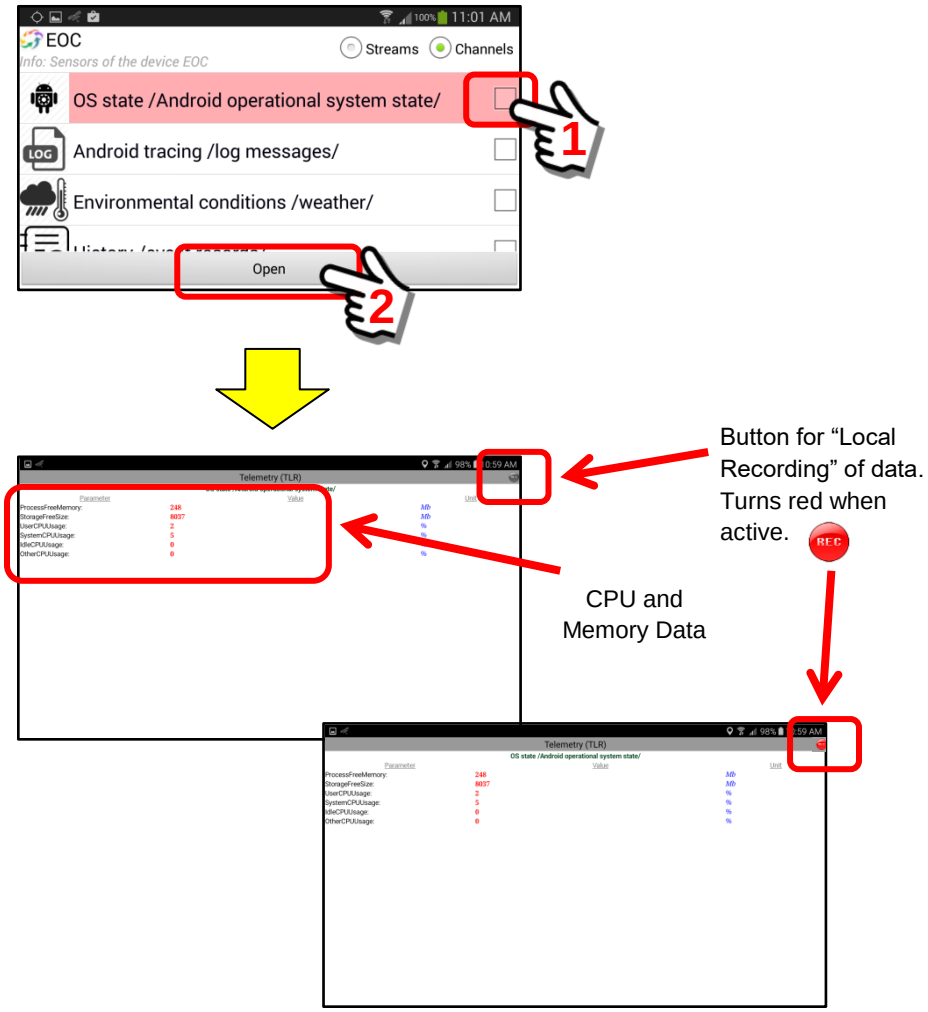
f. Sample interval, ms

Factory default setting = “60000”

When this sensor is activated it will retrieve data from the system operational state once every 60000 ms (60 secs). We recommend you leave this setting unchanged unless you are doing development work and need more relevant data.

<u>Screen example</u>

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



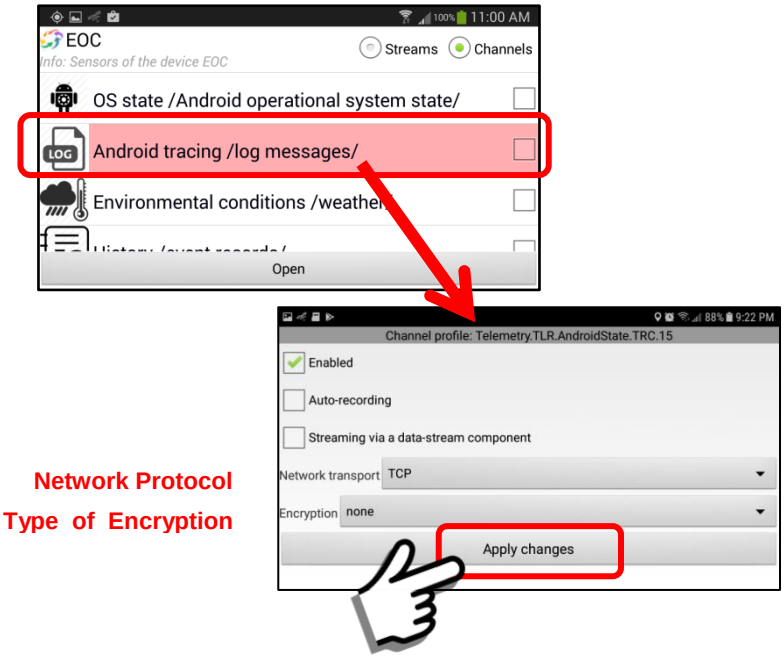
12. *Android tracing*

The Sentry MDU System has one (1) Log File monitoring channel that provides log file messages for the mobile device.

Typically this feature is only used for troubleshooting and development work. This section will describe the channel and the corresponding “default” settings.

Android tracing /log messages/

This is the settings panel for the Log Messages feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the log file data. We recommend that this channel be unchecked.

When “checked”, this indicates that the Log Messages channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

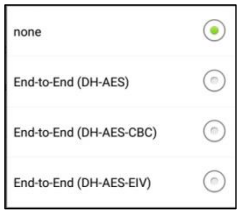
e. Encryption

Factory default setting = “None”

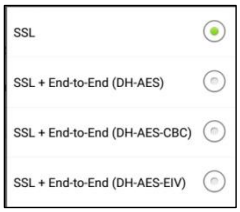
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)

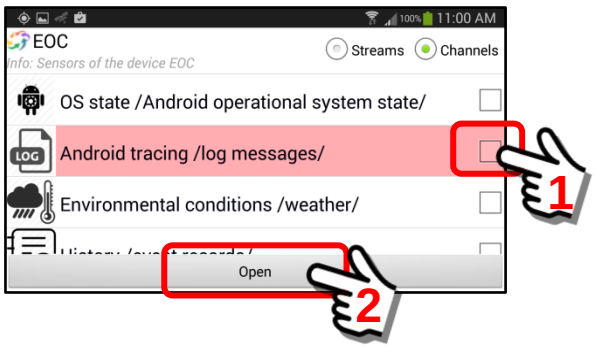


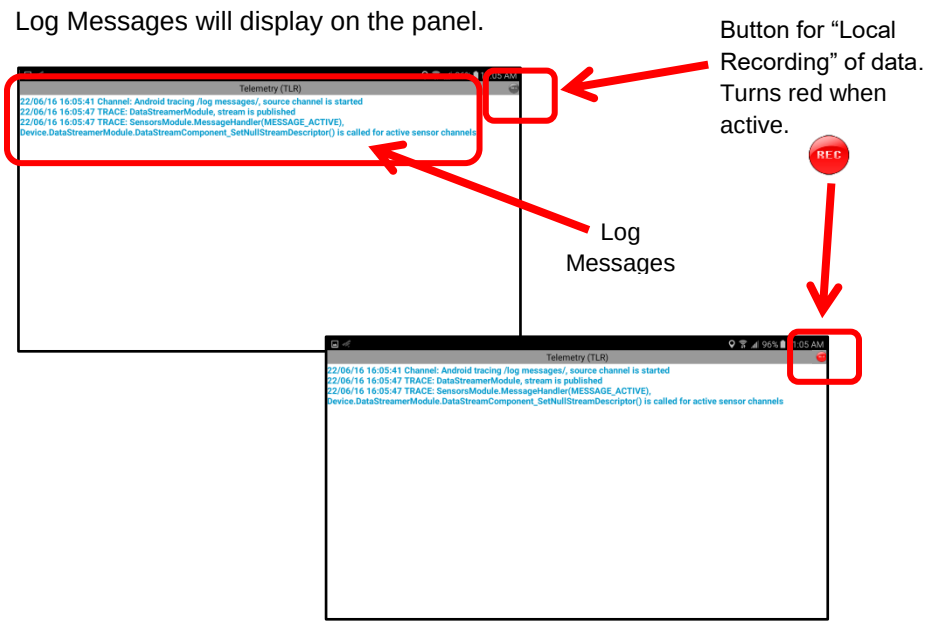
Main Configuration Menu (https/SSL encryption)



Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.




Log Messages will display on the panel.
Button for “Local Recording” of data. Turns red when active.
REC
Log Messages
Telemetry (TLR)
22/06/16 16:05:41 Channel: Android tracing /log messages/, source channel is started
22/06/16 16:05:47 TRACE: DataStreamerModule, stream is published
22/06/16 16:05:47 TRACE: SensorsModule.MessageHandler(MESSAGE_ACTIVE),
Device.DataStreamerModule.DataStreamComponent_SetNullStreamDescriptor() is called for active sensor channels

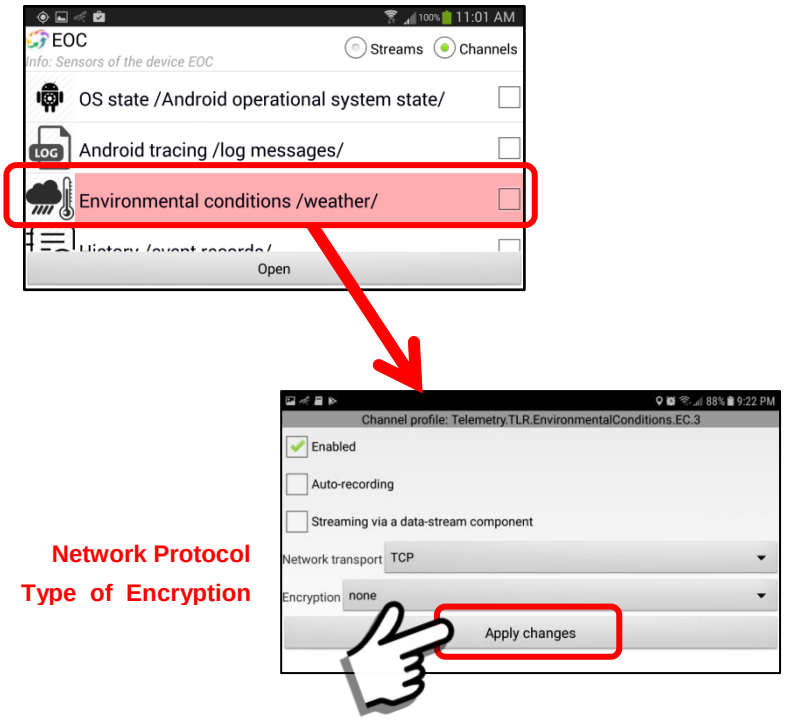
13. *Environmental conditions*

The Sentry MDU System has one (1) Environmental Sensor channel that provides data on the sensors that are integral to the mobile device. We call these “environmental sensors” because they monitor the environment around the mobile device such as Temperature, Pressure, Relative Humidity, Light, Acceleration, Magnetic field and Gyroscopic motion.

The number of available sensors depends on the particular hardware device. This section will describe the channel and the corresponding “default” settings.

Environmental conditions /weather/

This is the settings panel for the Environmental Sensors feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In some situations it may be necessary (or desirable) to stream the environmental data from a remote device. This could be situations where you want to know if a “remote” mobile device is “moving” or not. These sensors will detect motion. Unless you have a special reason to activate this channel, we recommend that this channel be unchecked.

When “checked”, this indicates that the Environmental Sensors channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do

NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

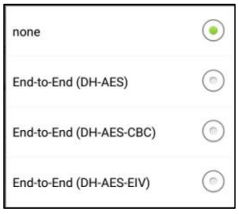
e. Encryption

Factory default setting = “None”

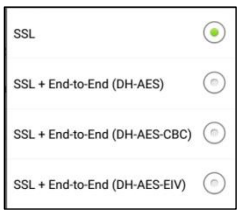
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



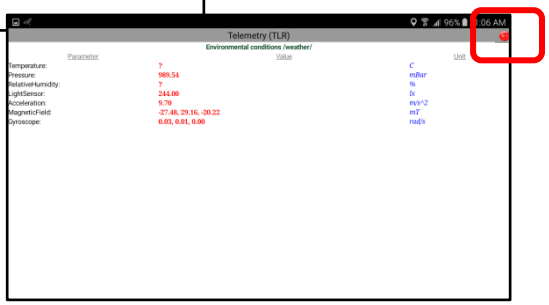
Main Configuration Menu (https/SSL encryption)



Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.

Button for “Local Recording” of data. Turns red when active.



Sensor Data

Temperature
Pressure
Relative Humidity
Light Sensor
Acceleration
Magnetic Field
Gyroscopic Motion

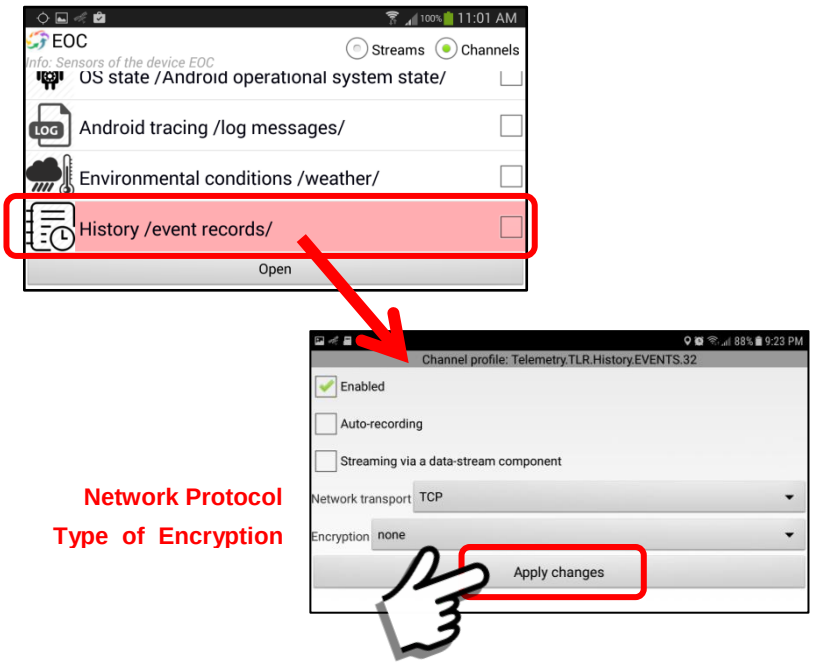
14. *History*

The Sentry MDU System has one (1) History channel that provides event records for the mobile device.

Typically this feature is only used for troubleshooting and development work. This section will describe the channel and the corresponding “default” settings.

History /event records/

This is the settings panel for the Historical Records feature. If you make changes to these settings, make sure to click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary (or desirable) to stream the History data. We recommend that this channel be unchecked.

When “checked”, this indicates that the Historical Data event record channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

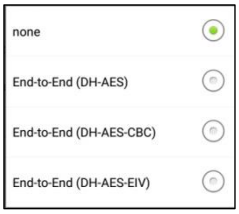
e. Encryption

Factory default setting = “None”

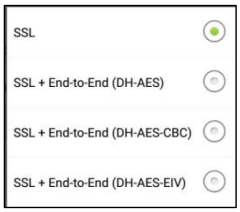
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)

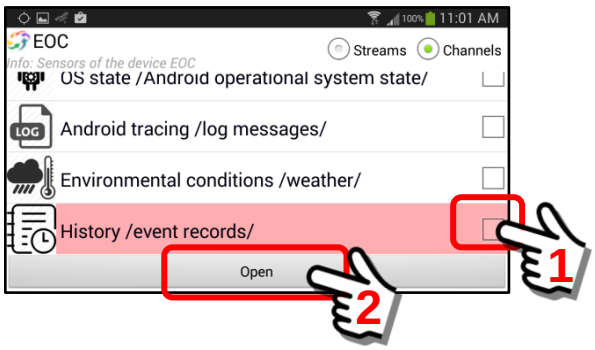


Main Configuration Menu (https/SSL encryption)



Screen example

To view a screen example, put a “check” in the checkbox and click the “Open” Button.



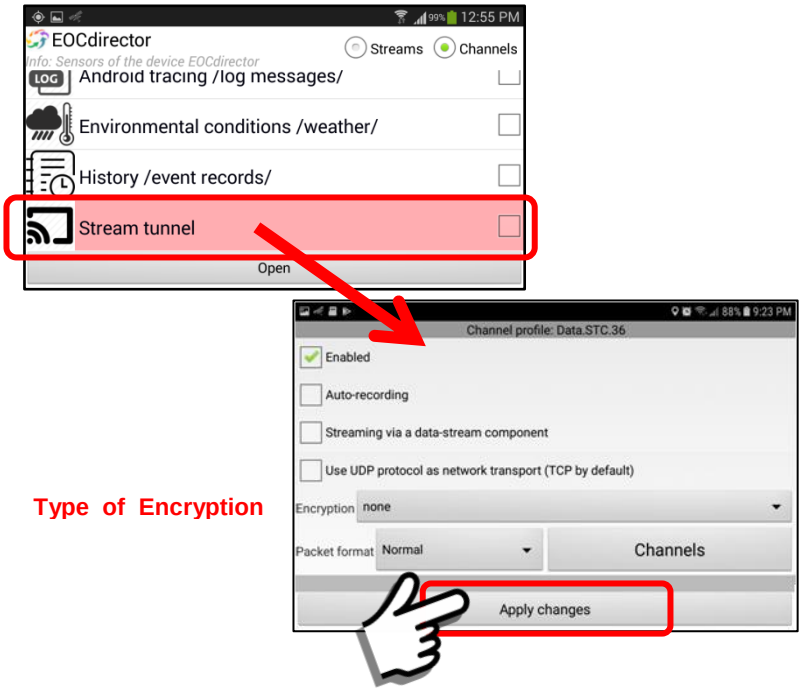
15. *Stream tunnel*

The Sentry MDU System has a Stream Tunnel feature that allows a User to configure multiple data channels into a single combined data "stream". A Stream Tunnel would be a group of channels desired by a User that are grouped by some common meaning.

This feature enables a user to pre-configure multiple data streams, save it as a stream tunnel, and transmit the data as a single network connection (reducing bandwidth requirements).

Stream tunnel

This is the settings panel for the Stream Tunnel feature. If you make changes to these settings, make sure to click the "Apply changes" Button to save the Channel Profile.



Type of Encryption

The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = "checked"

When "checked" this indicates that the feature is "enabled" on the device and can be activated by a User. If "unchecked" it cannot be started.

b. Auto-recording

Factory default setting = "unchecked"

When "checked" this indicates that whenever this sensor is activated it will "automatically" record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications it is not necessary to stream the content of the Stream Tunnel data. We recommend that this channel be unchecked unless you use this custom configuration often.
When “checked”, this indicates that the Stream Tunnel channel is to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Use UDP protocol as network transport

Factory default setting = “unchecked”

As a default setting we typically use TCP as the default network transport protocol. If you need the additional speed of UDP-RTP and are familiar with configuring and testing this protocol, it is an available option.

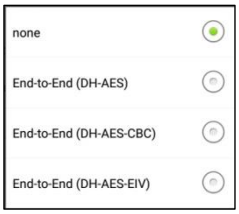
e. Encryption

Factory default setting = “None”

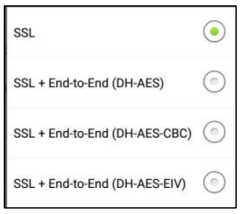
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Packet Format Button

Factory default setting = “Normal”

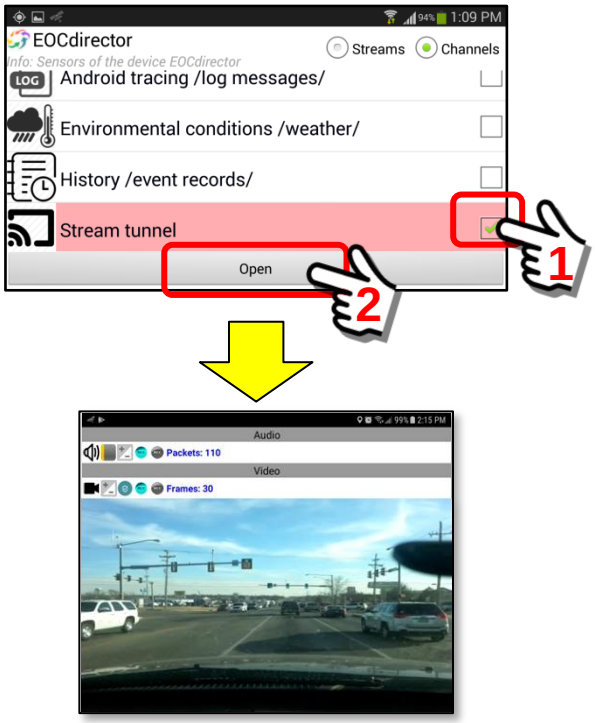
The Stream Tunnel channel encapsulates each data packet of its content and transmits via a communications connection. This option defines a method of encapsulation. The “Normal” setting (default) encapsulates the channel packet “as is”. The “Zipped” option squeezes a channel packet using the ZIP method before encapsulation. Depending on the mobile device hardware specifications (ie CPU, memory, etc) the added step of the ZIP option may or may not improve performance. A user should experiment to get the best balance of performance.

g. Channels Button

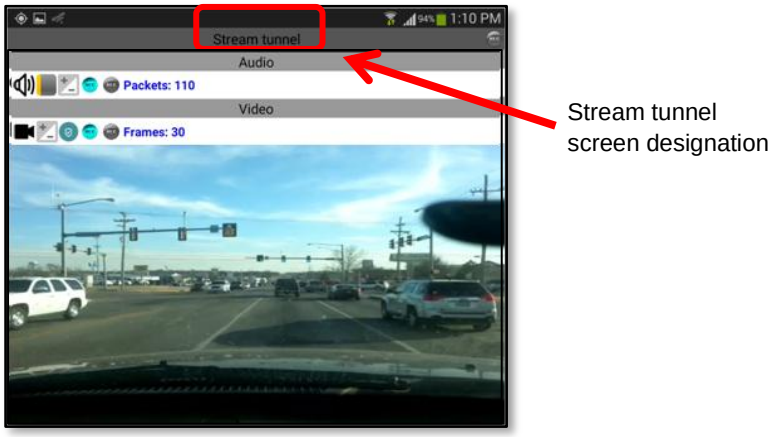
This button provides for the selection and configuration of the sensor channels that will be included in the Stream Tunnel. Additional menu options are available under this tab..

<u>Screen example</u>

To view a screen example, put a “check” in the checkbox and click the “Open” Button.

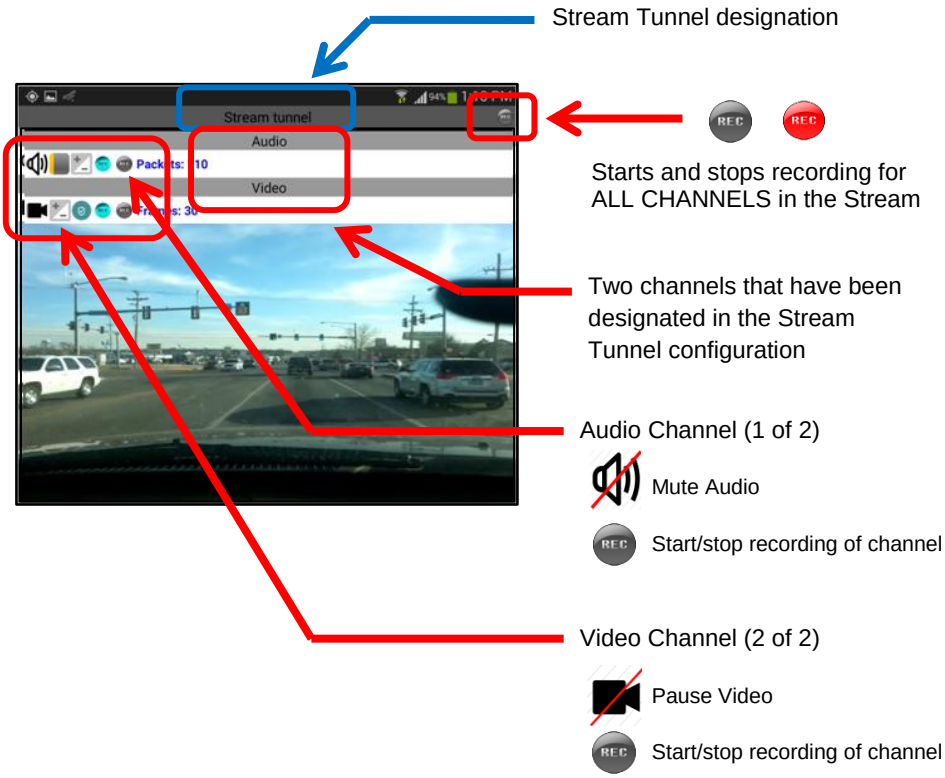


A typical application for a Stream Tunnel would be a pre-configured Audio/Video transmission. And, of course, these can be set up as a “Bookmark” selection from the list.



<u>The parts of a Stream Tunnel display</u>

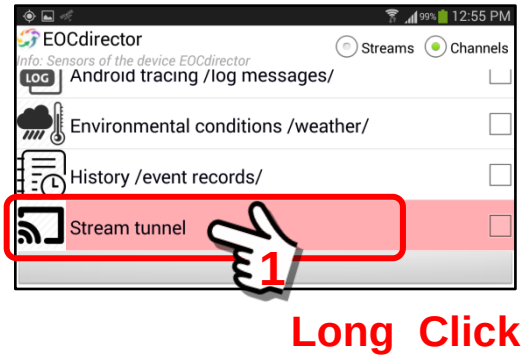
A Stream Tunnel sensor display is similar to other sensor displays. However, users have the option to record data from a single channel or the combined group of channels. This concept will be illustrated below with an example of two channels.



Setting up a Stream Tunnel

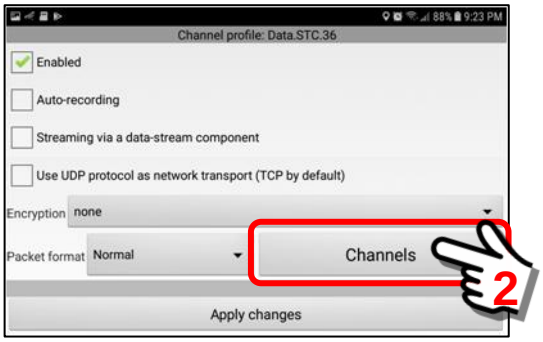
This example will illustrate how to set up and configure the Stream Tunnel feature.

To open the configuration options, perform a “Long click” on the Stream Tunnel title in the Sensors Listing.



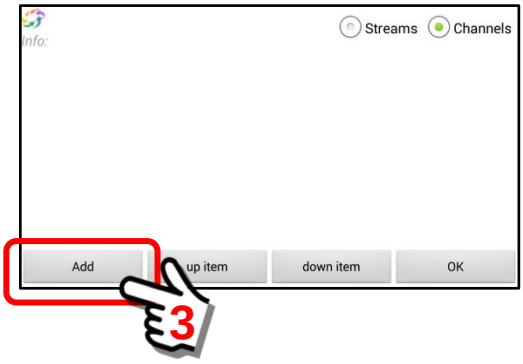
Long Click

Select the “Channels” Button. From here we will select the sensor channels we want to combine into our Stream Tunnel.



You will be presented with a blank screen in which you will select and load the channels for the Stream Tunnel.

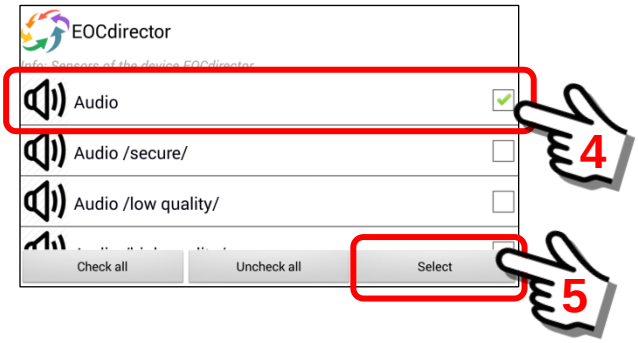
Click on the “Add” Button, lower left of the panel.



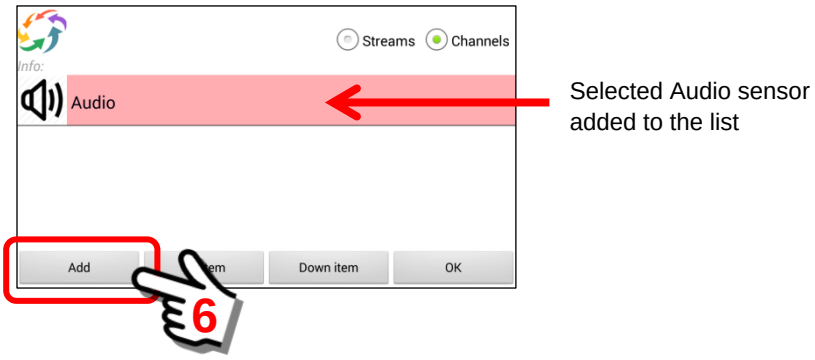
Clicking the “Add” Button will open a listing of the available Sensor Channels that may be included in a Stream Tunnel.

In this example, we will select an “Audio” channel to add to our Stream Tunnel configuration.

Click on the “Audio” sensor.

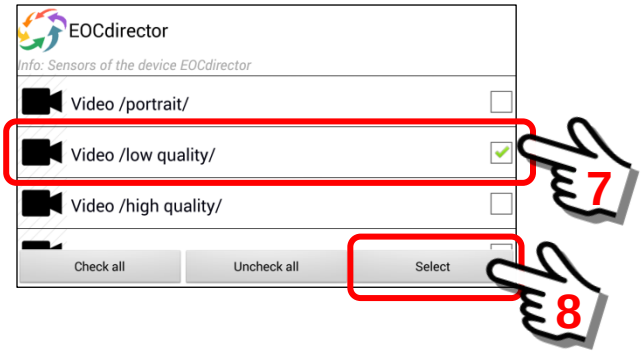


When the sensor is selected, the screen will return to the configuration panel. The selected sensor (ie Audio) should now be displayed.



Now, we will selected another channel … “Video /low quality/” and add it to our Stream Tunnel configuration. Click on the “Add” Button to again select a sensor from the available listing.

Select the “Video /low quality/” item from the list.

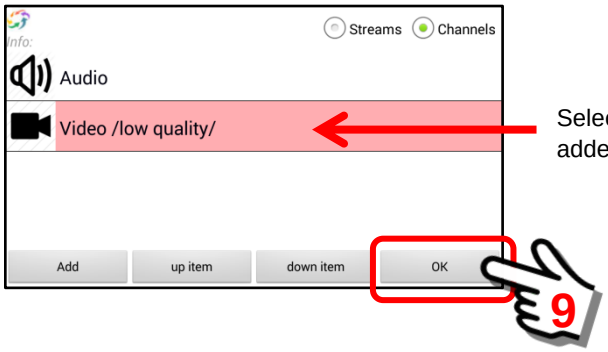


Important Note: Do not select duplicate sensors for streaming. For example, do not select multiple video sensors to stream data since each would have

different parameters for the same camera device. This would result in an error.

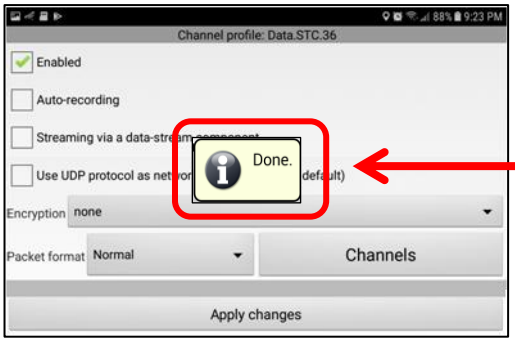
We now have two sensors that are added to the Stream Tunnel configuration.

When you are finished, click the “OK” Button to save the changes.



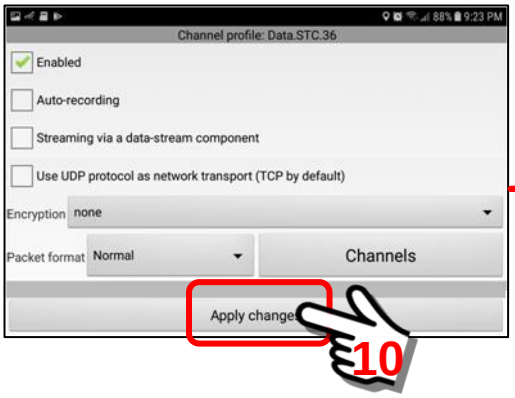
Selected Video sensor added to the list

The Stream Tunnel configuration screen will now be displayed. If adding the new configuration is successful, you will see a “Done” message displayed for a few seconds.



Indicates that the adding of sensor channels was completed.

The final step is to apply the changes to the User Settings. Click on the “Apply changes” Button at the bottom of the screen.



Note:
You MUST click the Apply Changes Button or the configuration will not be saved.

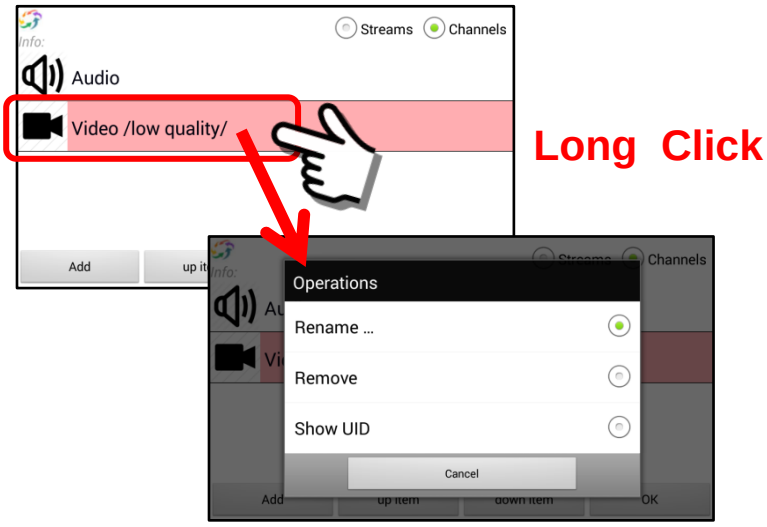
The Stream Tunnel configuration is now complete for two channels (Audio and Video).

Additional Screen Options

The Stream Tunnel feature has many of the same editing options as other features in the Sentry MDU Application. These will be highlighted below.

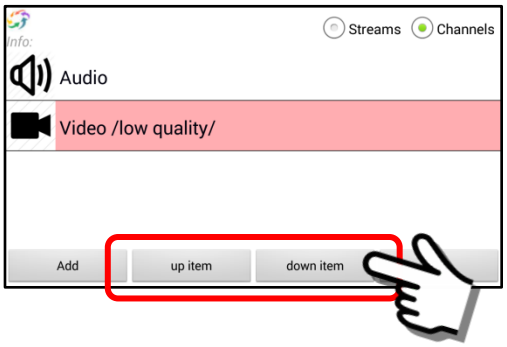
To rename or remove a channel

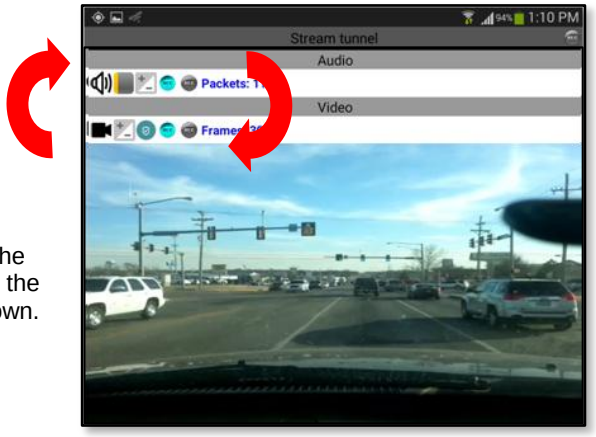
Perform a “long click” on the sensor channel.



To change the order in which channels are displayed

The “Up item” and “Down item” Buttons allow a user to change the order in which the channels are displayed on the panel.





Note:

You may adjust the ORDER in which the channels are shown.

15.2.18. The “Recorders” button (settings and schedules)

Overview:

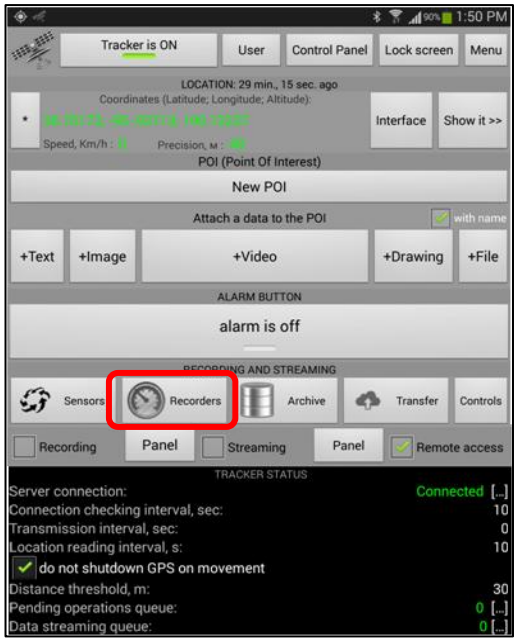
The “Recorders” button provides a user access to the setup and configuration of data recording on the mobile device. Depending on the type of mobile device the sensors that may have data recorded are as follows:

a. Audio (microphone sensor)
b. Video (2 camera sensors, front and back)
c. Geo-location (GPS / GLONASS Satellite sensor)
    i. Geo-Coordinates
    ii. Altitude (meters)
    iii. Speed (Km/hr)
d. Temperature (internal device temperature, C)
e. Barometric Pressure
f. Light Sensor
g. Acceleration
h. Magnetic Field
i. Gyroscope
j. Cellular Network Signal Strength
k. Battery Indicators (Voltage, Charging, % Charge remaining)

All of these sensors may be recorded either locally or remotely. Information may be collected and stored for future analysis.

Tracker Panel – “Recorders” Button:

The “Recorders” Button is located on the left-lower middle of the Tracker Panel. This button will allow user access to the recorder setup and configuration on the local mobile device.



This “Recorders” Button, located on the Tracker Panel, is the primary method for a User to record sensor data on their mobile device. Although the Recorders Button on the Mobile Object Panel may be used (accesses many of the same functions), the Recorders Button on the Tracker Panel is the preferred location for configuring the data recorders.

> **Important Note #1: Access to the recorders (turning them on-off) from a remote device** (assuming security credentials allow) **do not provide notification on the local device that another user(s) has accessed the recorders.**
>
> **Important Note #2: All users have the option to TURN OFF the “Remote Access” option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the system will show that the “Remote Access” feature has been turned off. See Section 15.2.24 on how to turn off the Remote Access feature.**

Description of the “Recorders” function and features:

The Sentry MDU System offers almost unlimited options for recording data. Users have the ability to combine sensor channels into a variety of configurations and then “record” that data for analysis/review later.

We recommend users have a thorough understanding of the Sensors Section (**15.2.17**) since the recorders simply activate the Channel Profile settings that the user has specified for a particular sensor.

The Sentry MDU System has 47 pre-configured recorder options available to the User. Since each recorder option includes one or more sensor channels we will review this topic by selecting the most commonly recorded sensor groups … Audio and Video.

<u>The following recorder groups are available:</u>

Audio recorder

Video recorder

AudioVideo recorder

AV recorder

Geo-location track

Environmental conditions

Android state

Android OS state

Android tracing

History events

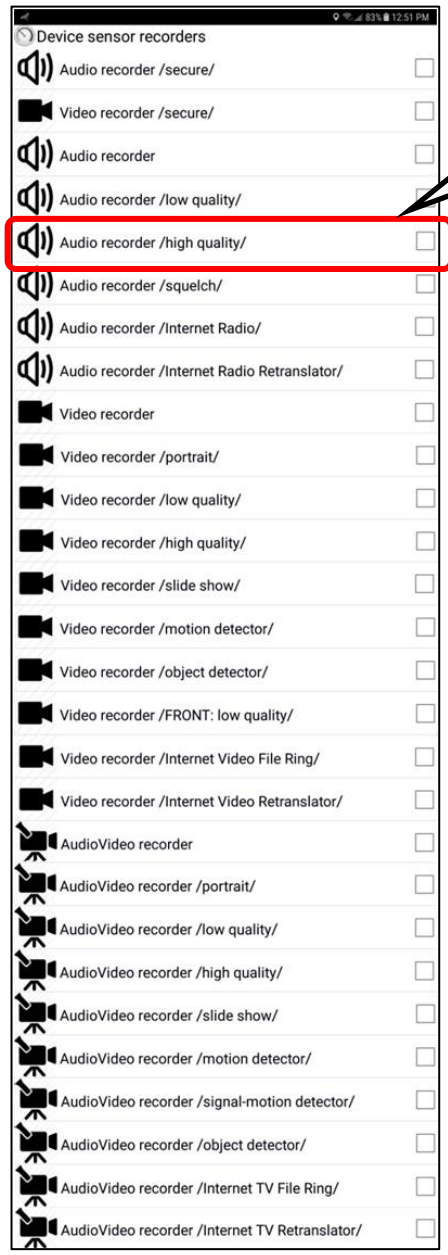
1. ***Parts of the "Recorders" Panel.***

A click on the "Recorders" Button from the Mobile Object Panel opens a Recorders Panel. The parts of the Recorders Panel are identified as follows.

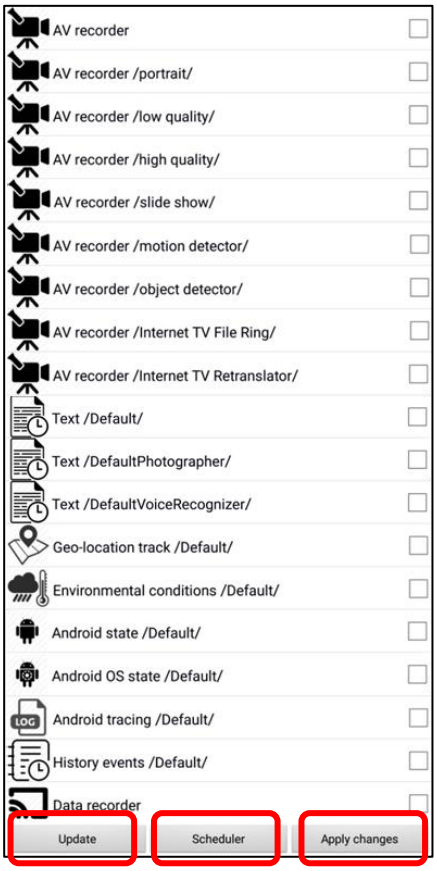
A full list of the different Audio, Video, Audio-Video, and other pre-configured sensor recorders.

All recordings are stored in the "Archive" section of the device.

These recorders are installed with a set of "default" factory configuration settings. We recommend that these settings are reviewed and adjusted to meet the capability of your mobile device.



Pre-configured recorder option which uses settings from the selected Sensor Channels.



Click this button to apply changes

A scheduling feature to start-stop recording at a pre-determined time.

Updates the current states of the recorders in the event some of them are "active".

2. *Special features of the recording function*

This section will highlight some of the special features available in the recording function.

Differences between the AudioVideo Recorder and AV Recorder

Both the AudioVideo and AV Recorder options use 2 sensor channels (audio and video). However, the way the sensor channels are implemented is different, as shown below.

AudioVideo Recorder

This recorder uses 2 independent sensor channels, an Audio Channel and a Video Channel. In the Data Archive each channel is shown as an independent file. Each may be independently played back. Allows maximum flexibility.

Sample AudioVideo display panel

AV Recorder

This recorder uses a combined audio-video channel to provide both audio and video. When the recording is played back it is played as a single audio-video output.

Sample AV Recorder display panel

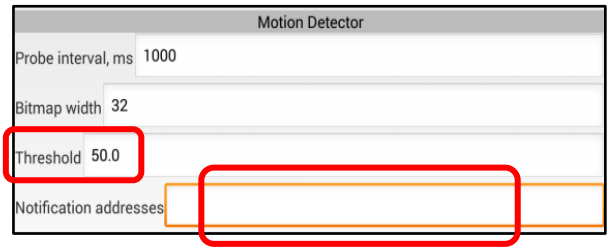
Motion Detection Feature

Motion detection is an available feature for the following recorders.

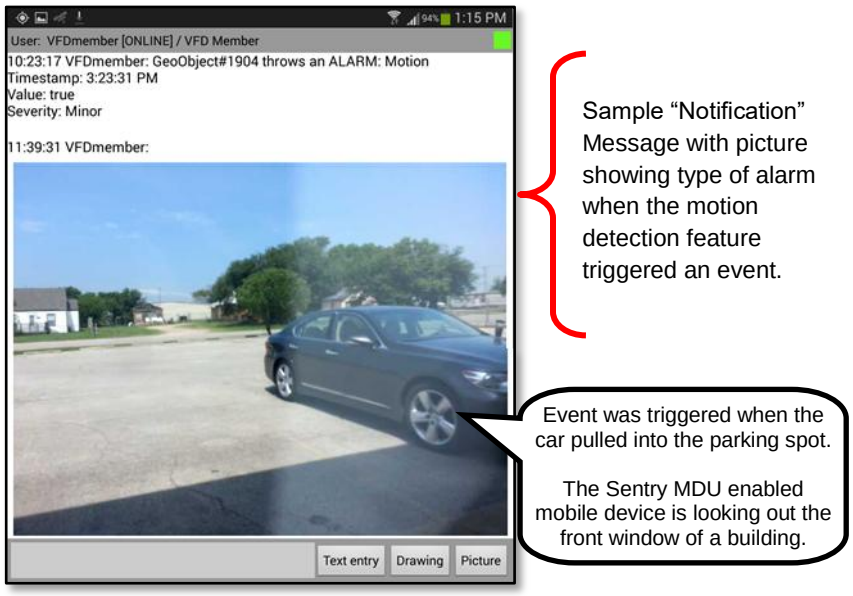
a. Video recorder
b. AudioVideo Recorder
c. AV Recorder

As implemented on the Sentry MDU System, this feature allows a User to set a sensitivity threshold for motion detection and includes the ability to “mask” certain parts of the scene in order to focus the motion detection to specific areas.

To activate motion detection, set the “Threshold” value to a number greater than “0.0”.

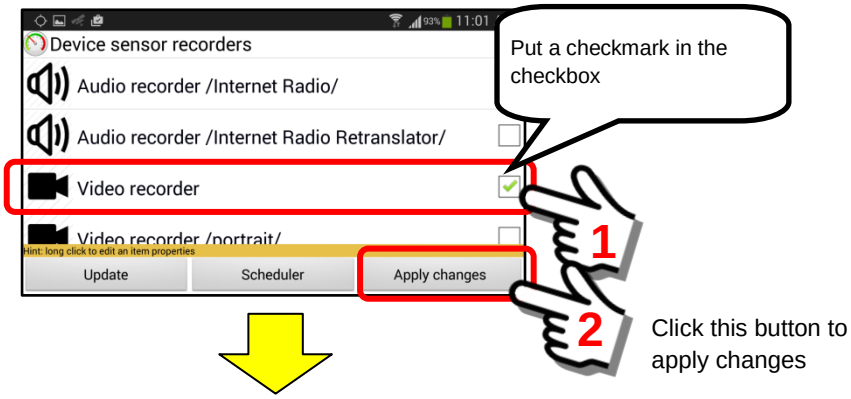


Another option is a “Notification” feature that will allow messages (and pictures) to be sent to other users on the network when a motion “event” occurs. Access to the SentryMDU Manager Desktop Client is required **to fully utilize** the notification option (masking), however the App does have notification capability (see individual Video Sensors for configuration options).



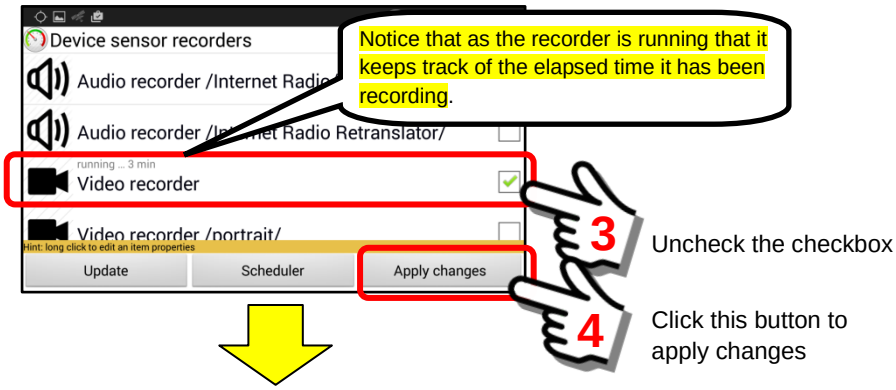
See Section 15.5 for an example using Motion Detection as part of a surveillance camera application.

3. ***Activating a recorder to capture data for future analysis.***
To activate a “recorder”, simply put a checkmark in the checkbox adjacent to the item and click “Apply changes”. The recorder will now continue to run until the checkmark is removed and the “Apply changes” button is clicked once again.

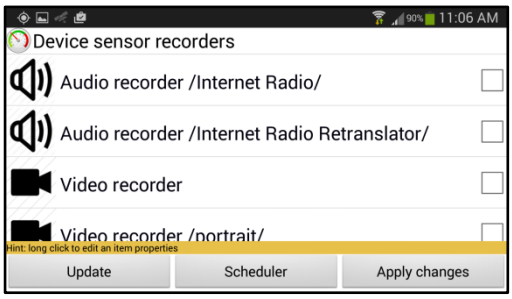


You may now do other things with the mobile device. The recording will continue until you turn it off (or someone with the correct security credentials turns the recorder off).

To turn “off” the recorder, visit the sensors recorder panel and “uncheck” the checkbox and click the “Apply changes” Button.

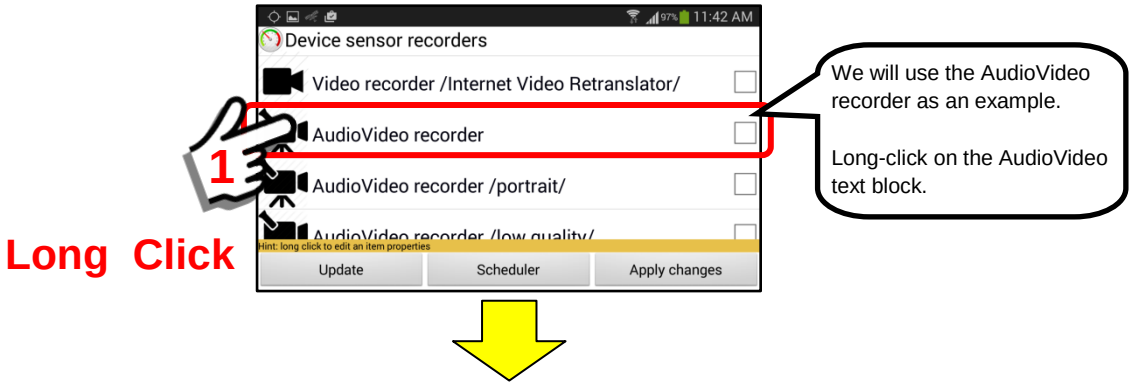


The recorder for the remote device has now stopped recording.

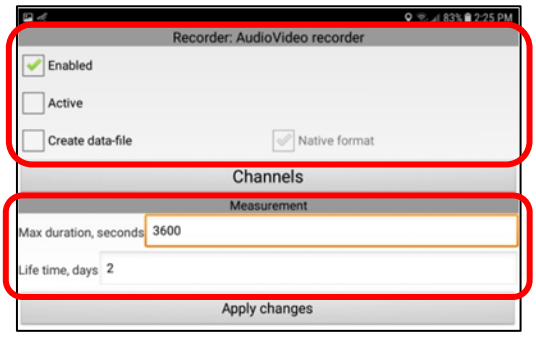


4. ***Review and change the recorder settings.***

During the installation of the Sentry MDU Application a set of default configuration settings are installed for all data recorders. These settings will work for most mobile devices. However, depending on your requirements, you may choose to modify these settings. This section describes how to make changes to the default settings.



Performing a “long-click” on the AudioVideo recorder text opens a configuration panel for the recorder. Depending on the type of sensor (ie audio, video, GPS, etc.) these configuration panels may be different.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Active checkbox

When “checked” this indicates that the recorder is currently “active” and recording data. When a user puts a checkmark in the box, the recorder will become “active” once the “Apply changes” button is clicked.

c. Create data-file checkbox

When “checked” this means that a recorded record will be automatically attached as a data file to the current user activity (see Content on User Information Panel). When active, this also allows the “Native format” checkbox to become available for user modification.

d. Native format checkbox

In the recording of audio-video, the recorded file uses the native Android AV format when saving the file. When “checked” this means there is no data conversion. When “unchecked” the application will convert the audio-video file to .mp4 format from the native AV format.

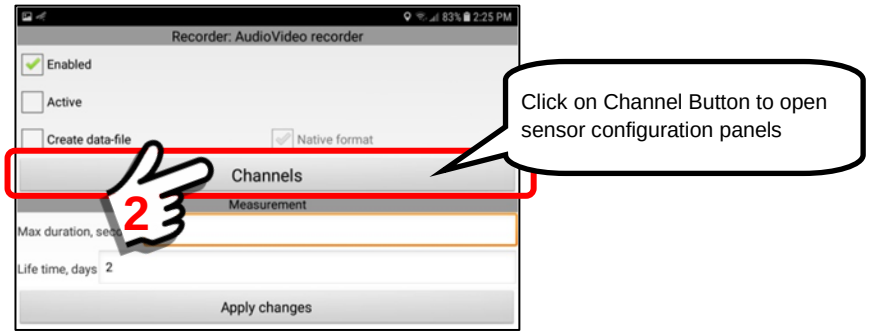
e. Max duration in seconds

This is the maximum length of a single data record in seconds. For example, the default is 3600 seconds (60 minutes). This means the application will record a single data file for a maximum of 60 minutes and then start a new file. If a recording is to last 3.5 hours, the resulting data files would be 3 files @ 60 minutes each and 1 file @ 30 minutes.

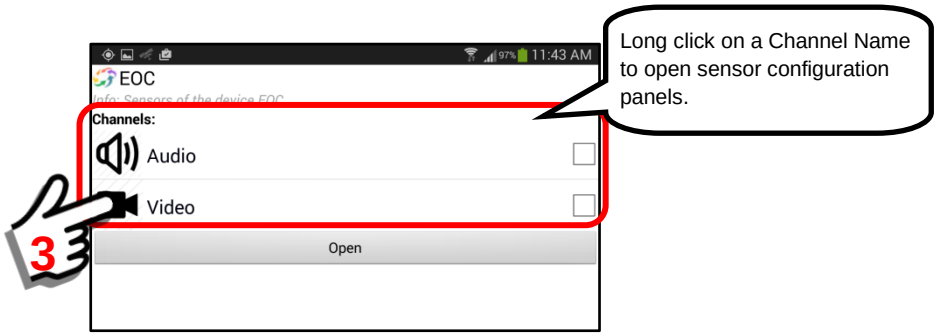
f. Life time in days

This is the “life time” of a recorded file on the mobile device before it is automatically removed. The Sentry MDU System has settings for the mobile device and the Data Server. They are set independently. This setting is for the mobile device and the default is 2 days. If a record is not saved to the Data Server it will be automatically removed after this time interval setting.

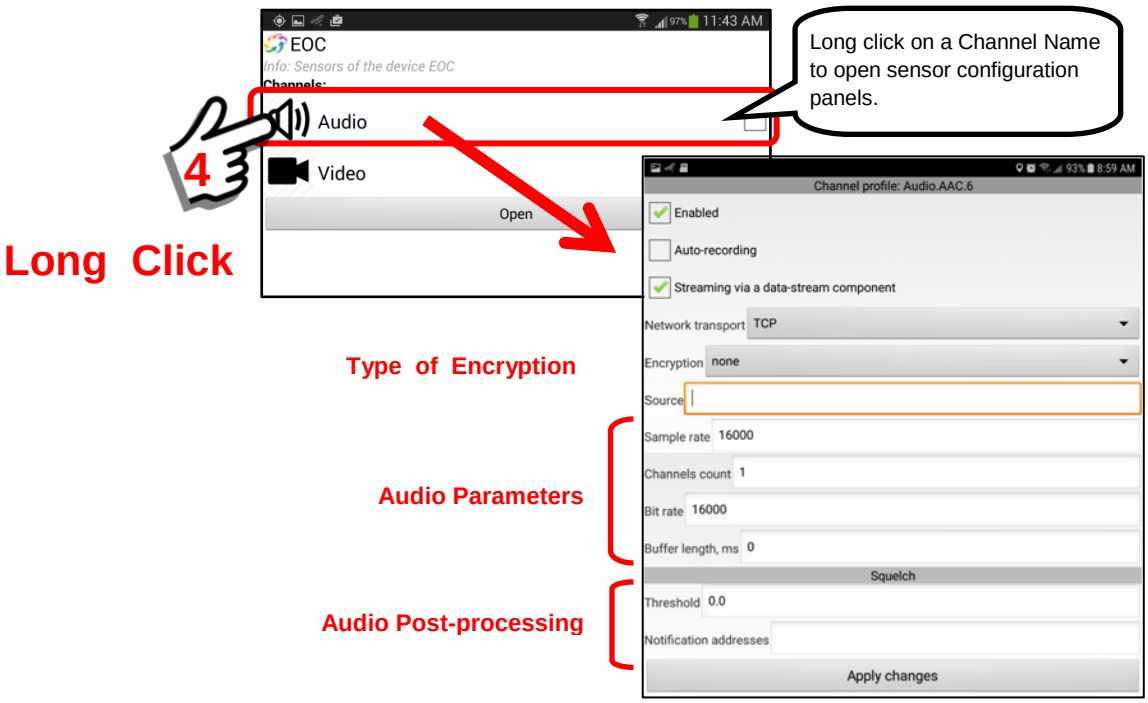
In addition to the recorder configuration options, the individual sensor elements (ie audio and video channels) have configuration settings as follows:



Clicking on the Channels Button will open the individual channels for the audio and video configuration. Select the sensor to be reviewed and perform a “Long Click” on the text name to open the panel.



In our example of an AudioVideo Recorder, we will first review the Audio Channel profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)

Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

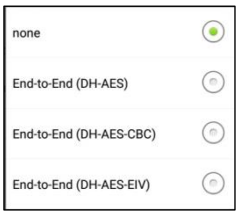
The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so onWe have also provided the UDP-RTP protocol as an "option". In some video applications the UDP-RTP protocol may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

e. Encryption

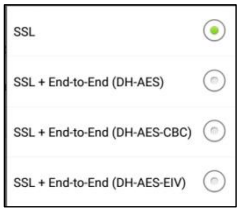
If during initial configuration, the Server Setting is set for "Secure Connections" (see Section 5.4) then the default will be "SSL". The "Encryption" selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

The "Source" data entry location is for specifying a data source for the channel. In our example of the Audio channel recorder, when the "Source" is empty

(default) this indicates that the microphone on the mobile device will be the source of the audio. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Sample Rate

This is the digital sampling rate of the internal audio processor of the mobile device. The default of 16000 Hz should work for most applications.

h. Channels count

The channels count indicates whether an audio source is “mono” (1) or “stereo” (2). Most of the time audio will come from the mobile device microphone, which is mono, or 1 channel. However, other audio configurations have sources which are stereo (2 channel) such as the Internet Radio or the Radio Retranslator feature. Those require the 2-channel setting.

i. Bit rate

This is the data transfer rate in “bits-per-second” of the audio data. The default of 16000 bps should work for most applications.

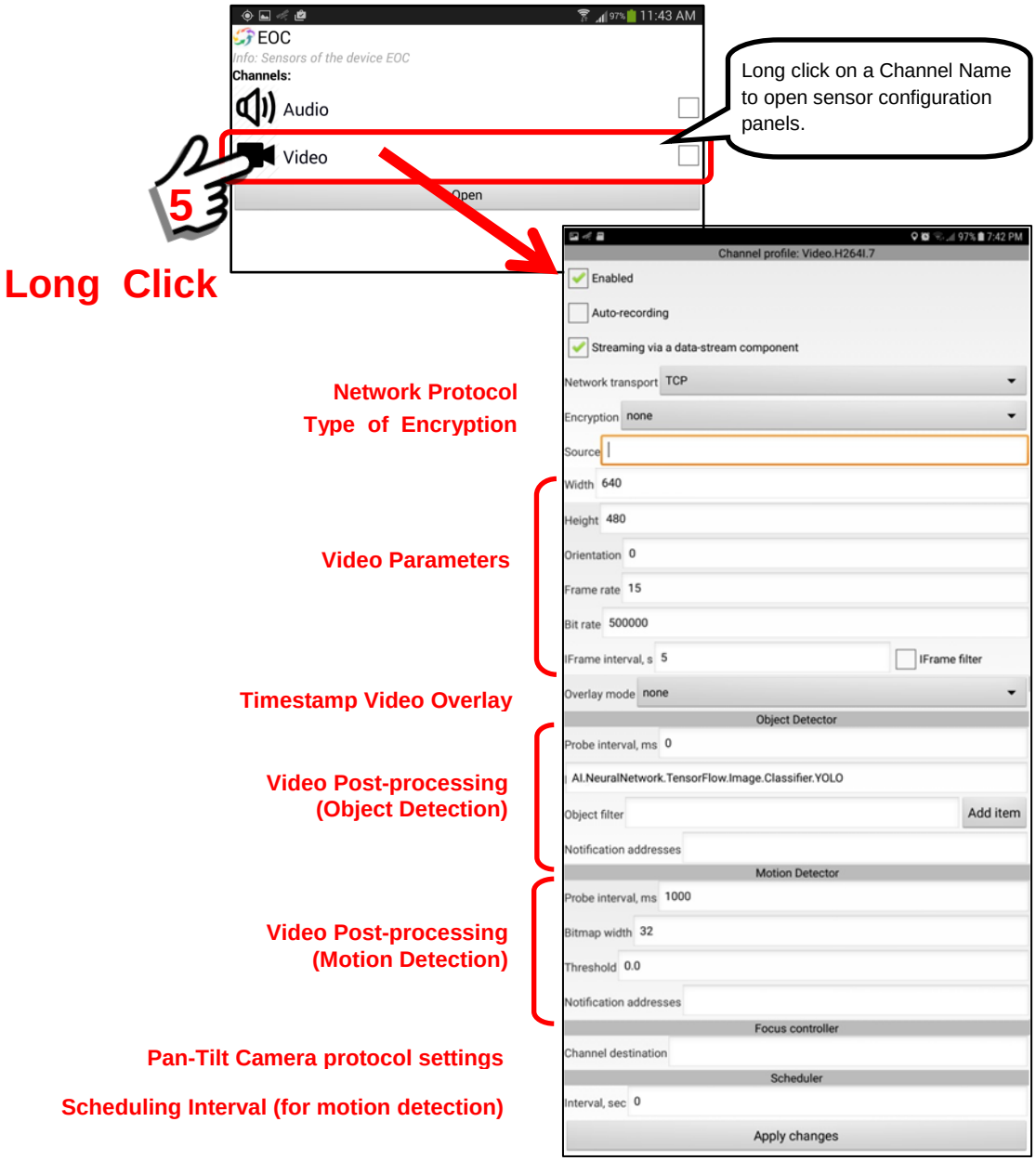
j. Squelch - Threshold

The squelch feature is an attempt to mute the audio output in the absence of sufficient audio amplitude in the transmission. As used in the Sentry MDU System, we remove pauses and periods of silence from the data stream in an effort to reduce buffering and lag time. A sound artifact must exceed a set threshold before it will be output by the mobile device. The “threshold” value is a number between 0.0 – 10000. The default setting is “0.0”, no squelch.

k. Squelch - Notification Addresses

The notification feature allows a User to send other Users a “message notification” when a trigger event occurs. In the case of the Audio “squelch” parameter, if a sound signal exceeds the set threshold, a message notification can be sent.

In our review of the AudioVideo Recorder, we will now review the Video Channel.



<u>The checkboxes and parameters are described as follows:</u>

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “checked”

In most applications where audio-video streaming is used, this “Video” channel is the one selected for streaming. We recommend that this channel be selected (checked). When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

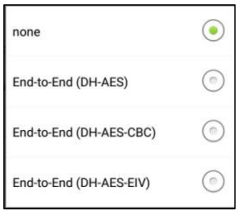
e. Encryption

Factory default setting = “None”

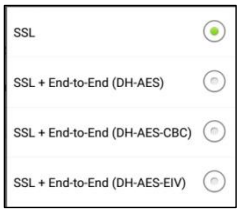
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the

source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be

sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something

that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

Factory default setting = “*A.I. Code reference”*

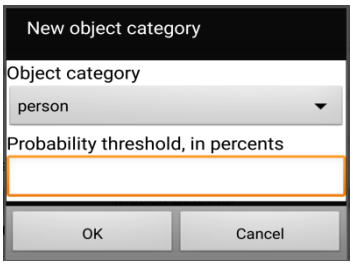
This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to

search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare

them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 0.0

The default is “0.0”, this means the motion detector feature is turned “off” and not active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event. Typically, a number between 25 – 50 works well, provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify

“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

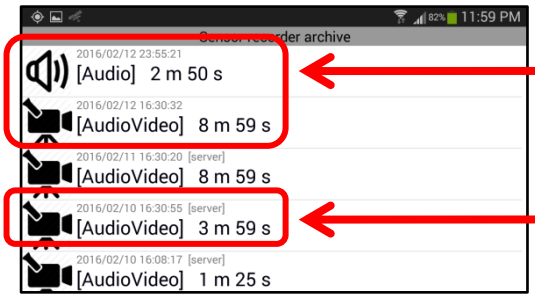
5. Recording multiple channels at the same time.

It is possible to run multiple data recorders at the same time. For example, you may choose to record audio, video, GPS location and accelerometer readings … all at the same time. However, remember that you may NOT record two video or two audio channels at the same time since each may have different parameter settings. This would cause an error.

6. Accessing the recorded material.

Recordings will initially be stored on the local device from which the recording was made (ie remote device). They can be accessed in the device “Archive” Section and transferred to the Sentry Data Server or to your mobile device as required.

Recordings stored in the Archive Section of the local device.



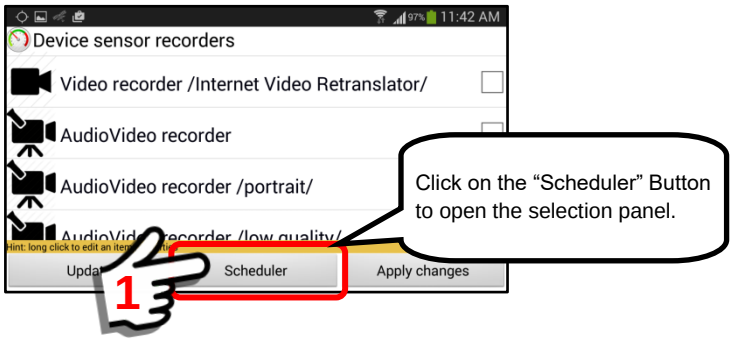
Notice two different types of recordings stored on the local device. Audio and AudioVideo.

This AudioVideo recording is stored on the “server”. See the [server] indicator.

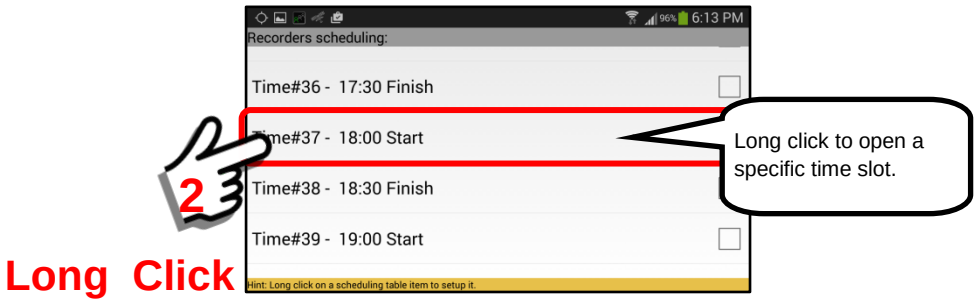
7. ***Setting up a recording schedule.***

The “Scheduler” Button feature allows a User to schedule the recording of any of the available recorders. The following steps should be followed:

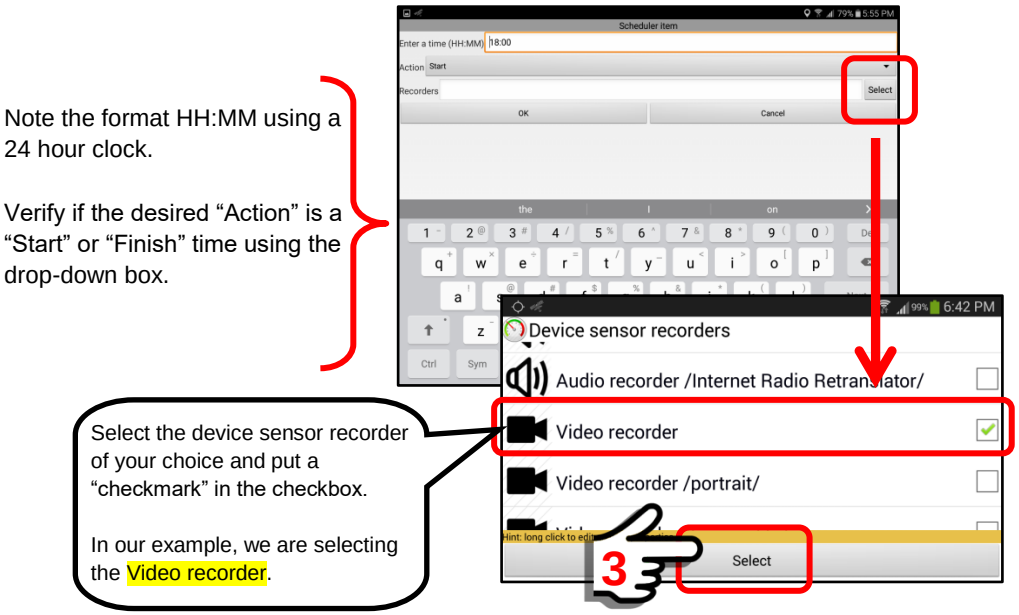
Select the “Scheduler” Button to access the scheduling feature.



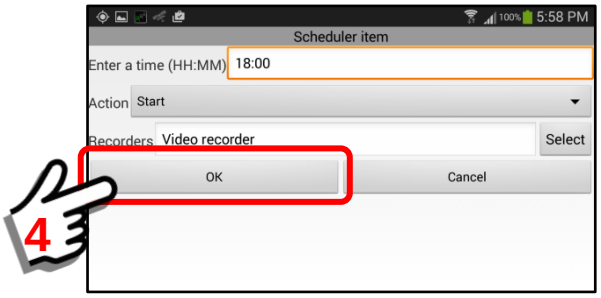
The scheduling feature provides 46 time slots during which various sensor recorders may be started and stopped. Perform a “Long click” to open a specific time slot scheduler configuration panel.



Select the time slots you wish to use.
Use the existing periodic time slots or enter your own time.



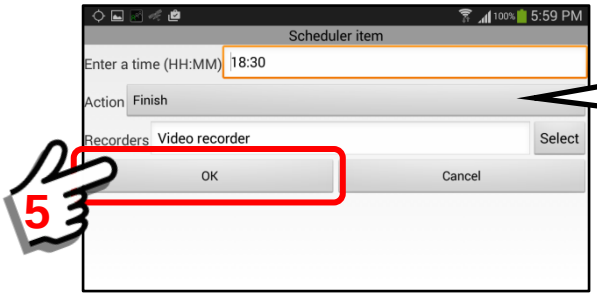
Once you have completed the “Start” time selection for the Video Recorder, your screen will look similar to the following:



You now have the time, action and video recorder specified.

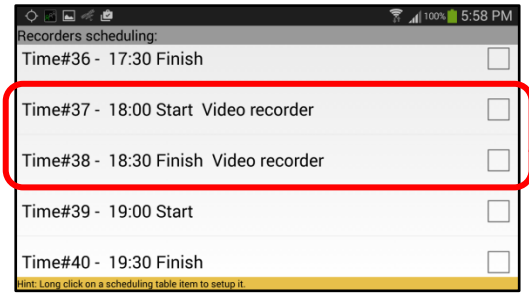
Click on the “OK” button to save the schedule settings.

Repeat the same procedure to establish a “Finish” time for the schedule. Click on the “OK” button to save the schedule.



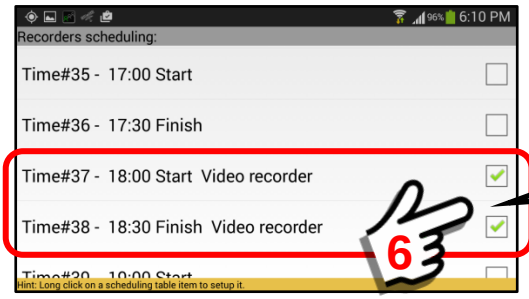
We have now established a “Finish” time and the recorder that will be used.

You will be returned to the Scheduler Panel. The start and finish times should be displayed adjacent to a time slot and the type of recorder should be indicated.



The schedule has now been specified for the Video Recorder.

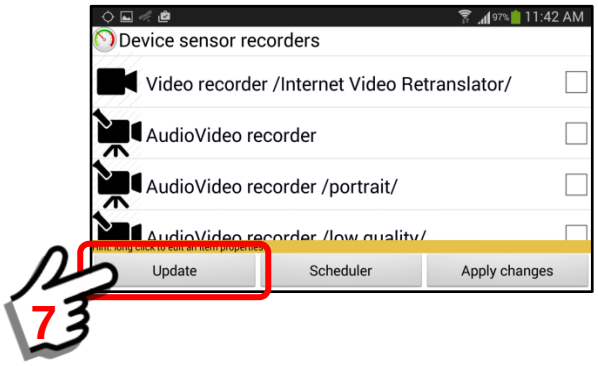
To activate the schedule, simply “click” and put a checkmark in the “Start” checkbox and the “Finish” checkbox.



The recording schedule is now active.

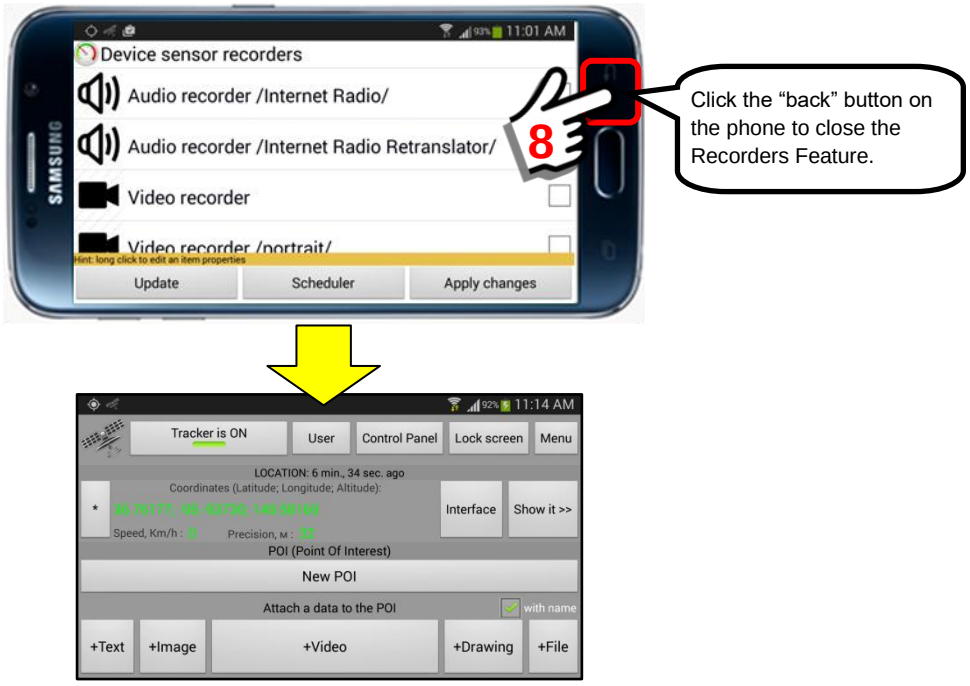
The schedule is now active. The recording will be triggered at the selected times. The schedule will stay active until it is turned off. Please note that you may combine “Motion Detection” (on the video recorder) with the scheduled actions. You may schedule a recording period but only activate recording in the event the device detects motion above a certain threshold.

In the event changes have been made to the sensors panel while you were setting up the schedule, it is always a good idea to click on the “Update” Button to ensure all changes are saved.

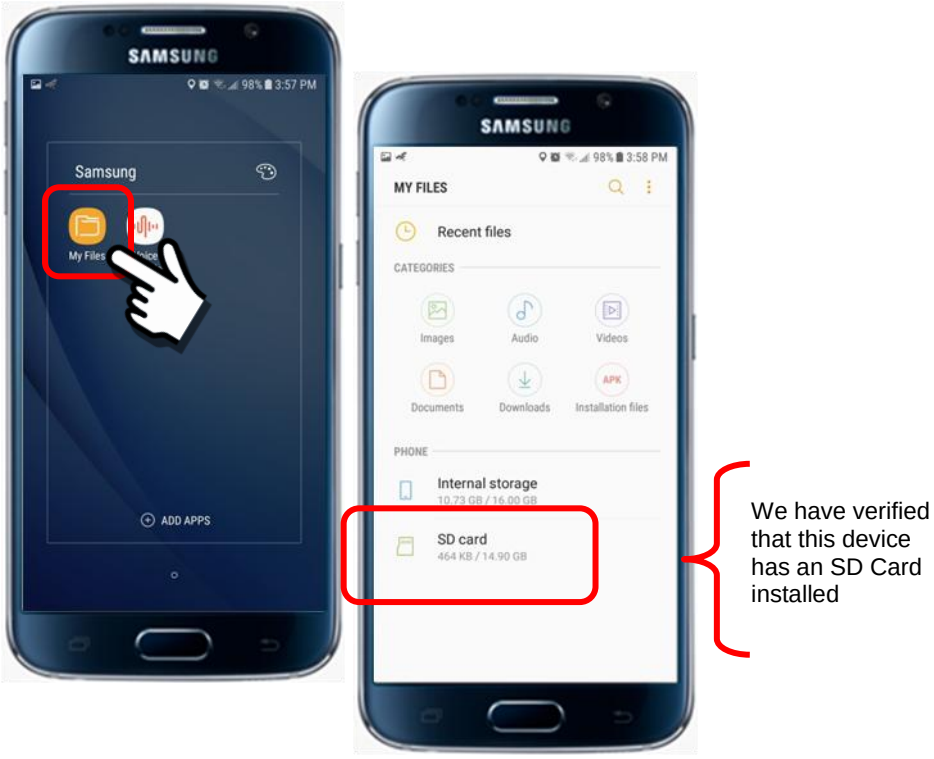


Important Note: The recording schedule will remain active until it is removed or turned off. Pay special attention because it is easy to “forget” that you have an active schedule. Also remember, that depending on the Security Settings of your account, other users MAY have access to create a recording schedule on your device.

Click on the “Back” button on the phone to return to the Tracker Panel.

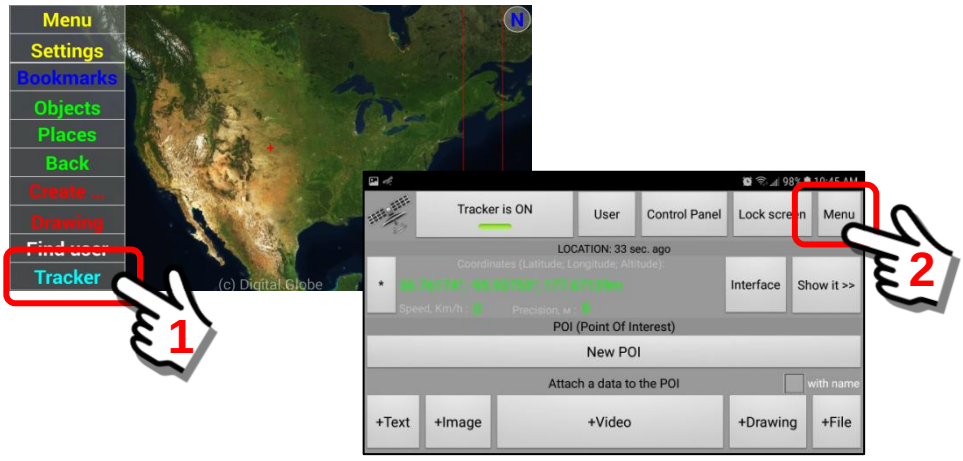


8. ***Set up an SD Card to store recordings (verify card is installed).***
To store a recording to an SD Card, make sure you have an SD Card installed. Depending on your device manufacturer your screens may be different, but you should have something similar to the following (showing a Samsung phone):



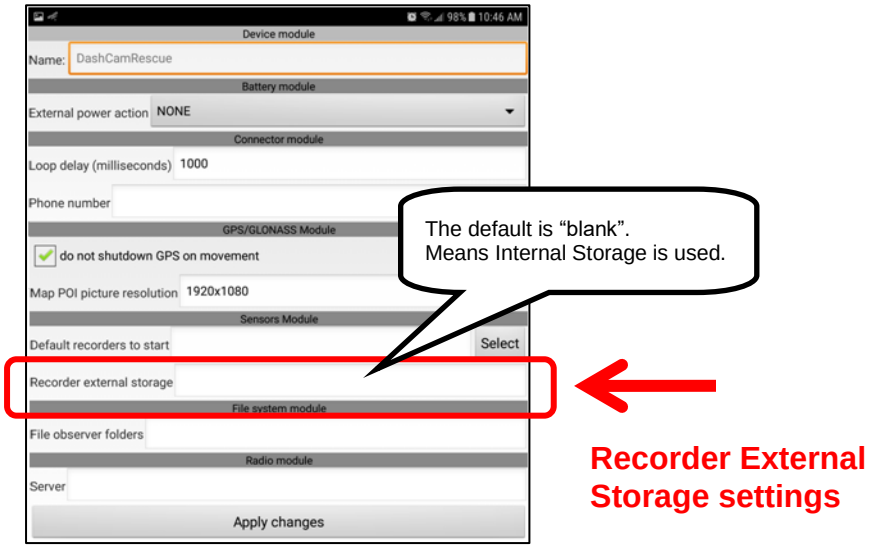
9. ***Set the "Device Profile" module for Recorder External Storage***
By default, the SentryMDU App will record all data to files stored on the "internal" memory of the device. In order to store (transfer) files to external storage (ie SD Card) we must configure a setting in the Device Profile.

<u>Open the Tracker Panel, click on the Menu Button</u>



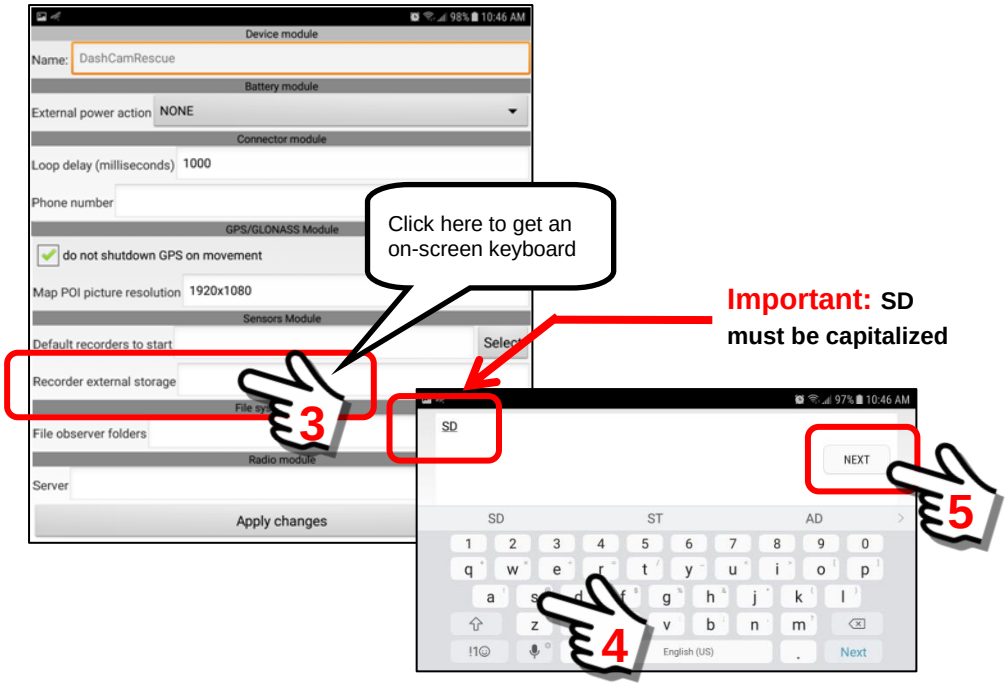
Review the **Recorder External Storage** Option on the Panel

By default, the “Recorder External Storage” option field is “blank”. This means that any data files that are stored are stored on the internal memory of the device. In order to use “external storage” (ie SD Card) we must indicate that an SD Card is to be used.



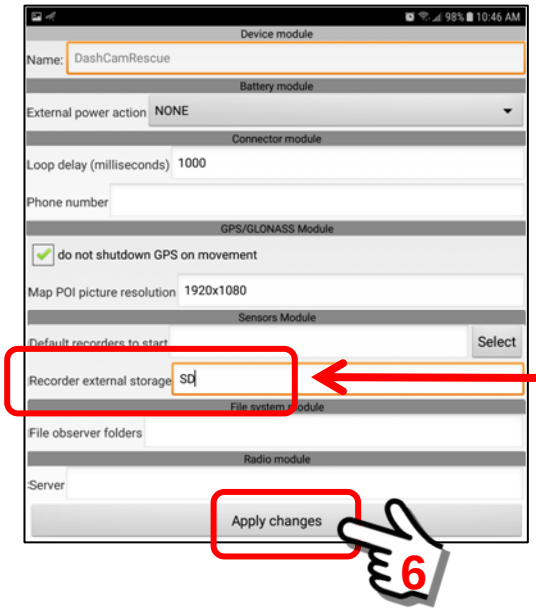
Edit the Recorder External Storage to designate an SD Card

Enter the letters … **SD** to indicate an **SD Card** is the external storage location for the files. It is **REQUIRED** that the letters **SD** are capitalized.



Save the changes to the Device Profile Panel

The Device Profile for the mobile device has now been changed to indicate that an SD Card will be used for Recorder External Storage. Click “Appy changes” to save the settings.



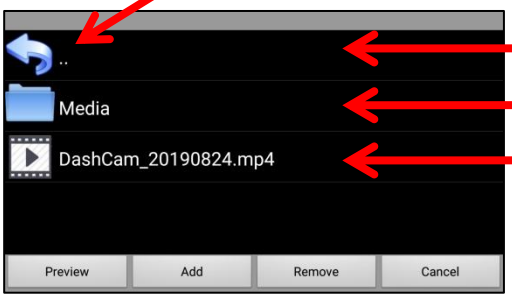
We have designated an SD Card to be the external storage

The “Recorder External Storage” feature is now enabled. This means that the Sentry MDU System will now store recorded files on the SD Card at specified intervals.

Stored files will be put into the User Defined ROOT directory

For a default configuration, the file location of the External Storage will be at the ROOT level of the SentryMDU file system on the SD Card as shown below.

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /



SentryMDU ROOT directory

User created sub-directory (optional)

User installed file in the Root directory

See **Section 5.9** on how to create sub-direcories if you wish to segregate your files into logical folders.

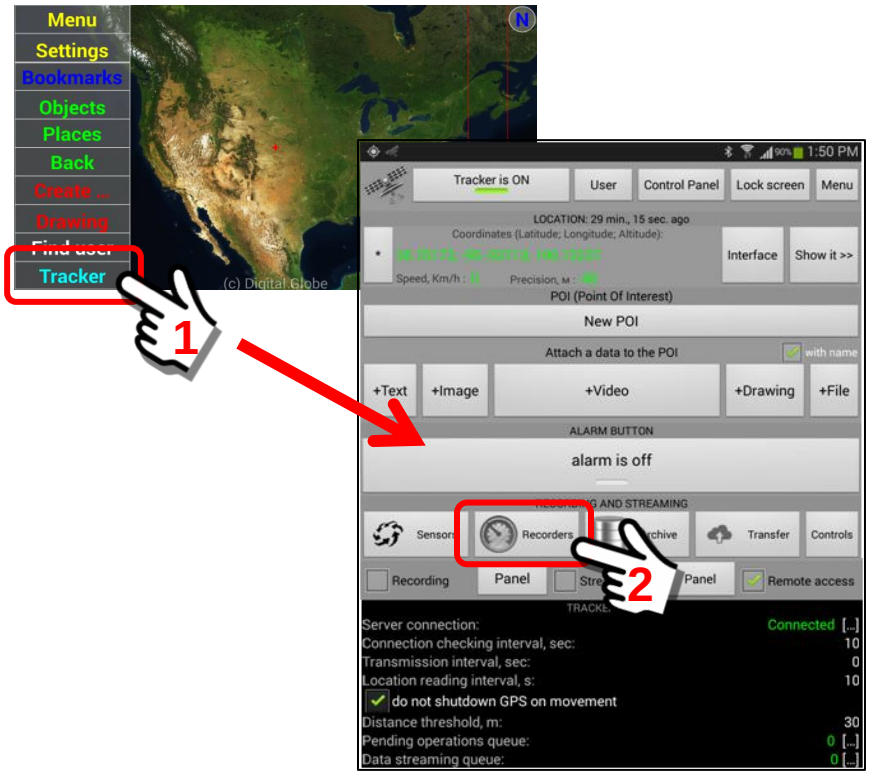
10. ***Set the "File Transfer" interval to copy to the SD Card.***

There are two issues that must be considered when transferring files from internal memory to an SD Card.

a. The length of the recording (ie 10min, 30min, 60min, etc.).
b. How often a transfer should be done (ie day, week, month).

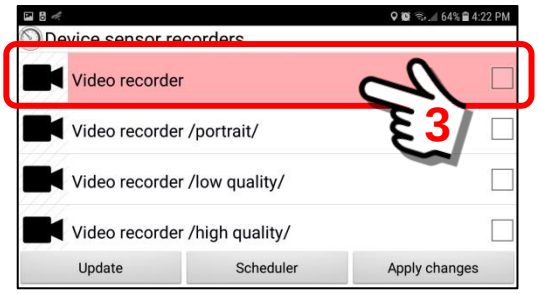
Both of these issues are described in previous sections of this User Manual, but we will briefly touch on them here.

<u>Open the Tracker Panel, click on the Recorders Button</u>



<u>Select a "Device Sensor Recorder" to use</u>

In this example, the Video Recorder will transfer files over to the SD Card. We will edit the transfer interval from 30 days to daily.



Long Click

Review the Video Recorder configuration panel

The video recorder configuration panel contains settings for both the recorded “length” of each video file and the “life time” in days for when the file will be transferred or removed from internal memory. See **Section 15.2.18, Item #4** for a complete discussion of these features.

In this example, we leave the recorded length at 60 minutes (3600 seconds) but will change the “Life time, days” from 30 days to one day.

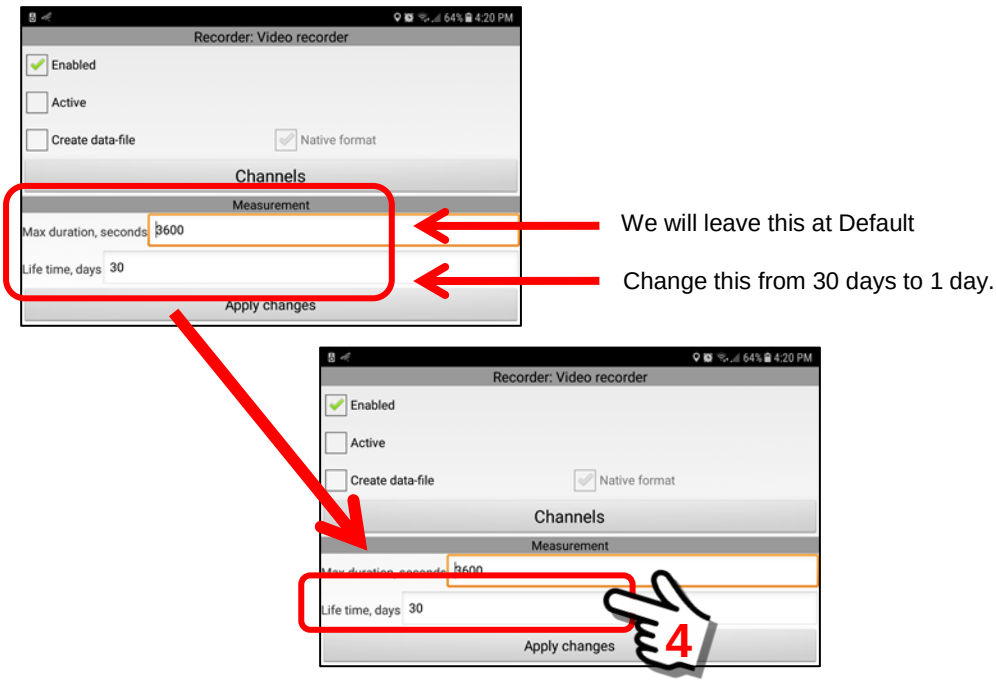
Max Duration, seconds:

This is the maximum length of a single data record in seconds. For example, the default is 3600 seconds (60 minutes). This means the application will record a single data file for a maximum of 60 minutes and then start a new file. If a recording is to last 3.5 hours, the resulting data files would be 3 files @ 60 minutes each and 1 file @ 30 minutes.

Life time, days:

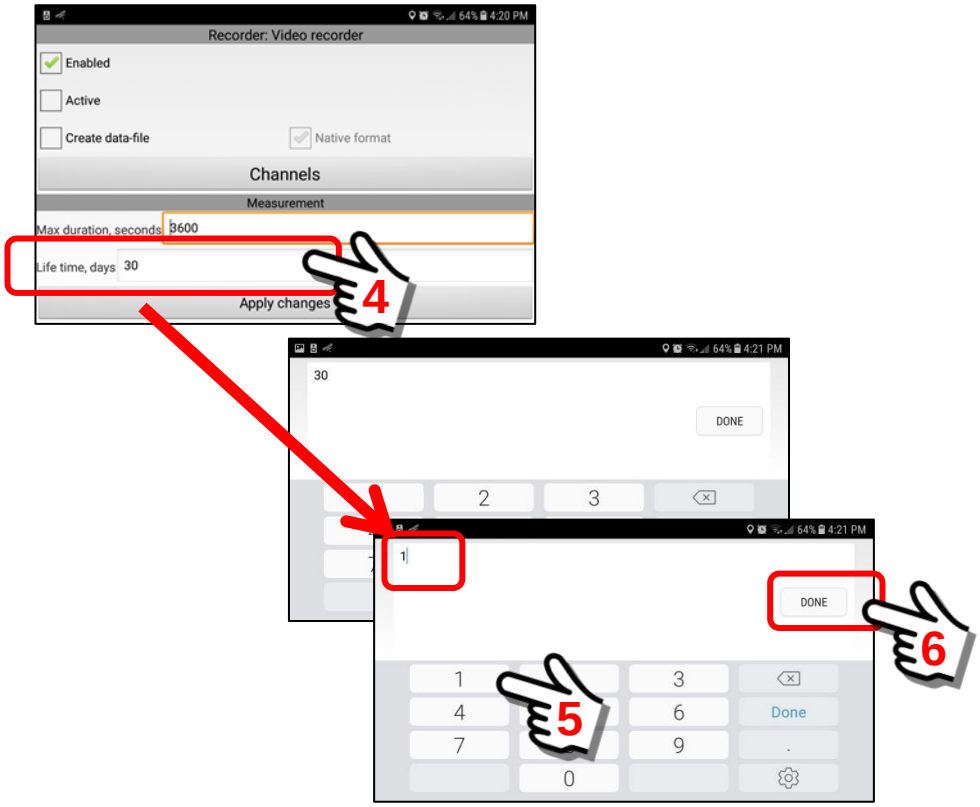
This is time period that a recorded file will stay on the mobile device before it is automatically removed. When time is expired, the file will either be (1)removed, (2)transferred to the Data Server (if you have a License or Subscription) or (3)transferred to an available SD Card.

The Sentry MDU System has settings for the mobile device and the Data Server. They are set independently. This setting is for the mobile device and the default is 2 days. If a record is not saved to the Data Server it will be automatically removed after this time interval setting unless it is transferred to the SD Card.



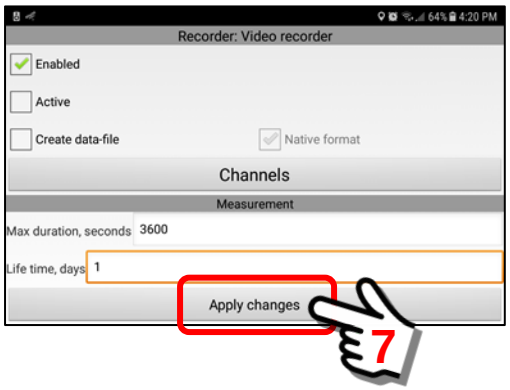
Configure the “Life time” for 1 day

Click on the “Life time” field to access the on-screen keyboard and make changes.



Accept changes and save

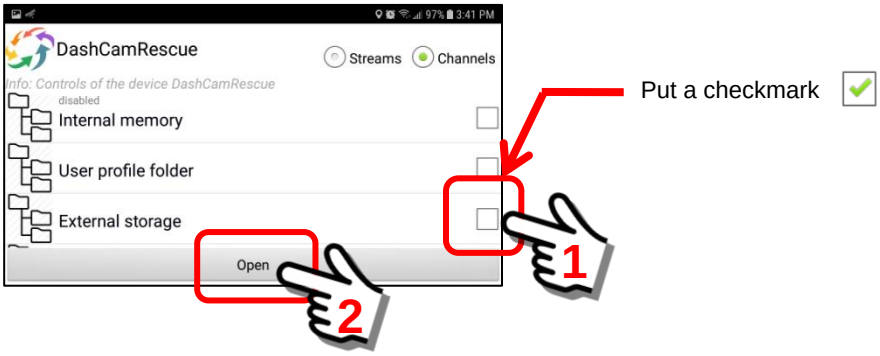
Click the “Apply changes” Button to save the new configuration.



With the “Life time” set for one day, and the Recorder External Storage set to transfer files to the SD Card, we have now configured the SentryMDU App to record Video and do a daily transfer of video files from internal memory storage to the external SD Card.

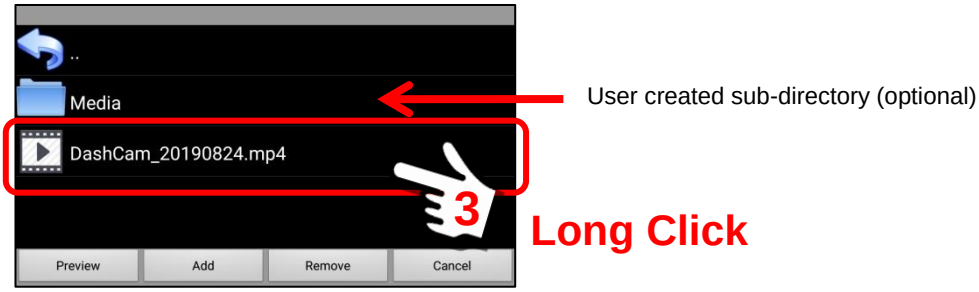
11. ***Access to data and files on the SD Card.***

This section will describe the access available to users for the data stored on the SD Card. We begin with access to the file structure of the card.

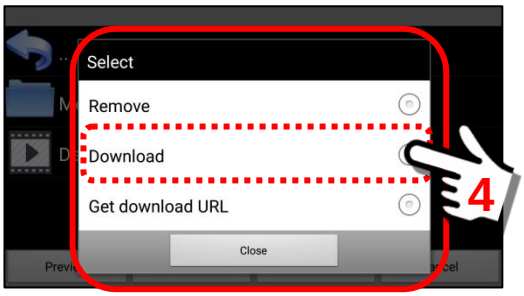


When you "open" the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card (**Device** Folder).

Navigate the file system and locate a file. Perform a "Long click" on the selected file name.



A "Long click" on the file name will open a pop-up menu that provides options to Download or Remove a file. If you have "remote" access, you may also download the file to your device (assuming you have credentials).



15.2.19. The “Archive” button

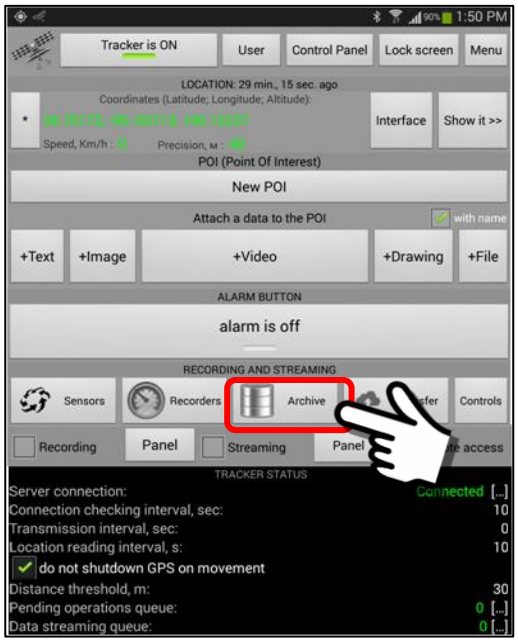
Overview:

The “Archive” Button provides a User access to the data that has been recorded by the local device. Some of the data may actually be “stored” on the file system of the local device and some of the data may be shown on the local device but actually stored on the Sentry MDU Data Server but available to the local device.

This section will describe the features of the data archive.

Tracker Panel – Archive Button:

The “Archive” Button is located on the lower middle section of the Tracker Panel. This button will allow user access to the recorded data on the local device or data recorded by the local device but transferred to the Sentry MDU Data Server.



This “Archive” Button, located on the Tracker Panel, is the primary method for a User to access recorded data on their mobile device. Although the Archive Button on the Mobile Object Panel may be used (accesses many of the same functions), the Archive Button on the Tracker Panel is the preferred location.

Important Note #1: Access to the archive data on a remote device does not provide notification on the remote device that another user(s) is accessing the data archive.

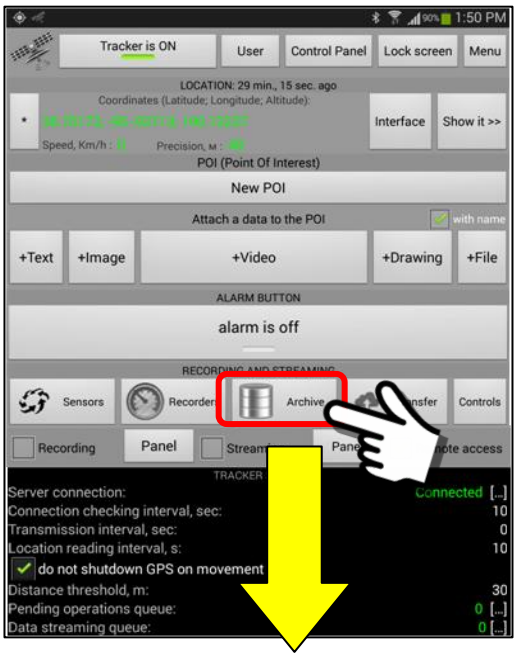
Important Note #2: All users have the option to TURN OFF the “Remote Access” option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the

system will show that the "Remote Access" feature has been turned off. See Section 15.2.24 on how to turn off the Remote Access feature.

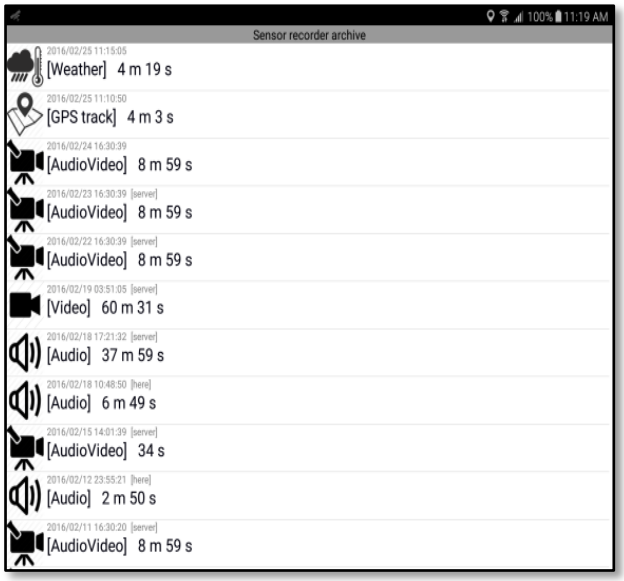
Description of the "Archive" function and features:

1. How data is organized in the Archive.

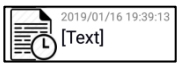
Data in the archive is organized by the "timestamp" date of the file when it was created. The most recently created files are at the top of the page.



Data files in the archive are sorted by date with most recent at the top of the page.



The Archive stores the data files under a variety of headings depending on the type of data. The following icons and titles which correspond to the sensor groups are used to display the data.

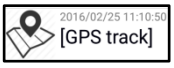


Text recordings of text, photography and speech-to-text conversions.

Audio recordings

Video recording (only video, no audio)

Audio & video recorded together

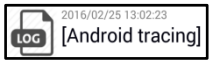


The GPS Track displayed on a map over a time period.

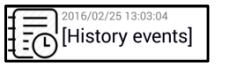
Environmental sensors including internal device temperature, barometric pressure, light sensor, accelerometer, etc.

The device state sensors include readings for battery voltage, battery temperature, battery charge level and cellular signal strength.

Device operating system state includes data on available memory on the device, CPU usage and data storage space available.

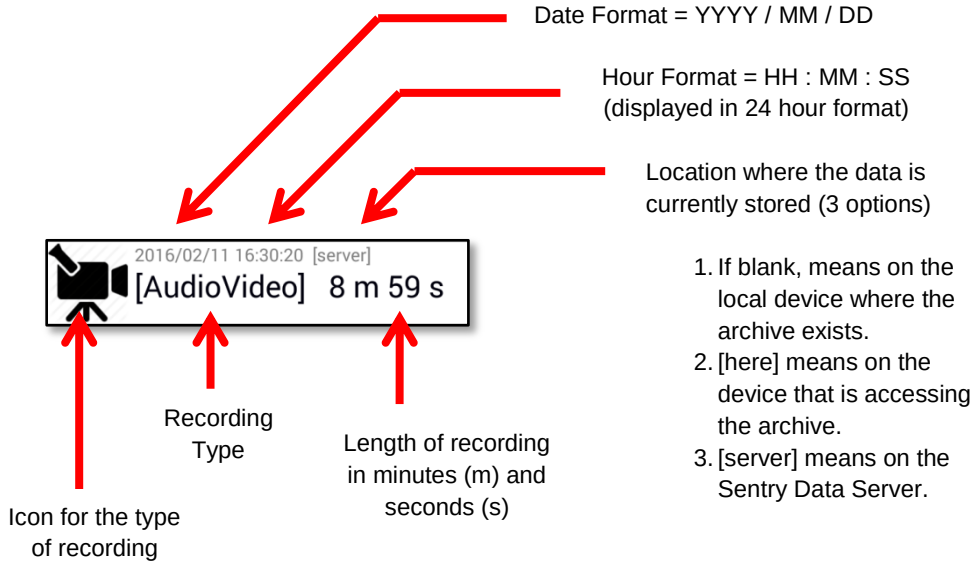


Android tracing is a series of log messages about device operation. Generally not used by Users.



History events provide a list of log messages about events on the device. This is a troubleshooting tool generally not used by Users.

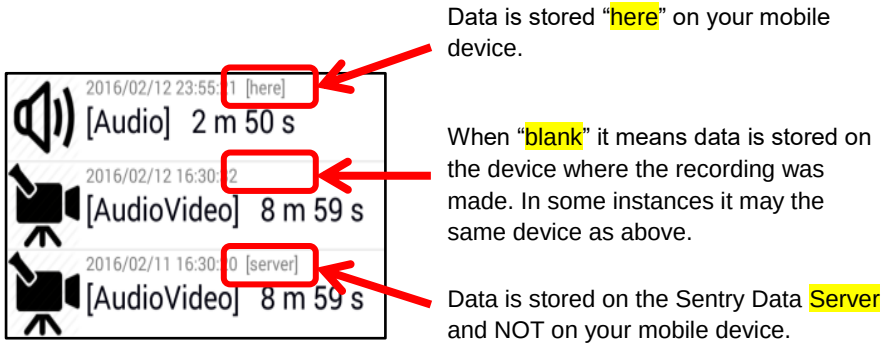
2. ***Reading the Archive display format.***
The display format of the recordings stored in the archive are illustrated below.



3. ***Archive data lifetime settings and transfer to the Data Server.***
Depending on the configuration settings, data in the Archive usually has a "lifetime" after which it is automatically removed from the local device. The "default" lifetime is 2 days (see Section 10.19.2, Item 3f). Data that is stored on the SentryMDU Data Server also has a "lifetime" which is independent of the mobile device. These settings are administered by the Sentry Manager Desktop Client.

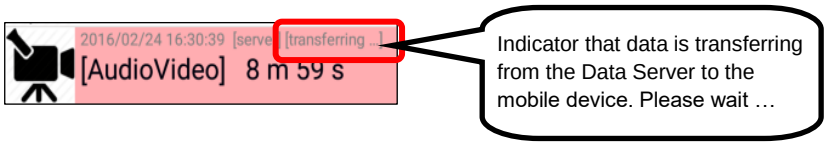
Files that have been removed from a mobile device (to free up memory space) may still be accessed by the mobile device and downloaded from the Data Server.

Typically, you will see three (3) indicators on the location of recordings.



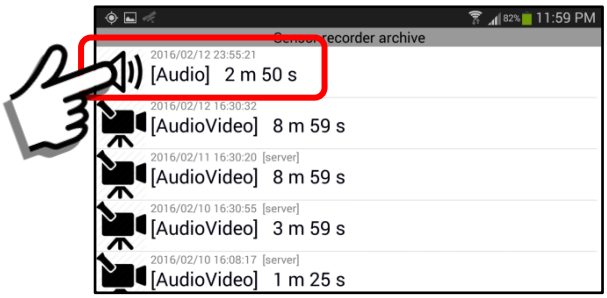
During the times when you click on a data file to view the audio-video, the data must be transferred from the Data Server to your

mobile device. In those situations, you will see an indication of a data "transfer" taking place. See below for an example.

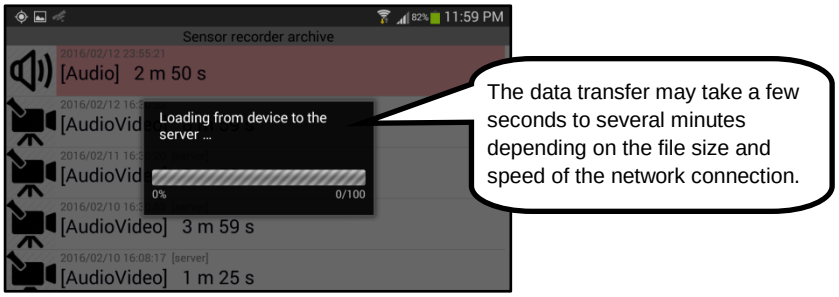


4. ***Viewing data files in the Archive.***
To view a data file, simply "click" on a file name and the file will load and open.

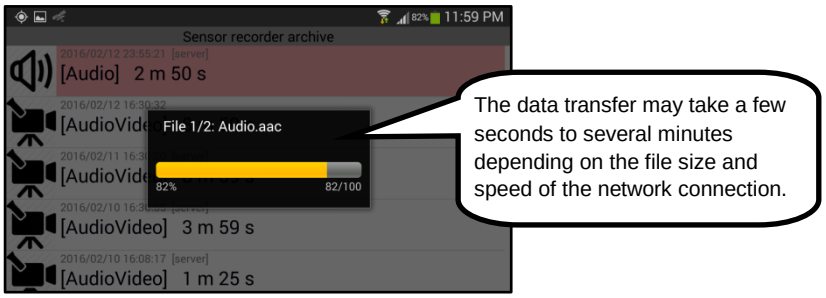
In this example, we are selecting an audio file that is stored on our mobile device. Click on the audio file.



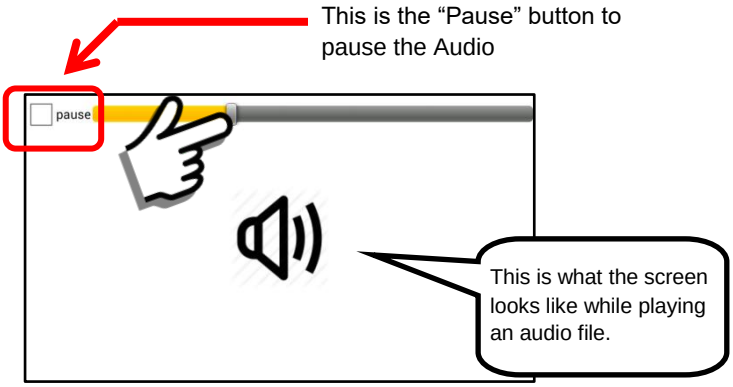
Clicking on the selected audio file will instruct the Sentry MDU System to transfer the audio file from the Data Server if it is not on our local device.



Once the file has transferred from the Data Server, it will be opened on your mobile device.



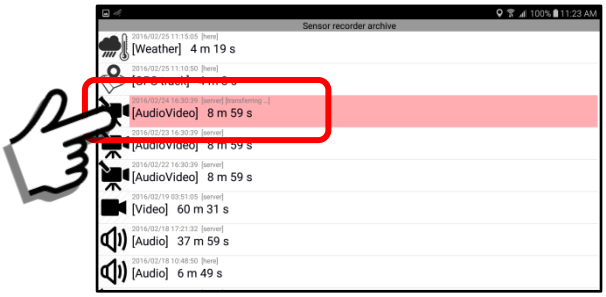
Once the audio file is loaded on your device, it will begin to play. The “slider” will allow a User to advance the audio quickly to a place of interest in the recording. In addition, a “pause” checkbox is available to pause the audio as necessary.



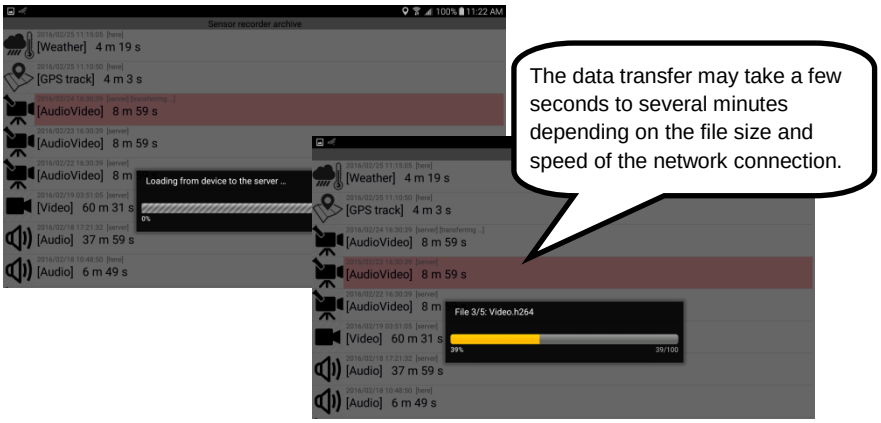
When finished, click the “back” button on the phone to return to the Archive Panel.

5. ***Viewing audio-video data files in the Archive.***
The procedure to view audio-video files that are contained in the archive follows the same procedure as above.

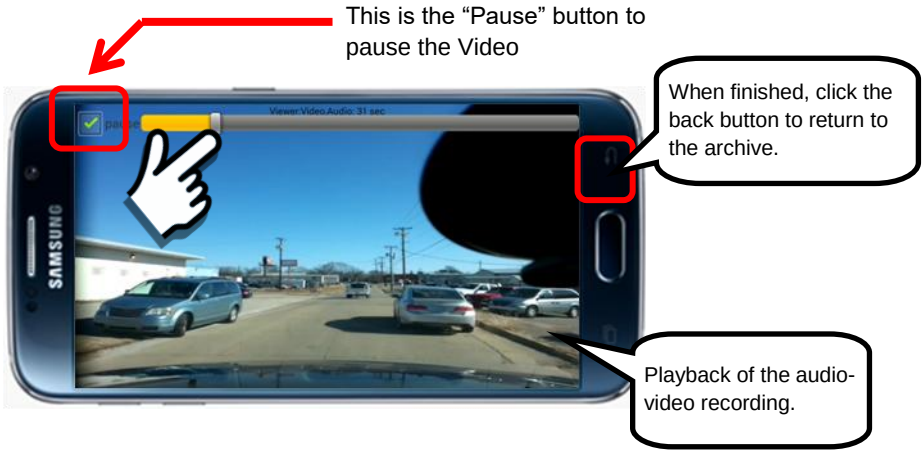
In this example, we will select and view an audio-video recording.



Clicking on the selected audio-video file will instruct the Sentry MDU System to transfer the audio-video file from the Data Server and then open it on your mobile device.



Once the audio-video file is loaded on your device, it will begin to play. The “slider” will allow a User to advance the video quickly to a place of interest in the recording. In addition, a “pause” checkbox is available to pause the video as necessary.

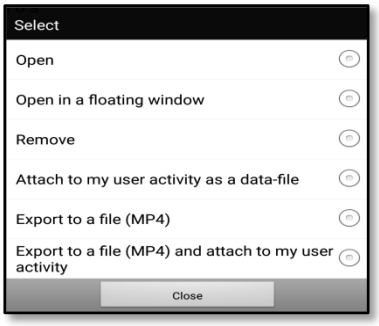


6. ***Removing data files from the Archive.***
Data that is stored in the “Archive” on the mobile device may be removed from the mobile device. Data that is stored on the server, may be removed from the server if the configuration (and User access privileges) allow.

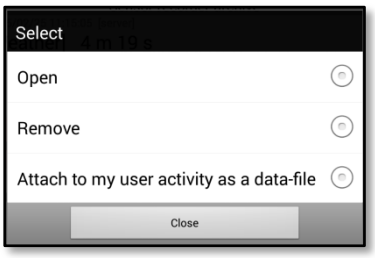
This example, will show how to remove data from the local archive.

Performing a “Long click” will open a selection box with a variety of menu options. For your own “archive”, by default, you have the access rights to remove any of your files. However, if you have sufficient access rights you may also have the ability to remove data files from OTHER users data archives. In your own archive you will have a few more menu options than if you are accessing another user’s archive. See below.

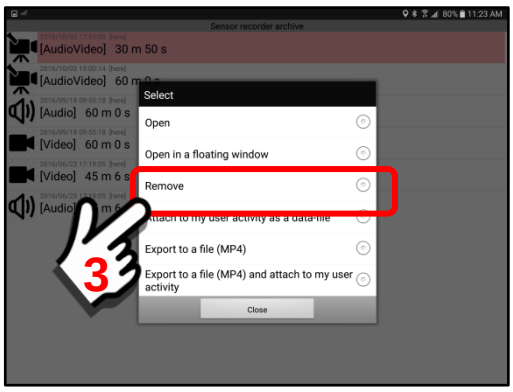
Menu Options for YOUR archive



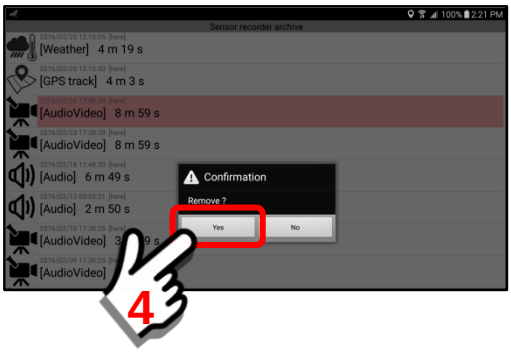
Menu Options for another users archive



To remove a data file, click on the “Remove” option.



Confirm that you do want to permanently “remove” the data file.

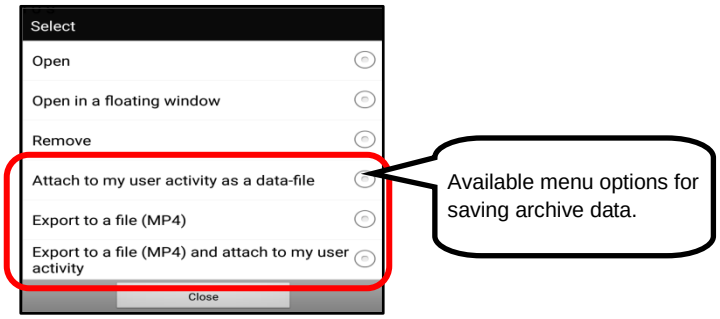


The data file is now removed from the local device.

Important Note: The removal of archive data from the mobile device may or may not remove the same data from the Sentry MDU Data Server if it is also stored there. This will depend on the specific configuration settings of your organization. See your System Administrator for your company policies.

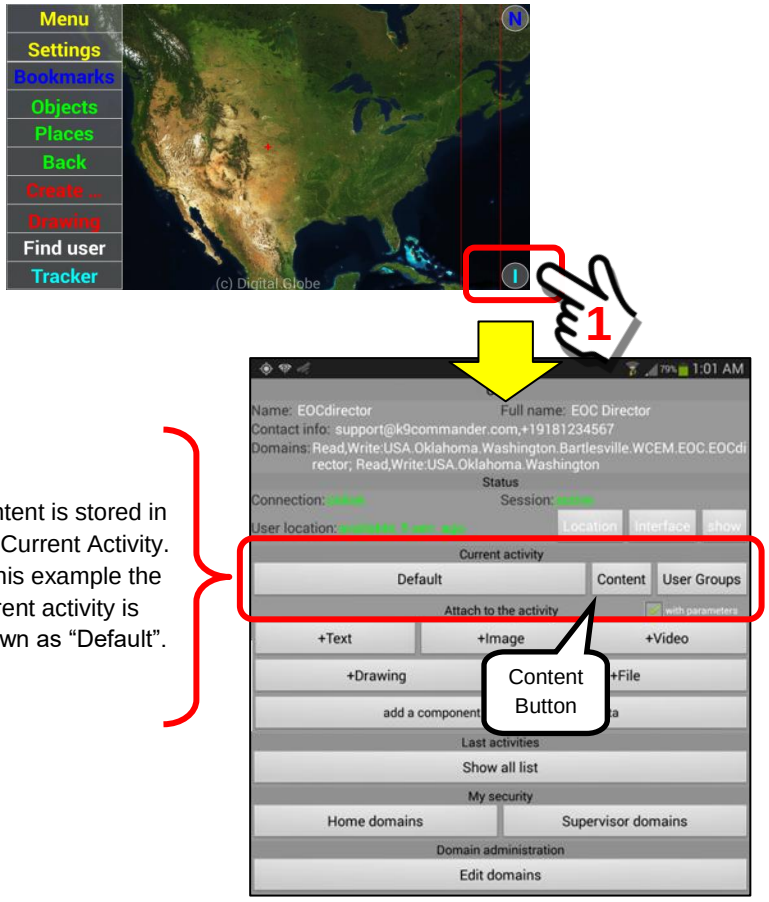
7. ***Saving data files in the Archive.***

The SentryMDU System provides for several different methods of saving data that is stored in the archive.

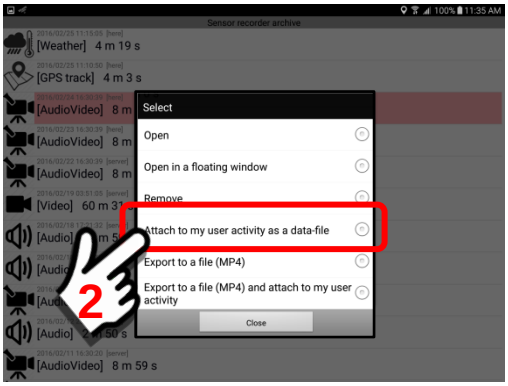


Attach to my user activity as a data-file

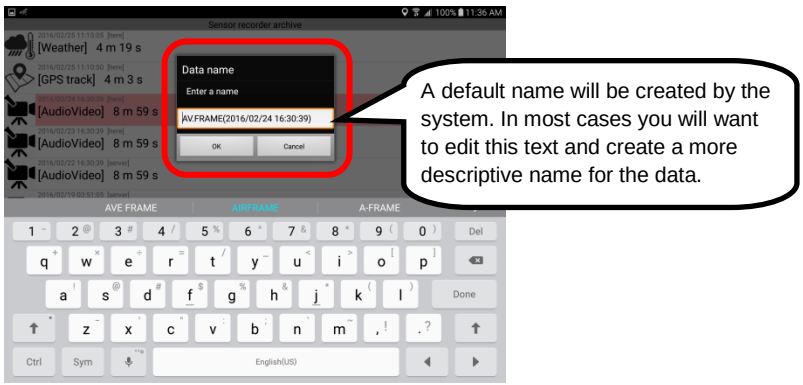
This option will store the data file in YOUR content folder. This content folder is located on the User Panel.



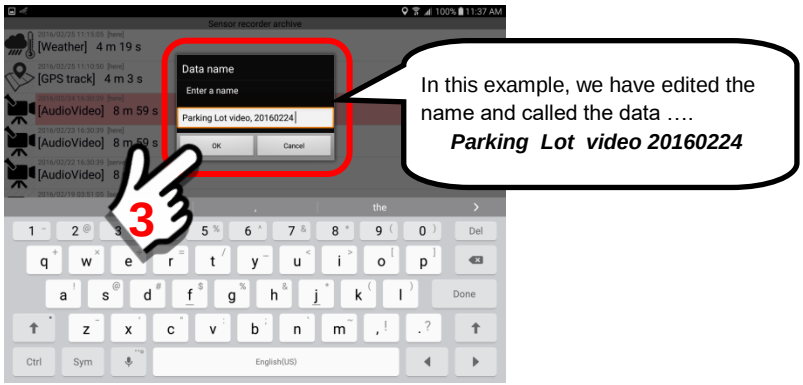
To attach the data file to the current activity folder, select the option from the Menu.



The system will prompt you for a “name” that you want to store the data under. The name will default to a data “type” and a date as shown below.



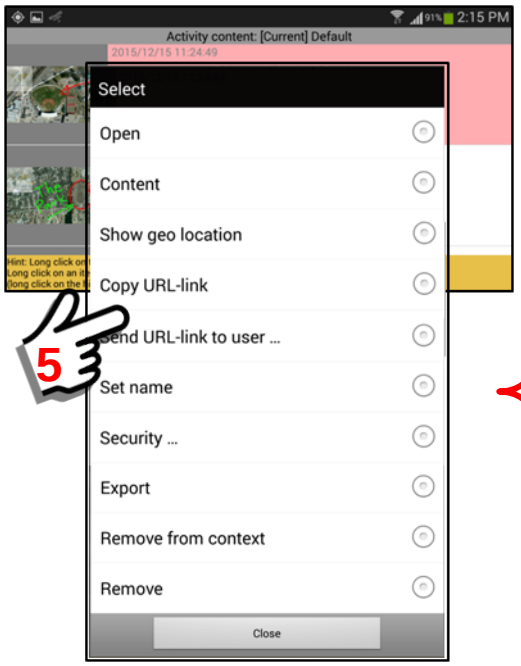
Edit the system generated name and create a more descriptive name for the data. When finished, click “OK” to continue.



The data file has now been copied to the Content Folder under your Current Activity topic area.

A message will appear at the bottom of the page indicating the data transfer was successful.

Once the data file is installed in the "Content" Folder, a whole new series of menu options are available to the User. These options will be covered in other sections of the document, however we are showing the Menu Panel below for your review.



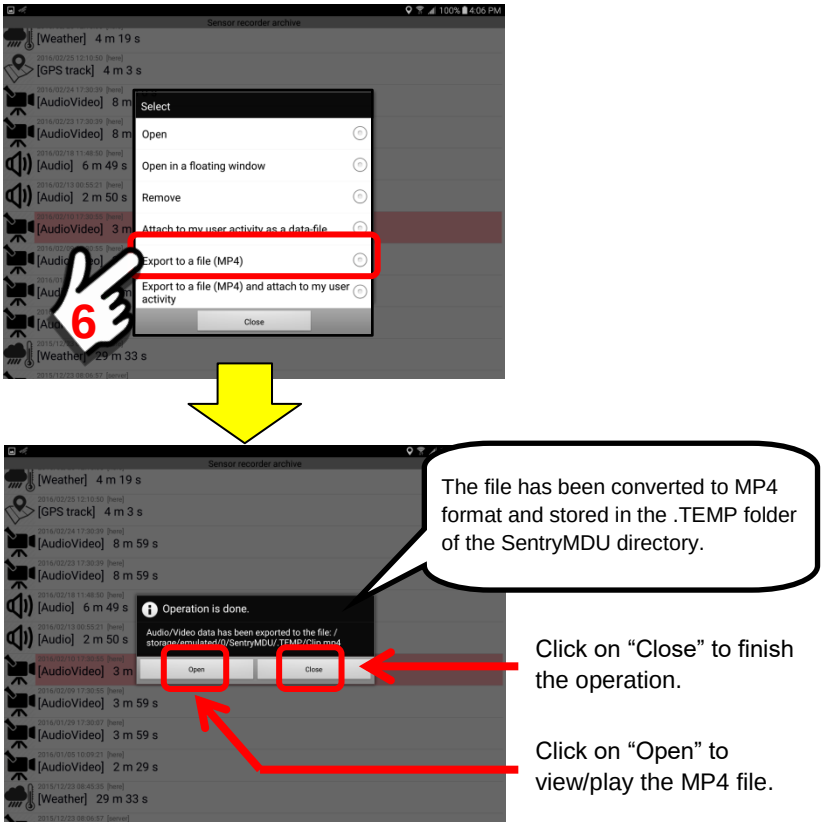
Additional menu options are available once the data file is transferred into the user content folder.

A "long click" on the file name will open the menu.

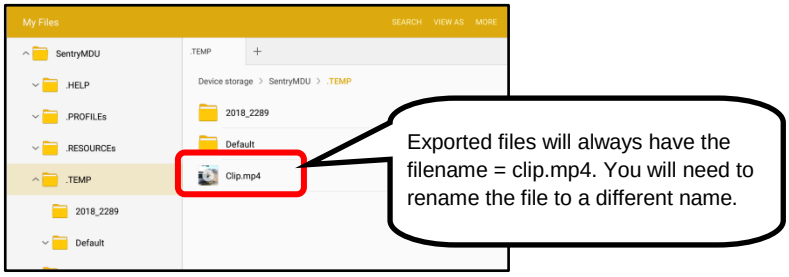
Export to a file (MP4)

This option will export the data file to an MP4 data file. The MP4 file will be stored in a temporary folder (.TEMP) on the mobile

device which can then be transferred/copied to other computer systems for offline storage or to be played on other video players.



The saved file (clip.mp4) is stored in the .TEMP folder in the SentryMDU directory as shown below.



Export to a file (MP4) and attach to my user activity

This option is a combination of the previous two menu items. The system will “export” a file to the TEMP folder AND attach a copy to the Current Activity of the User.

15.2.20. The “Transfer” button (scheduled data upload)

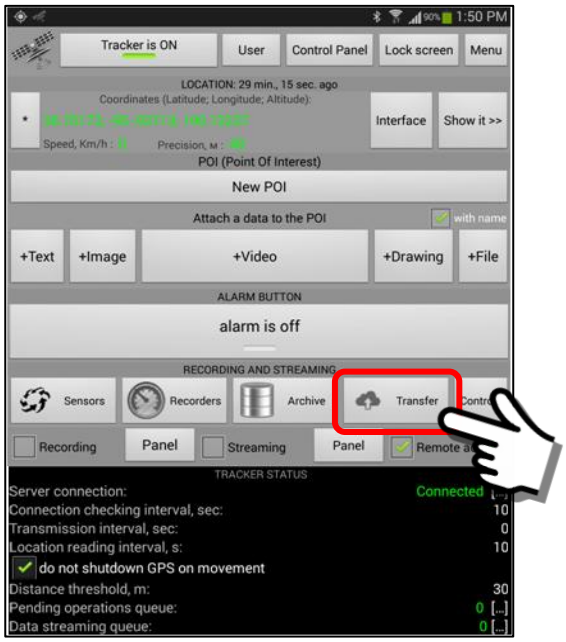
Overview:

The “Transfer” Button provides a User the ability to transfer data from the mobile device to the Sentry MDU Data Server by “manual” or “automated” methods. Scheduling options are available to set up transfers at specific times during the day (ie Shift change, break periods, etc.).

This section will describe the features of the Data Transfer Feature.

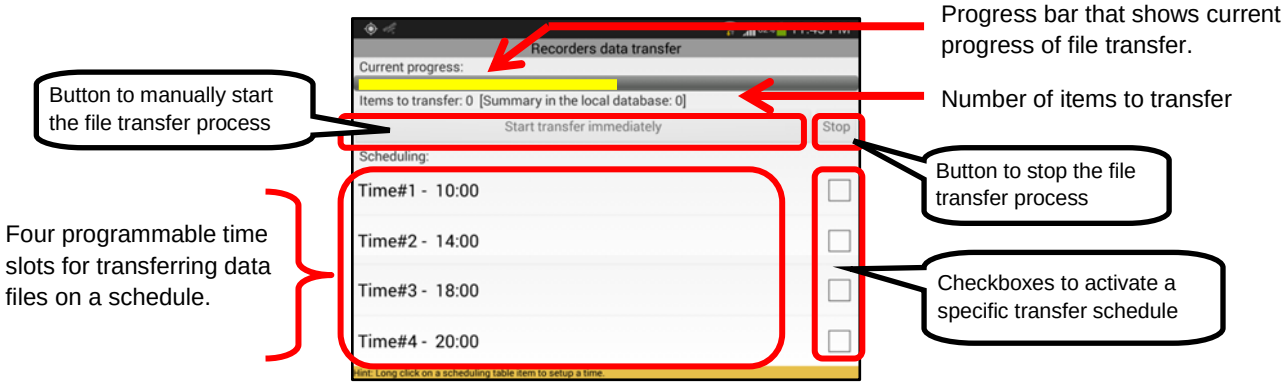
Tracker Panel – “Transfer” Button:

The “Transfer” Button is located on the lower-right section of the Tracker Panel. This button will allow a user to transfer data files from the mobile device to the Sentry MDU Data Server.



General layout of the “Records Data Transfer” Panel:

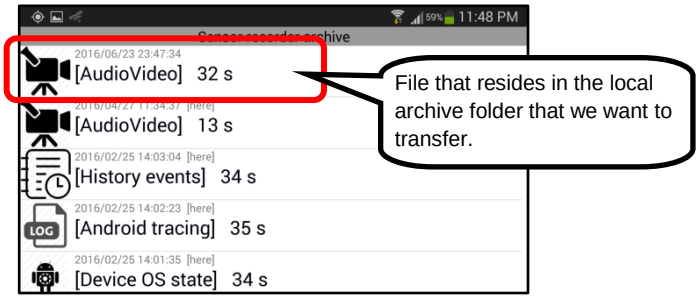
This “Transfer” Button, located on the Tracker Panel, is the primary method for doing data transfers between the mobile device and the Sentry MDU Data Server.



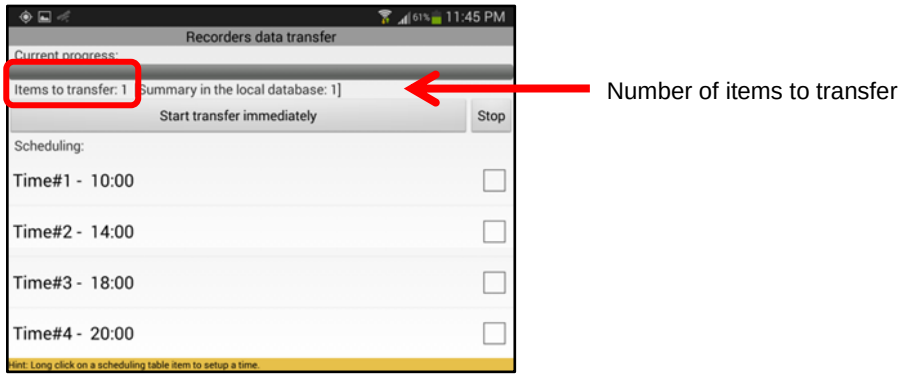
Description of the “Transfer” Button function and features:

1. ***Perform a “manual” transfer of data files.***
   This section will describe how to perform a “manual” transfer of files that currently reside in the database on the local device.

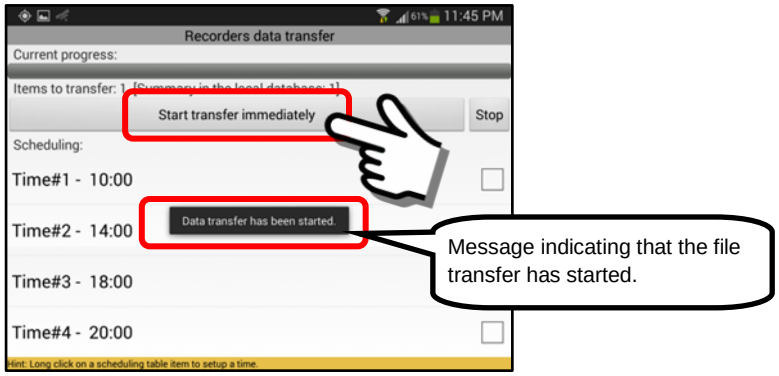
   In this example, we have a single file that resides on the local device that we want to transfer to the Sentry MDU Data Server.



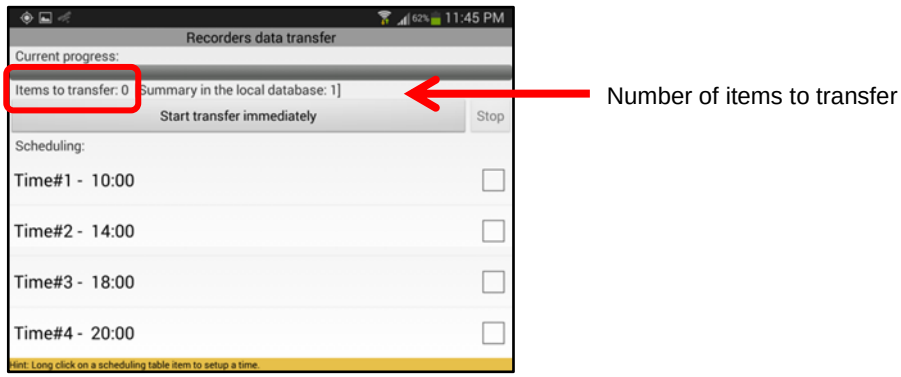
   Clicking on the Transfer Button from the Tracker Panel we can see that we have one (1) file to transfer.



   To begin a file transfer immediately, click on the “Start transfer immediately” button. A message will be displayed for about 3 seconds showing that the file transfer has started.



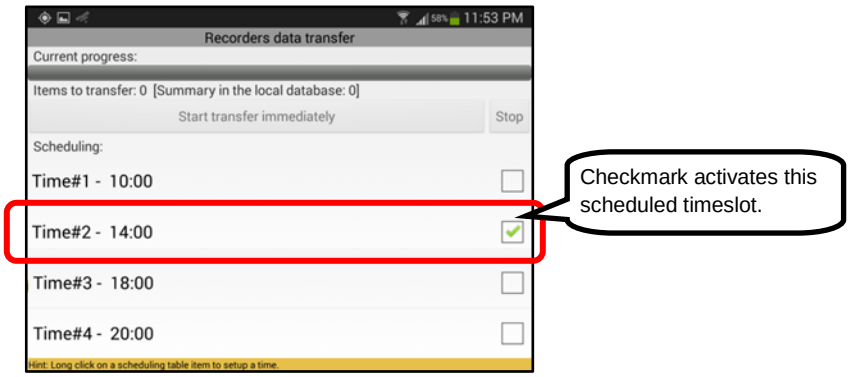
When the file transfer is complete, the “Items to transfer” value has been reduced to zero (0). However, note that the “Summary in the local database” = 1. This means that the file is now stored on the SentryMDU Data Server AND the local device. As you recall from previous sections, each file has a “lifetime” (user settable, default = 2 days). If we had done nothing, this file would have been transferred in 2 days, but we elected to do the file transfer immediately.



2. ***Activate the automated transfer schedule***

The scheduling feature has 4 time slots, designated in a 24-hour format, that can be programmed by the user. This will transfer ANY files in the archive that have not previously been transferred.

Put a “checkmark” in the checkbox adjacent to the time slot desired. Multiple time slots may be selected. This transfer time will remain “active” until it is changed.

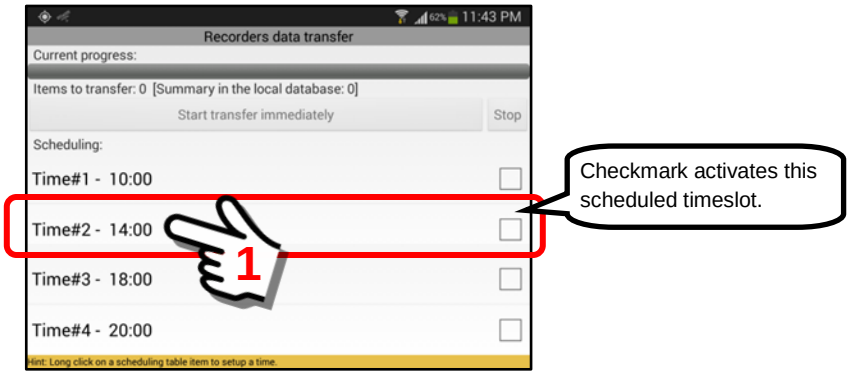


Important Note: The transfer schedule will remain active until it is turned off. Pay special attention because it is easy to “forget” that you have an active schedule.

3. *Create a "new" transfer schedule*

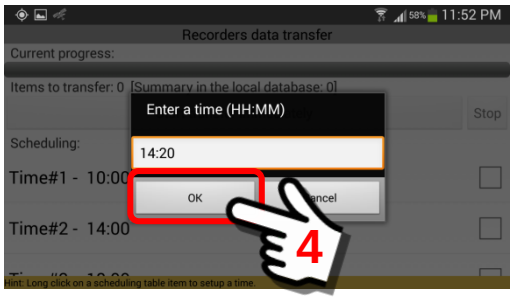
This section will describe how to create a "new" file transfer time slot schedule.

Select a desired time slot (ie Time #1, 2, 3, 4). For this example, we will select Time #2. Perform a "long click" on Time #2.

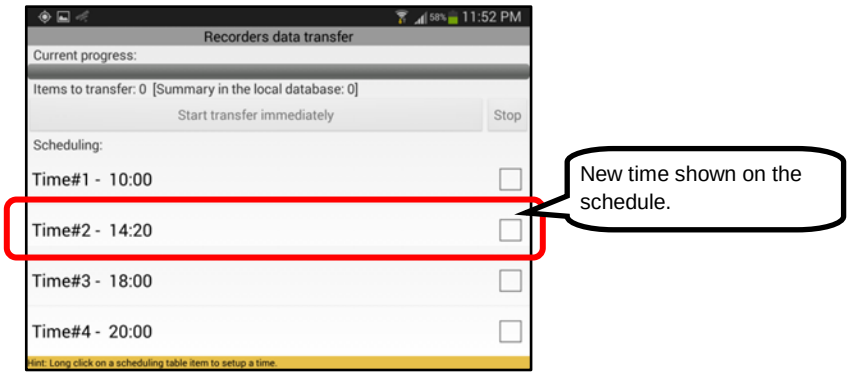


A data entry box will appear on the panel. Click inside the data entry field area to activate the on-screen keyboard. Enter the desired time.

Click "OK" to save the new schedule time.



The new time schedule will now be displayed on the Recorders data transfer panel, as shown below.



15.2.21. The “Controls” button

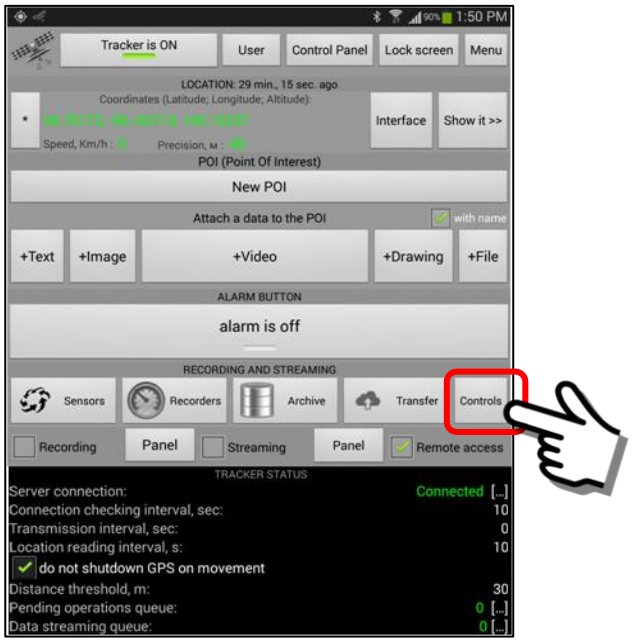
Overview:

The “Controls” Button opens a panel that allows a User to issue voice commands remotely, use a remote device as an audio megaphone and to allow a “remote control” interface for PTZ (pan, tilt, zoom) platforms or mechanical actuators (future implementation). The features in the “Controls” section are also available on the Mobile Object panel for the local device and remote devices (assuming adequate security privileges).

This section will describe the Controls Button Feature on the Tracker Panel.

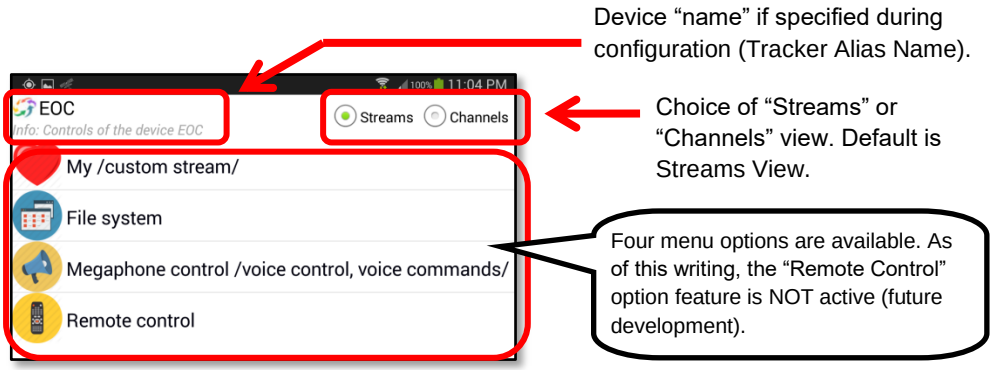
Tracker Panel – “Controls” Button:

The “Controls” Button is located on the lower-right section of the Tracker Panel.



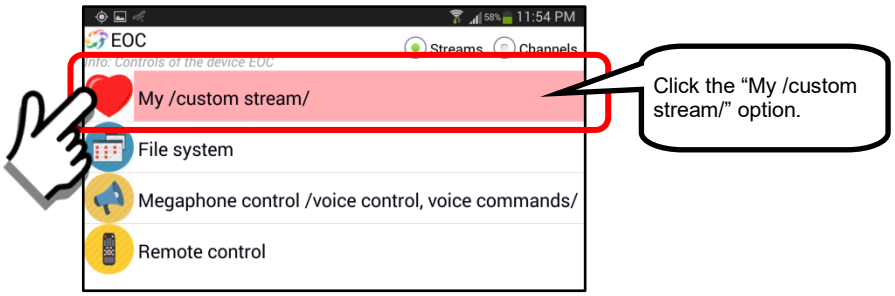
Description of the “Controls” Button function and features:

1. ***Parts of the Controls Panel.***
   When clicking on the “Controls” Button, the following panel appears.



2. ***The "My /custom stream/" choice***

The "My /custom stream/" option allows a user to create a custom configuration for either the "Audio voice commands" or the "Audio Megaphone" feature available in the Controls Section. This example will describe how to create a set of custom audio commands for the local mobile device.

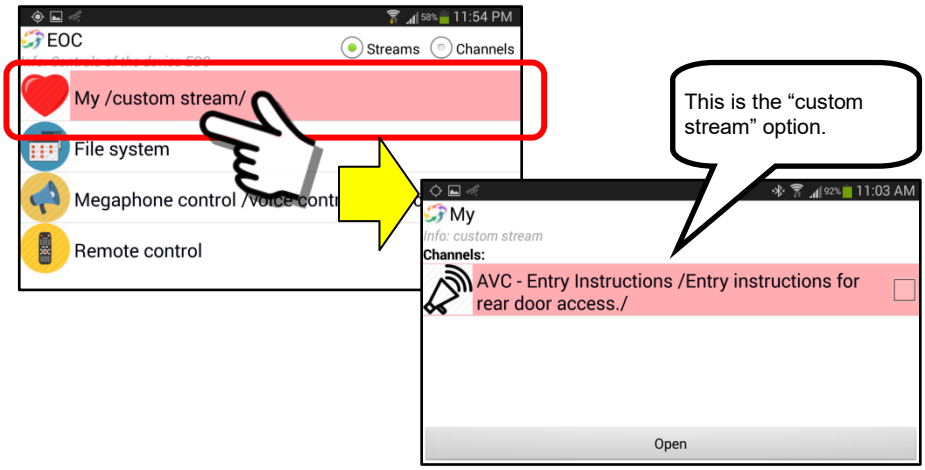


The "My /custom stream/" menu option will accept BOTH a long and short click.

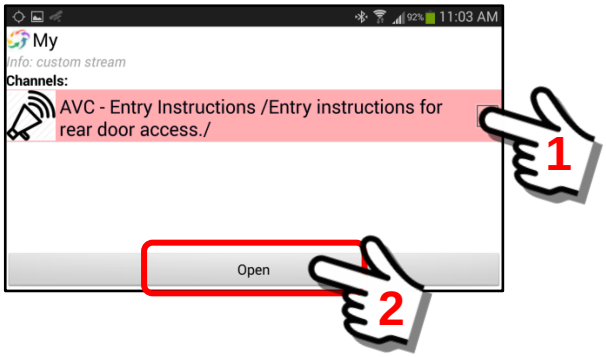
<u>Short click on the "My /custom stream/" option</u>

A short-click on the "My /custom stream/" menu option opens another panel that provides for access to launch the custom stream menu item. This menu item would have been created previously.

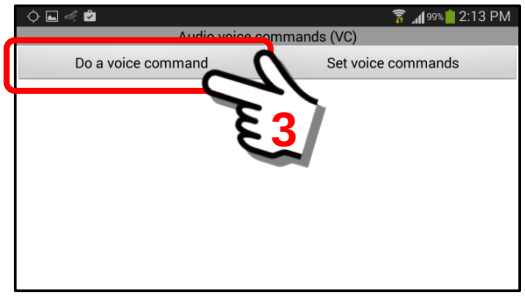
In this example, a custom set of "Audio Voice Commands" (AVC) has been created that provide verbal instructions on how to access the rear door of a building. This set of commands can be stored on the local device and then sent to remote devices as desired.



To test the Entry Instructions example, put a check in the checkbox and the click the "Open" Button

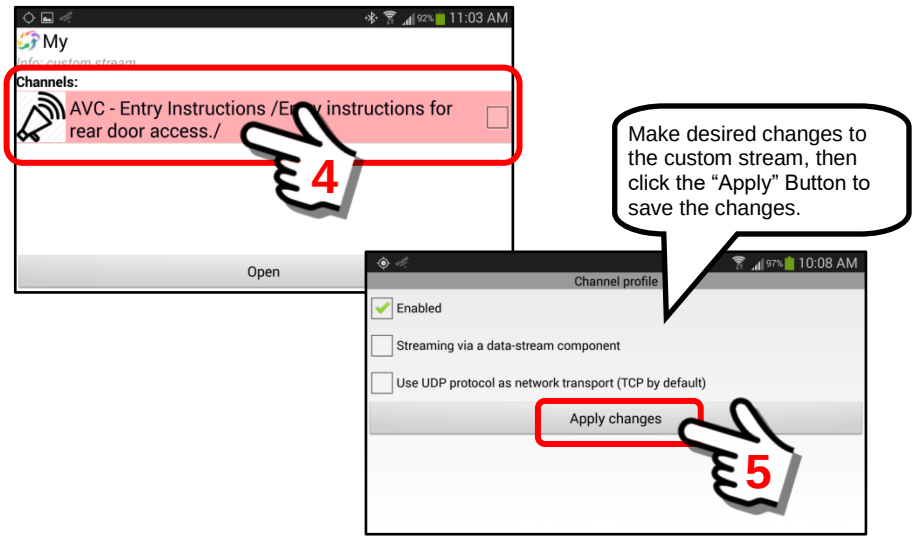


An Audio Voice Commands panel will be displayed. To “play” the recorded voice command, click on the “Do a voice command” Button. You should hear the recorded instructions.



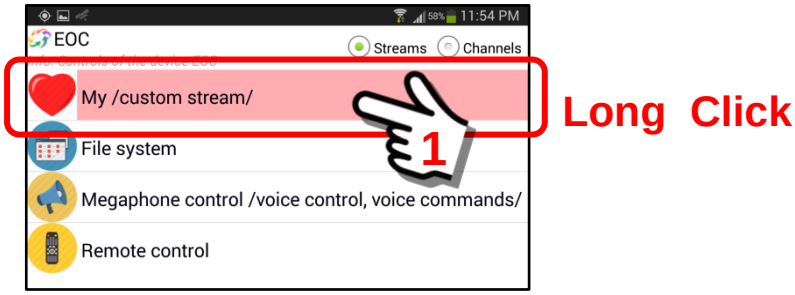
Important Note: In normal use, these recorded instructions would be transmitted to a remote device and “played” on the remote device. In this example, using the Controls Button on the Tracker Panel, we are showing how to test the Voice Commands option.

To adjust profile parameters for the channel, perform a “Long click” on the channel name.

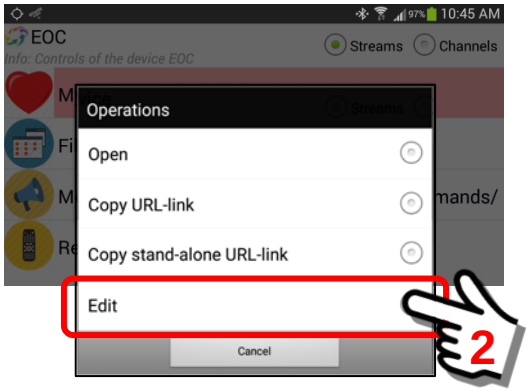


Long click on the “My /custom stream/” option

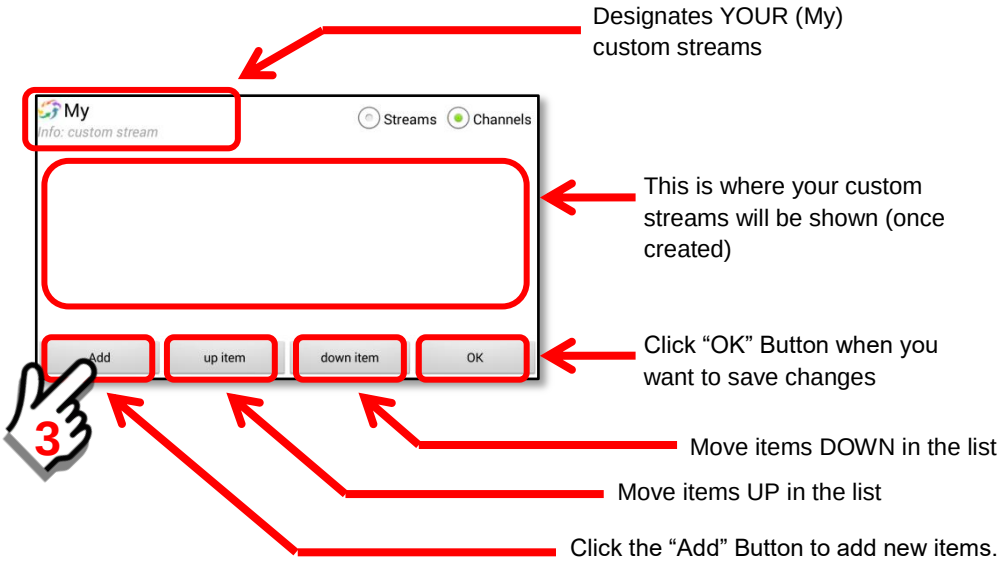
Performing a “long click” on the “My /custom stream/” option will open an Operations panel that will allow you to create your custom stream. The following steps will describe the process to create the custom stream used in the example above.



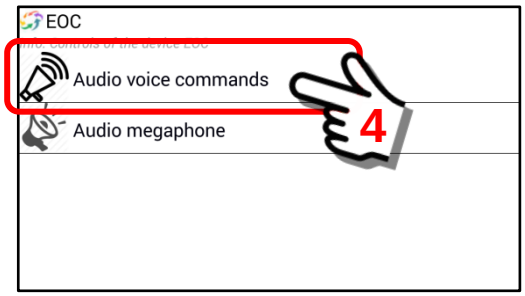
Click on the “Edit” Button to create (or add) a new custom stream.



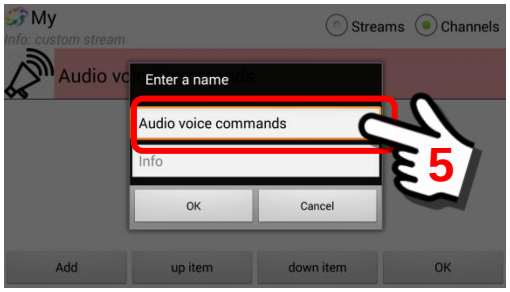
A blank panel will be displayed. This is where the sensor channels for the custom stream will be stored. Click the “Add” Button.



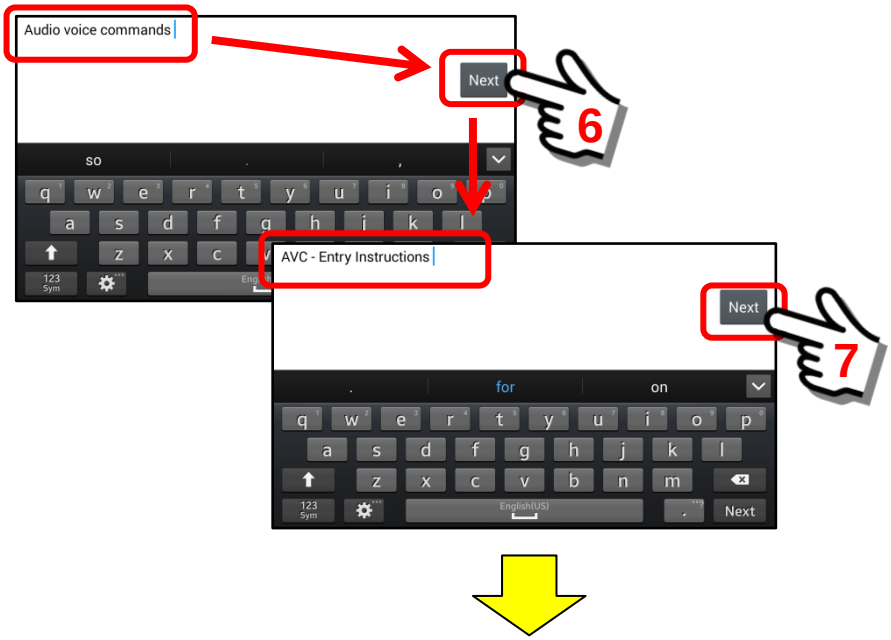
Clicking the “Add” Button will display two options for creating custom streams. For our example, we will select the “Audio voice commands” option.



You may enter a “Name” for the custom stream you are creating. The system will “default” to the name of the stream (in this case it is “Audio voice commands”). Click in the data entry field location to show the on-screen keyboard and then make any text changes desired.



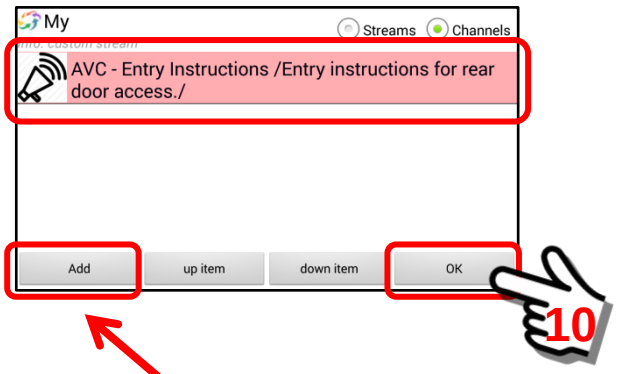
We will change the default “Audio voice commands” text to “AVC – Entry Instructions” as this better describes the content.



After entering a new “name” for a set of voice commands, we can optionally enter additional descriptive text in the “info” data field. In this example we will enter … “Entry instructions for rear door access”. Click “Done” when finished.

Upon completion of entering the text, the “Enter a name” Panel will return showing the changes you have made. Click the “OK” Button to save these changes.

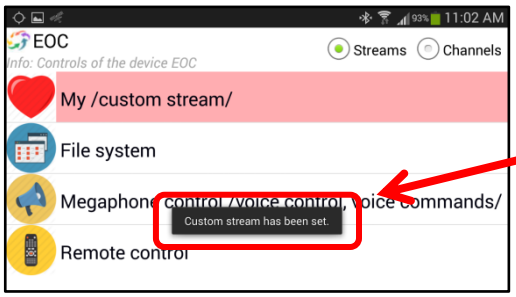
The channel description is now changed to show the text you have added. The results are illustrated below.



Click “OK” to save changes.

To add more channels to the Custom Stream option, click the “Add” Button.

When finished with the configuration of the Custom Stream setup, click the “OK” Button. You will be returned to the Controls Panel.

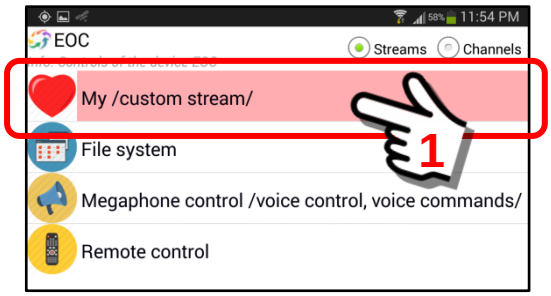


If the Custom Stream setup was successful, a message will appear for 3 seconds.

Now that you have created a “new” custom stream, follow the instructions for a “short click” (as explained above) on the “My /custom stream/” menu item to launch the new custom stream.

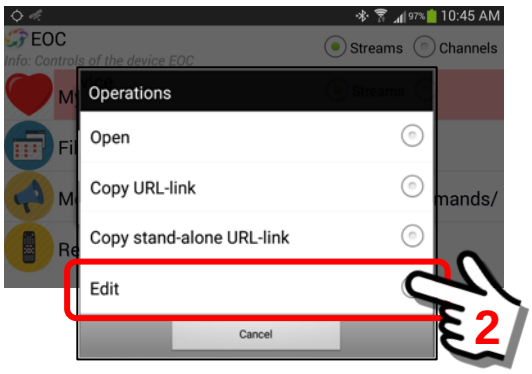
<u>Edit the “My /custom stream/” option</u>

Performing a “long click” on the “My /custom stream/” option will open an Operations panel that will allow you to “edit” your custom stream. The following steps will describe the process to edit the custom stream used in the example above.

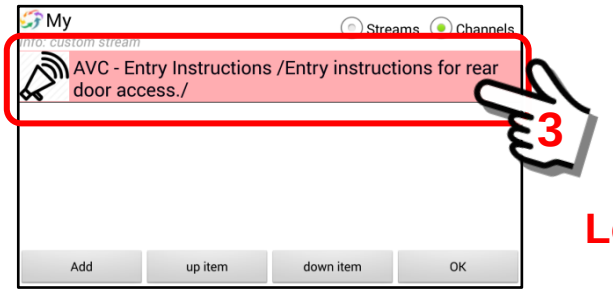


Long Click

Click on the “Edit” Button to change/edit the custom stream.



You will be presented with the custom stream “channel” that you have created previously. Perform a “Long click” on the channel to open the Operations Panel.

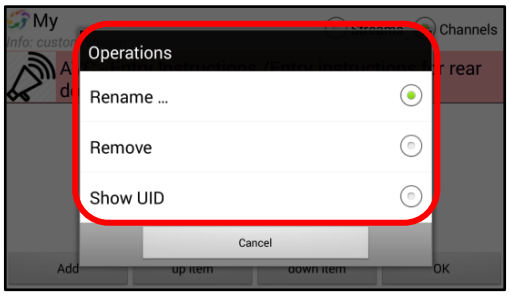


Long click to access the Operations options.

Long Click

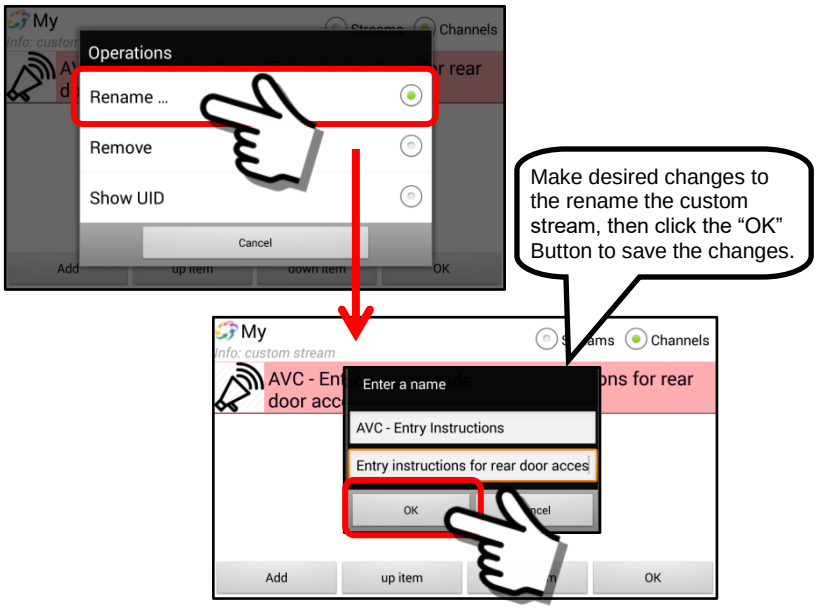
The Operations Panel provides 3 menu options to the User.

a. Rename (change the name of the channel).
b. Remove (remove the channel from the list)
c. Show UID (display the Voice Command channel ID)



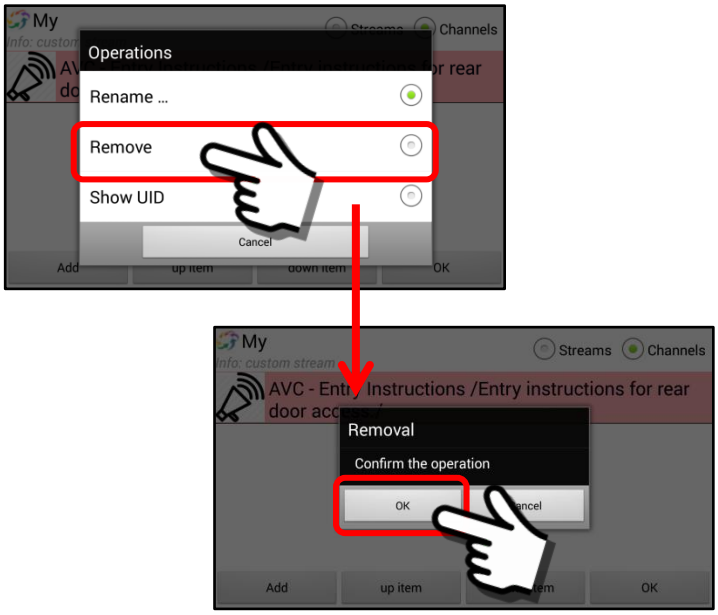
<u>Rename</u>

Change the “Name” of the Channel and/or the auxiliary description.



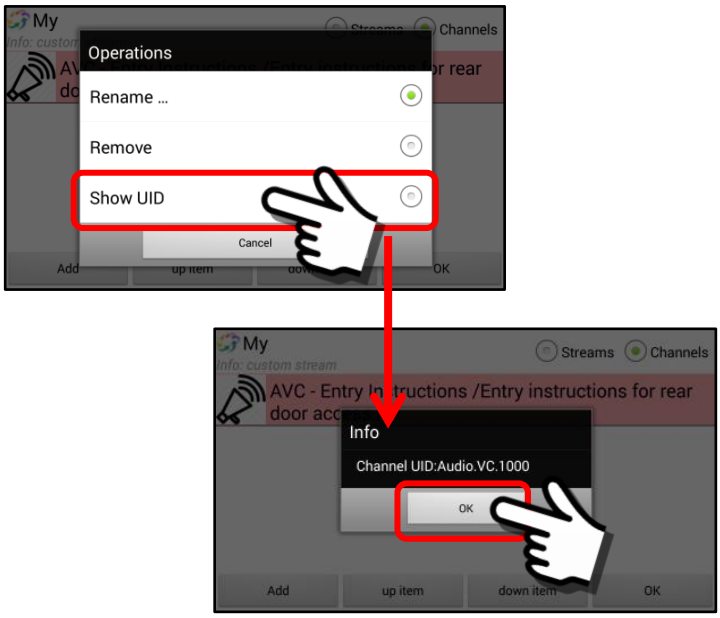
Remove

This option will “remove” the custom stream channel from the list.



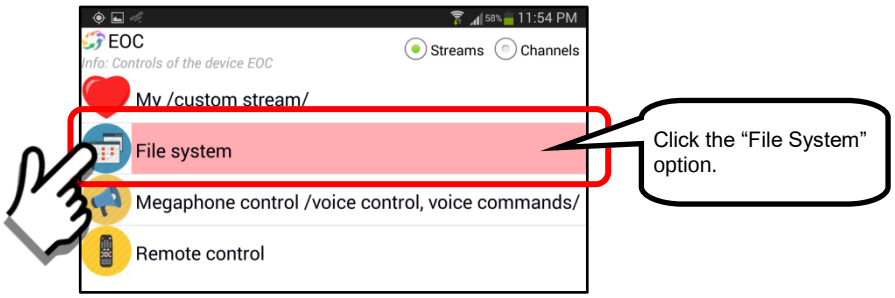
Show UID

This option will display the Channel UID for the Voice Command used in the channel profile. In this example it is “Audio.VC.1000”. As a practical matter, this UID is only of interest to Software Developers.



3. *The "File system" choice*

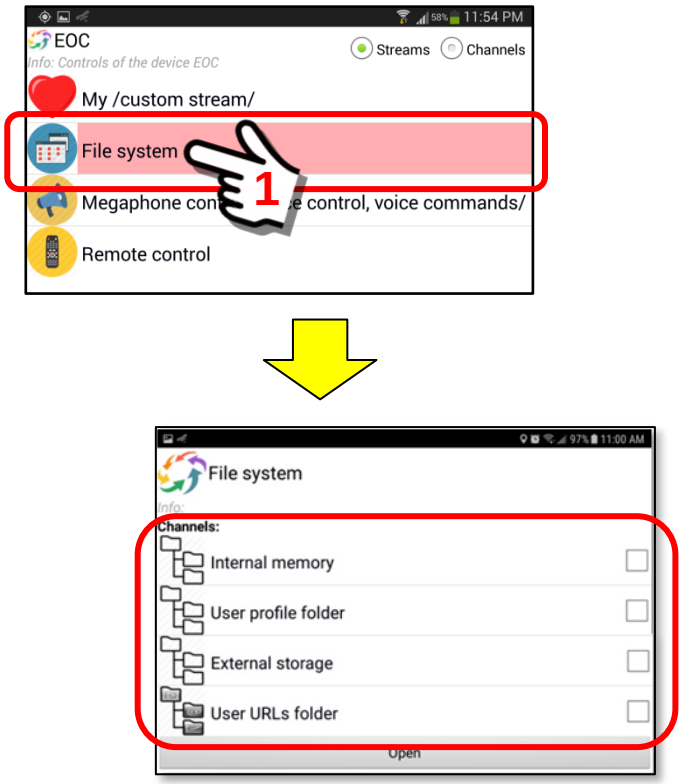
This example, will review the "File system" option. This allows a user to view files/folders/URLs from the local mobile device.



The "File system" menu option will accept only a short-click (note that on the Mobile Object panel "Controls" Button option it will accept BOTH a long and short click).

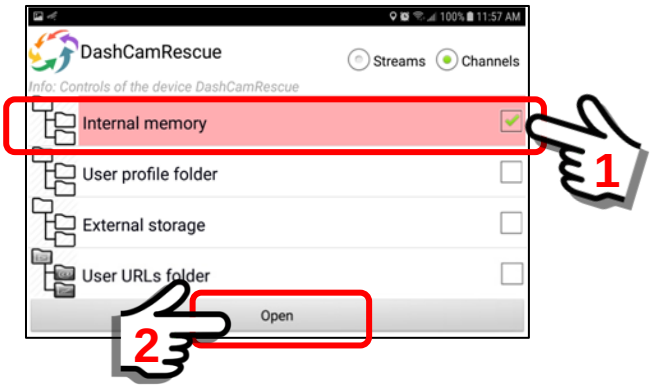
<u>Short-click on the File system option</u>

A short-click on the "File system" menu option opens another panel that provides for access to the SentryMDU App file system and stored URL folders. There are 4 options available.

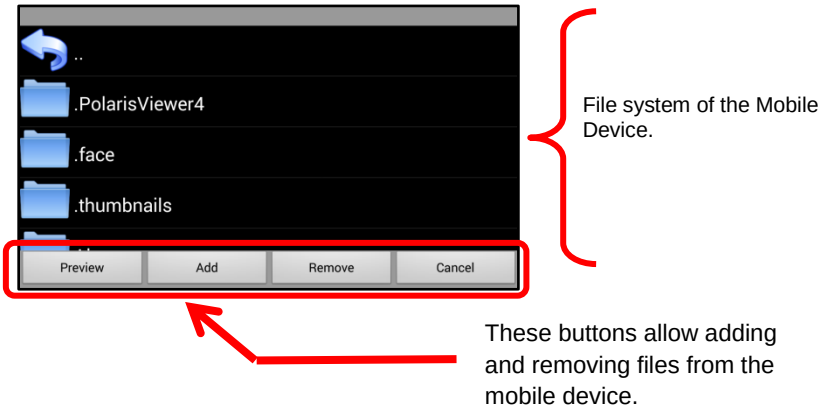


a. <u>Internal Memory</u>

This menu choice allows a User to view the files and folders located in the file system on the mobile device. This feature will allow adding and removing files. In order to do peer-to-peer file transfers, both mobile devices (sending and receiving) must allow access to the file systems on the devices. The “Internal Memory” channel profile is the place where these changes are to be made.

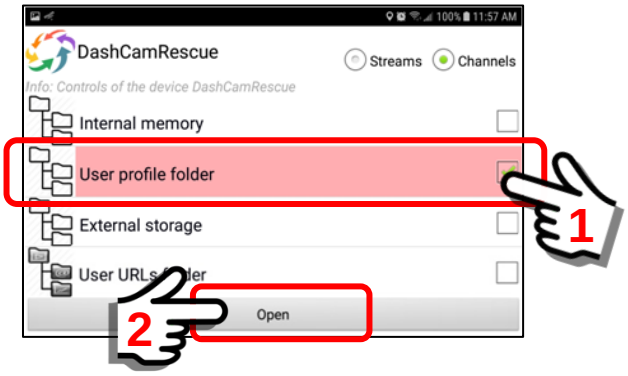


The file system on the mobile device.



b. <u>User profile folder</u>

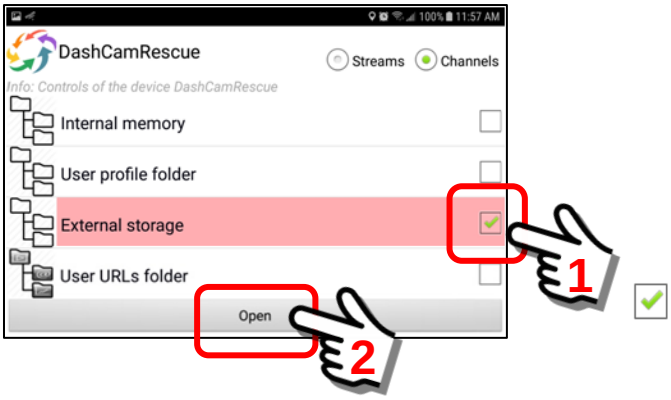
This menu choice allows a User to view the files and folders located in the “PROFILEs” section of the SentryMDU App. Although we provide access for a User to these files we would caution about making changes to any of the files unless you know what you are doing.



Click the “Open folder” button to view the contents of the folders. You may now navigate the file system of the mobile device.

c. <u>External Storage</u>

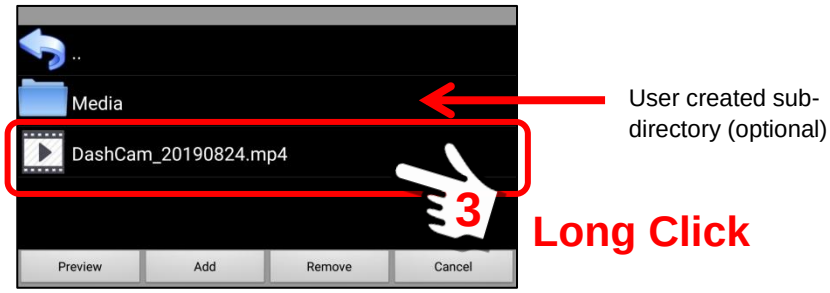
This menu choice allows a User to view the files and data stored on an SD Card, if one is installed. We begin with access to the file structure of the card.



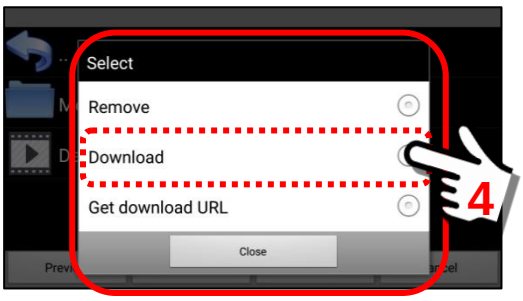
When you “open” the file location of the External Storage channel, you will see the ROOT level of the SentryMDU file system on the SD Card (**Device** Folder).

<SD Card> / Android / data / com.sentrymdu.GeoEye / files / Device /

Navigate the file system and locate a file. Perform a "Long click" on the selected file name.

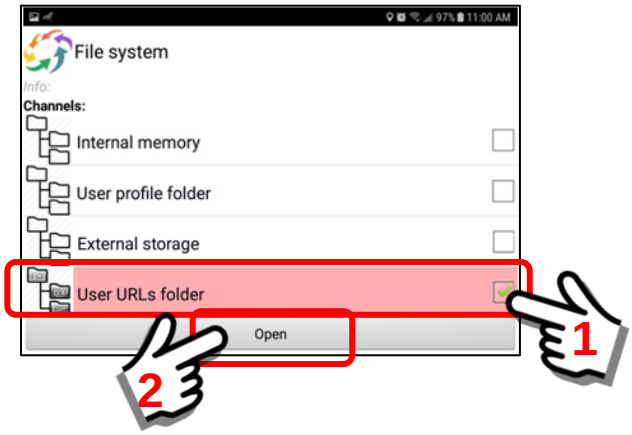


A "Long click" on the file name will open a pop-up menu that provides options to Download or Remove a file. If you have "remote" access, you may also download the file to your device (assuming you have credentials).

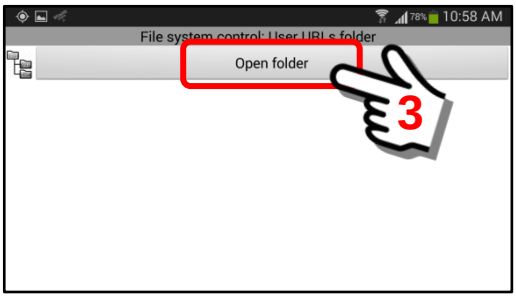


See **Sections 5.8 and 5.9** for a detailed discussion of SD Card configuration and use.

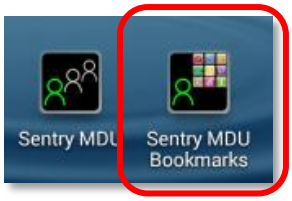
d. <u>User URLs folder (contents of SentryMDU Bookmarks Icon)</u>
This menu choice allows a User to view the URL folders and files that have been created in the Bookmarks section. This capability will allow a user to transfer a complete bookmark folder to another user if desired (saves on configuration time for large organizations).



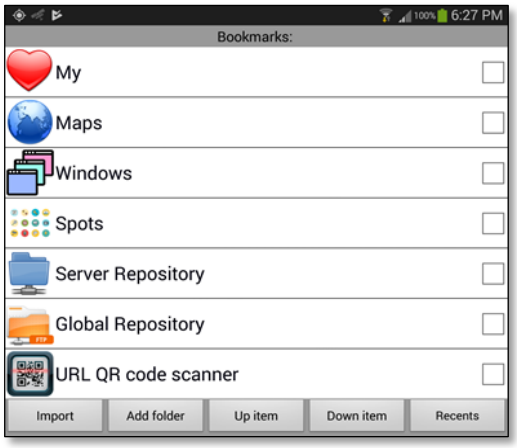
At the “File Systems Controls” Panel, click once again to “open” the Bookmark URLs.



Click the “Open folder” Button. This will display the bookmark URLs and folder inside the Sentry MDU Bookmarks Icon shortcut.



Will display the Bookmark Folders that are stored in the Icon Folder on the mobile device.



4. ***The "Megaphone control" choice***

The Megaphone Control choice includes two options.

<u>The Audio Megaphone</u> option will allow a User to speak into a local mobile device … and a designated remote device will broadcast their voice over the remote device speaker as a "Megaphone". This is a "one way" communications method.

<u>The Voice Commands</u> option will allow pre-recorded voice commands to be initiated from a local mobile device and played over the loudspeaker of a "remote" mobile device.

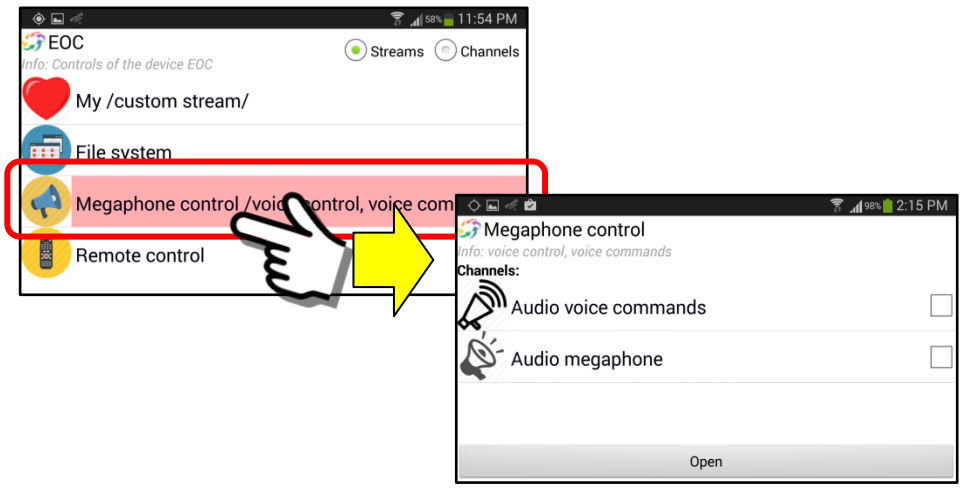
In most instances, use of these two options would be performed by activating the "Controls" Button on the Mobile Object Panel of a remote device. However, this section is describing the "Controls" Button on the Tracker Panel. The features are similar and the screens look the same, except you are using your own mobile device. The voice command option will allow you to test the voice commands (see what they sound like). The "Megaphone" feature on your own device simply makes your device echo the words you speak into the microphone. This topic is covered here as an abbreviated version of what is covered under the Mobile Object Panel section.

The "Megaphone control" menu option will accept only a short-click (note that on the Mobile Object panel "Megaphone control" option will accept BOTH a long and short click).

<u>Short-click on the Megaphone control option</u>

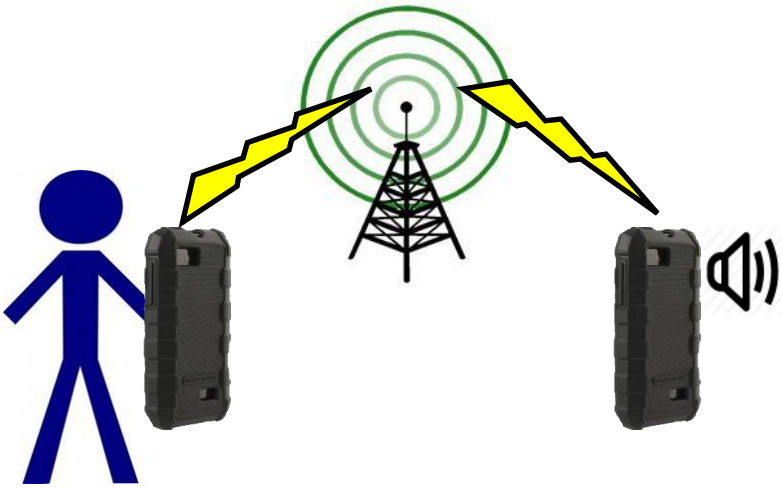
A short-click on the "Megaphone control" menu option opens another panel that provides for access to install pre-recorded voice commands on your local device. The implementation of the "Megaphone control" option on the Mobile Object panel of a "remote" device allows the pre-recorded voice commands to be installed on a "remote" device (see **Section 10.20, Item 4**).

On the Tracker Panel, you only have access to your local device.

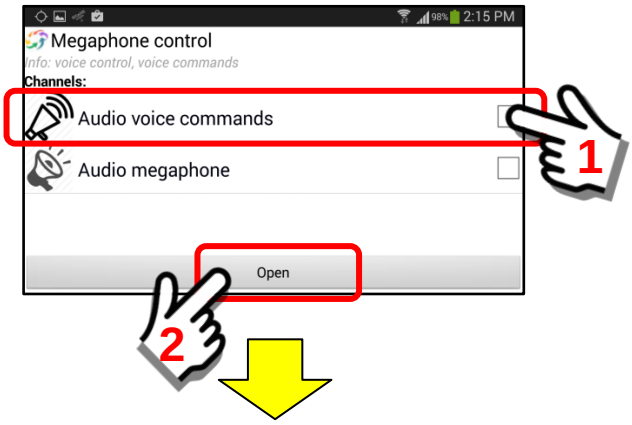


a. <u>Audio voice commands</u>

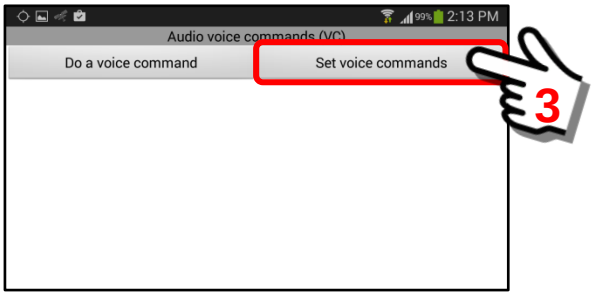
The “Audio voice commands” option, as implemented on the Tracker Panel, allows a user to install pre-recorded messages/commands on their local device for testing before sending to other remote devices.



To engage this feature, click on the “Audio voice commands” channel on the Megaphone control panel.



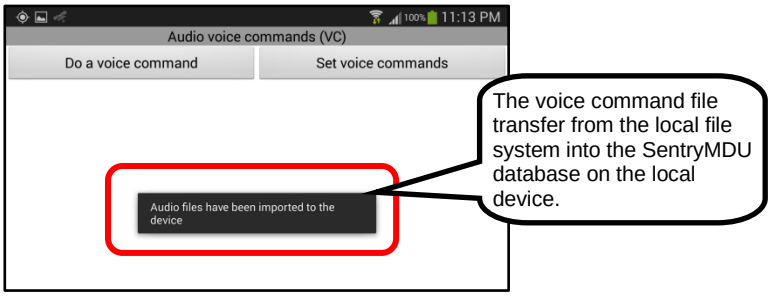
Install the files with the voice commands on the local device. Click on the “Set voice commands” Button.



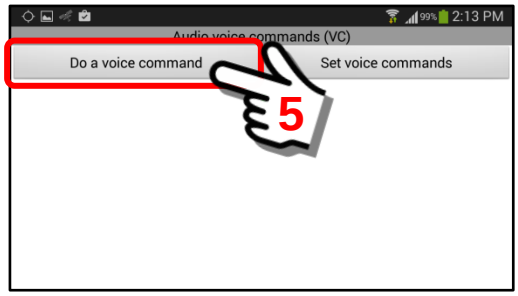
The file system of the local mobile device will be displayed. Navigate to the appropriate directory and select the Voice Commands file as shown below.

Clicking on the "Select" Button will load the Voice Command files into the Sentry MDU System database for this local device.

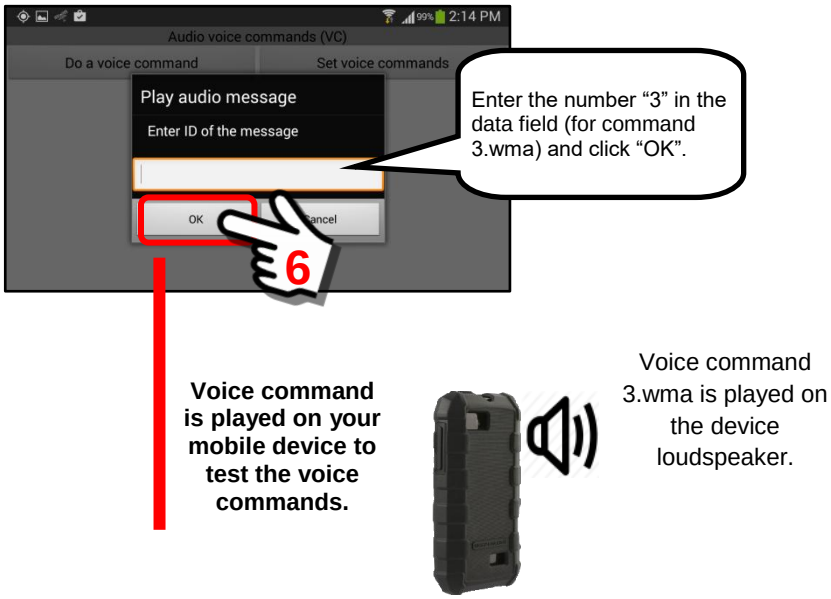
If the file transfer is successful the following message will appear.



The system is now ready to "test" a Voice Command file on your local device.



The system will now ask for the ID number of the voice command message. Typically, voice commands have filenames such as 1.wma, 2.wma, 3.wma ….. 20.wma. Voice commands may be in many different audio formats. This example is using .wma audio files.

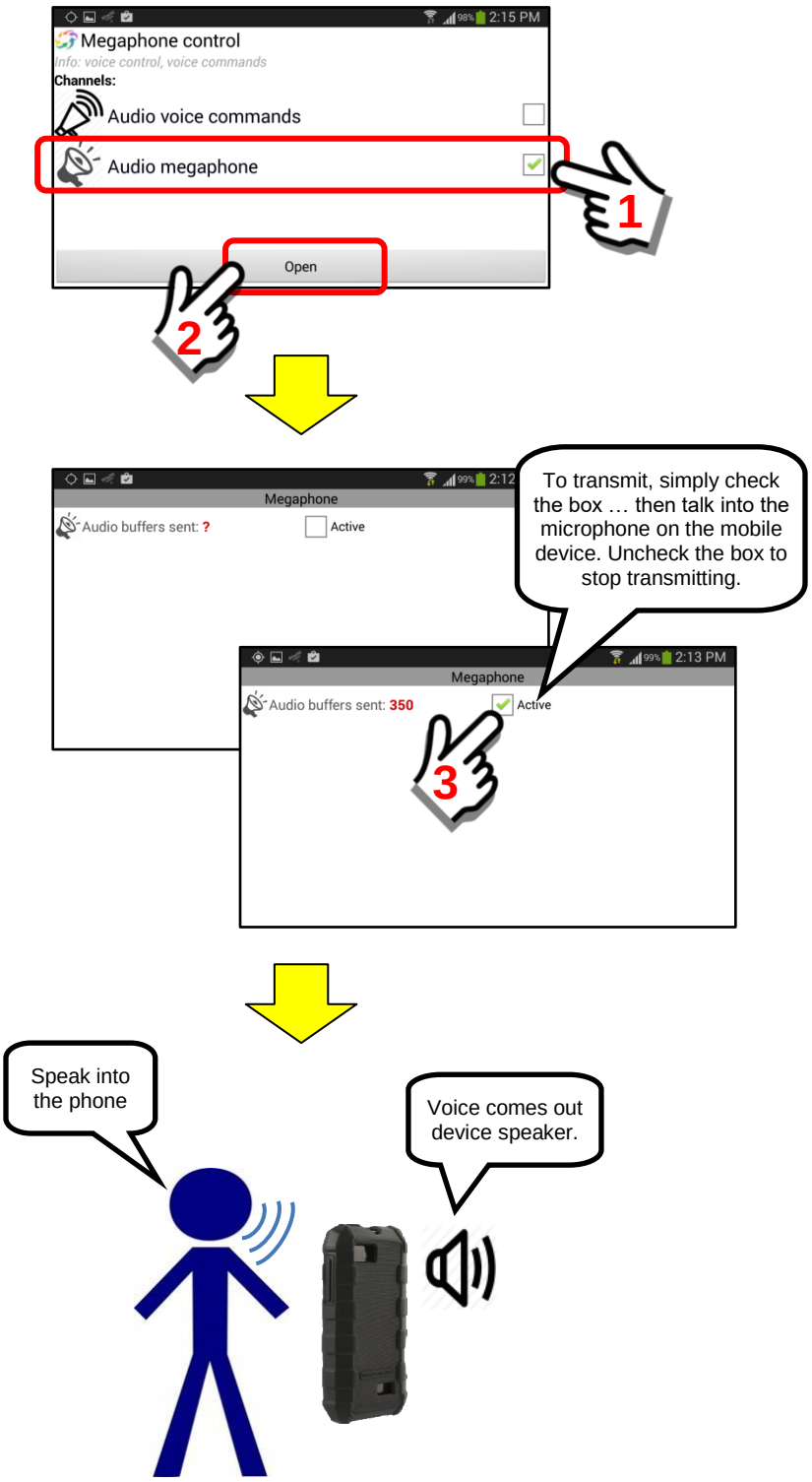


b. <u>Audio Megaphone</u>

The Audio Megaphone allows a User to speak into a local mobile device … and the remote device will broadcast their voice over the remote device speaker as a "Megaphone". This feature is best used with an auxiliary Bluetooth amplified speaker.

As implemented on the Tracker Panel, this option allows a user to "test" the Megaphone feature with their own device.

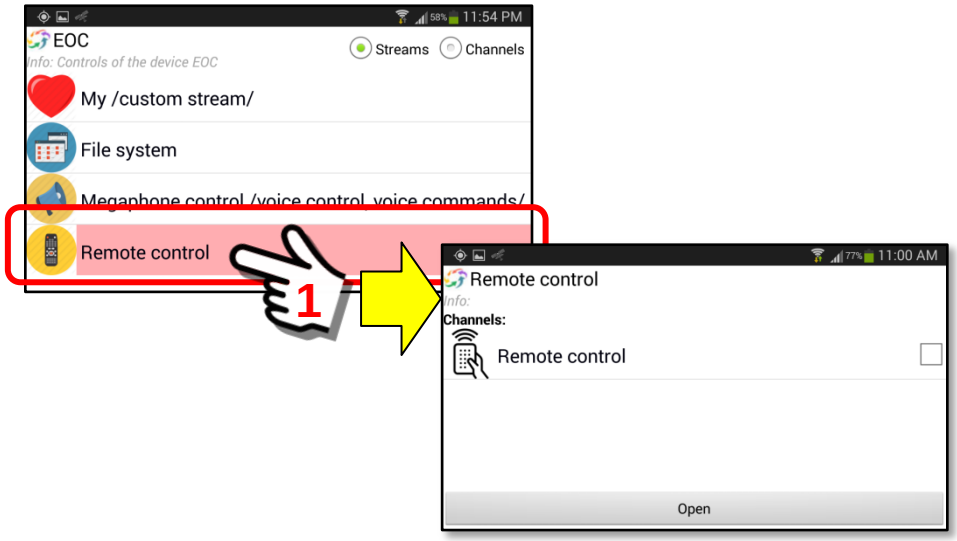
To engage this feature, click on the “Audio megaphone” channel on the Megaphone control panel.



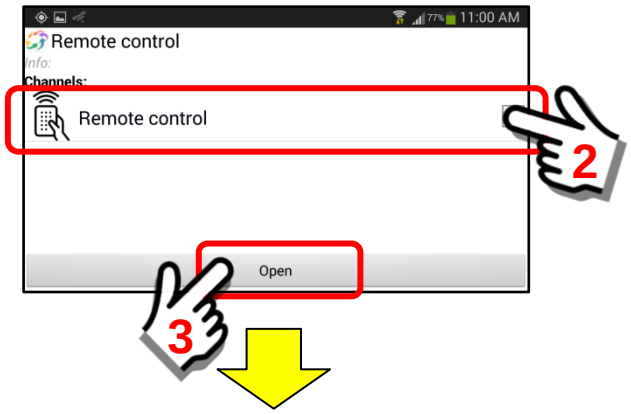
5. ***The "Remote control" choice (future implementation)***
In this example, we will review the "Remote Control" option. As of this writing, the Remote Control menu item is not active. In the future, the remote control option will allow a user to control a "real-world" interface such as relay boards and other devices.

The "Remote control" menu option, on the Tracker Panel, will only accept a short-click entry. Although there are several configuration options available, as of this writing they are not activated. They are reserved for future implementation.

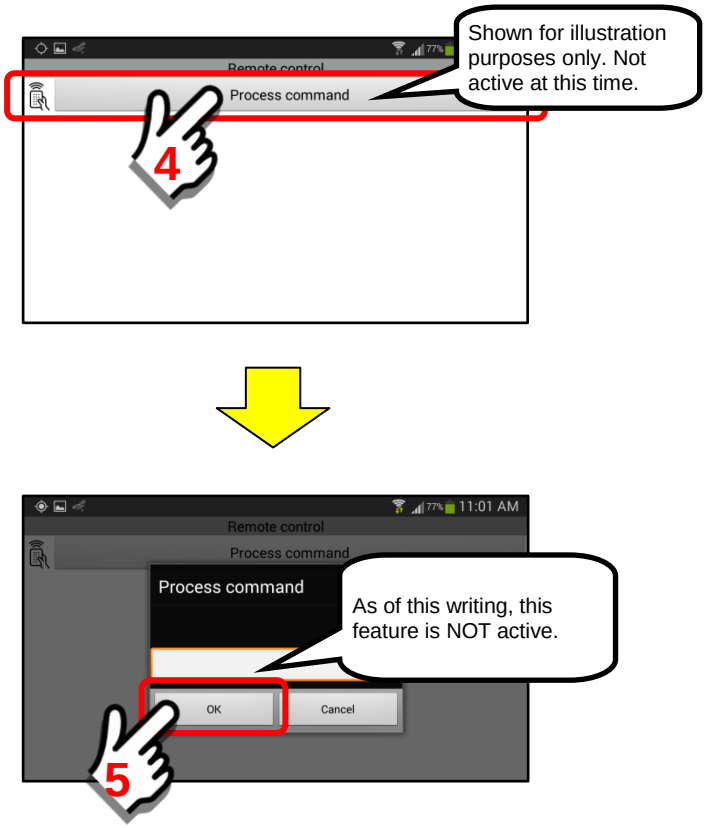
<u>Short-click on the Remote control option</u>
A short-click on the "Remote control" menu option opens another panel that provides for access to the sending of a "process" command string (future implementation). Currently, no actions will take place.



Although these following menus are available, no actions will take place. The following screens are for informational purposes only.

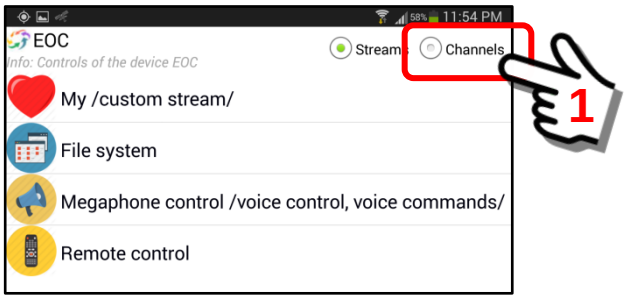


Activating the Remote Control channel will open a panel that will provide a list of Process Commands (future).

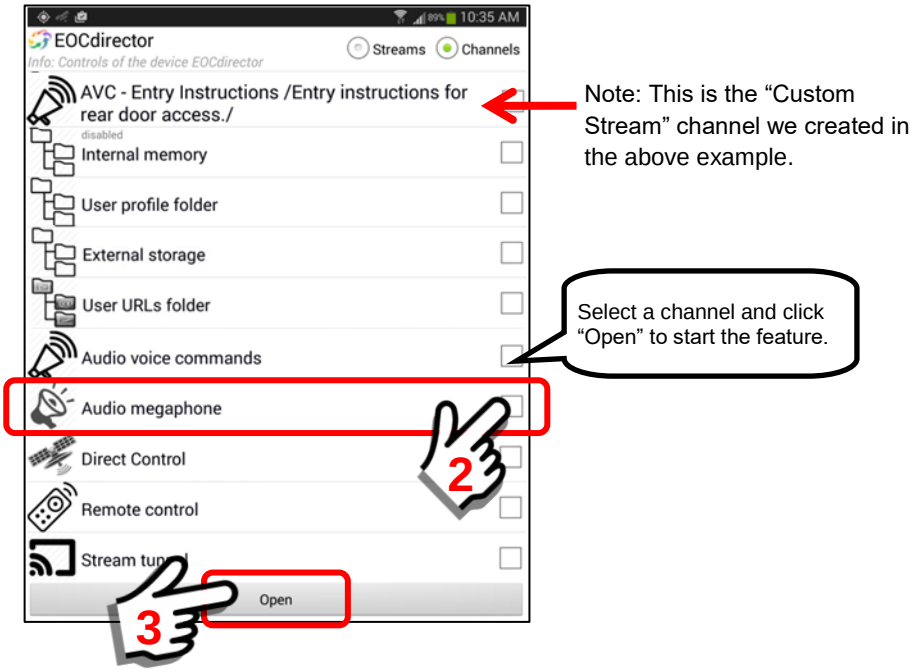


6. ***Controls Button – Channels View feature.***

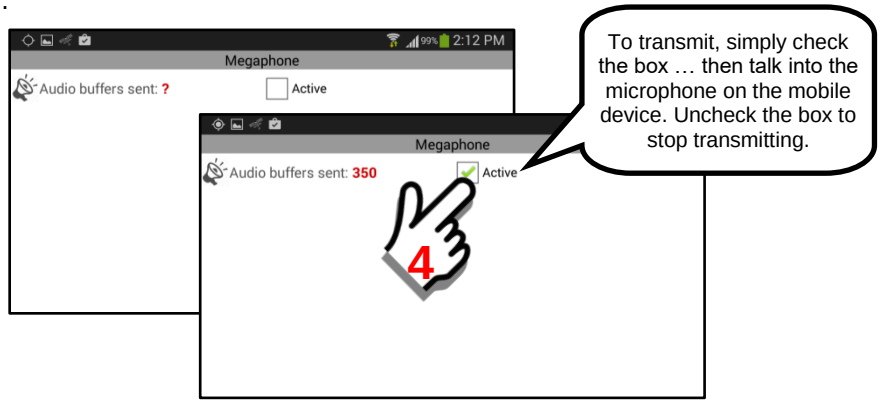
In the previous examples we have been reviewing the "Streams" View of the Controls Button features. As we navigated through menu levels we accessed the individual "channels" that make up the data streams. It is possible to access and execute the channel options directly through the "Channels View" feature.



The channels view simply provides all channels in a list. A user may "select" and open the following channels.



In this example, we have selected the Audio Megaphone channel to launch.



15.2.22. The Recording checkbox and Panel button

Overview:

The “Recording” checkbox and associated Panel Button allows a user to designate specific Sensor Recorders (one or more) that will be activated when the recording checkbox is “checked” (activated).

This section will describe how to use these features on the Tracker Panel.

Tracker Panel – Recording checkbox and Panel Button:

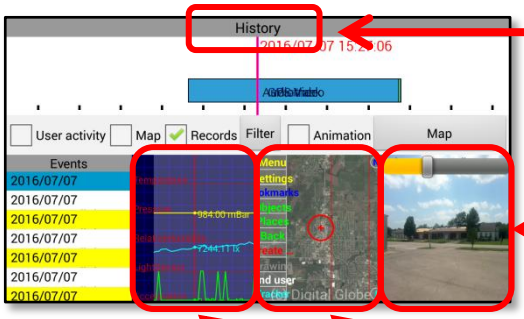
These features are located on the lower left side of the Tracker Panel.

Description of the Recording Panel function and features:

1. ***Overview of the Recording feature.***
   The recording feature on the Tracker Panel allows a user to pre-configure a specific Sensor (or group of sensors) to record data when “recording” is activated. Recording is turned on manually.

Sensors that may be recorded include all sensors on the mobile device, such as audio, video, GPS coordinates, acceleration and more. Each sensor may be individually customized for the application (see **Section 15.2.17**). When the “recording” checkbox is activated the selected sensor(s) data will be stored in the Data Archive on the local device (and/or can be transmitted to the Sentry MDU Data Server).

In the following examples we will show how to record both a single channel of sensor data and multiple channels of data that may be played back individually or by using the History Feature (via Mobile Object Panel) as illustrated below.



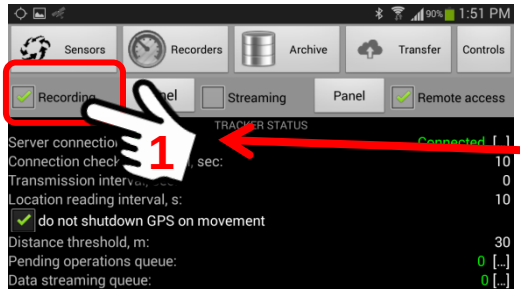
History Feature on the Mobile Object Panel

Audio-Video Recording

GPS location of where Audio-Video recording was made

Environmental sensors such as Light intensity, Pressure, Acceleration.

2. ***Activating the Recording Feature.***
To activate the recording feature, perform a “Long click” on the Recording Checkbox. You will feel a tactile vibration on the mobile device for ½ second duration. The green checkmark should now appear in the checkbox indicating that recording is now “active”.



Long click to activate recording. Long click a second time to turn off.

Long Click

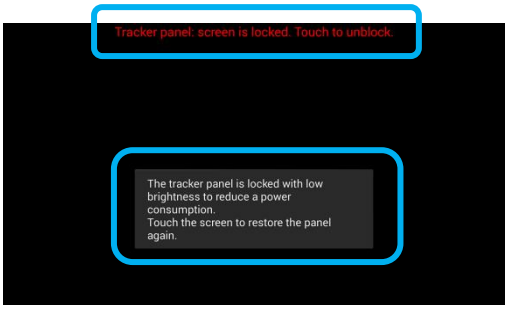
Important Note: The recorder will remain active until it is turned off. Pay special attention because it is easy to “forget” that you have an active recorder.

When the recorder has been turned on, via the activation checkbox on the Tracker Panel, the User must remain at the Tracker Panel screen. If you attempt to use the “back” button on your phone and navigate to another menu, you will receive a “reminder” message that recording has not finished.

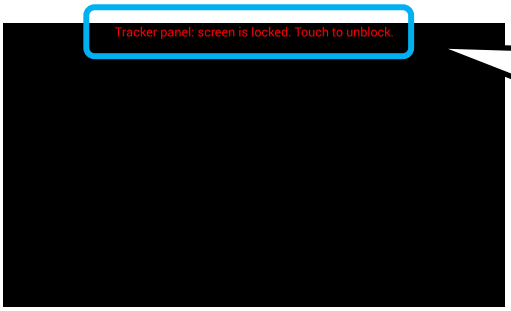
You may NOT navigate away from the Tracker Panel screen while the recording feature is active.

If you attempt you will see a message that “Recording is not finished”.

By design, the Tracker Panel has many features that are only available to the user of the mobile device. Since many features are launched from the Tracker Panel, the panel screen is designed to “dim” in brightness after 30 seconds of inactivity.

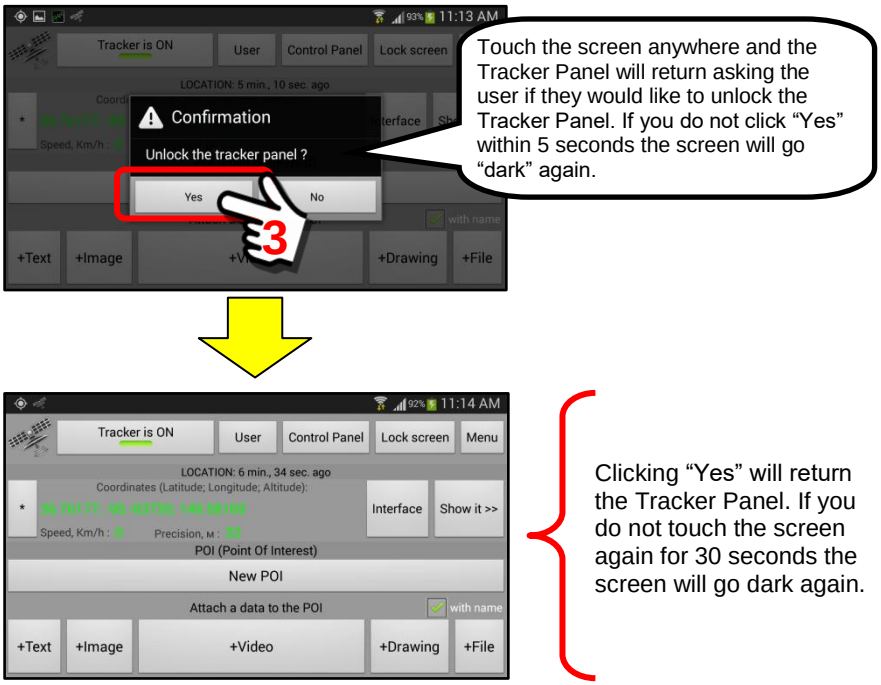


Screen will go dark with a message to bring the display back.



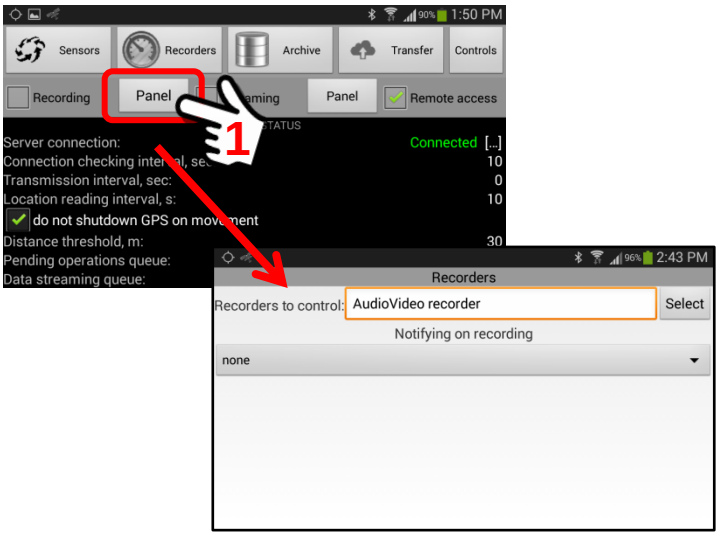
When the screen is “dark” a very faint message is red text will explain that touching the screen will bring the display again.

To restore the Tracker Panel display, touch the screen



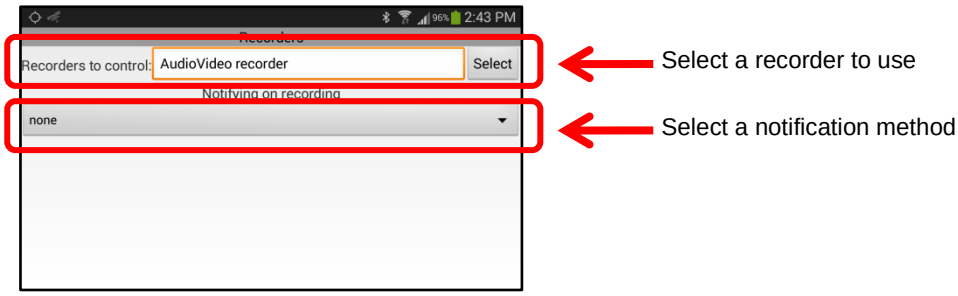
3. ***Setting up a single recorder channel.***
The recorder feature allows a User to designate one (or more) sensor recorders. This example will describe how to set up an AudioVideo recorder.

Click on the recording "Panel" Button to gain access to the "Recorders" Panel. This panel will allow selection of the sensor channels to record.

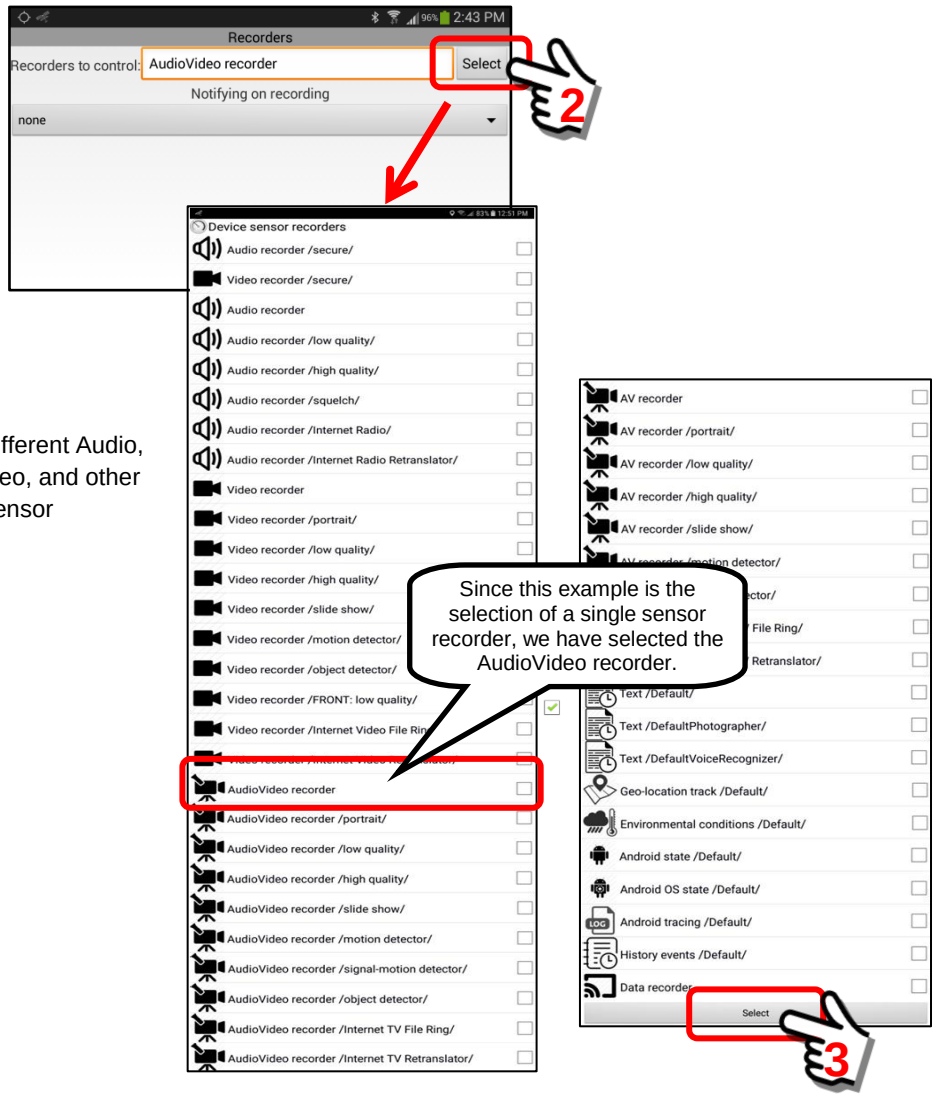


The “Recorders Panel” has two primary functions:

a. Designate which recorders to control when the recording button is activated.
b. Select a method by which the Sentry MDU System will notify you (the User) when the recorder is active.



To select a recorder to control, click on the “Select” Button. A list of available “recorders” will be displayed. In this example, the “AudioVideo” recorder (default) is shown as “checked” and active.

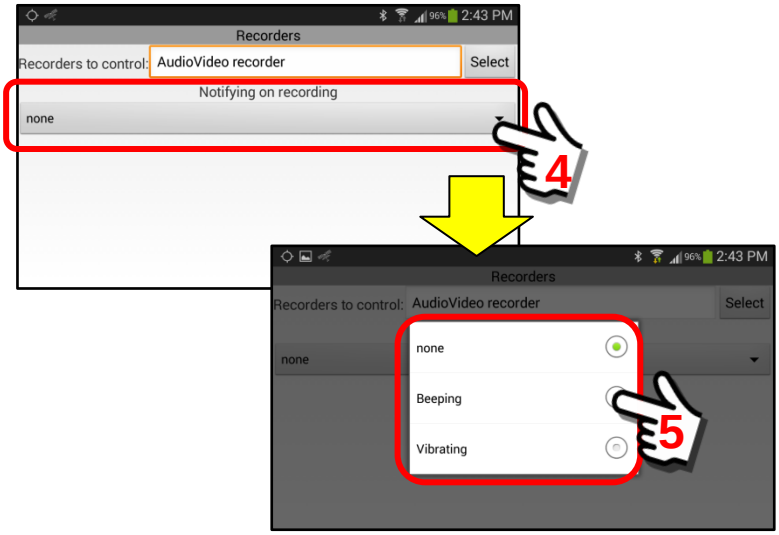


A full list of the different Audio, Video, Audio-Video, and other pre-configured sensor recorders.

Put a “check” in the checkbox of the “AudioVideo Recorder” option in the list. Then click on the “Select” Button to save the choice.

In this example, we have now selected the recorder to control, now we need to select whether or not we want to be notified by the “system” when recording is active.

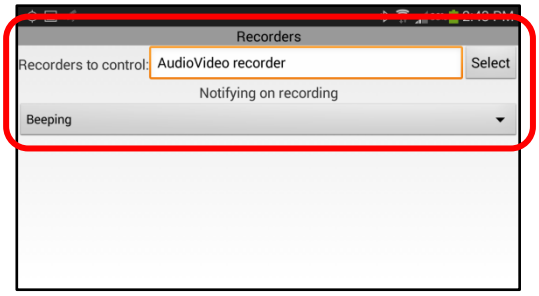
Click on the “Notifying on recording” Button to open a selection box.



<u>We are offered 3 options:</u>

1. **None** – No notification, this is the default.
2. **Beeping** – The mobile device will emit a short “beep” tone once every 10 seconds to indicate the recorder is active.
3. **Vibrating** – The mobile device will make no noise, but will emit a short “vibration” pulse once every 5 seconds to indicate the recorder is active.

From the list, select the notification method. For this example, we will select “Beeping” as our notification method. The Recorder panel should now appear as follows:



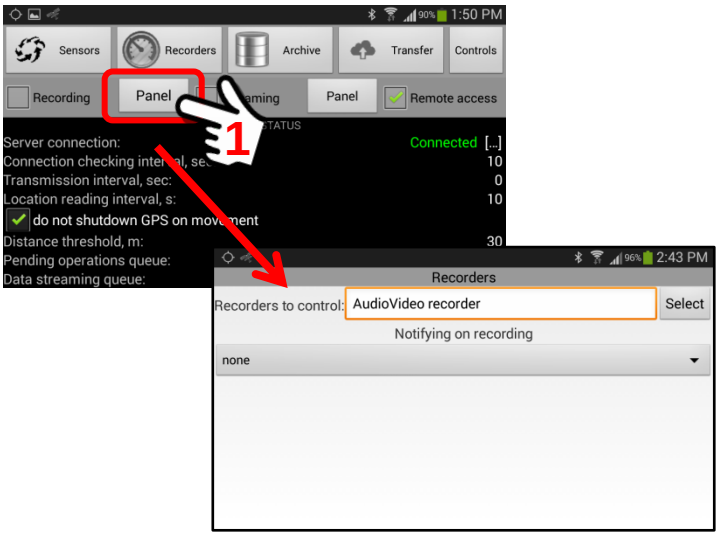
Selections of AudioVideo recorder and Beeping notification.

Click the “back” button on the mobile device to return to the Tracker Panel screen. You are now ready to activate the recording feature.

4. ***Setting up multiple recorder channels.***

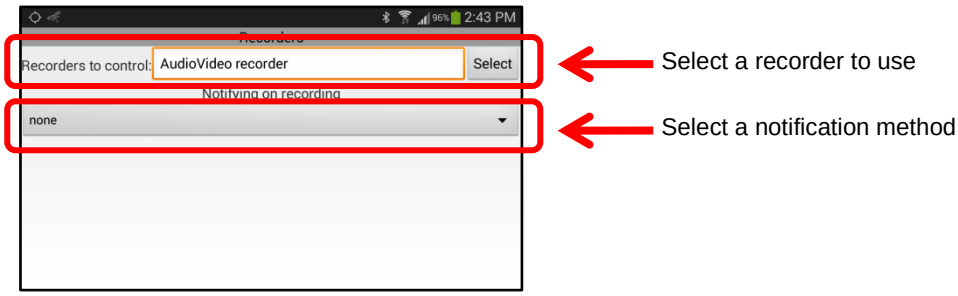
The recorder feature allows a User to designate one (or more) sensor recorders. This example will describe how to set up 3 separate recording channels.

Click on the recording "Panel" Button to gain access to the "Recorders" Panel. This panel will allow selection of the sensor channels to record.



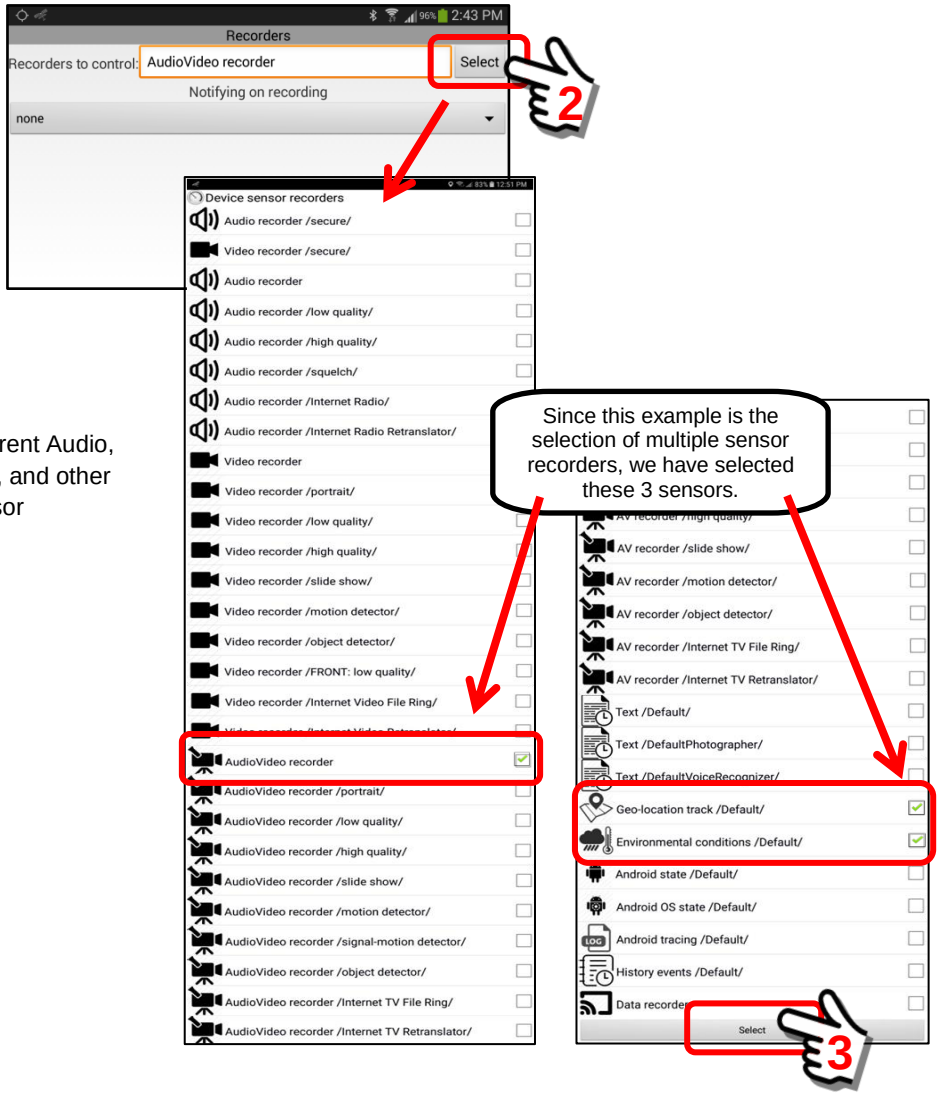
<u>The "Recorders Panel" has two primary functions:</u>

a. Designate which recorders to control when the recording button is activated.
b. Select a method by which the Sentry MDU System will notify you (the User) when the recorder is active.



To select multiple recorders to control, click on the "Select" Button. A list of available "recorders" will be displayed. In this example, the "AudioVideo" recorder (default) is shown as "checked" and active. However, in this example we want to add two more sensors to the

recorder function. We will add GPS Tracking and Environmental Sensors.

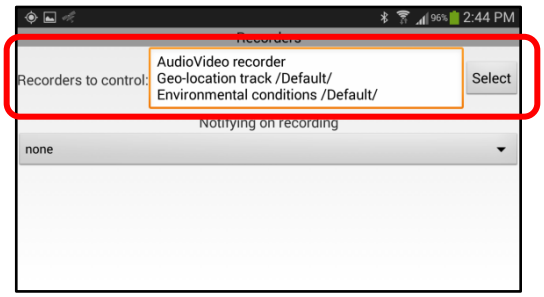


A full list of the different Audio, Video, Audio-Video, and other pre-configured sensor recorders.

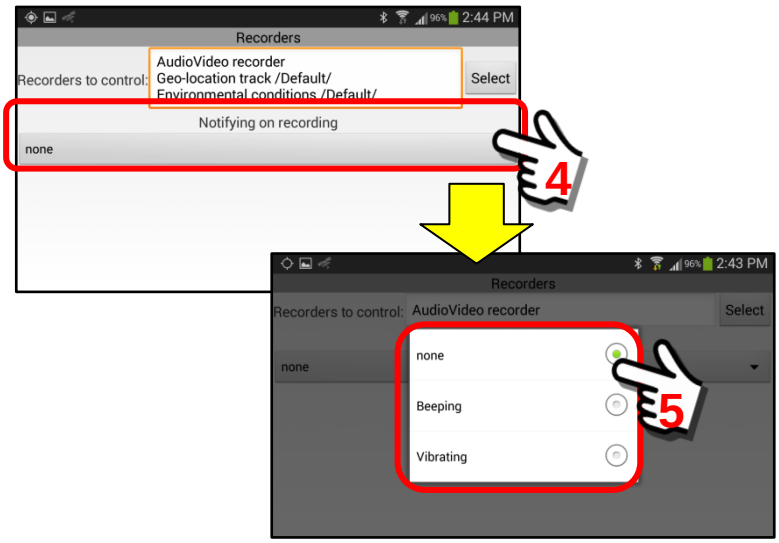
Put a “check” in the checkbox of the 3 choices in the list. Then click on the “Select” Button to save the choices.

In this example, we have now selected the following 3 recorders to control.

1. AudioVideo
2. Geo-location track
3. Environmental conditions



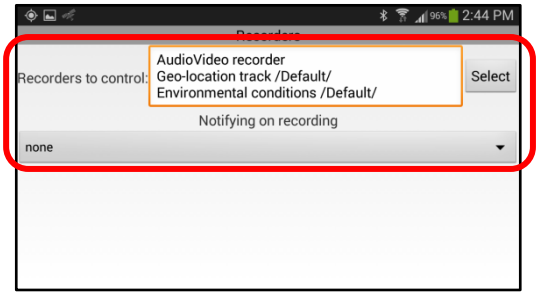
Now we need to select whether or not we want to be notified by the "system" when recording is active. Click on the "Notifying on recording" Button to open a selection box.



We are offered 3 options:

1. **None** – No notification, this is the default.
2. **Beeping** – The mobile device will emit a short "beep" tone once every 10 seconds to indicate the recorder is active.
3. **Vibrating** – The mobile device will make no noise, but will emit a short "vibration" pulse once every 5 seconds to indicate the recorder is active.

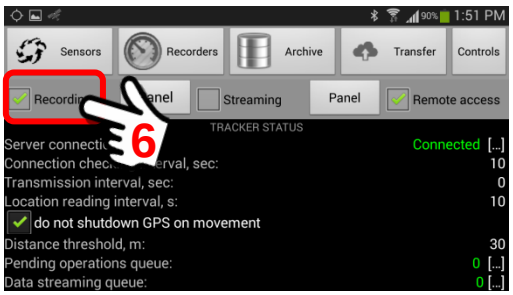
From the list, select the notification method. For this example, we will keep "none" (the default) as our notification method. The Recorder panel should now appear as follows:



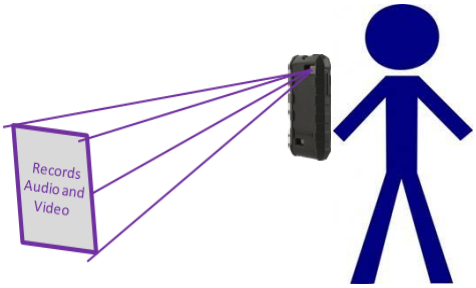
Selection of 3 recorders and no notification.

Click the "back" button on the mobile device to return to the Tracker Panel screen. You are now ready to activate the recording.

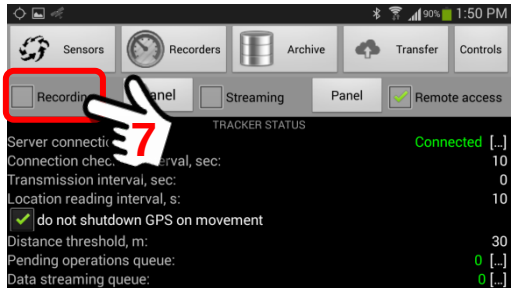
To test the “new” multiple sensor recording configuration, click on the “Recording” checkbox to start the recorders.



Point the rear camera (sensor) on the mobile device to a scene. It will be recording audio and video as well as the GPS location and other environmental parameters. Record for 25 seconds.

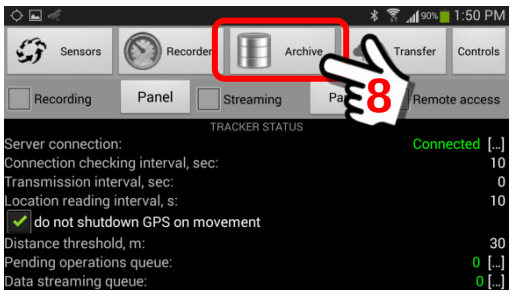


After 25 seconds, perform a “long click” on the Recording checkbox again to turn “off” the recorder feature.

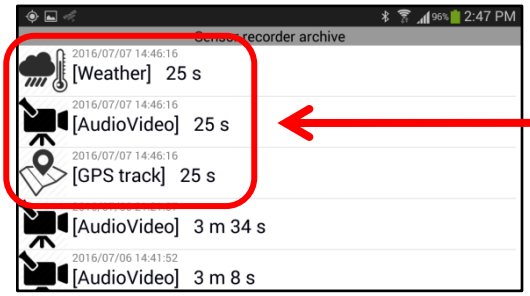


Long Click

To review the data that has been recorded, click on the “Archive” Button.



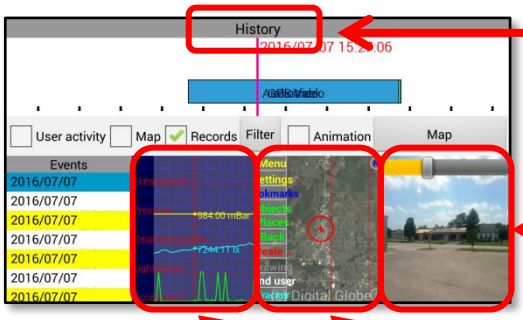
The Data Archive should contain 3 separate data files at 25 seconds each.



The Archive will contain 3 separate data files for the 3 sensor recorders that were activated.

These data files may be played independently (click on each to "play" the data). However, for this example, we will use the Sentry MDU History Feature to simultaneously play all 3 data streams.

Navigate to the Mobile Object Panel of your mobile device and select the "History" Button. Select the current date, then expand the horizontal time line until you see the recorders that were used. An example is illustrated below.



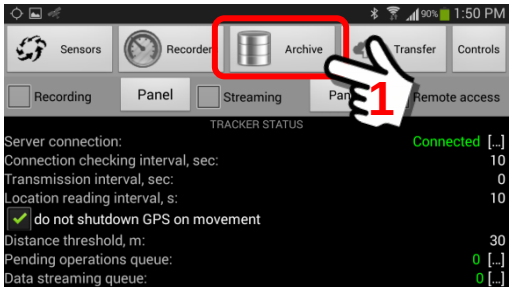
History Feature on the Mobile Object Panel

Audio-Video Recording

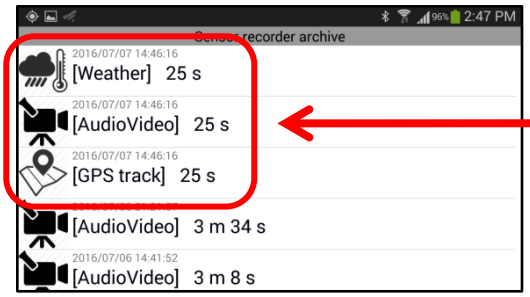
GPS location of where Audio-Video recording was made

Environmental sensors such as Light intensity, Pressure, Acceleration.

5. ***Reviewing the recorded content via the Data Archive.***
To review the data that has been recorded, click on the “Archive” Button on the Tracker Panel.

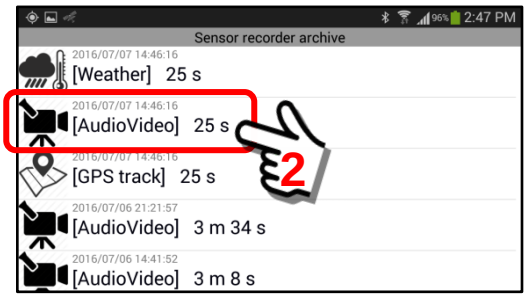


The Data Archive should contain 3 separate data files at 25 seconds each.



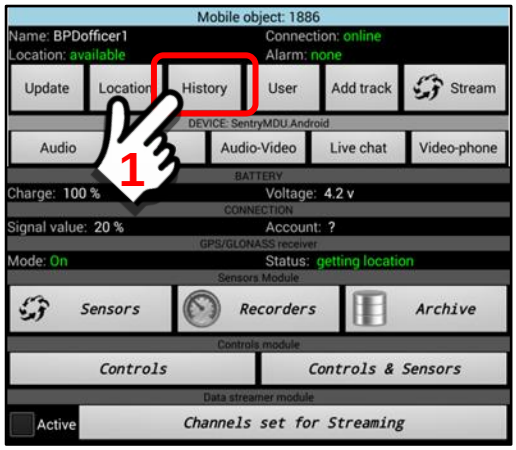
The Archive will contain 3 separate data files for the 3 sensor recorders that were activated.

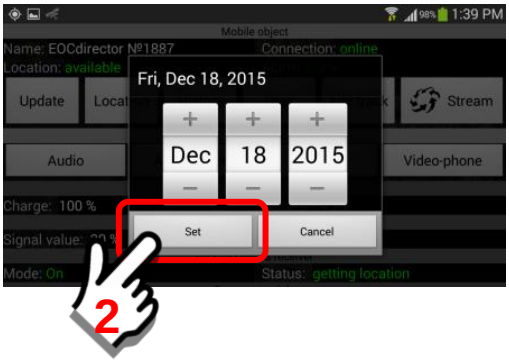
These data files may be played independently. For this example, we will play the AudioVideo file. To play this file, click on the filename



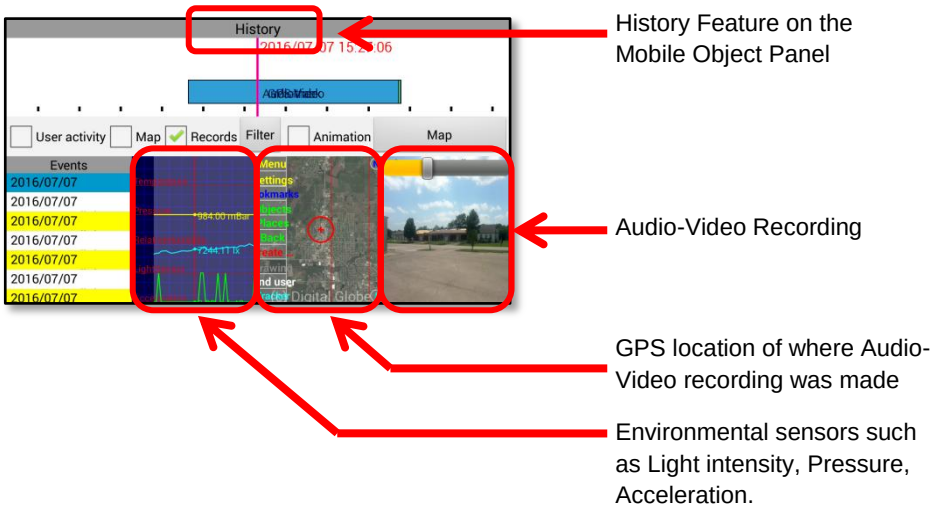
The AudioVideo file will play on the mobile device.

6. ***Reviewing the recorded content via the History Feature.***
To review all 3 data streams simultaneously, use the History Feature which is available on the Mobile Object Panel (see **Section 10.9** for more details).





Navigate to the Mobile Object Panel of your mobile device and select the "History" Button. Select the current date, then expand the horizontal time line until you see the recorders that were used. An example is illustrated below.



15.2.23. The Streaming checkbox and Panel button

Overview:

The “Streaming” checkbox and associated Panel Button allows a user to designate specific Sensor Channels (one or more) that will be activated when the streaming checkbox is “checked” (activated).

The data streamer module allows a user to select and set up a sensor (or group of sensors) that will stream the data to the Sentry Data Server and multiple other mobile devices. Typically this data stream is an audio/video stream, but it could be any number of sensors that have been configured to stream the data.

The advantage of “streaming” is that one device may stream data to many other mobile devices without placing a high load on the originating device.

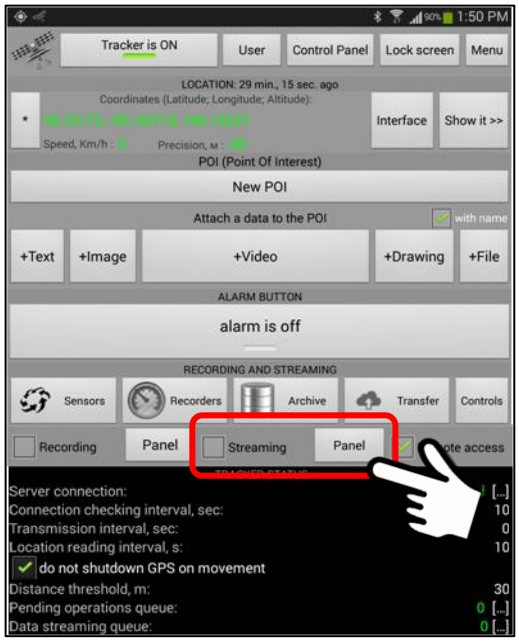
> **Important Note: The originator of the data streaming MUST configure their device for data streaming. All users wanting to “view” the data stream must have adequate security access to monitor the streaming.**

As implemented on the Tracker Panel, the “streaming” feature is turned on-off “manually” by a User (via a checkmark in the checkbox). The data streams that will be transmitted are those that have been pre-configured and designated in the associated streaming “Panel” Button.

This section will describe how to use these features on the Tracker Panel.

Tracker Panel – Streaming checkbox and Panel Button:

These features are located on the lower center of the Tracker Panel.



Description of how data streaming works:

In order to know when to use data "streaming" and when to use "direct connections" between mobile devices, it will be important for the user to understand how these two methods are used in the Sentry MDU System.

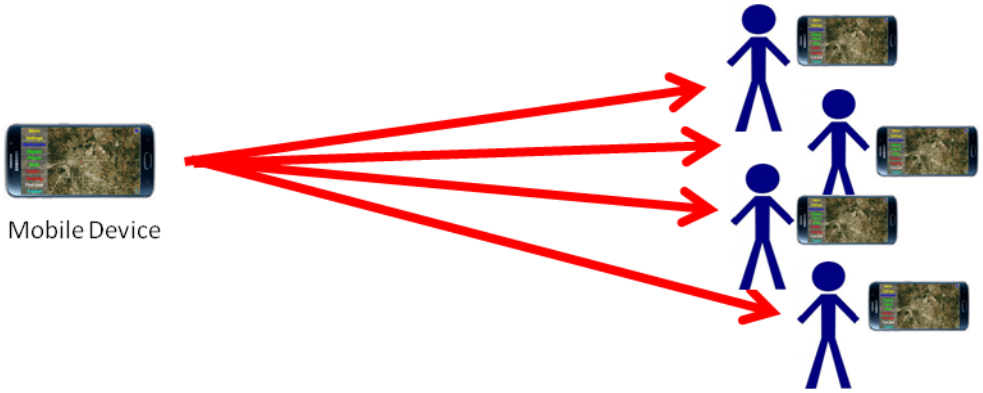
Direct Connection

The "direct connection" method is where one mobile device connects directly with another mobile device WITHOUT routing through the Sentry Data Server. The direct connection method may be limited by the available bandwidth (WiFi or Cellular) or the hardware itself (amount of memory and processing ability of the mobile device). Typically, a high quality mobile device will become overloaded with more than 8-10 direct connected devices.

In the direct connection method, as each new remote user connects to the originating mobile device, a "new" socket connection is created on the mobile device to handle the data flow. As more and more connections are made, eventually, this affects the performance of the originating mobile device and connections become unstable as data processing becomes overloaded.

Typically, you may assume that 1-5 direct connections will work fine and you should not have any issues. If you expect more than 5 users monitoring your data feed (audio-video) we would suggest you use the streaming method.

The illustration below shows a direct connection scenario.



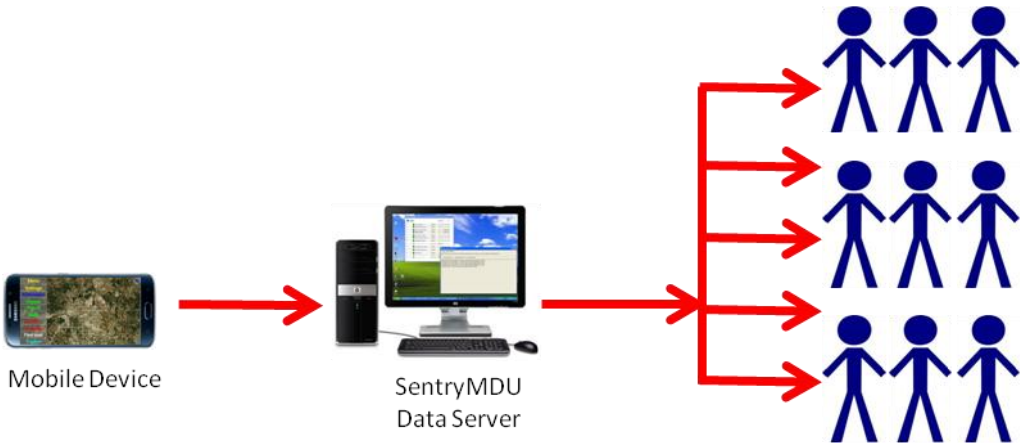
Data Streaming Method

The "data streaming" method is where one mobile device connects to the SentryMDU Data Server, which in turn connects to many remote mobile devices. The advantage of the Streaming Method is that the SentryMDU Data Server handles all of the bandwidth, processing and data streaming overhead. Since the Data Server is typically a high performance computer, it has the ability to provide hundreds of simultaneous streaming connections to remote mobile devices.

In this method the originating mobile device only sends a single data stream to the SentryMDU Data Server. Other remote mobile devices, in order to view the audio-video stream, simply click on the “Streaming” Button in the originators Mobile Object Panel. By doing this, they are actually connecting to the SentryMDU Data Server to receive the audio-video stream and therefore do not load the originating device.

The “Data Streaming” method can theoretically process hundreds of thousands of simultaneous connections. In practical terms, a system will be limited by the available internet bandwidth and the type of data being transmitted (ie bitrate and framerate of video transmissions).

The illustration below shows a data streaming scenario.



The following sections will describe how to configure a mobile device for data streaming.

Configuration of the Data Streaming feature:

The Data Streaming feature will require configuration steps to be taken on the “originating” device (the device that will be streaming the data). These settings will be configured on the Tracker Panel. This section will describe the steps necessary.

<u>The following process will be covered:</u>

1. Select the mobile device that will be streaming the data (originating device).
2. Review the Sensors Section on the Tracker Panel to determine if the existing sensors have been configured for data streaming.
3. Identify which sensors (ie Audio/Video) you would like to stream to other devices.
4. Configure selected sensors for data streaming.
5. Test data streaming feature to verify correct configuration settings.

The sections below will explore each of these topics in detail. Please note that in this example all changes are performed on the Tracker Panel.

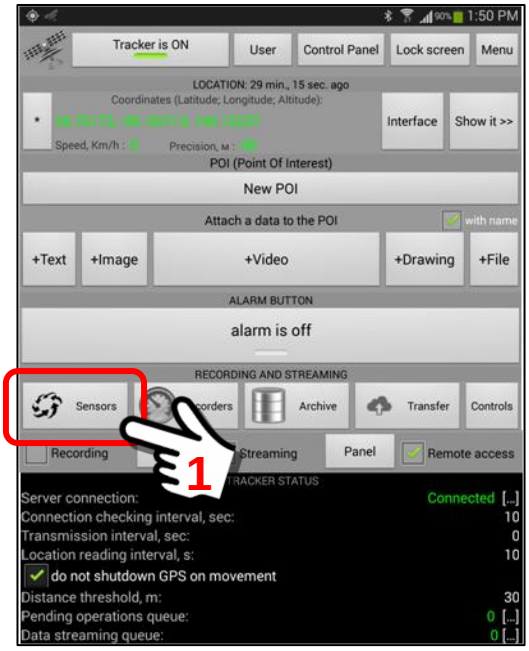
1. ***Select the mobile device that will be streaming the data.***
   Since this section is about the Tracker Panel, each user of a mobile device will configure THEIR own device for the data streaming sensors they want (ie Audio/Video). However, depending on the security settings of a User, they may also configure a "remote" device (mobile device belonging to another person) using the Mobile Object Panel of the remote user. The process is exactly the same.

   In this example, we will be configuring the data streaming for our own device. We will assume our device belongs to User = EOCdirector.

   The configuration process starts by reviewing the configuration of the "Sensors" on the device. Access to the sensors can be found on the Tracker Panel on your own device.

   <u>Location of "Sensors" parameters on your own device</u>

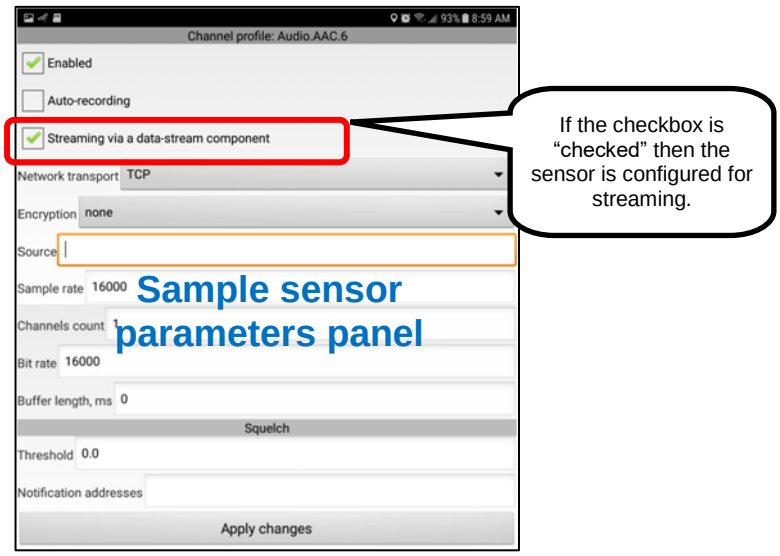
   <u>Tracker Panel – Sensors Button</u>



2. ***Determine if existing sensors have been configured.***
   The first step is to determine if the mobile device has sensors that are configured for "streaming" data. All sensors will have a "checkbox" with the heading "*Streaming via a data-stream component*". If this box is "checked" then it means that this sensor is

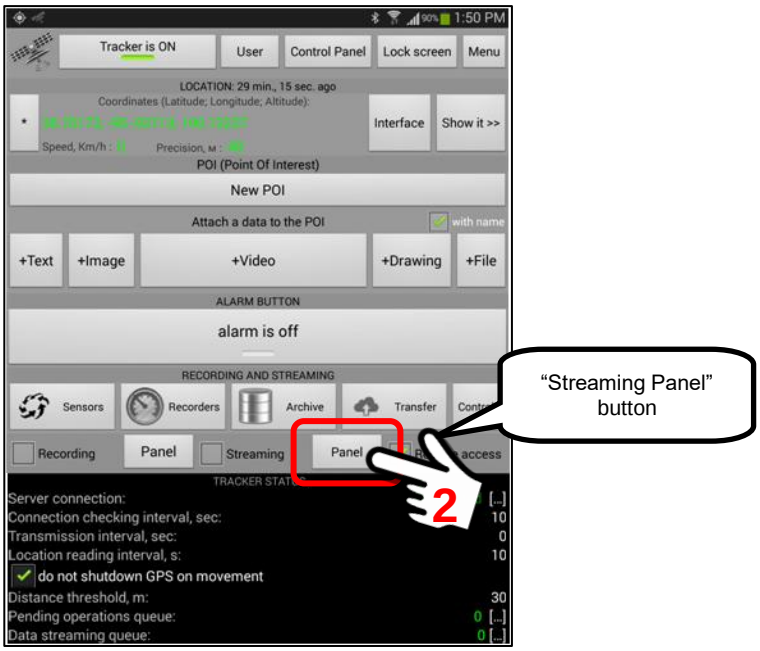
configured for data streaming and when streaming is activated, this sensor's data will be streamed.

We are looking to see which sensors are currently configured.

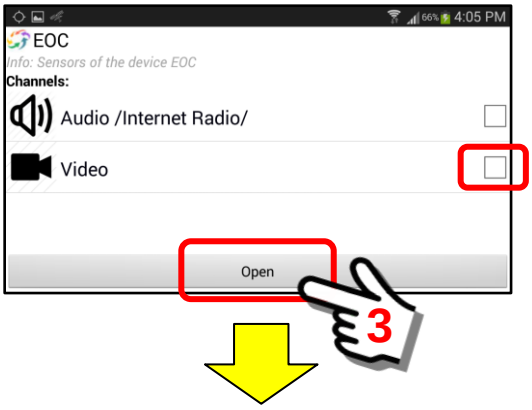


Important Note: Do not select duplicate sensors for streaming. For example, do not select multiple video sensors to stream data since each would have different parameters for the same camera device. This would result in an error.

To determine which sensors are currently selected for 'Streaming", click on the streaming "Panel" Button located on the bottom center of the Tracker Panel.

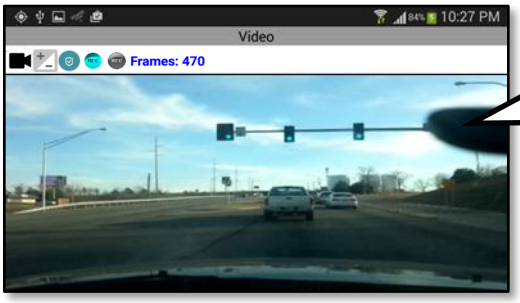


In this example, we notice that 2 channels have been set as “streaming” channels. If you wish to “test” the data stream, follow the instructions below.



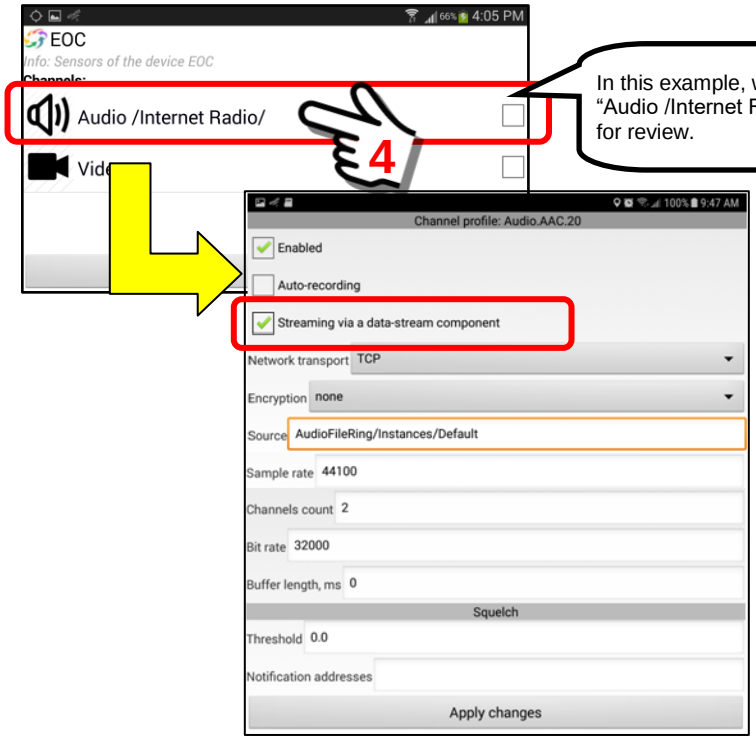
To “test” the streaming, put a “checkmark” in the checkbox for the channel you want to test (or both channels) and click on the “Open” Button.

For this example, we will test the “Video” channel.



When finished testing, click the “back” button on the mobile device.

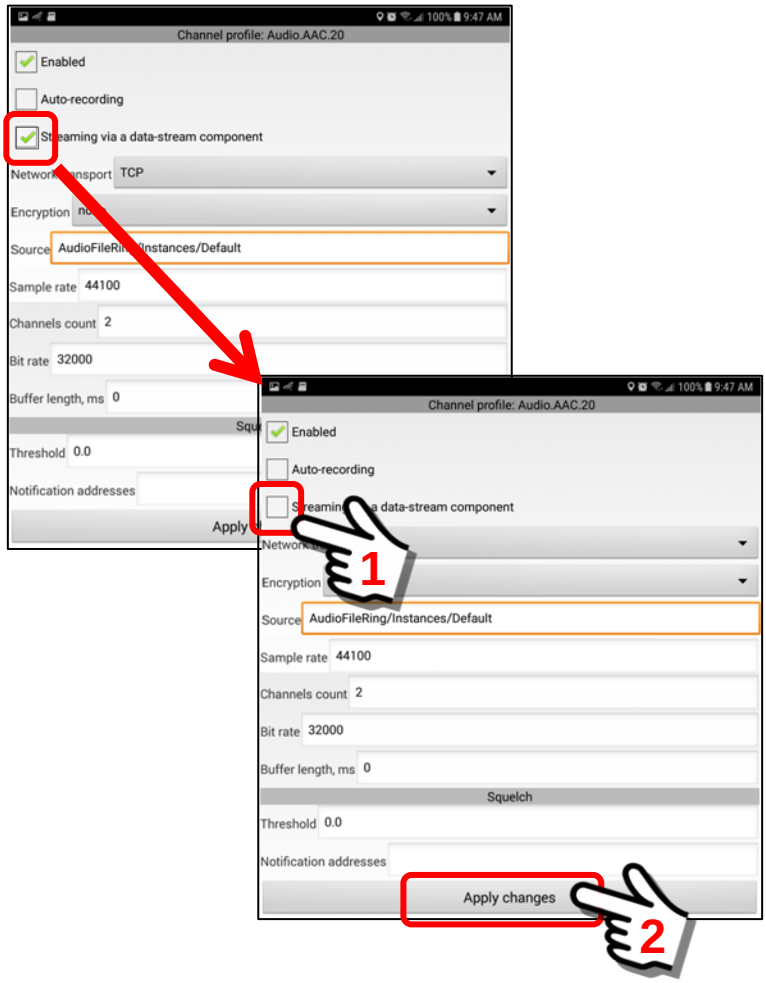
To review the channel profile (parameter settings) perform a “Long click” on the channel name and the “Channel Profile” panel for the sensor will appear. As you can see, the “streaming” checkbox is checked (active).



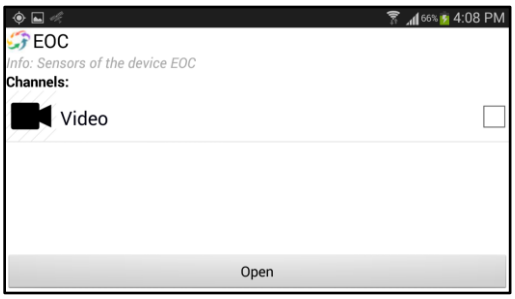
In this example, we have selected the “Audio /Internet Radio/” channel profile for review.

3. ***Identify which sensors are to be configured for streaming.***
In this example, we want to remove the “Audio /Internet Radio/” channel and replace it with a single “Audio” channel. The objective is to stream an audio and video channel.

To remove the “Audio /Internet Radio/” channel, open the channel profile panel, uncheck the streaming checkbox and then “Apply changes” to save the new settings.

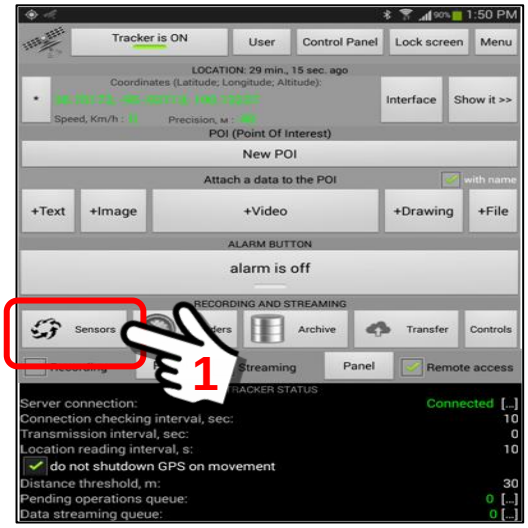


Now that we have removed the “Audio /Internet radio/” channel, we are left with only the Video channel that is configured for streaming.

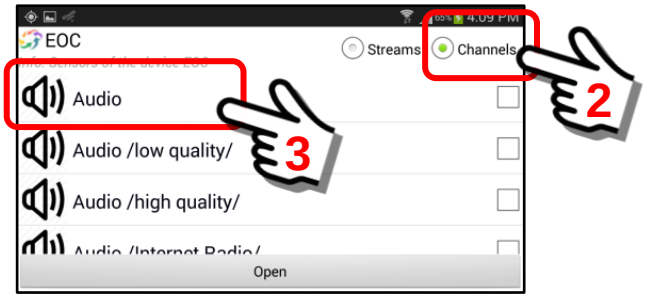


4. ***Configure selected sensors for data streaming.***

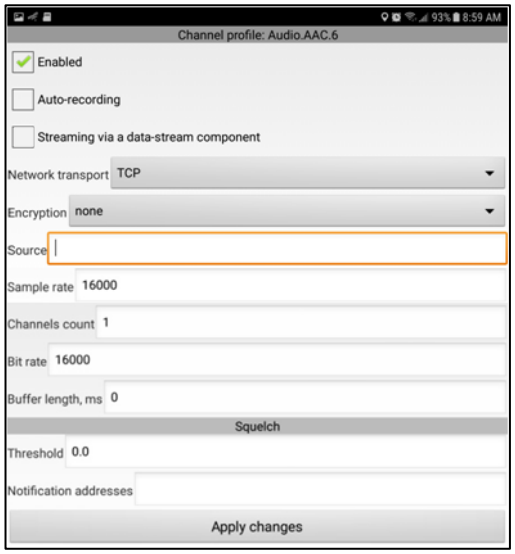
The next step is to add an Audio channel from the sensors list to the channels we want for streaming. Select the “Sensors” Button.



Select the “Channels” display option and then select the “Audio” sensor channel.

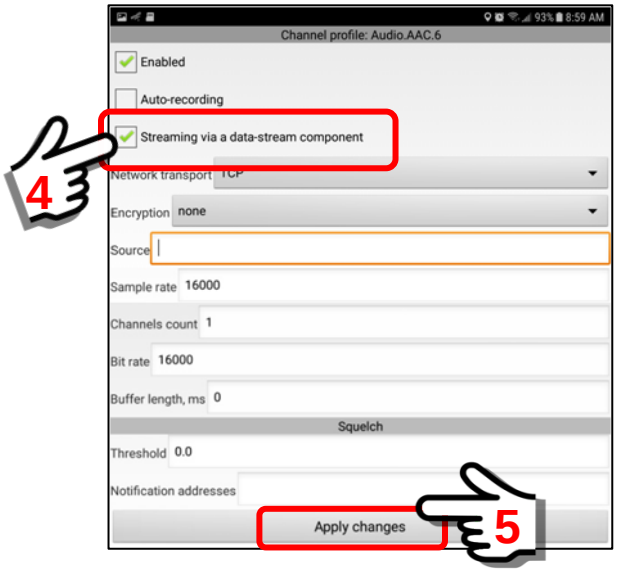


Perform a “Long click” on the Audio menu choice. This will open a Channel Profile Panel that will show the audio parameters for the particular audio sensor (device microphone).

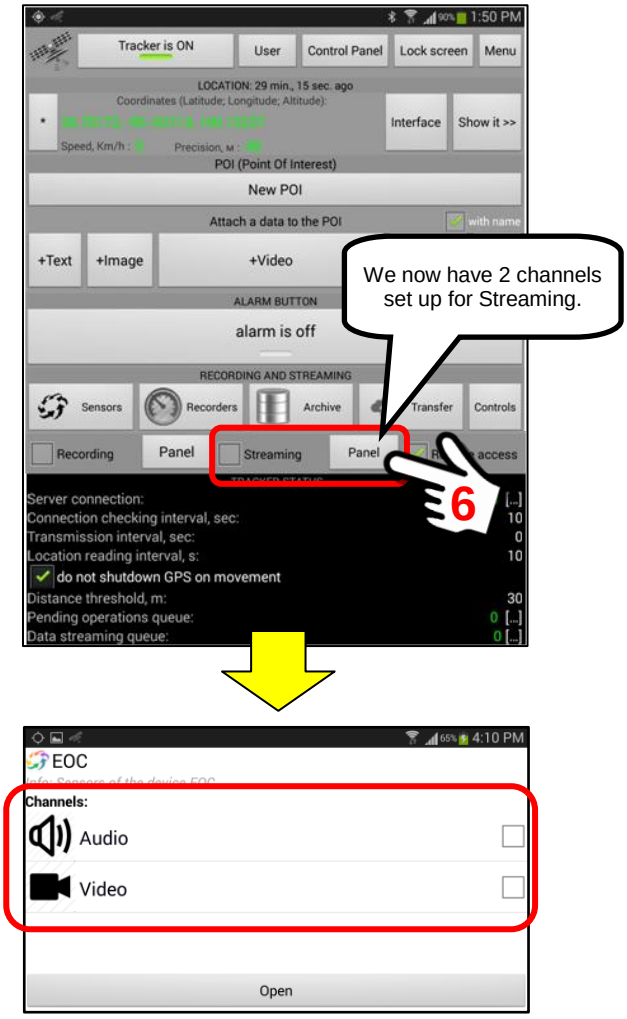


In most cases, the default settings are sufficient. However, the audio sample rate and bit rate may be adjusted to match the capabilities of the mobile device and available bandwidth.

Put a “checkmark” in the checkbox to make the streaming “active” for this sensor and then click the “Apply changes” button to save the new settings.



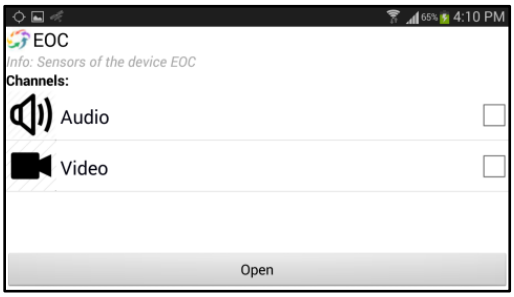
Now when you click on the “Panel” button, you will see both the Audio and Video channels displayed.



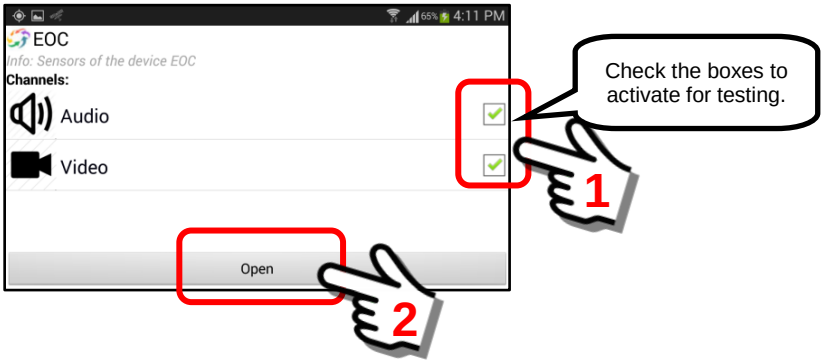
5. ***Test data streaming feature to verify correct configuration settings.***

The first time that data streaming channels are set up it is recommended to “test” the data streaming to make sure things work as desired. This section will describe how to test the streaming.

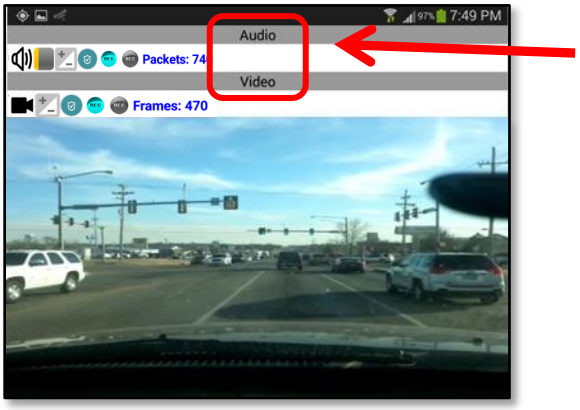
Click on the Streaming “Panel” Button and open the panel showing the channels.



Select the channels you wish to test. In this example, we wish to test both the audio and video channels. Put checkmarks in the checkboxes.



Clicking on the “Open” Button will launch the streaming display as shown below. When the streaming is activated for the test, the device will display audio/video from the on-board camera and microphone. Hold your device and point around you to view the scene. When finished, click the “back” button on your device to close the audio/video display.



In this example, both channels are streaming data from the mobile device.

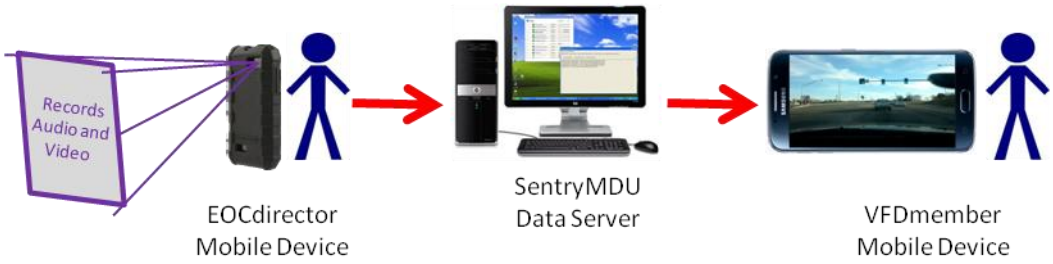
The test is successful.

6. ***Activate streaming on the originating device.***
At this point in our example, we have set up the sensor channels that we want to use for data streaming (ie Audio/Video) and we have tested that they work. The next step is to set our device to activate the "streaming" feature and then view the data stream on ANOTHER mobile device. This test requires two mobile devices.

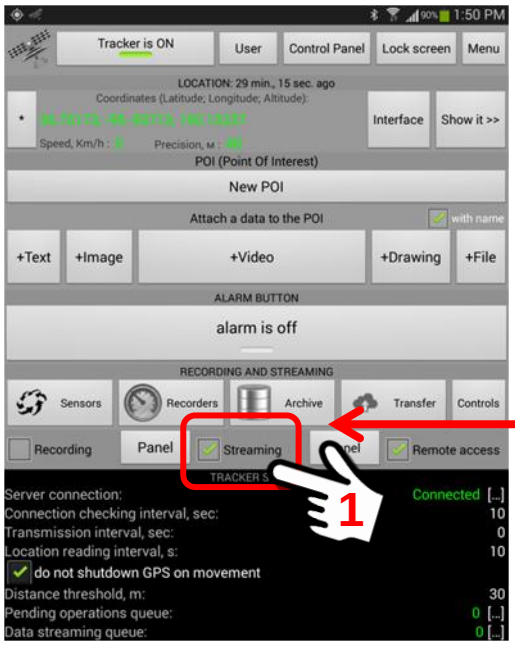
We will perform the following steps:

a. Activate the "Streaming" feature on the EOCdirector device.
b. Review the data stream on device User = VFDmember.

The following illustration shows an arrangement where EOCdirector's mobile device is "streaming" audio/video to VFDmember's mobile device. As explained earlier, since this is data streaming where many people may receive the data stream, the data is sent to the SentryMDU Data Server first and then on to the User population.



To begin, activate the "Streaming" feature on the EOCdirector device. A typical example would be using the device as a "dash cam" in a car and transmitting the audio/video to Central Dispatch or other Users.



Tracker Panel on Mobile device of EOCdirector

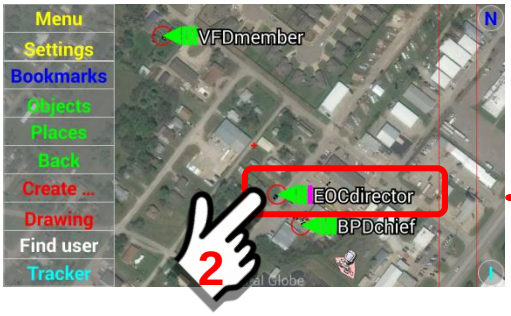
Perform a "Long Click" on the "Streaming" checkbox on the Tracker Panel to start streaming data.

Streaming has now started and will continue as long as the "Streaming" checkbox is checked.

> **Important Note: In this example, the EOCdirector user has started the data streaming. However, ANY USER with sufficient security access may also start-stop the data streaming function (from the Mobile Object panel). All users wanting to "view" the data stream must have adequate security access to monitor the streaming.**

A remote User may monitor the data stream from the EOCdirector mobile device by taking the following steps (assuming security credentials allow). In these next steps, we are using the mobile device of VFDmember.

VFDmember Mobile Device



In this example, we assume user **EOCdirector** is streaming audio/video from a vehicle "Dash cam" and we want to monitor the video stream on user **VFDmember** mobile device.

Note that when EITHER a direct connection or streaming method of video transfer is turned "on" a Mobile Object marker will have a "fushia" colored block in the marker.

Click on the EOCdirector "object marker" from the Main Map Screen. The Mobile Object panel for the User = EOCdirector will appear on the VFDmember mobile device.

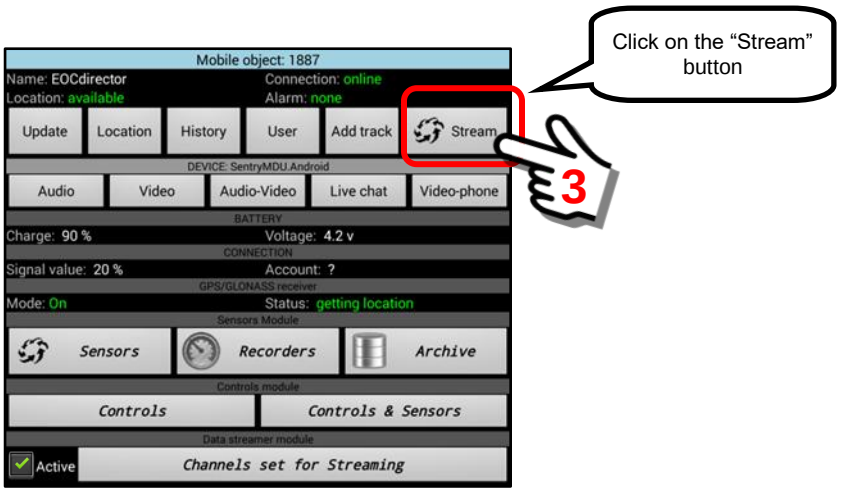
We are viewing the EOCdirector mobile object panel on the VFDmember mobile device.

Observe that the "Active" box is checked on the EOCdirector mobile object panel. This indicates that the "Streaming" feature is currently ACTIVE and transmitting.

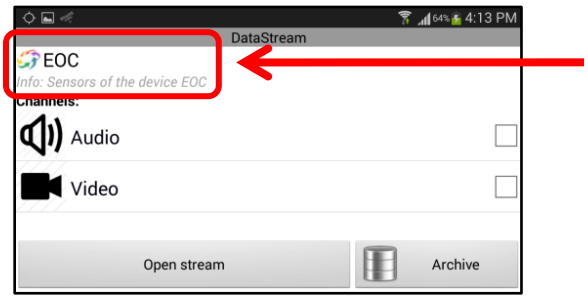
Take no action, only observe.

After verification that the EOCdirector mobile device is transmitting a data stream (Active box checked), we want to access the data stream from the VFDmember mobile device.

Take the following steps.

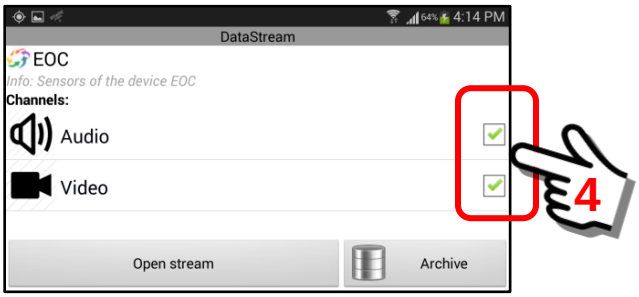


A click on the "Stream" Button will open a DataStream Panel for the EOCdirector user.

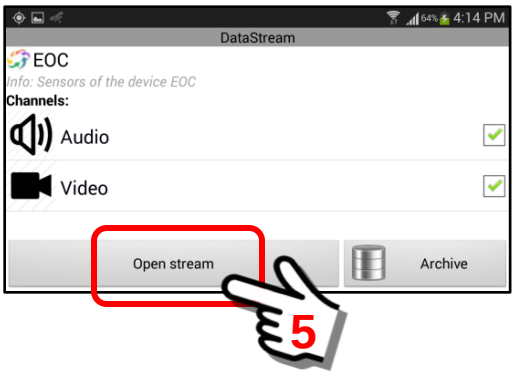


Notice that this is the EOC user data stream components. You are viewing this on the VFDmember mobile device.

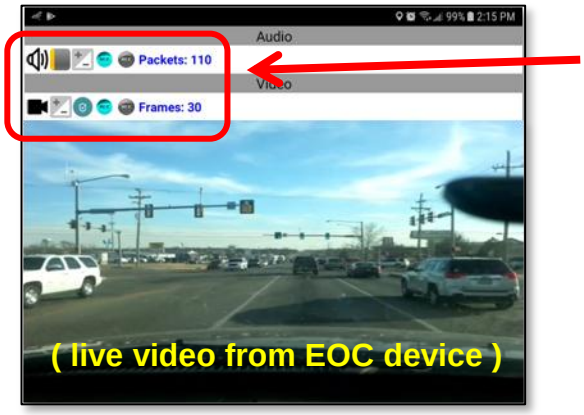
A user may now select the "streaming" channels that they want to monitor. In our example, the VFDmember user will select both the audio and video channels.



Once the streaming channels are selected, click the “Open stream” Button to launch the Audio/Video transmission.

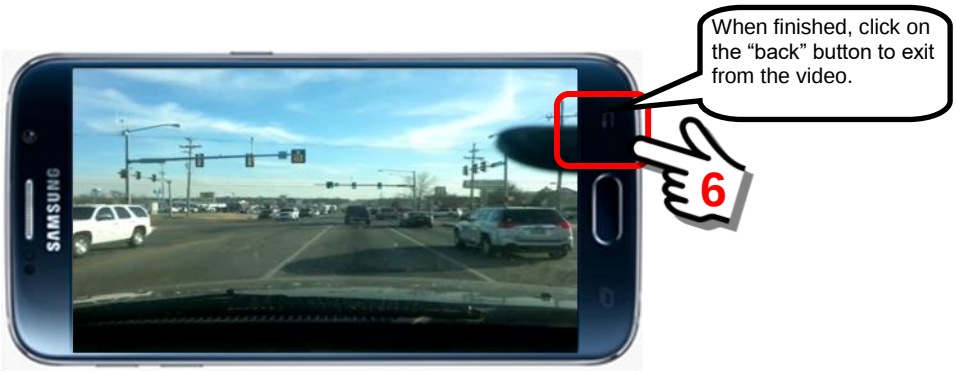


The audio/video stream from the EOCdirector device will now display on the VFDmember device.



These icons can allow the video to be paused, data flow control to be optimized and the audio-video to be recorded locally.

Another view of the streaming audio/video with the title bars hidden from view (swipe finger “up” to hide title bars).



15.2.24. The Remote Access checkbox

Overview:

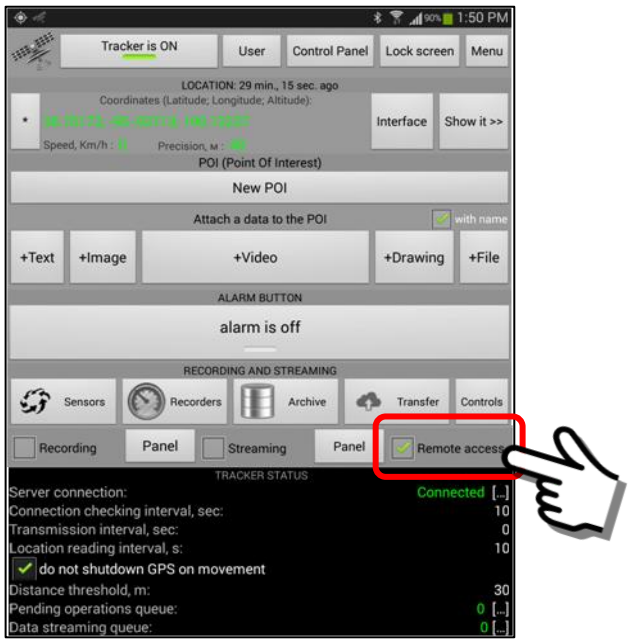
The “Remote Access” checkbox allows a user to turn the ability of other users to access their device, on or off. When “checked” this means other Users may have access (assuming their security credentials allow) and “unchecked” blocks all access from everyone.

> **Important Note: All users have the option to TURN OFF the “Remote Access” option that enables other users to access and monitor their mobile device. This ability to TURN OFF the remote monitoring cannot be overridden by the system. However, the system will show that the “Remote Access” feature has been turned off.**

This section will describe how to use the “Remote Access” feature.

Tracker Panel – Remote Access checkbox:

This feature is located on the lower right side of the Tracker Panel.



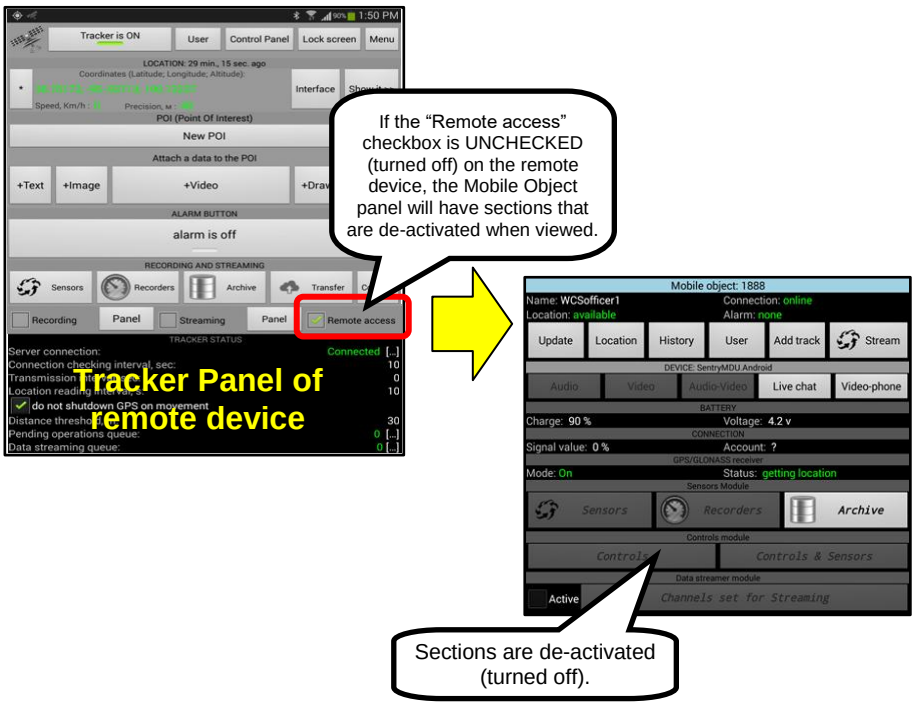
Description of the Remote Access feature:

1. ***Default setting of the “Remote Access” feature.***
   The default setting for the “Remote Access” feature is to be enabled (turned on). When turned on this allows other users with the appropriate security credentials to monitor the sensors on this device (ie audio, video, GPS location, etc.).

Important Note: This feature does not provide notification on the remote device that another user(s) is monitoring and/or using remote access.

2. ***Turning the "Remote Access" feature on – off.***
   Perform a "long click" to turn the Remote Access feature on – off. A long click is used so that this feature cannot be "accidentally" turned on – off by a simple click.

3. ***How to tell if the "Remote Access" feature is turned "off" on a remote device.***
   If a remote user has disabled the ***Remote Access*** feature on their Tracker Panel, the mobile object panel (when viewed by other users) will have sections that are de-activated (grayed out) when viewed.



4. ***When to turn off the "Remote Access" feature.***
   There will be times when the Remote Access feature is appropriate to turn off. If you are a First Responder (Law Enforcement, Fire, EMT, etc.) it is appropriate to turn off the remote access feature when you are on vacation, off-shift or on personal time.

15.2.25. The Tracker Status panel section

Overview:

The “Tracker Status” section provides a summary of Tracker Panel related configuration settings and information on data transfer queues.

This section will describe the “Tracker Status” display area.

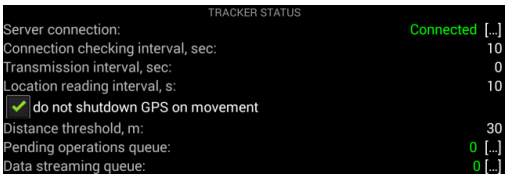
Tracker Panel – Tracker Status section:

This section is located on the bottom of the Tracker Panel.

Description of the parts of the Tracker Status panel:

1. ***Overview of the Tracker Status panel.***
   The Tracker Status panel provides a summary review of key configuration settings and status indicators of data transfer queues.

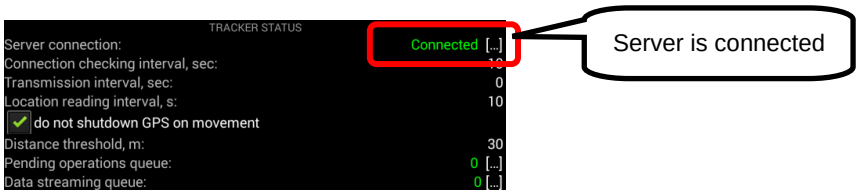
2. ***Parts of the Tracker Status panel.***
   This section will describe the various sections of the Tracker status panel. Three of the items have optional menus that can be accessed by the User. They are indicated by a bracketed, “[…]” symbol.



Server Connection:

Provides an indication of whether or not the Sentry MDU App mobile device is connecting to the Sentry MDU Data Server. Also provides the ability to "force" a connection update in the event of a network issue.

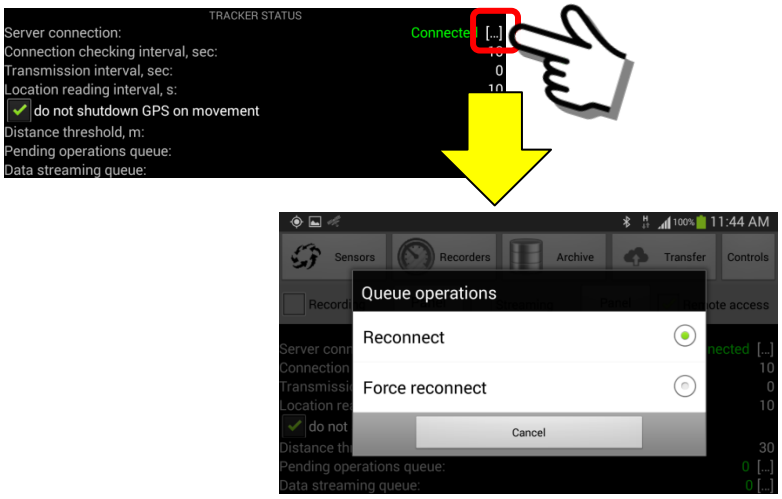
Message of an active server connection



Message of no server connection

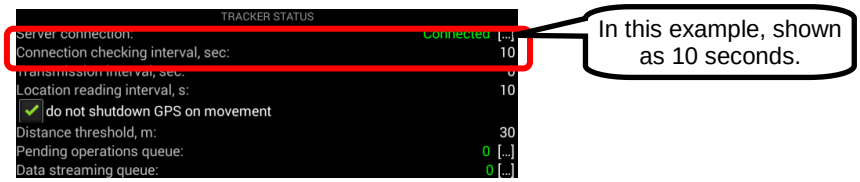
Optional menu to reconnect or force a server reconnect

Click on the bracketed "[…]" section to open the options menu.



Connection checking interval, sec:

This is the time period in seconds for how often the mobile device checks the Sentry MDU Data Server to make sure the network connection is still active.



Transmission interval, sec:

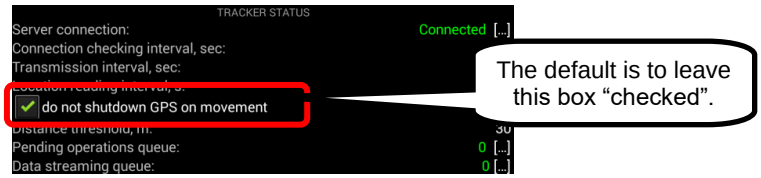
The Tracker transmission interval is the time interval, in seconds, of how often the device events (such as GPS locations, battery level, cellular signal strength, etc.) are transmitted to the Data Server. When set to “0” (zero) then the transmission is “continuous”. For first responders, a setting of “0” is appropriate, for most other applications a setting of 180 (3 minutes) is good enough.

Location reading interval, s:

The location reading interval is how often the mobile device reads the internal GPS location from the available satellites. The default is 300 seconds (5 minutes). In practical terms, a good number to use is 10-20 seconds for first responders. This is a good balance between accuracy of location and battery usage

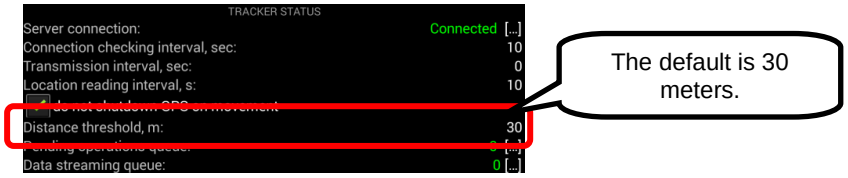
Do not shutdown GPS on movement

This “checkbox” is checked by default. In normal operation a User does want the GPS sensor to continue providing updates when the device is moved. If “unchecked” then the GPS sensor will not provide new location data if the device is moved.



Distance threshold, m:

The GPS satellite “precision” threshold for measurement. Typically this is 30 meters and the default should be used.



Pending operations queue:

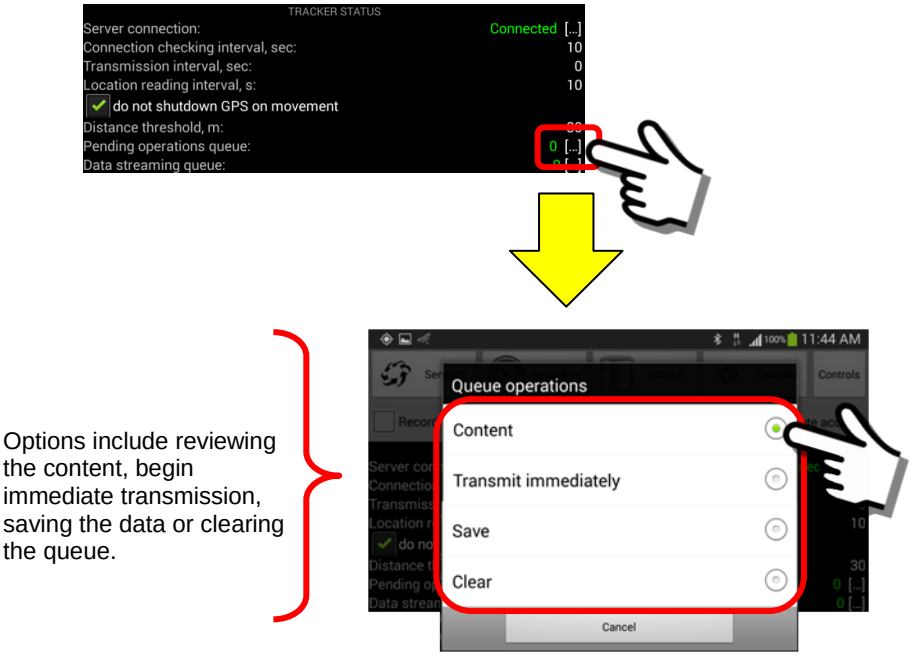
This is a value that represents pending operations of the mobile device. In the event a mobile device looses connectivity to the Sentry MDU Data Server, the device will “queue” the pending operations until connectivity is re-established and then send the data.

Indication of no pending operations due

Indication of 14 pending operations due

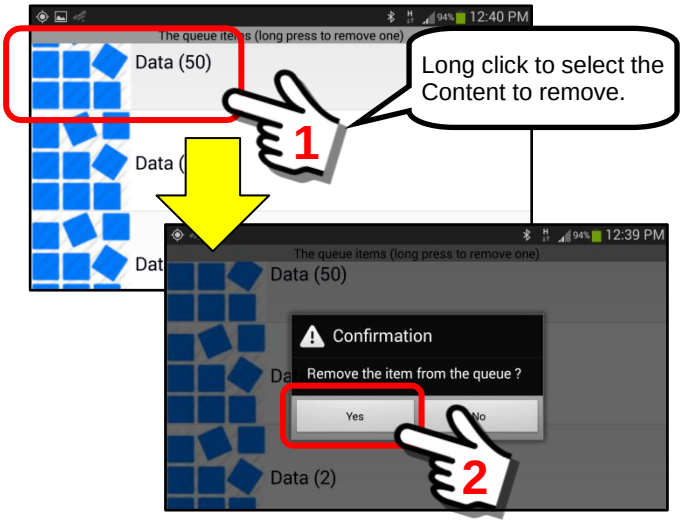
Optional menu for Queue Operations

Click on the bracketed “[…]” section to open the options menu. Four menu options are available.



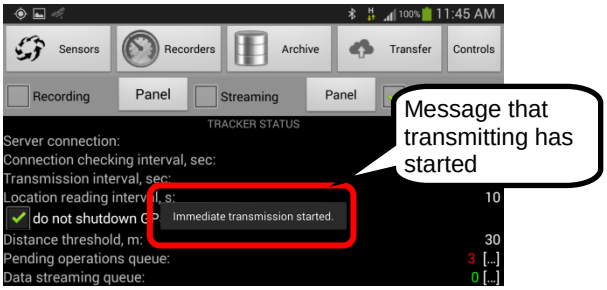
Content

This option will display the data files that are currently in the data queue.



Transmit immediately

This option will force the transmission of the data in the queue.

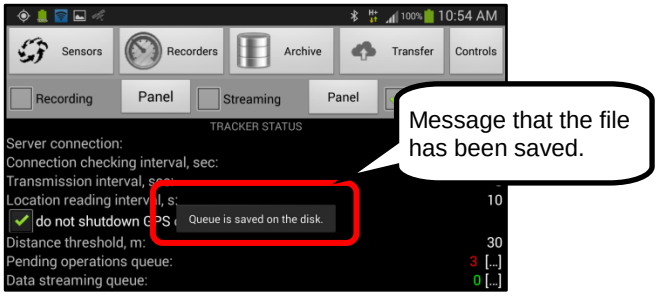


Save

This option will save the data that is in the queue to a folder on the mobile device.

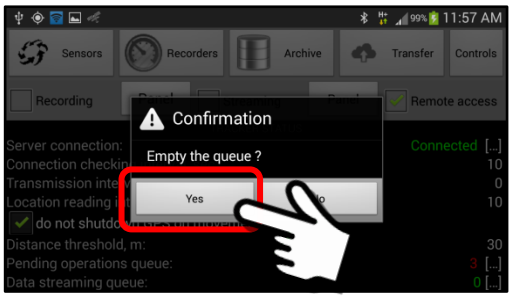
The “Save” feature is to avoid a loss of data in the event the internet was unavailable at the time and the phone was low on battery and will be shut down. In this situation, the user can “save” the data in the queue before turning off the phone. The queue will be

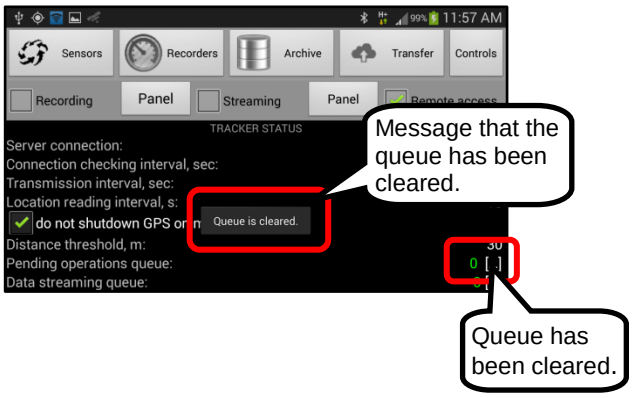
restored the next time the phone is turned on and the data will be transferred.



Clear

This option will clear (erase) all data from the “pending operations” queue.





Data streaming queue:

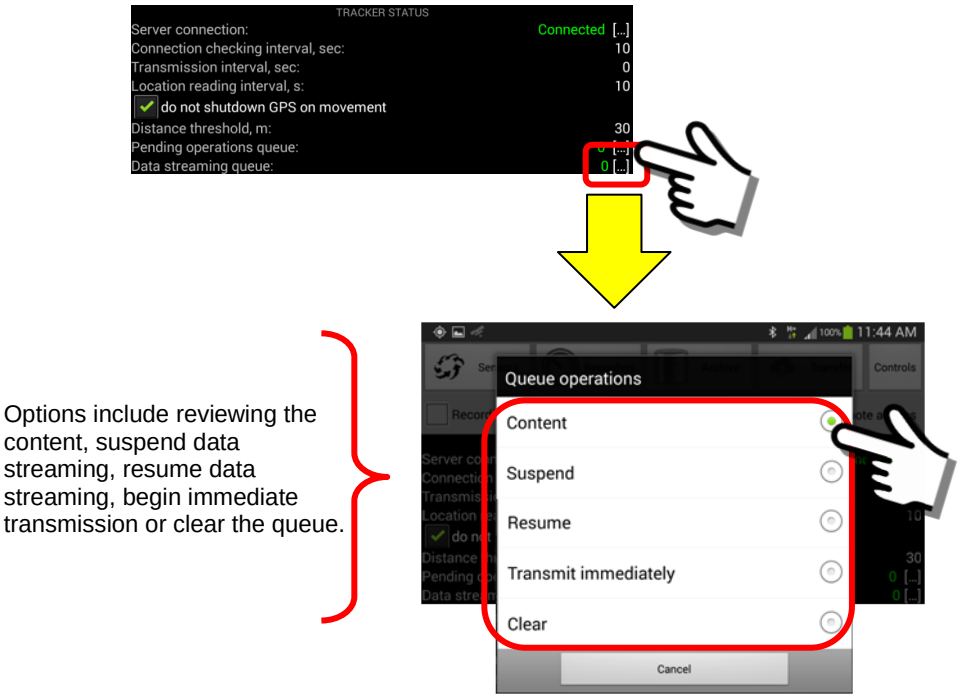
This is a value that represents data streaming operations that are in the queue of the mobile device. In the event a mobile device looses connectivity to the Sentry MDU Data Server, the device will "queue" the data stream until connectivity is re-established and then send the data.

Indication of no pending data to stream

Indication of 1 data file of 12Mb due to transmit

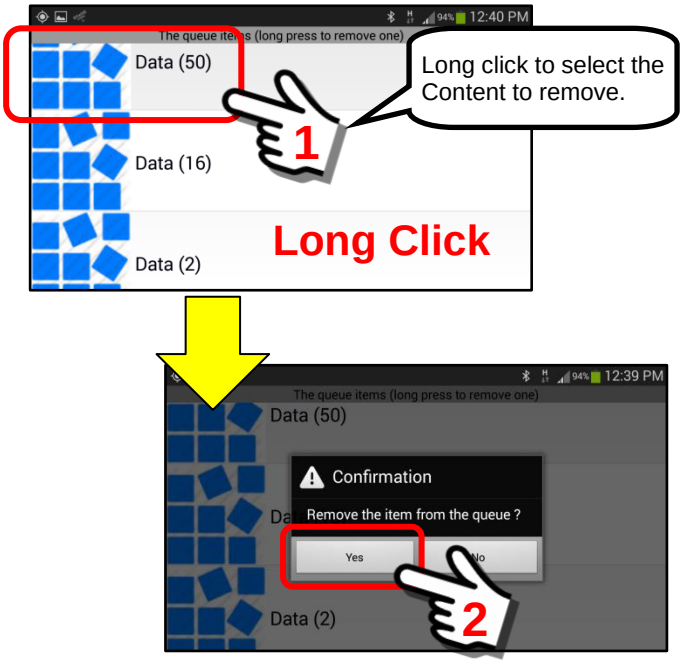
Optional menu for Queue Operations

Click on the bracketed "[…]" section to open the options menu. Five menu options are available.



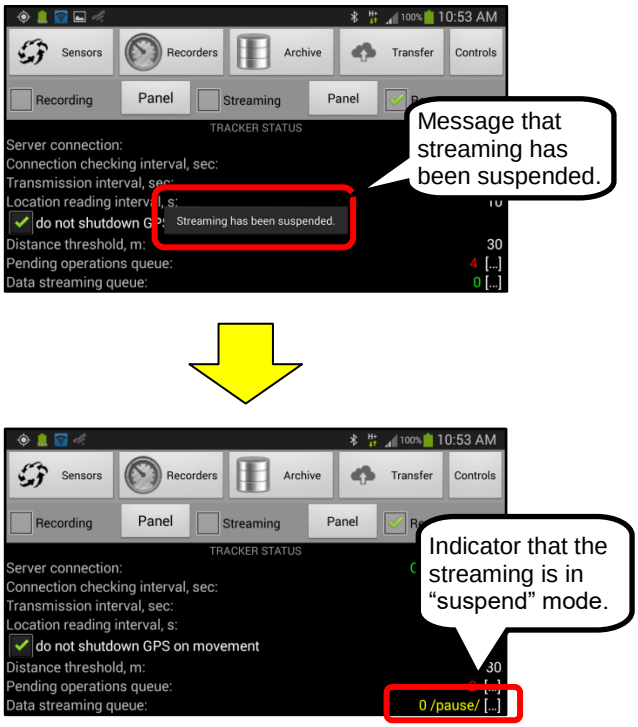
Content

This option will display the data files that are currently in the data queue.



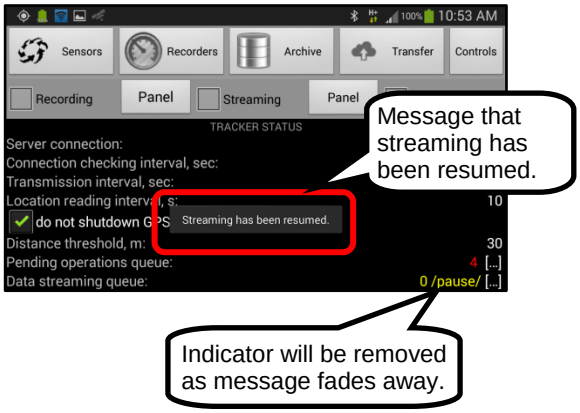
Suspend

This option will suspend (pause) the transfer of data from the streaming queue.



Resume

The option will resume data streaming from the queue.

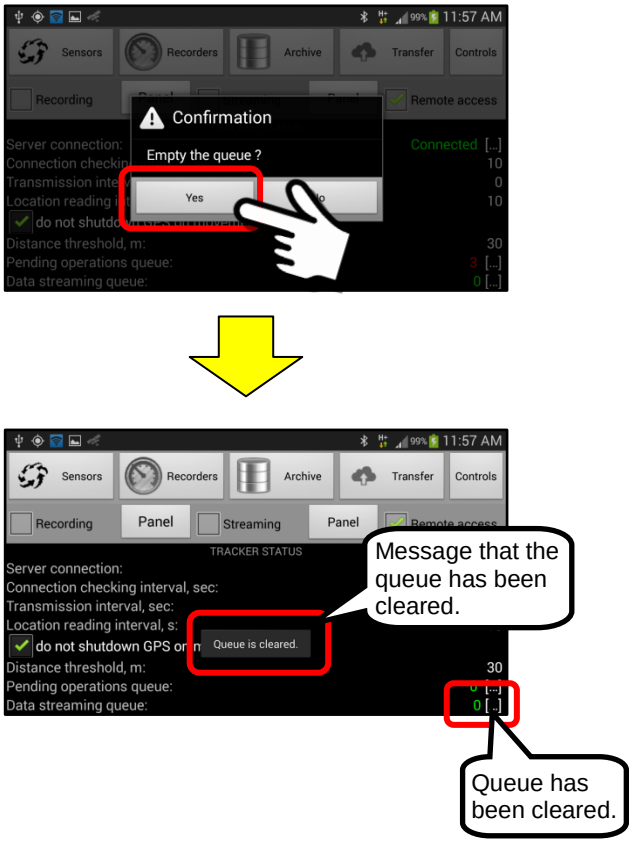


Transmit immediately

This option will force the transmission of the data in the streaming queue.

Clear

This option will clear (erase) all data from the “pending operations” queue.



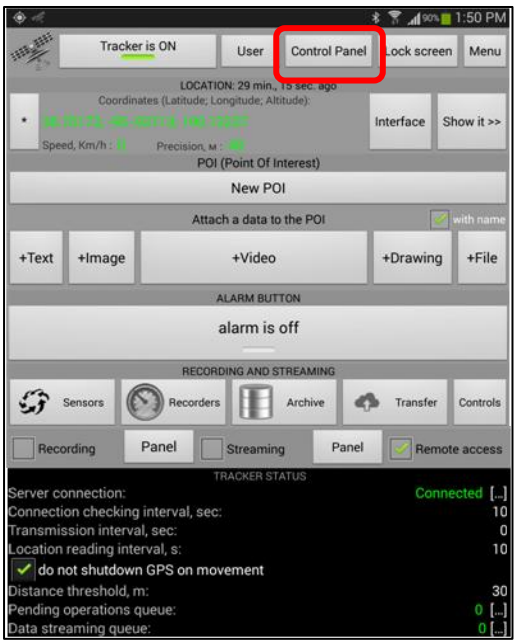
15.3. Example - Configure a wearable Body Camera (Body Cam)

Overview:

This section will describe how to use the Sentry MDU System as a wearable “Body Camera”. The Control Panel button implements the “Body Worn Camera” solution for the SentryMDU System. This control panel is designed with 3 large buttons that make turning the “Body Cam” feature on/off a simple action. This section will describe the setup and operation of the Body Worn Camera feature.

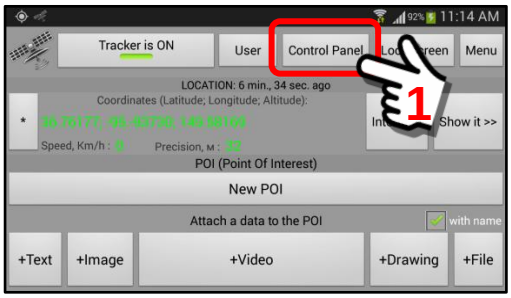
Tracker Panel – “Control Panel” Button:

The “Control Panel” Button is located at the top middle portion of the Tracker Panel screen.

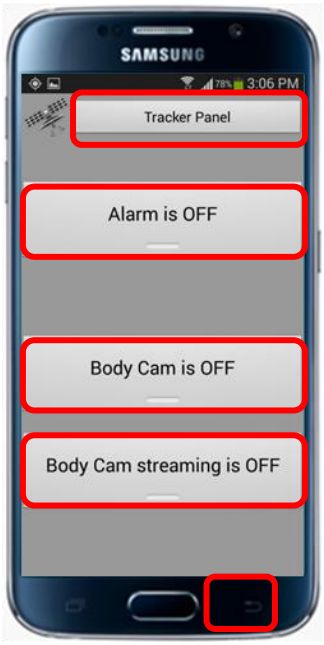


Description of the Body Worn Camera feature:

1. ***Screen view of the Body Worn Camera control panel***
   To open the Body Camera control panel, click on the “Control Panel” button.



The Body Worn Camera control panel is designed for the phone to be held in a vertical position. The elements of the screen layout are explained below.



Returns the User to the Tracker Panel

Turns the "Alarm" feature on-off

Turns the "Body Cam" feature to record on the local device, on-off

Turns the "Body Cam" feature to stream audio-video to others, on-off

"Back" button on the phone closes the Control Panel and returns to the Main Map screen. Clicking the Tracker Menu item returns directly to this Control Panel.

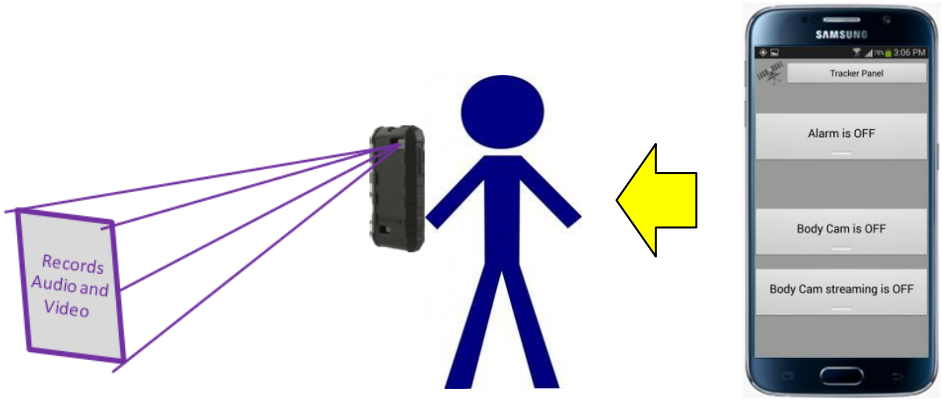
2. ***Overview of the Body Worn Camera feature***

The Body Worn Camera feature can allow the user to turn on the recording by several different methods:

a. Manually, by clicking a screen button
b. Tap Control by "tapping" on the screen

Important Note: Some of the less expensive mobile devices DO NOT HAVE gyroscopic sensors. If your device does not have one, you will NOT HAVE the Tap Command option.

c. Voice commands by voice recognition features



3. ***The "Alarm" Button***

This is a "one button" activation of the Alarm parameters that have been set during configuration. This can monitor any of the "sensors" on the Device and provide an alarm notification if they are outside of desired parameters. Only available with SentryMDU Manager Desktop access.

4. ***The "Body Cam" Button***

This turns the Audio-Video recorder on or off. This feature uses the settings for the Audio and Video (frames per second, resolution, bitrate, audio fidelity) that were previously set up in the Sensor Channels.

5. ***The "Body Cam streaming" Button***

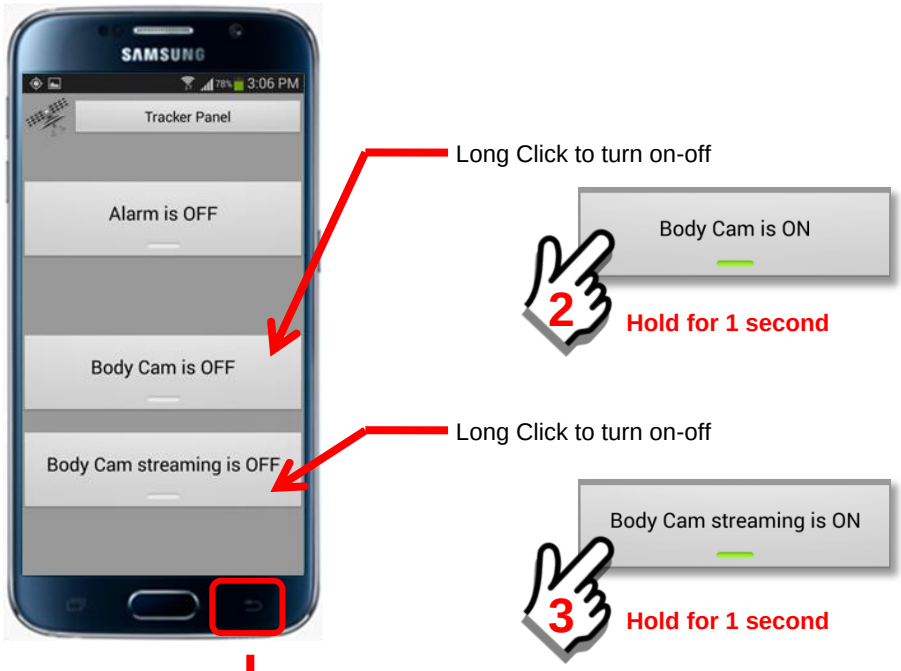
This turns the "streaming" function for the Audio-Video recorder on or off. This feature uses the streamer settings for the Audio and Video (frames per seconds, bitrate, audio fidelity, etc.) that were previously set up in the Sensor Channels.

6. *Activating the Recording and Streaming features*

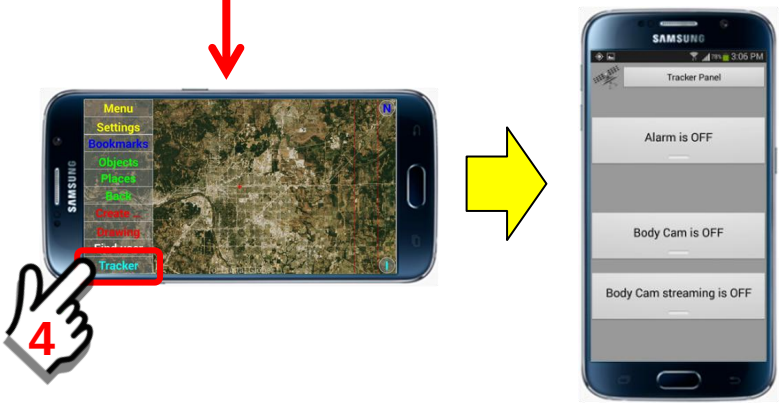
This section will describe how to activate and use the features.

To activate the Audio-Video recording (or streaming) … perform a LONG CLICK (touch for about 1 second). A long click is used so that it takes more than a simple "touch" to activate the feature.

The device may also be configured to provide vibration, voice notification and periodic beeping to alert the User that the recording is "active".

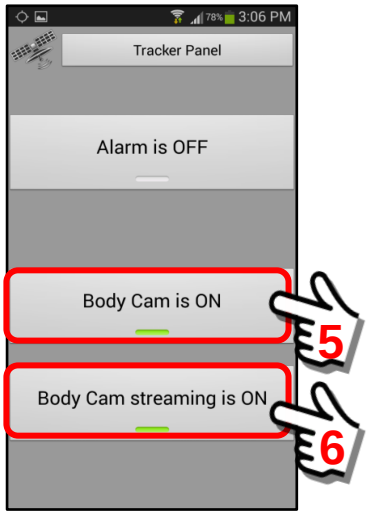


The "Back" Button returns a User to the Main Map Menu. However, the program remembers that the user was at the Body Cam panel … and the next time a User clicks on the Tracker Menu choice … the User is taken directly to this Body Cam panel (bypassing the Tracker Panel).



7. ***Activate BOTH local recording and streaming.***
The Body Worn Camera feature has the ability to both “record” the audio-video on the local device AND stream live audio-video to the SentryMDU Data Server which in turn can broadcast the live audio-video to other users on the system.

Simply activate BOTH buttons as shown below.



Long Click on BOTH buttons to turn on both local recording and data streaming.

Long Click

Configuration settings for the Body Worn Camera feature:

1. ***Overview of configuration***
The configuration of the Body Worn Camera feature is generally a “one time” exercise for a mobile device and is normally done during initial device configuration and setup.

Since the SentryMDU System software is device independent (works with many different types of mobile devices) the configuration settings will depend on the specific hardware used. Issues such as screen resolution, radio specifications (ie 5G, 4G-LTE), camera/video resolution, GPS sensitivity and a host of other factors will all affect how the mobile device is configured.

This section will describe the menus and screens that will need to be addressed during configuration for the Body Worn Camera feature. Other sections of this guide will provide additional detail on specific configuration issues that may apply to the Body Worn Camera feature but are not included here.

2. ***Configuration of the Camera Sensor (resolution, bitrate)***

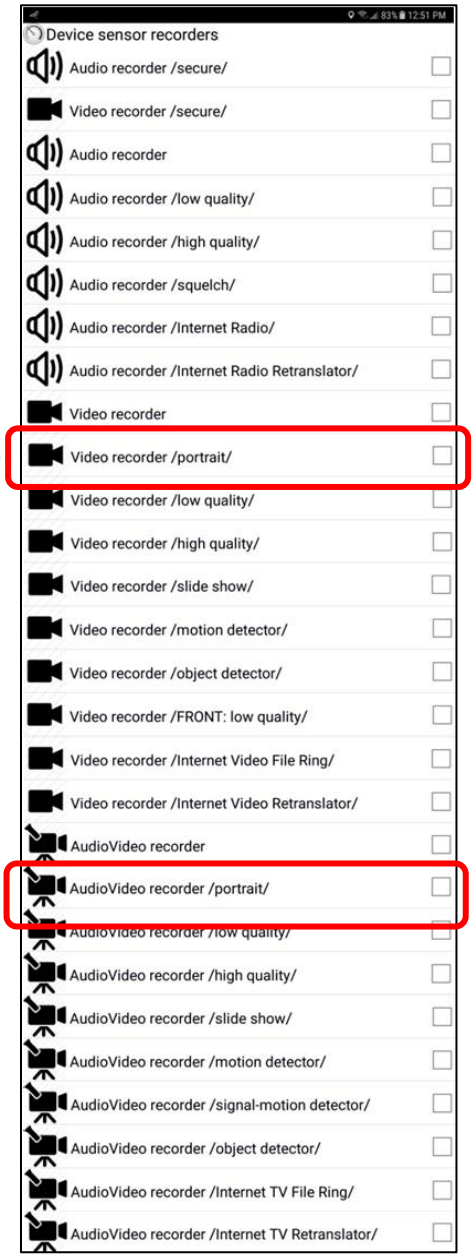
The configuration of the Camera Sensor on the mobile device will depend on the hardware specifications and the application. Some of the considerations when setting up the camera resolution are as follows:

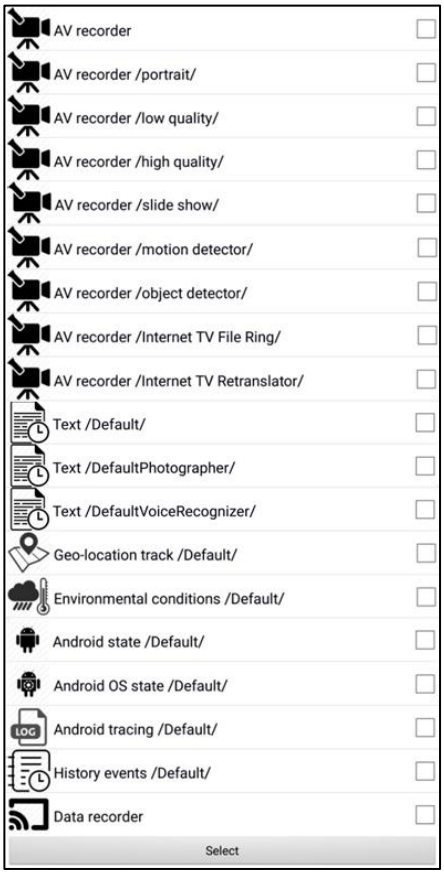
a. Camera resolution setting
b. Aspect ratio of camera sensor
c. Recording framerate of camera sensor
d. Bitrate of data transfer via Cellular or WiFi

To set up a mobile device to function as a “Body Worn Camera” the SentryMDU System provides the user with two pre-configured options. One is video only (no sound) and the other is audio and video. Since the mobile device is generally to be worn in a vertical orientation, the video is to be recorded in “portrait” mode.

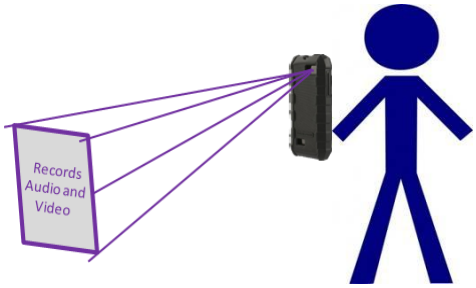
Video only, Portrait Mode 1

Audio and Video, Portrait Mode 2





The purpose of the “Portrait” mode designation is to remind the user that this channel sensor (camera sensor) is having the video image recorded in a “vertical” format.



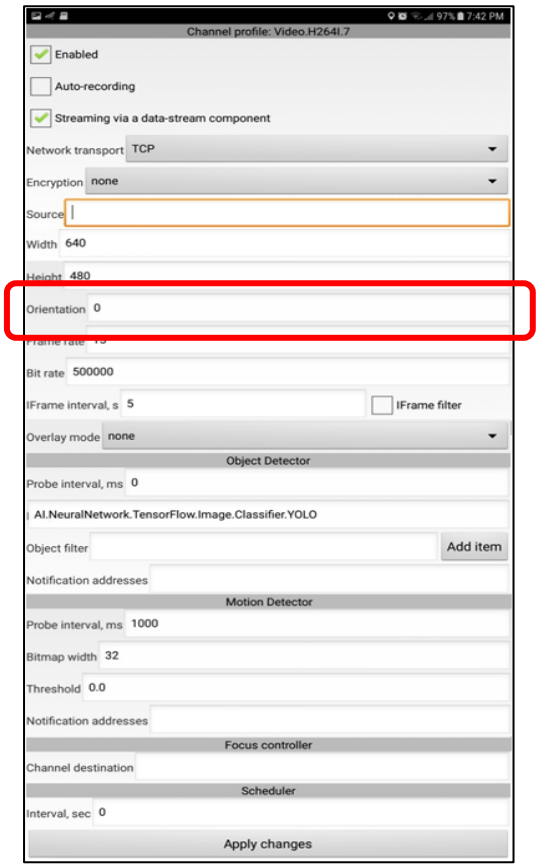
The images below show how the lens arrangement on a particular camera sensor will affect the field-of-view of the image.

Horizontal Format

Vertical Format

The default setting for the “portrait” mode is the vertical format image. As you will note from the images above, the vertical format exposes more of the scene in the vertical plane.

In configuration of the video channel it is possible to “change” the aspect ratio of the recorded image and rotate it. This is performed by putting a value between 0 – 360 degrees of rotation into the “Orientation” data field.



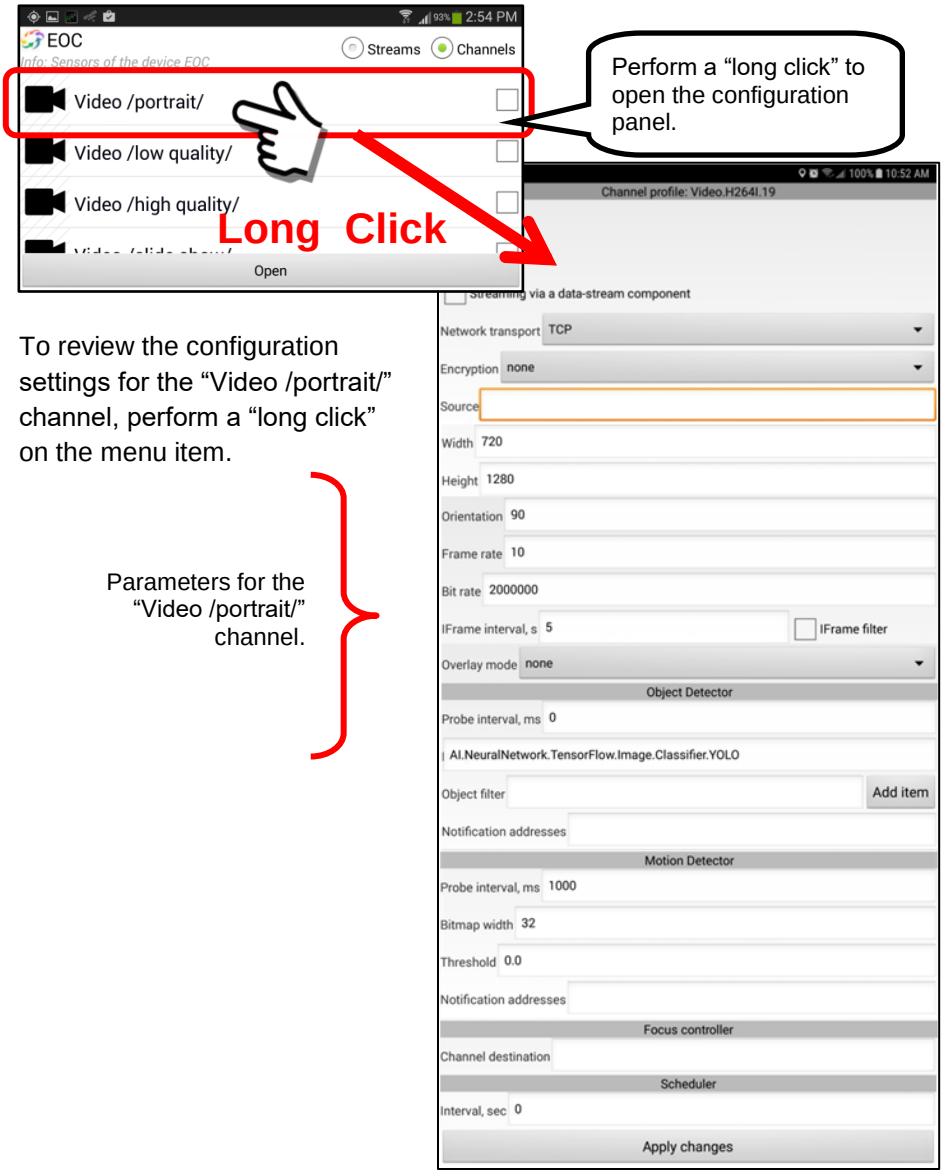
The default setting for “Orientation” is zero (0 degrees). This means no rotation of the image.

If image rotation is desired, enter a value between 0 - 360 in this block.

When transmitting live video from a mobile device worn as a “Body Cam” (vertical format) it may be desirable to have the aspect ratio “rotated” 90 degrees from the vertical format so it appears as a horizontal format image. The SentryMDU System allows the user to present the image in either a vertical or horizontal format. We use software algorithms to rotate the recorded/streamed image to achieve the desired view.

> **Important Note: Depending on the type of camera sensor (and lens arrangement) used by the device manufacturer, you will need to experiment with the width and height settings of the aspect ratio to arrive at an image that is not skewed (stretched).**

This example will use the “Video /Portrait/” channel as the selected item and we will add a separate “audio” channel to the final configuration (we could have used the combined AudioVideo). The section will review the steps required to set up a “pre-configured” channel that can be used in the Body Cam application.



To review the configuration settings for the “Video /portrait/” channel, perform a “long click” on the menu item.

Parameters for the “Video /portrait/” channel.

The checkboxes and parameters are described as follows:

a. Enabled checkbox

When “checked” this indicates that the recorder feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”.
When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”.
When “checked” this indicates that this channel is used for streaming data via the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”.
As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

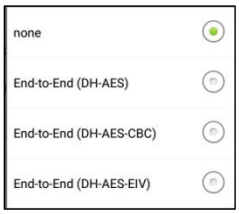
The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

e. Encryption

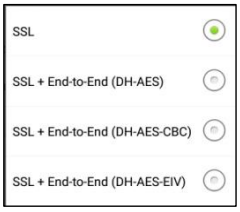
Factory default setting = “None”
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

The “Source” data entry location is for specifying a data source for the channel. In our example of the Video channel recorder, when the “Source” is empty (default) this indicates that the camera on the mobile device will be the source of the video. In other configurations the source may be a network “address string” determined from other sources (ie website address or remote network connection).

g. Width

This is the “width” of the video capture setting for the camera (height in portrait mode). Video capture settings will depend on the device capability. Settings may depend on the aspect

ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent.

> **Reminder: For the Body Cam, in "portrait" mode, we are rotating the image 90 degrees and the "width" now becomes the vertical height. If your device has a 16:9 aspect ratio, you must still have the same aspect ratio to match the camera sensor native format.**

Also please note that just because a mobile device can record HD video, the ability to "transmit" due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480).

h. Height

This is the "height" of the video capture setting for the camera (width in portrait mode). Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent.

> **Reminder: For the Body Cam, in "portrait" mode, we are rotating the image 90 degrees and the "height" now becomes the horizontal width. If your device has a 16:9 aspect ratio, you must still have the same aspect ratio to match the camera sensor native format.**

Also please note that just because a mobile device can record HD video, the ability to "transmit" due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480).

i. Orientation

The "Orientation" setting allows a user to "rotate" a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default setting is "0" (zero) which means no rotation.

j. Frame rate

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most applications.

k. Bit rate

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 2000000 bps should work for most applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3,2,1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable. Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID

o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

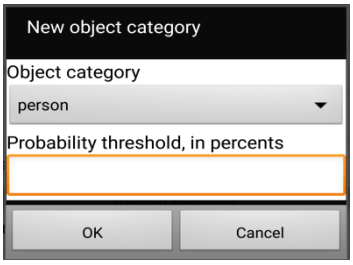
Factory default setting = “*A.I. Code reference”*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = “blank/empty”

The default is “blank”, this means no object category has been selected. Click the “Add Item” Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture “snapshot” will be sent.

See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a “change” in the image (or image section).

t. Motion Detector - Bitmap width

The default is “32”. This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine “motion”. We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

The default is “0.0”, this means the motion detector feature is turned “off” and not active.

v. Motion Detector - Notification Addresses

Factory default setting = “blank/empty”

The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

See **Section 15.5** for an example of Motion Detection being used in a surveillance application.

w. Focus Controller – Channel Designation

Factory default setting = “blank/empty”

The Focus controller field allows a user to specify a PTZ control interface for “Smart” Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

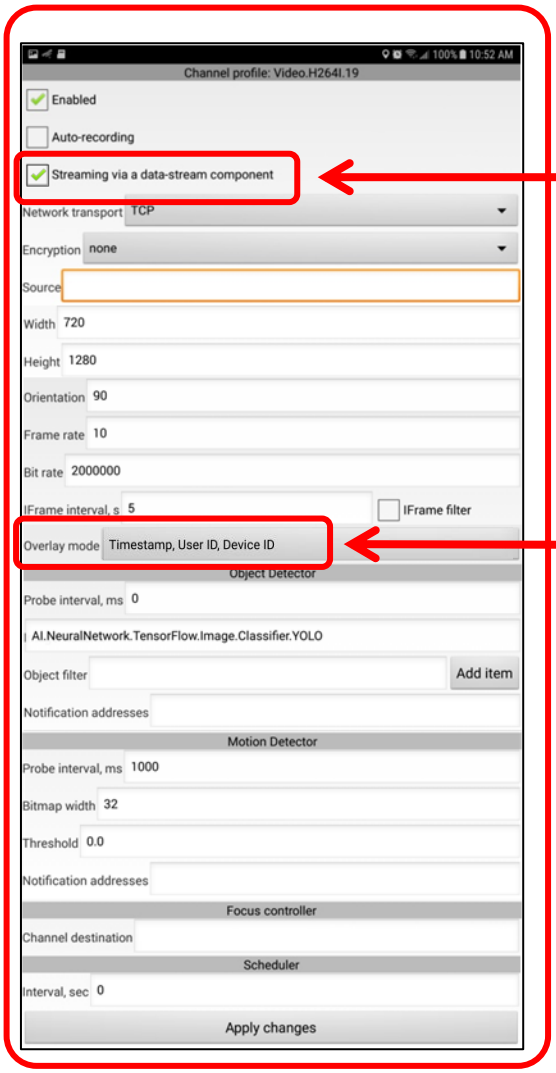
In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler - Interval sec

Factory default setting = 0

The “Scheduler” feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is “0” seconds, which means that the motion detection “feature” is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

The settings for the example of a Body Worn Camera application are as follows:



Since we are setting up the data "streaming" it is important that the checkbox is "checked".

Watermark Text overlay for Body Cam Video Files

<u>The following settings refer to the Configuration Panel</u>

a. **Enabled checkbox**
   Checked
b. **Auto-recording**
   Unchecked
c. **Streaming via a data-stream component**
   Checked
d. **Network transport**
   TCP (First Responders should use UDP-RSPP)
e. **Encryption**
   None
f. **Source**
   No Entry

g. **Width**

If we assume a typical smartphone with a native video resolution of 1280 x 720 in horizontal mode.

Width = 720

h. **Height**

If we assume a typical smartphone with a native video resolution of 1280 x 720 in horizontal mode.

Width = 1280

i. **Orientation**

90 Degrees

j. **Frame rate**

10

k. **Bit rate**

2000000

l. **iFrame interval, s**

5

m. **iFrame filter**

Unchecked

n. **Overlay mode**

Timestamp, User ID, Device ID

o. **Object Detector - Probe interval, ms**

0 (inactive)

p. **Object Detector – A.I. NeuralNetwork**

AI.NeuralNetwork.TensorFlow.Image.Classifier.YOLO

q. **Object Filter**

No Entry

r. **Object Detector – Notification addresses**

No Entry

s. **Motion Detector - Probe interval, ms**

1000

t. **Motion Detector - Bitmap width**

32

u. **Motion Detector - Threshold**

0.0 (inactive)

v. **Motion Detector – Notification addresses**

No Entry

w. **Focus Controller – Channel Designation**

No Entry

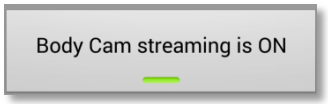
x. **Scheduler – Interval, sec**

0 (inactive)

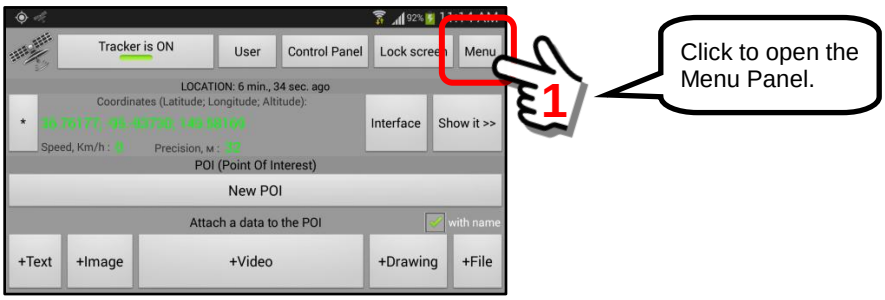
3. *Body Cam configuration for Data Streaming*

The configuration of the data streaming has many of the same issues as the camera sensor. However, for data streaming, the mobile device will stream data to the SentryMDU Data Server which in turn will stream data to all other connected devices. The issue for data streaming is the pathway from the mobile device (via WiFi or Cellular) to the Data Server. The amount of available bandwidth is the critical factor.

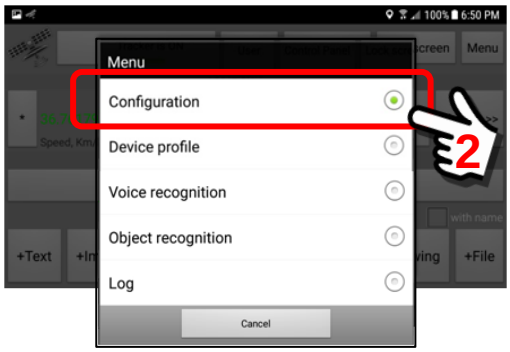
a. Camera resolution setting
b. Aspect ratio of camera sensor
c. Recording framerate of camera sensor
d. Bitrate of data transfer via Cellular or WiFi



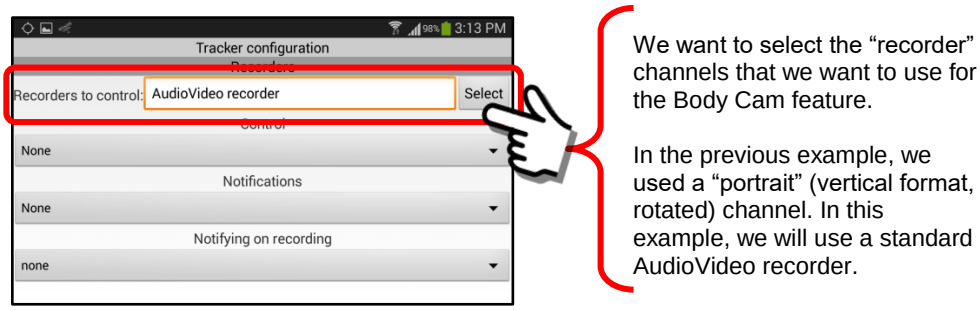
In this example, we will show how to set up the Body Cam feature for data streaming.



Select the “Configuration” menu choice.

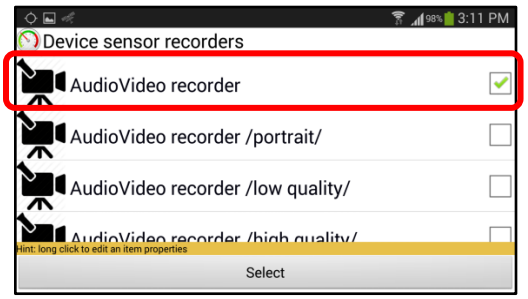


Click the “Select” button on the Configuration Panel.

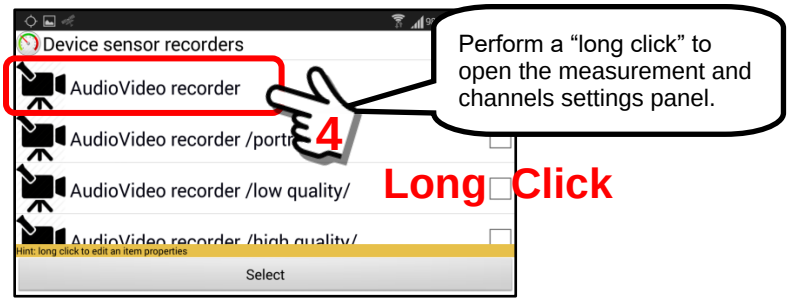


Clicking on the “Select” Button will open a listing of the available Device Sensor Recorders. The “AudioVideo recorder” is shown as “checked” (default). This is where a user can select any other pre-configured sensor recorders.

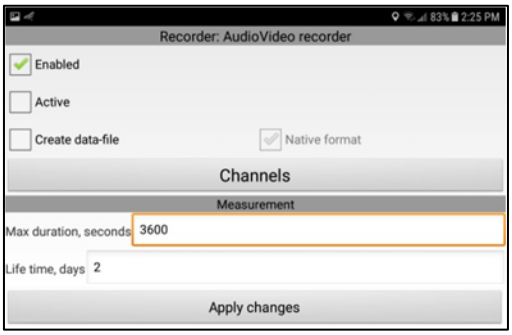
In our example, we will select the “AudioVideo recorder” option.



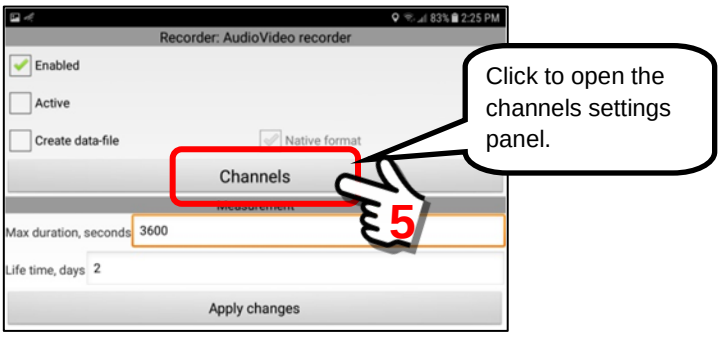
To review the video parameters for the selected “AudioVideo recorder”, perform a “long click” on the sensor name.



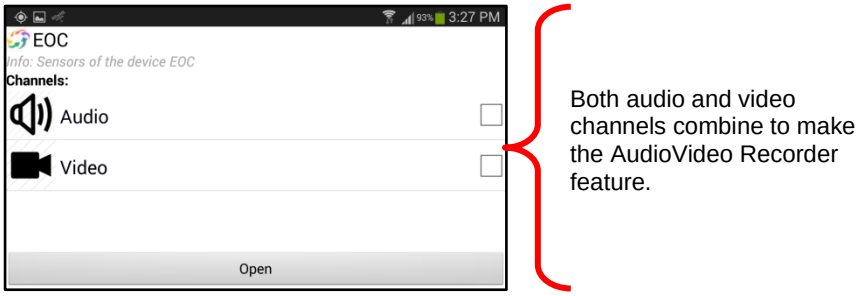
This panel shows the current settings for the AudioVideo recorder. A detailed discussion of these settings are in **Section 10.19.2.**



To review the individual settings for both the Audio and Video channels, click on the “Channels” Button.

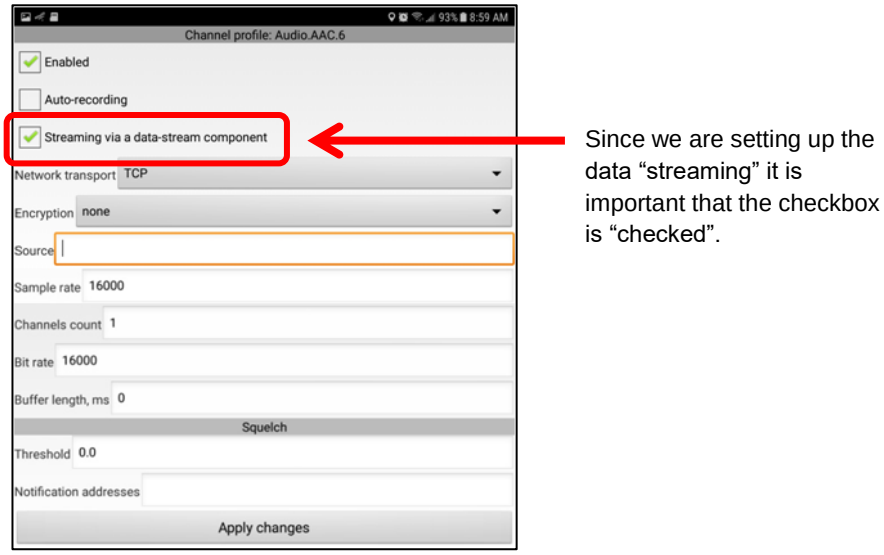


Depending on the type of recorder used, the channels will be listed as shown below. In this example we have BOTH an Audio and Video channel.



To view the “Audio” configuration settings, perform a “long click” on the Audio text block. The parameters menu will be displayed.

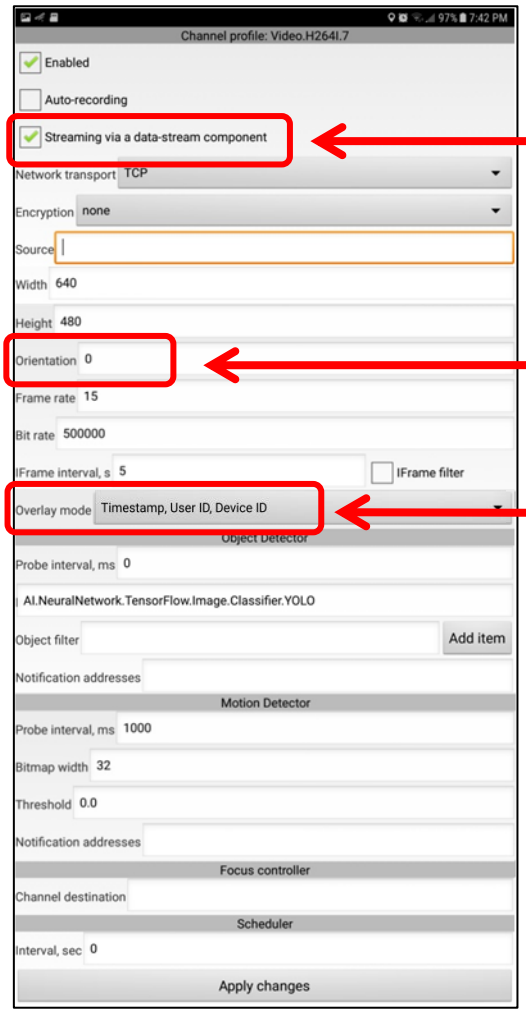
Audio Parameters



To view the “Video” configuration settings, perform a “long click” on the Video text block. The parameters menu will be displayed.

In this example, the mobile device will automatically rotate the video orientation when the device is held vertically (some devices do that). For that reason we do **NOT** need to set a video orientation setting (ie 90 degrees) as we did previously.

Video Parameters

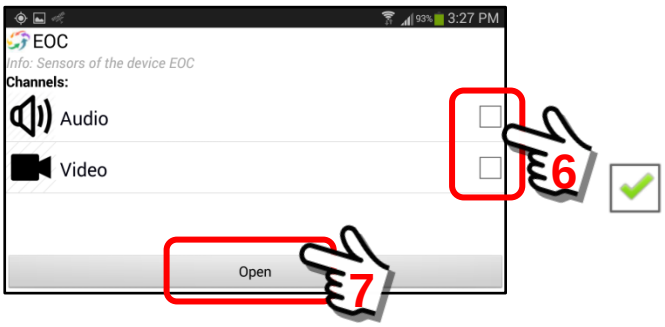


Since we are setting up the data “streaming” it is important that the checkbox is “checked”.

In this example, we are NOT rotating the image orientation (some phones do this automatically).

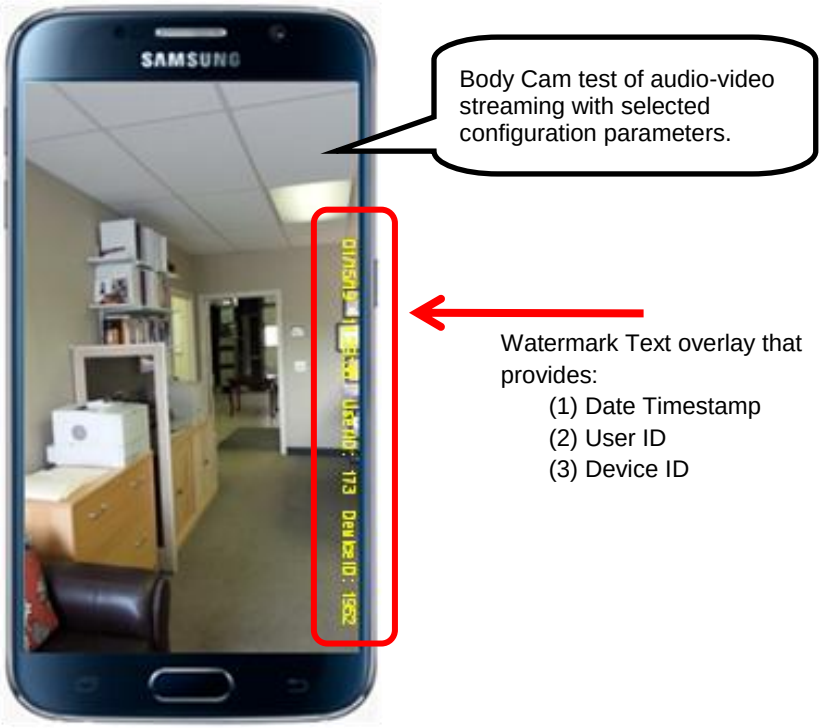
Watermark Text overlay for Body Cam Video Files

All parameters look good, we are ready to use the Body Cam feature in “streaming” mode. To “test” the configuration, put “checks” in each of the checkboxes and click “Open” to launch the audio-video streaming.



The audio-video output will be displayed on your device. The parameter settings for bitrate, framerate and video resolution will all impact the “smoothness” of the video.

This is what the video would look like if monitored on a remote device.

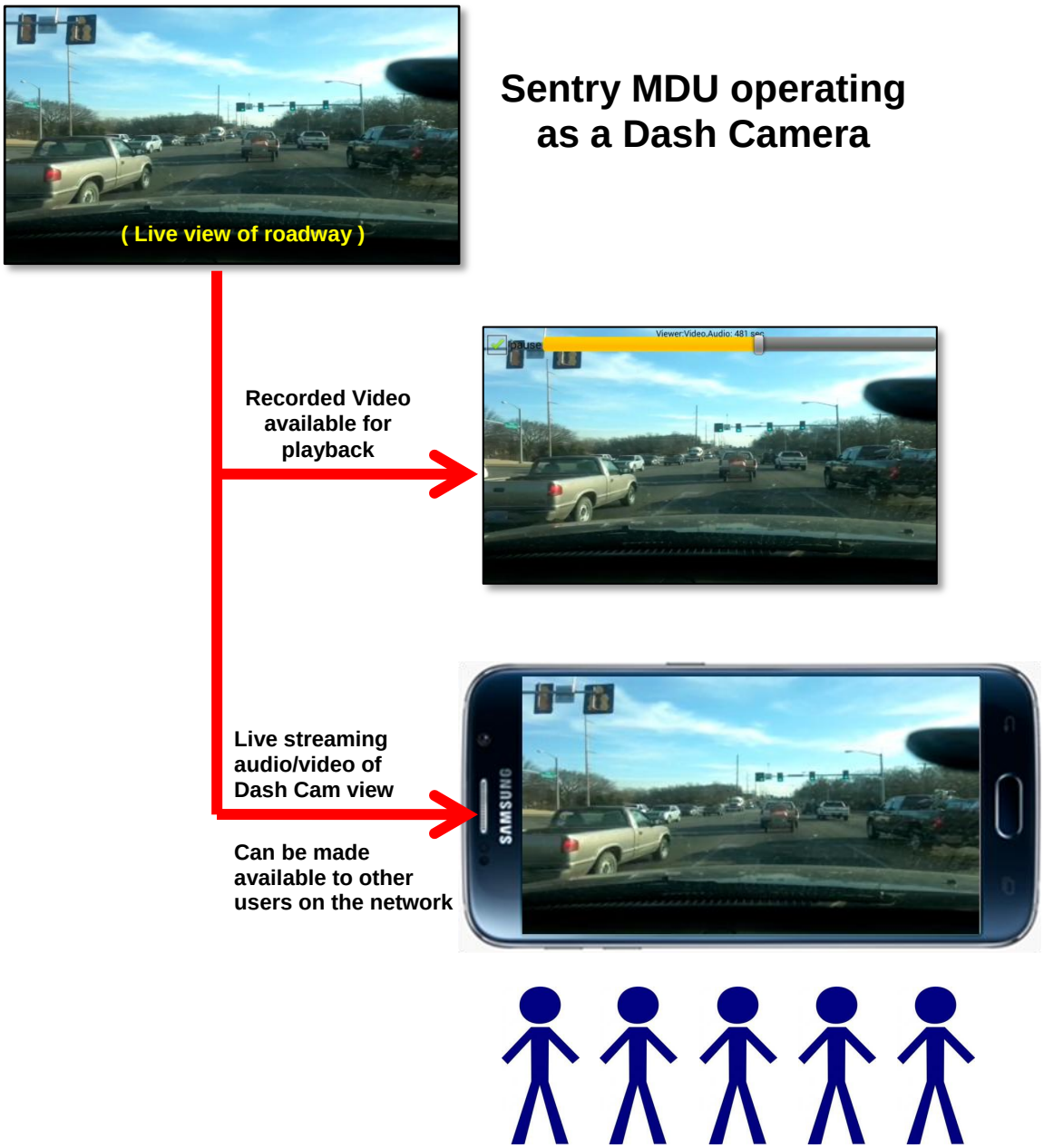


15.4. Example - Configure a vehicle Dash Camera (Dash Cam)

Overview:

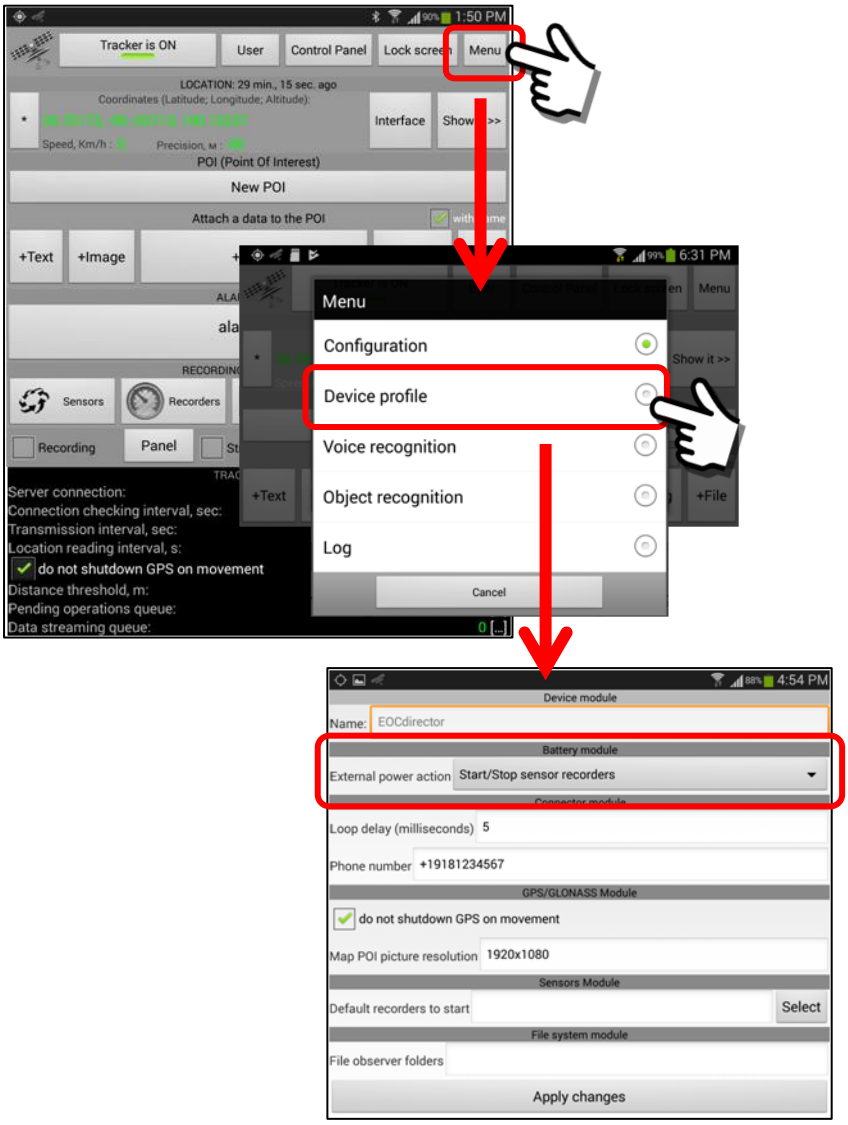
This section will describe how to use the Sentry MDU System as a vehicle “Dash Camera”. There are many products on the market that mount a cell phone (via suction cup or pad mount) to allow a view out of the windshield of a vehicle. This section will describe how to use an “auto start” feature that will automatically start recording whenever the cell phone (mounted as a Dash Cam) is plugged into a power source in the vehicle (ie cigarette lighter). When the car ignition is turned on, and the cell phone receives power, the audio/video recorder will begin recording and/or streaming live video.

This section will describe the setup and operation of the External Power Action feature that is available on the Device Module Menu.



Tracker Panel – "Menu" Button, External Power Action:

The "External Power Action" feature is provided as a Menu option on the Tracker Panel screen.



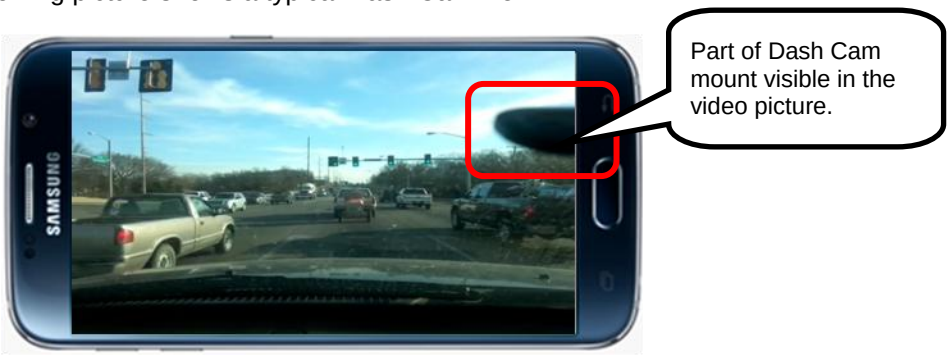
Description of the Dash Camera setup, function and features:

1. ***Mounting the Mobile Device as a Dash Camera.***
   In most cases, the mobile device used as a Dash Camera will be a "cell phone". Although video can generally be recorded by holding the cell phone in any orientation, most cell phones record video best (HD 1920x1080) while holding the cell phone in a horizontal manner.

   We recommend using a dash camera mount that will hold the mobile device so that the video is in the native horizontal format. The device should be mounted such that the back camera sensor (highest resolution sensor) is

facing out the windshield of the vehicle. For most vehicles, this is just below the rear view mirror, in the center of the windshield.

The following picture shows a typical Dash Cam view.



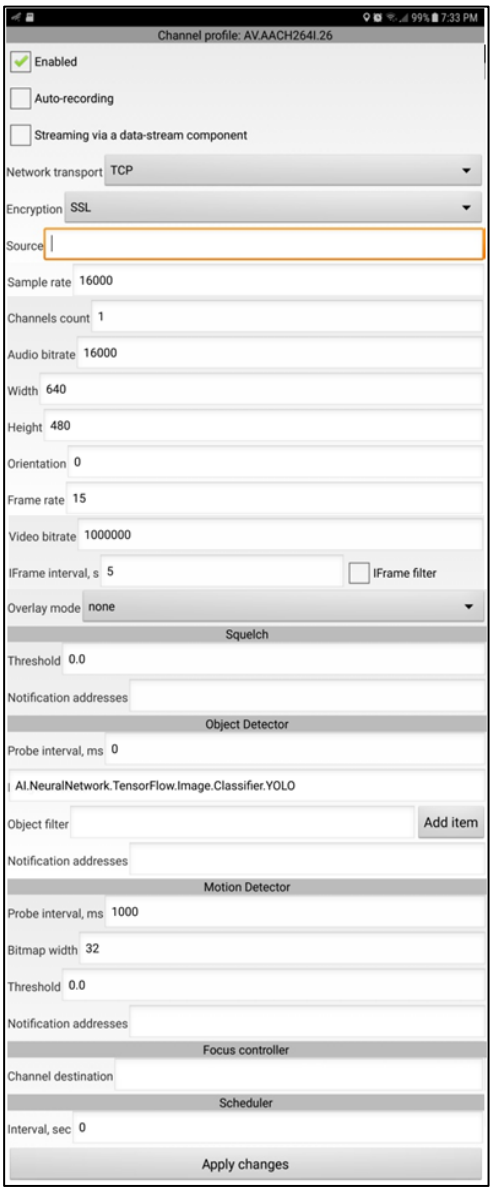
2. ***Prerequisite – Select and configure the camera sensor.***

In this example, it is assumed that you have previously configured the camera sensor parameters on your mobile device. This includes items such as video resolution, framerate and so on. This manual includes a whole section (**15.2.17, Item #7**) on AudioVideo sensor configuration.

The Sentry MDU System allows a user to "customize" sensor parameters to meet the application. For example, to record an audio-video clip it is possible to record an audio "track" and a separate video "track" such that each track could be reviewed separately. Another option is to record a single combined audio-video track. A user has complete flexibility on how to record and structure the recorded data.

In this example, we will be selecting the AV Recorder which uses a combined audio-video format.

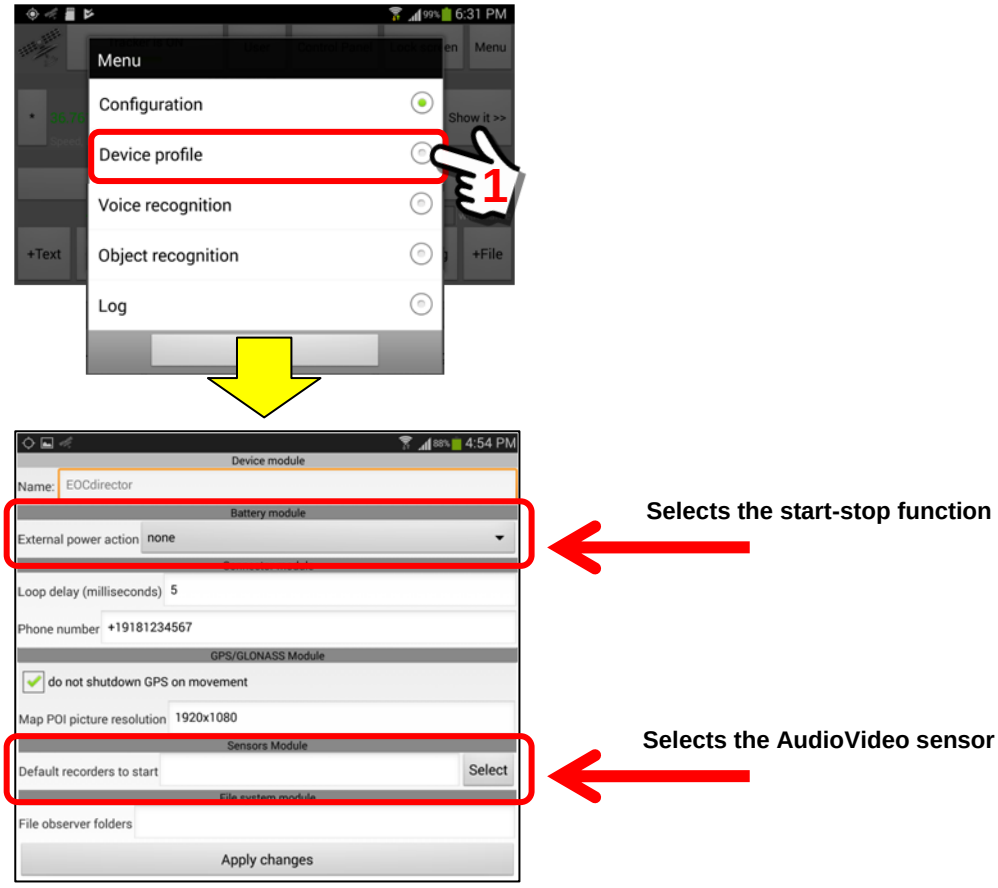
The picture to the right shows the channel profile of a combined audio-video sensor arrangement.



3. ***Setting up the Dash Cam configuration.***

To configure the mobile device for a Dash Camera application we will navigate to the Menu Options located on the Tracker Panel. This panel is covered in detail in **Section 15.2.6** of this guide.

We will select the “Device Profile” menu option which will take us to the Device Module Panel. We will make changes to two (2) parts of the panel in order to activate the automatic start-stop of the Dash Cam feature.



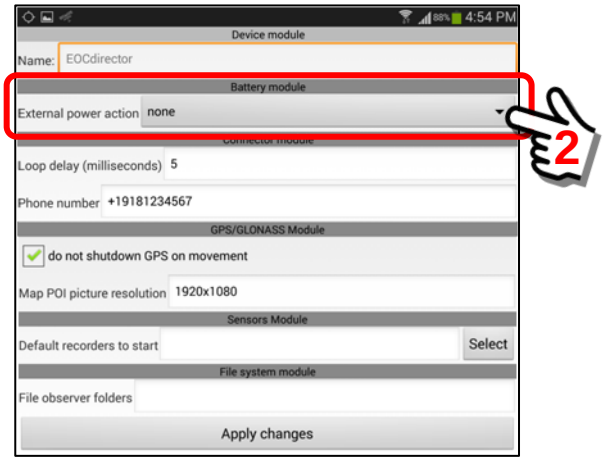
<u>External Power Action</u>

The Battery Module section is where we designate that the Dash Camera is to start-stop when the vehicle ignition is turned on-off. In the Sentry MDU design, we are assuming that when used on a windshield mount the mobile device will be plugged into a power source (ie cigarette lighter) or use a wireless charging adapter.

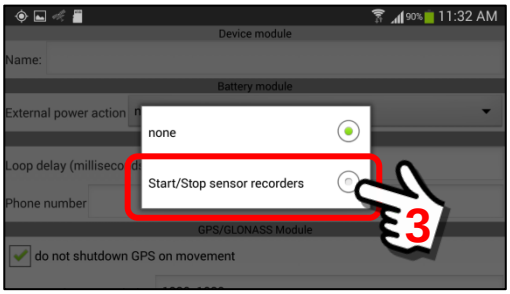
The Sentry MDU System monitors whether or not the device is being “charged” by an external power source. The “External Power Action” menu choice provides two options.

1. None (the default, no action is taken)
2. Start/Stop sensor recorders

The default setting is “None” (no action) as shown below.



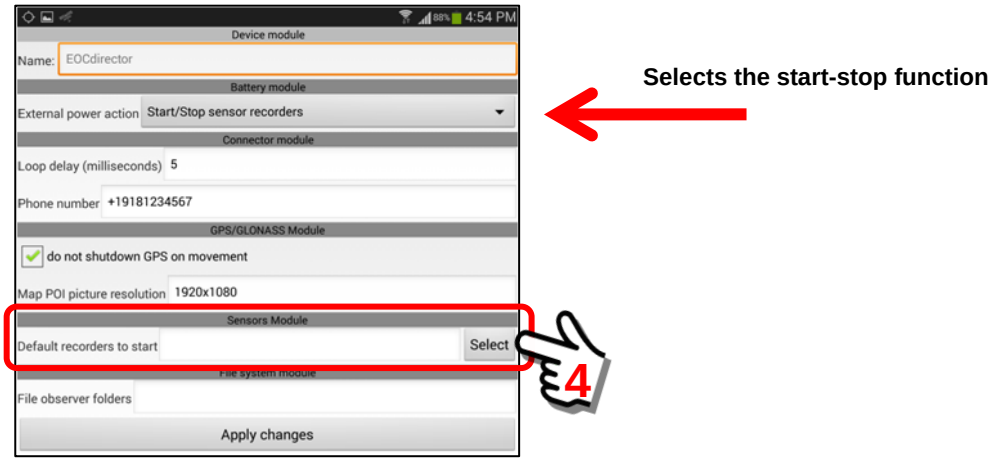
Click on the options button and select the “Start/Stop sensor recorders” choice.



We have now selected an external power action choice that will start-stop a designated sensor recorder. The next step is to select the sensor recorder that we want to use as our Dash Cam recorder.

<u>Setting the default recorders to start</u>

Click on the “Select” Button in the Sensors Module Section which will allow us to designate the “Default recorders to start”.



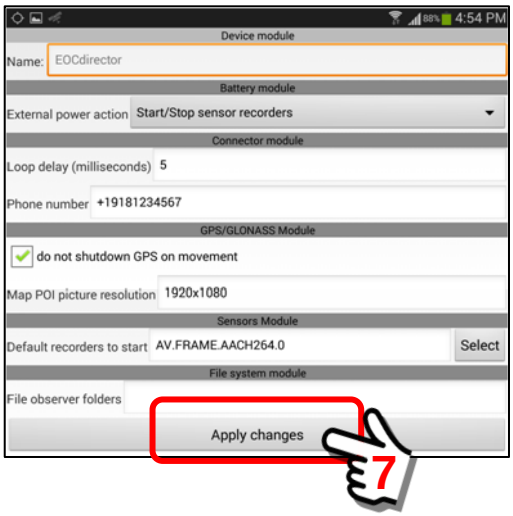
The “Select” Button will open the Recorders Panel providing a user choices on the recorder to use.

For our example, we will be selecting the “AV recorder” option.

Once you have selected the desired sensor(s), the screen will return to the Device Profile Configuration screen as shown below.

Review the data settings of the panel.

To save these settings, click the “Apply changes” button at the bottom of the panel.



You will now be returned to the Tracker Panel screen.

The device is now configured to start recording (using the AV Sensor parameters) whenever the device is receiving external power.

Important Note: It is easy to forget that the device is now configured to begin recording automatically any time it is plugged into a charger. If you are not regularly using the device as a Dash Cam, remember to select the “None” option on the menu to de-activate the automatic recording feature.

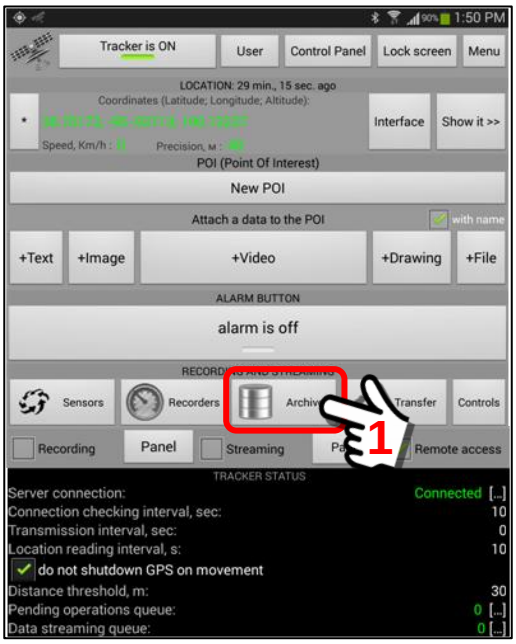
4. ***Monitoring and/or reviewing the Dash Cam recordings.***

The recordings created by the Dash Cam feature are stored in the "Archive" Folder that is available on both the Tracker Panel and the Mobile Objects Panel.

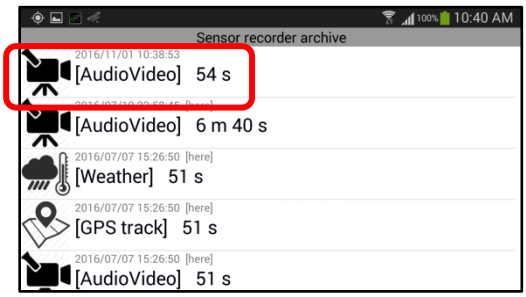
Depending on how the domain security settings of your mobile device has been configured, other users may have access to the Dash Cam recordings. In addition, other users may view/monitor the Dash Cam video in real-time as a "live" transmission. Refer to **Section 15.2.23** for details on how to set up live "streaming" video of the Dash Cam data transmission.

<u>To view recorded Dash Cam video</u>

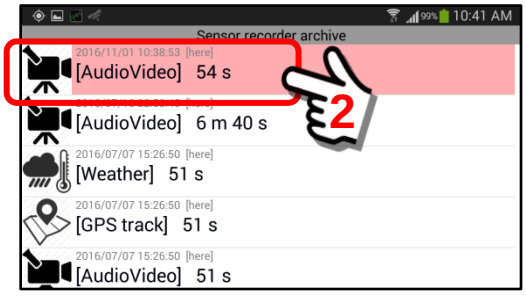
The audio-video files created by the Dash Cam will be stored in the Archive Folder. Select the Tracker Panel and click on the "Archive" Button to open the file storage area.



In this example, we can see that an AudioVideo file (54s) has been stored in the Sensor Recorder Archive folder.



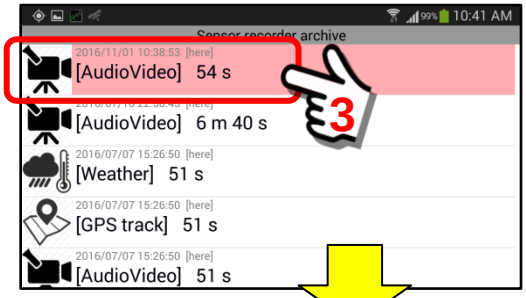
To play the video, click on the file name. The video will be processed and played on the mobile device.

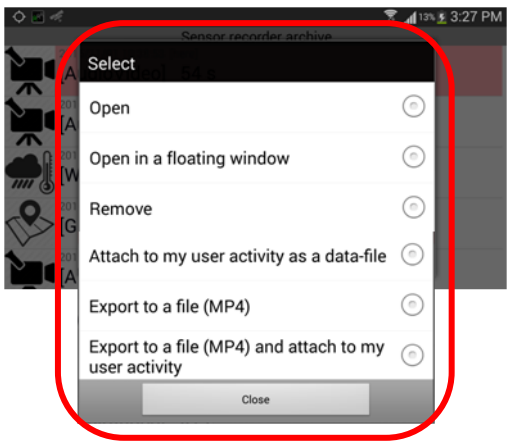


When a video file is “clicked” to be played, it is first transferred to the Sentry MDU Data Server and then made available on the local device (note the [here] notation).

Depending on the file size and internet speed, this may take from a few seconds to several minutes.

Once the video is stored in the Archive Folder, six additional options are available to manipulate the file … including to open in a floating window and export to other systems.





To monitor a live video stream from the Dash Camera

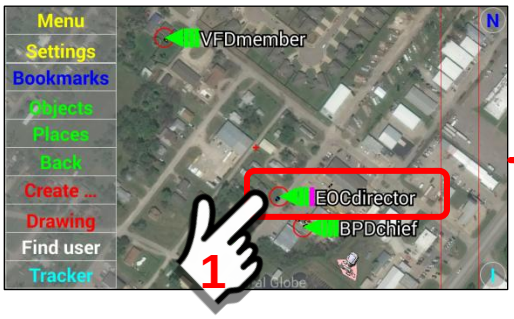
To monitor a video stream from a Dash Camera, the following conditions must be satisfied.

a. The User wanting to monitor the Dash Cam video must be in the same Security Domain.
b. The User must have sufficient security credentials that will allow them access to the Dash Cam on the remote mobile device.
c. The Dash Cam transmitting the video must NOT have the Remote Access feature turned “off”.
d. For “best” performance, the audio-video parameter settings of the Dash Cam should be set up for “streaming” the video (allows many more people to monitor the Dash Cam than by Direct Connection).

To monitor a remote Dash Cam a user simply needs to locate the Dash Cam device “icon” on the Main Map Screen, open the Mobile Object Panel for that user and select the “Streaming” Button.

For this example, we will assume User = VFDmember wants to monitor the Dash Cam of User = EOCdirector device.

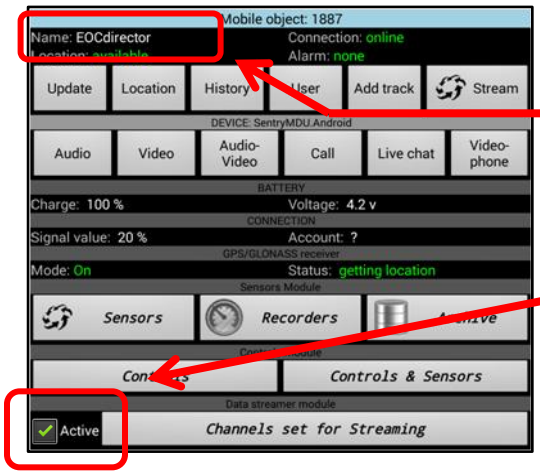
VFDmember Mobile Device



In this example, we assume user **EOCdirector** is streaming audio/video from a vehicle “Dash cam” and we want to monitor the video stream on user **VFDmember** mobile device.

Note that when EITHER a direct connection or streaming method of video transfer is turned “on” a Mobile Object marker will have a “fushia” colored block in the marker.

Click on the EOCdirector “object marker” from the Main Map Screen. The Mobile Object panel for the User = EOCdirector will appear on the VFDmember mobile device.



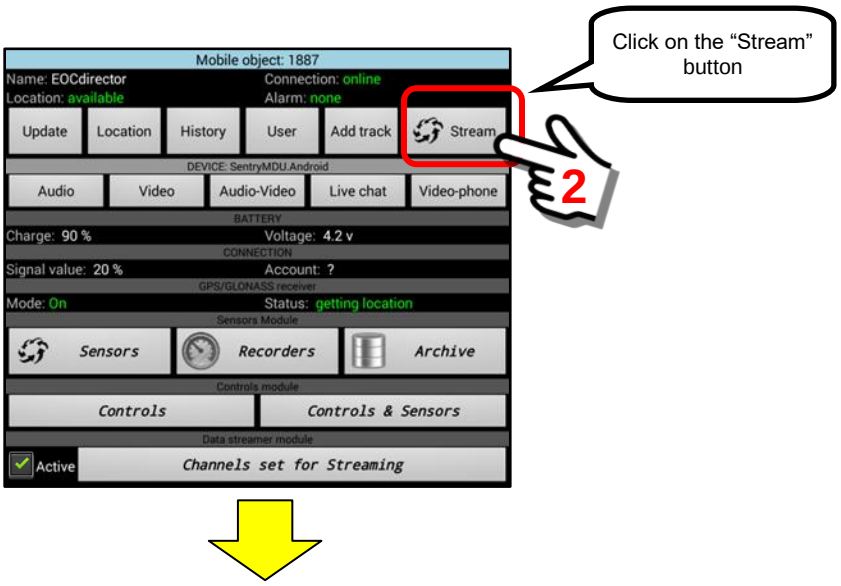
We are viewing the EOCdirector mobile object panel on the VFDmember mobile device.

Observe that the “Active” box is checked on the EOCdirector mobile object panel. This indicates that the “Streaming” feature is currently ACTIVE and transmitting.

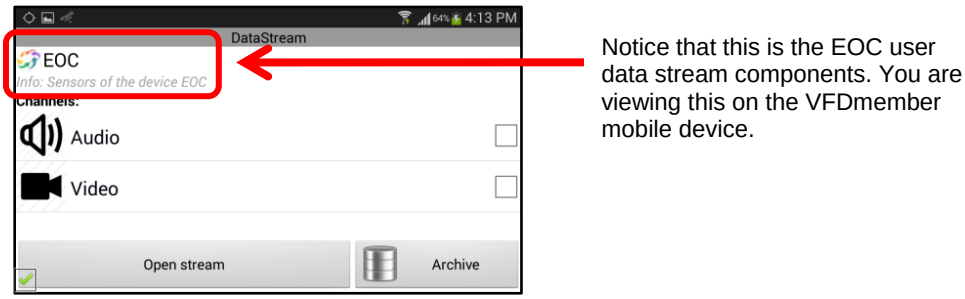
Take no action, only observe.

After verification that the EOCdirector mobile device is transmitting a data stream (Active box checked), we want to access the data stream from the VFDmember mobile device.

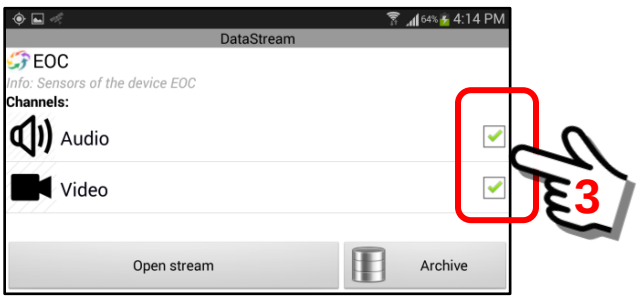
Take the following steps.



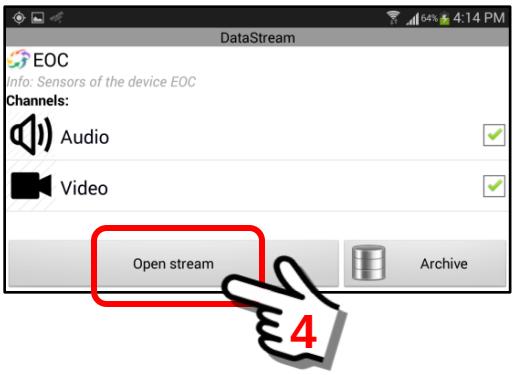
A click on the “Stream” Button will open a DataStream Panel for the EOCdirector user.



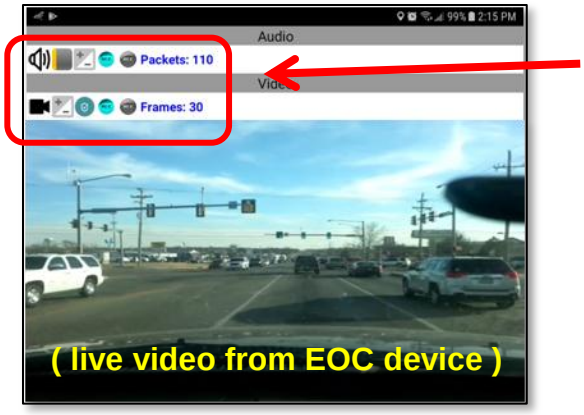
A user may now select the “streaming” channels that they want to monitor. In our example, the VFDmember user will select both the audio and video channels.



Once the streaming channels are selected, click the “Open stream” Button to launch the Audio/Video transmission.

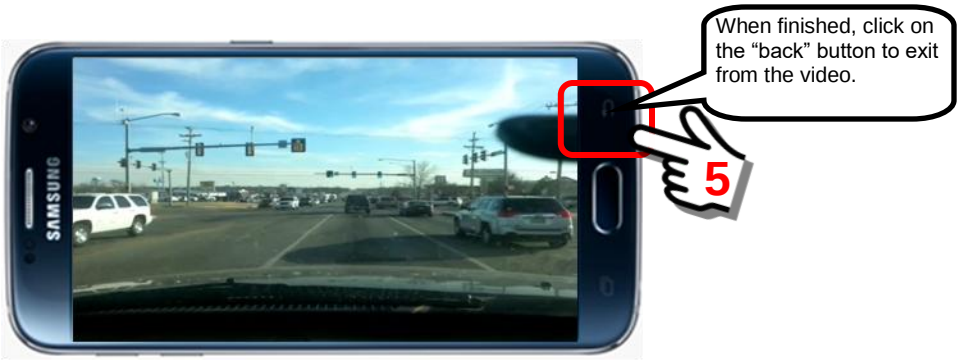


The audio/video stream from the EOCdirector device will now display on the VFDmember device.



These icons can allow the video to be paused, data flow control to be optimized and the audio-video to be recorded locally.

Another view of the streaming audio/video with the title bars hidden from view (swipe finger “up” to hide title bars).



15.5. Example – Set up a "motion activated" surveillance Camera

Overview:

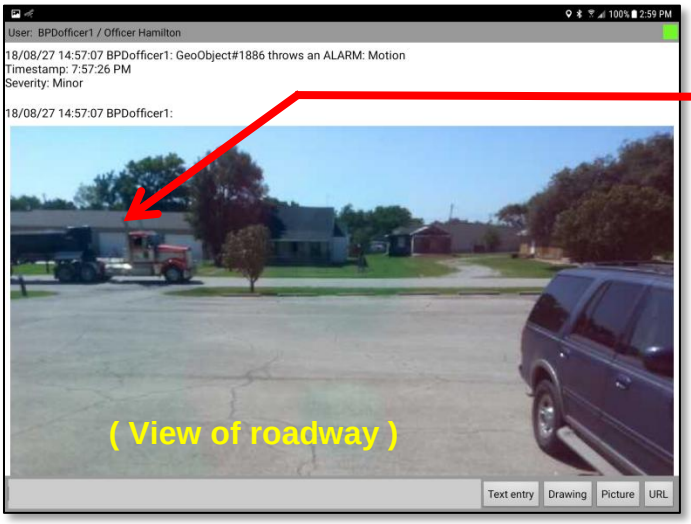
This section will describe how to use the Sentry MDU System as a surveillance camera equipped with Motion Detection. The range of features available to a User will depend on the "type" of User you are.

(1) If you are a User that has access to a licensed SentryMDU Data Server, then you will have full control over all features (see the SentryMDU Manager Desktop Manual for details).
(2) If you are a "Free" User or a Subscription User (where you do not have access to the SentryMDU Data Server) then there are some fine tuning features that you will not have access to.
(3) All users have the ability to "mask" (exclude) areas of the camera view.

Important Note: When an application uses motion detection for video recording, empty records (no motion) are removed from the data storage archive. If using the default setting of 60 minutes (3600 seconds) for video record storage length and it appears there are "gaps" in the stored files, it is usually because there was no motion detected and those records were removed to save storage space (since nothing was detected anyway).

This section will illustrate the setup and configuration necessary to use a mobile device as a motion activated surveillance camera. This mobile device will monitor a "scene" and send notification "alerts" to one (or several) other mobile devices in the security domain together with a "snapshot" of the scene when a triggering event occurs.

Sample Notification Message



Truck detected on the roadway and triggers an event.

A notification message and this "snapshot" is sent to 2 Users to alert them to the passing of the Truck.

SentryMDU Motion Detection Feature

Description of the Setup and Configuration:

1. ***Mounting the Mobile Device as a Surveillance Camera.***
   In most cases, the mobile device used as a surveillance camera will be a "cell phone". Although video can generally be recorded by holding the cell phone in any orientation, most cell phones record video best (HD 1920x1080) while holding the cell phone in a horizontal manner.

   We recommend using a phone mount that will hold the mobile device so that the video is in the native horizontal format. The device should be mounted such that the back camera sensor (highest resolution sensor) is facing out towards the scene that is to be monitored.

   For this example, we will mount the mobile device inside of a building, looking "out" a window and monitoring the traffic on a roadway. For long term monitoring this works best because we have access to a permanent power supply (hook up a phone charger) and the device can operate unattended for weeks/months at a time. In combination with available camera "lense" options, monitoring of long distances is possible.

   The following picture shows a typical mount application and roadway view.

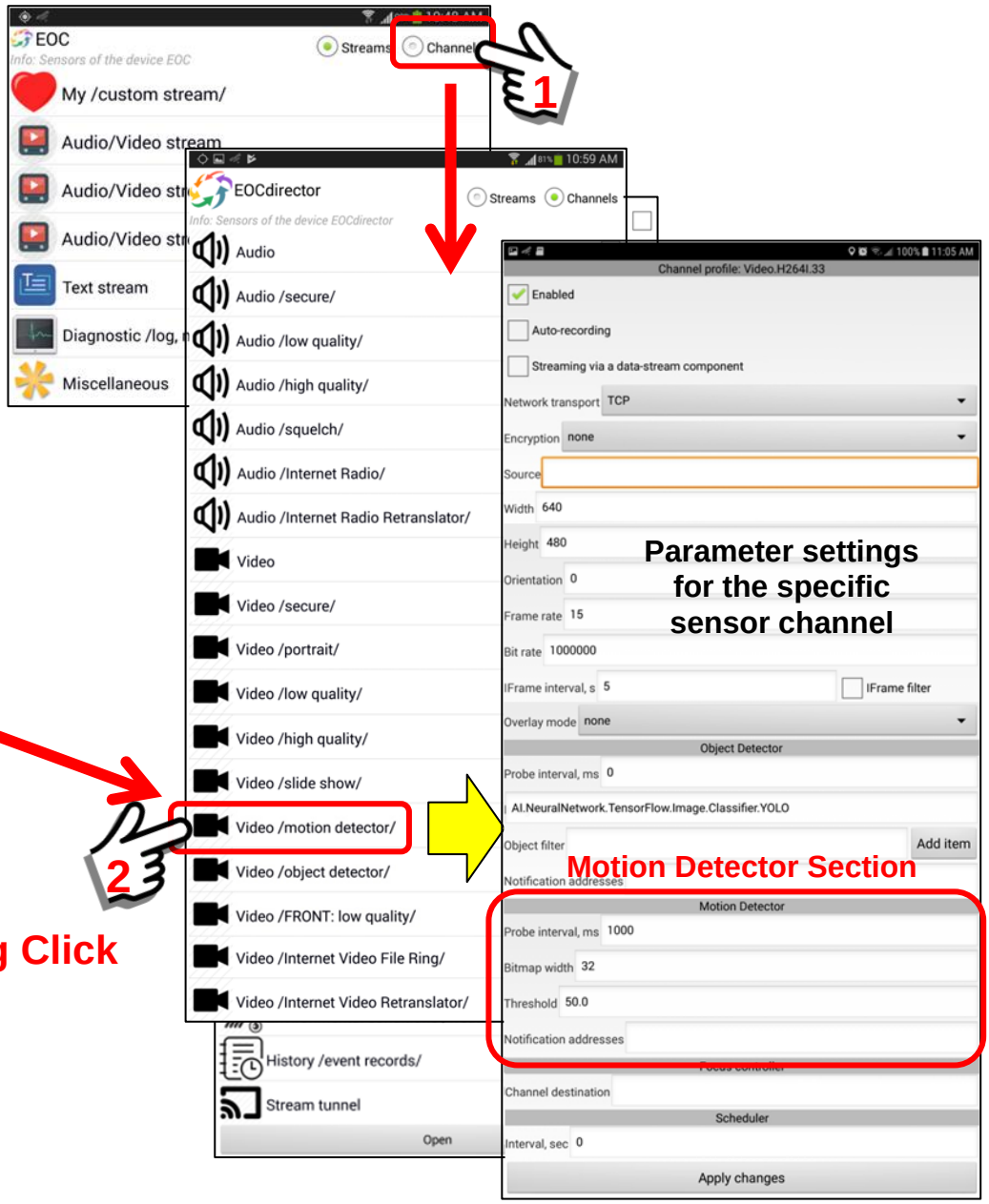
2. ***Select auxiliary camera lense to focus on desired area.***
   As explained in Item #1 above, there are commercial lense options available that will attach to the mobile device to greatly extend the "range" that may be monitored. These are certainly NOT required, but are mentioned here simply as an available option for those that need the capability.

   A few examples are shown below.

3. ***Prerequisite #1 – Select and configure the camera sensor.***
In this example, we will use the pre-configured "Video /motion detector/" sensor channel on your mobile device. We could create a User Defined custom sensor channel specifically for this application (see **Section 8.4.2**) but for this example, we will use the existing channel.

The Sentry MDU System allows a user to "customize" sensor parameters to meet the application. In this example, since we are located "inside" a building and are monitoring a scene outside, we do not have a need for an "audio" component. We will be selecting the "**Video /motion detector/**" channel which uses a single video format.

The picture below shows the channel profile of the pre-configured "Video /motion detector/" sensor channel.



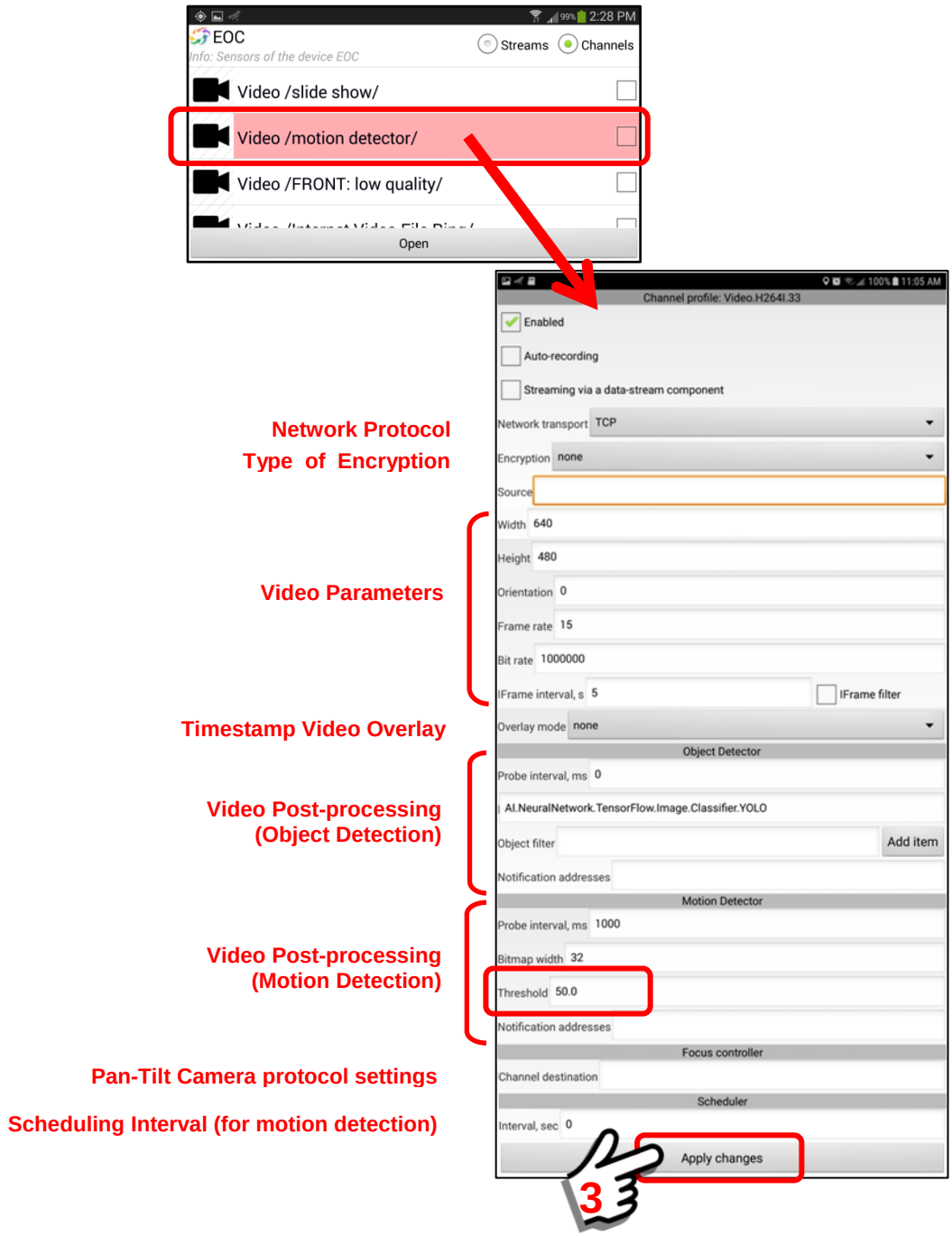
A "long-click" on any of the sensor menu choices will open a screen with parameters for that specific menu choice.

In this example, we are selecting the "Video /motion detector/" choice.

For this example, the “default” settings are sufficient for our application. If you need to make changes, you may make them here.

Video /motion detector/

This is a “motion detector” enabled video channel that uses the rear facing camera sensor on the mobile device to detect motion. As a default this sensor uses a medium video resolution of 640x480. However, since in most cases the motion detection is a “recorded” event, any video resolution (up to the limits of the device) may be used. If you make changes to these settings, click the “Apply changes” Button to save the Channel Profile.



The checkboxes and parameters are described as follows:

a. Enabled checkbox

Factory default setting = “checked”

When “checked” this indicates that the feature is “enabled” on the device and can be activated by a User. If “unchecked” it cannot be started.

b. Auto-recording

Factory default setting = “unchecked”

When “checked” this indicates that whenever this sensor is activated it will “automatically” record and save the data in the Archive.

c. Streaming via a data-stream component

Factory default setting = “unchecked”

In most applications this “low quality” video channel is not selected for streaming. We recommend that this channel remain unchecked for streaming unless you are using this channel profile for an application where streaming is required. When “checked” this indicates that this is the video channel to be used for the broadcast data-streamer (one-to-Server-to-many) if the streaming feature is activated.

d. Network transport

Factory default setting = “TCP”

As a default setting we typically use TCP as the default network transport protocol. We have also provided the UDP-RTP and UDP-RSPP protocols as “options”. In some video applications these UDP protocols may provide faster access and less lag time, however depending on the connection it may also drop video frames (UDP is used in VoIP telephony and Internet online TV).

See **Section 5.6** for details.

The UDP-RSPP protocol also provides for the setting of **Transport Reliability**. This has to do with the recapture of “lost packets” (or packets that arrive too late). In most audio/video transmissions you do NOT need to recapture lost internet data packets because the time that you needed it has now past. By adjusting transport reliability, you are able to reduce “lag time” in video transmissions. Depending on the latency of your network this may provide better “real-time” results (reduce lag by 1-2 secs).

Input Reliability = 1.0 …… (default)
Output Reliability = 1.0 …. (default)

1.0 = 100% reliability (all packets delivered)
0.0 = RSPP does not re-deliver ANY lost packets

The maximum time for delivery of a single data packet is 60 seconds. So, setting the reliability to 0.50 (50%) means the RSPP code will try to re-deliver packets from the last 30 seconds (50% of 60 seconds). Likewise, a setting of 0.10 (10%) would cause re-delivery during 6 seconds (10% of 60 seconds) … and so on.

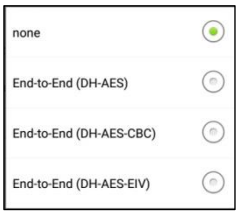
e. Encryption

Factory default setting = “None”

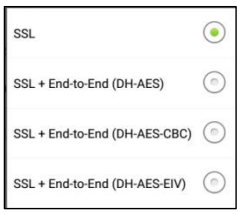
If during initial configuration, the Server Setting is set for “Secure Connections” (see Section 5.4) then the default will be “SSL”. The “Encryption” selection box is for specifying whether or not a data channel is encrypted and the type of encryption used.

Two types of Encryption Menus are available:

Main Configuration Menu (No encryption)



Main Configuration Menu (https/SSL encryption)



f. Source

Factory default setting = “blank/empty”

The “Source” data entry location is for specifying a data source for the channel. When the “Source” is empty (default) this indicates that the camera on the mobile device (back camera if there are two) will be the source of the video. In other configurations the source may be a network “address string” from other sources (ie website address or remote network).

g. Width

Factory default setting = 640

This is the “width” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

h. Height

Factory default setting = 480

This is the “height” of the video capture setting for the camera. Video capture settings will depend on the device capability. Settings may depend on the aspect ratio of the native camera on the device (ie 4:3, 16:9). Typical settings may be 640x480, 1280x720 up to HD-1920x1080. These settings are very much device dependent. Also please note that just because a mobile device can record HD video, the ability to “transmit” due to internet bandwidth considerations is another issue. To conserve bandwidth, we recommend using a video setting with a quality at the minimum acceptable level (ie 640x480). The Sentry MDU System allows for pre-setting a variety of video quality levels.

i. Orientation

Factory default setting = 0

The “Orientation” setting allows a user to “rotate” a video image based on the orientation of the recording device. Many phones are designed to record video while holding the phone in a horizontal manner. If the phone is then held in a vertical manner, the resulting video recording will be sideways. This feature allows a User to rotate the orientation to any angle between 0 - 360 degrees. The default is “0” (zero) which means no rotation.

j. Frame rate

Factory default setting = 15

This is the video data transfer rate in “video frames-per-second” of the data. Typical frame rates will be between 10 – 30 frames-per-second (fps). The frame rate, video resolution (ie 640x480) and the “Bit rate” all combine to impact the internet bandwidth that will be required by the device. We recommend a User set the “Frame rate” at the minimum acceptable level for the job. The default of 15 fps should work for most motion detection applications.

k. Bit rate

Factory default setting = 1000000

This is the data transfer rate in “bits-per-second” of the video data stream. The default of 1000000 bps should work for most motion detector applications and is a good starting point for testing. For those on dedicated (non-throttled) WiFi networks or 4G-LTE cellular networks, values of 5 – 8000000 may be appropriate.

l. iFrame interval, s

Factory default setting = 5

The default setting of 5 seconds is appropriate for most users. This “iFrame interval” is the time interval between “Key Frames” of “I-Frames” in an H.264 video stream (the default used by the Sentry MDU System). As numbers get smaller (ie 3, 2, 1) the additional data load may begin to affect performance. As numbers get larger (ie 6, 10, 20) the video may become pixilated and unstable.

Negative numbers (ie -1) will cause errors and the video channel will fail.

m. iFrame filter

Factory default setting = “unchecked”

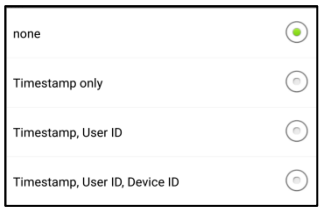
The default is “unchecked”. The “iFrame filter”, when checked results in a video stream that contains ONLY the I-Frames. The result can be something that appears to be a “slide show”. For example, if the “iFrame interval” is set to 5 seconds, then the video stream would only contain video frames accumulated once every 5 seconds. Played back this may appear as a time-lapse recording.

n. Overlay mode

Factory default setting = “none”

The default is “none”. The overlay mode provides 3 types of text overlay options for the video panel.

(1) Timestamp only
(2) Timestamp + User ID
(3) Timestamp + User ID + Device ID



o. Object Detector - Probe interval, ms

Factory default setting = 0

The default is “0”, this means the object recognition feature is turned “off” and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an “object” in the image that meets the filter selection criteria.

p. Object Detector – AI.NeuralNetwork.TensorFlow ….

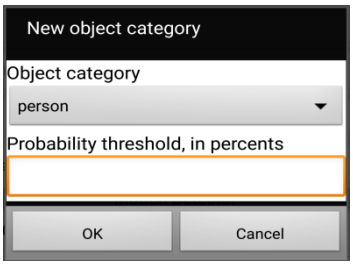
Factory default setting = "*A.I. Code reference"*

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text.

q. Object Detector – Object Filter

Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several) categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

r. Object Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 65%), a message notification with an attached picture "snapshot" will be sent.
See **Section 15.11** for an example configuration.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the

image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 50.0

The default is "50.0", this means the motion detector feature is turned "on" and is active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event.

Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

v. Motion Detector - Notification Addresses

Factory default setting = "blank/empty"

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.

(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

"MBIM:123,345,567" …… 3 users to notify

"MBIM:478" …… a single user to notify

w. Focus Controller – Channel Designation

Factory default setting = "blank/empty"

The Focus controller field allows a user to specify a PTZ control interface for "Smart" Cameras. An example for a ONVIF protocol would be:

ONVIF/Instances/Default/http://192.168.43.83;up=down

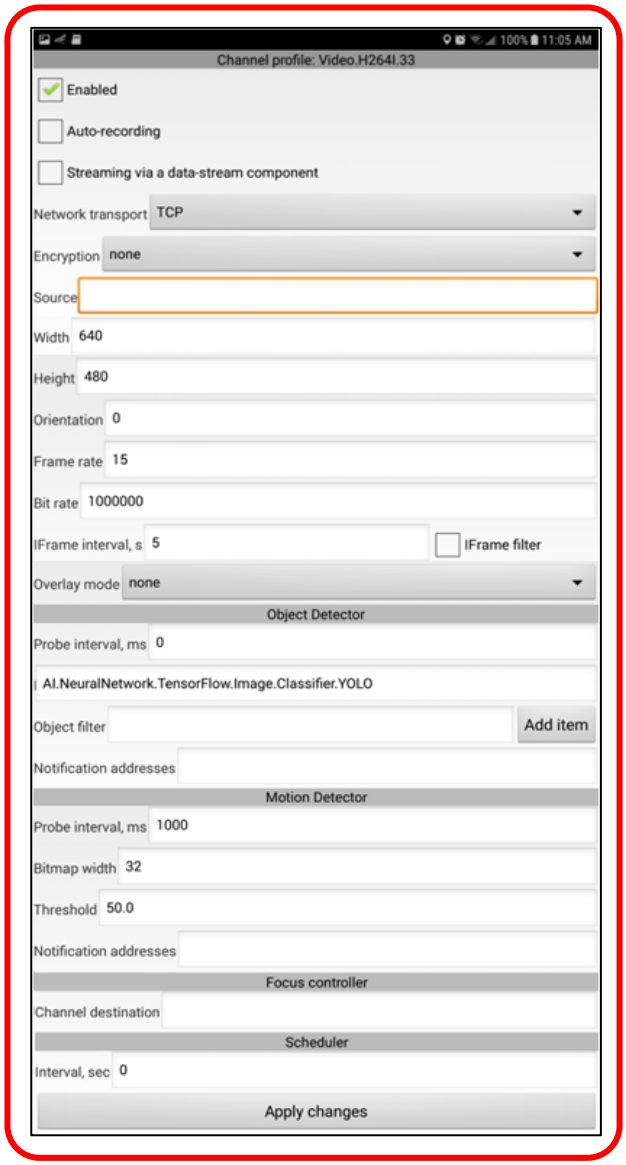
In this example, up=down means an inversion of the tilt control for cameras that may be mounted upside-down (on a ceiling).

x. Scheduler - Interval sec

Factory default setting = 0

The "Scheduler" feature is only active when the Motion Detection feature is activated (Threshold > 0). The default is "0" seconds, which means that the motion detection "feature" is continually comparing video frames for changes. When a value is used (i.e. 10 seconds), this means that once every 10 seconds the device will look for motion movement in the video frames.

The settings for the Surveillance Camera example are as follows:



<u>The following settings refer to the Configuration Panel</u>

a. **Enabled checkbox**
   Checked
b. **Auto-recording**
   Unchecked
c. **Streaming via a data-stream component**
   Unchecked
d. **Network transport**
   TCP (First Responders should use UDP-RSPP)
e. **Encryption**
   None
f. **Source**
   No Entry

g. **Width**

We are going to leave at the defaults.

Width = 640

h. **Height**

We are going to leave at the defaults.

Width = 480

i. **Orientation**

0 Degrees

j. **Frame rate**

15

k. **Bit rate**

1000000

l. **iFrame interval, s**

5

m. **iFrame filter**

Unchecked

n. **Overlay mode**

None

o. **Object Detector - Probe interval, ms**

0 (inactive)

p. **Object Detector – A.I. NeuralNetwork**

AI.NeuralNetwork.TensorFlow.Image.Classifier.YOLO

q. **Object Filter**

No Entry

r. **Object Detector – Notification addresses**

No Entry

s. **Motion Detector - Probe interval, ms**

1000

t. **Motion Detector - Bitmap width**

32

u. **Motion Detector - Threshold**

50.0 (active motion detection)

v. **Motion Detector – Notification addresses**

MBIM:140,154 (send notification to two users)

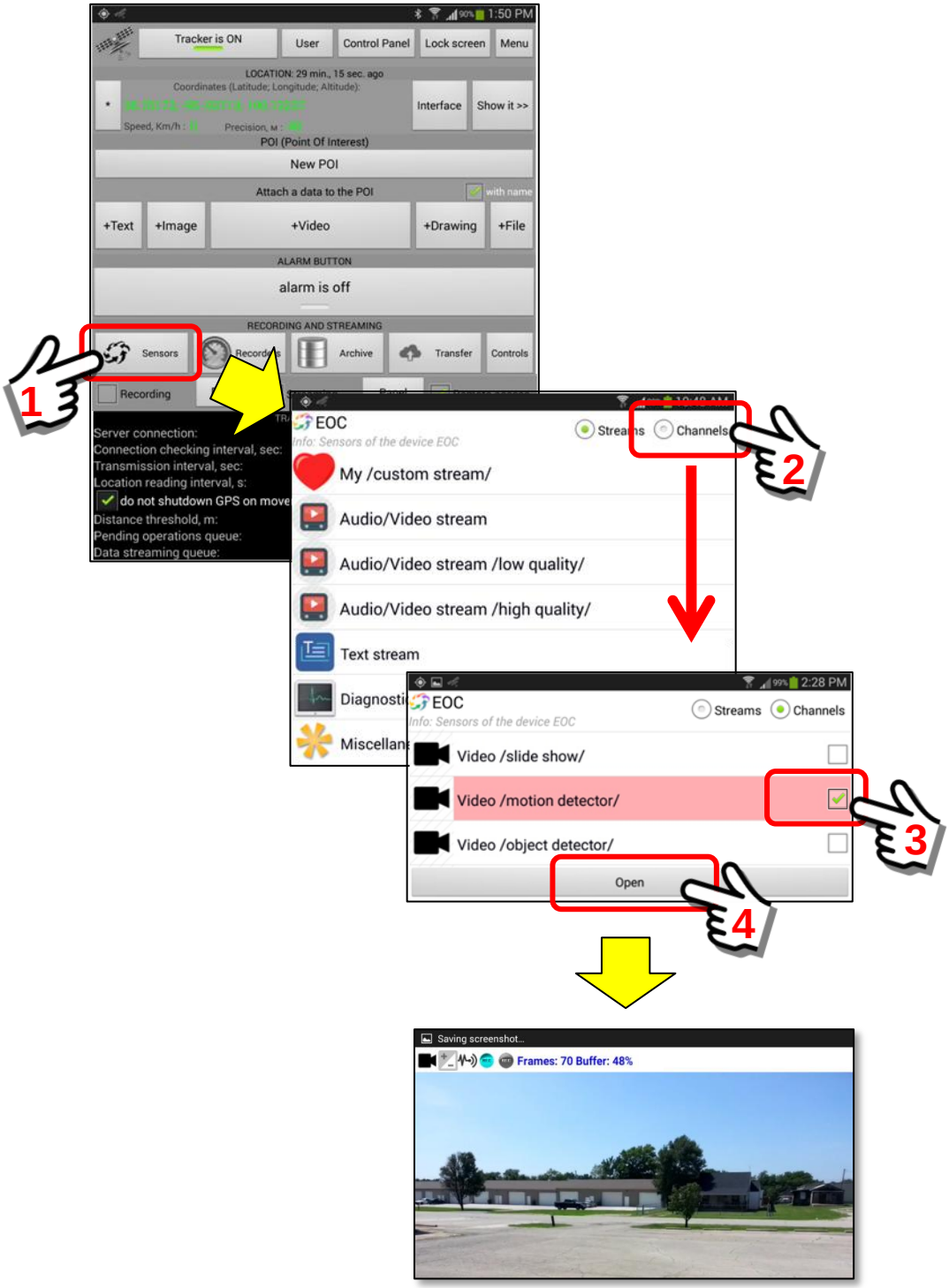
w. **Focus Controller – Channel Designation**

No Entry

x. **Scheduler – Interval, sec**

0 (inactive)

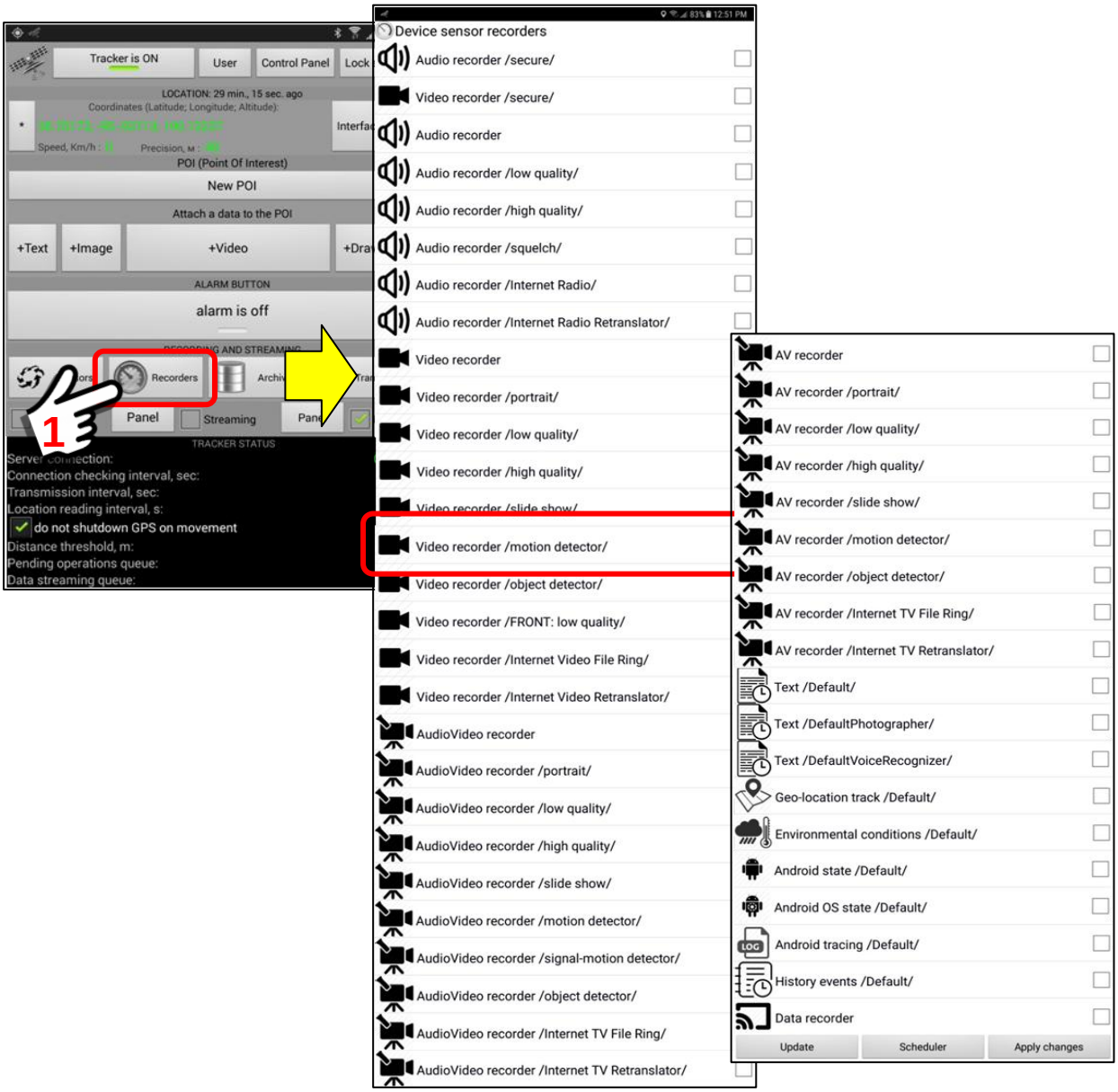
4. ***Test the* "Video /motion detector/" sensor channel.**
To test the sensor channel we will open the sensor channel on the remote mounted device.



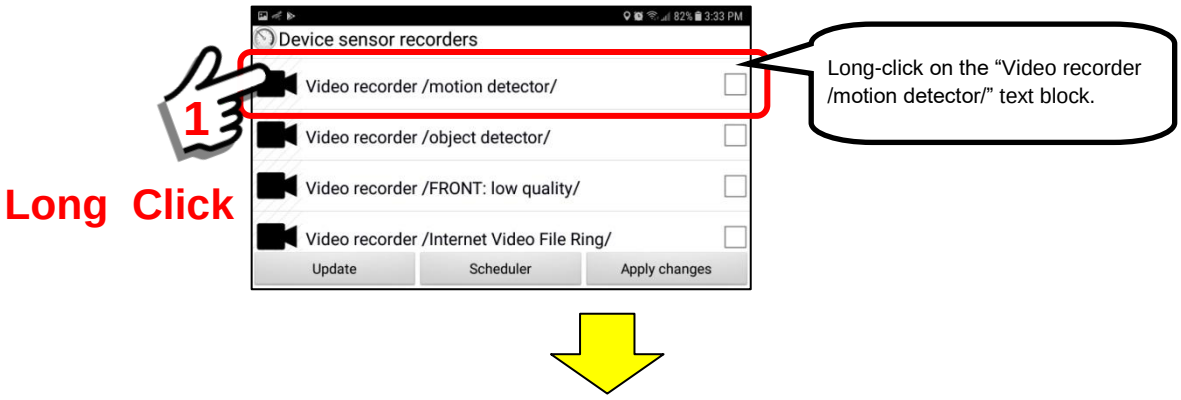
5. ***Prerequisite #2 – Select and configure the Recorder.***
To configure the mobile device for a motion detecting surveillance camera application we will navigate to the Recorder Options located on the Tracker Panel. (This can also be done via the Mobile Object Panel if the device is "remote" from you.) For initial configuration of the device it is "best" to do it ON the mobile device you will be using as the surveillance camera.

We set up the "Recorders" because we want to record ALL video, but in addition, we want to monitor any motion detection events and send notifications to other users if we get a "trigger" event (exceeds set threshold). We will be selecting the "**Video recorder /motion detector/**" recorder from the pre-configured choices. This will be using the "Video /motion detector/" sensor channel we configured in the previous section.

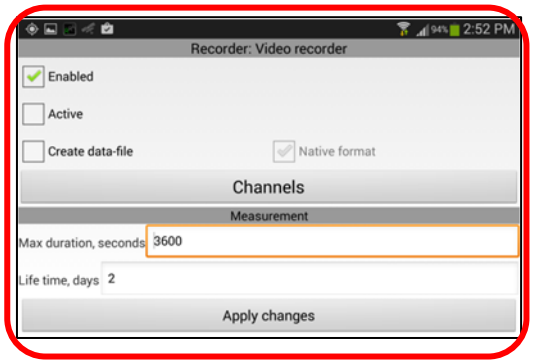
Open the **Tracker Panel** and navigate to the Recorder Section.
Click the **Recorders Button**.



6. ***Review and change the recorder settings.***
During the installation of the Sentry MDU Application a set of default configuration settings are installed for all data recorders. These settings will work for most mobile devices. However, depending on your requirements, you may choose to modify these settings. This section describes how to make changes to the default settings.



Performing a "long-click" on the the "Video recorder /motion detector/" text opens a configuration panel for the recorder. Depending on the type of sensor (ie audio, video, GPS, etc.) these configuration panels may be different.



<u>The checkboxes and parameters are described as follows:</u>

a. **Enabled checkbox**
When "checked" this indicates that the recorder feature is "enabled" on the device and can be activated by a User. If "unchecked" it cannot be started.

b. **Active checkbox**
When "checked" this indicates that the recorder is currently "active" and recording data. When a user puts a checkmark in the box, the recorder will become "active" once the "Apply changes" button is clicked.

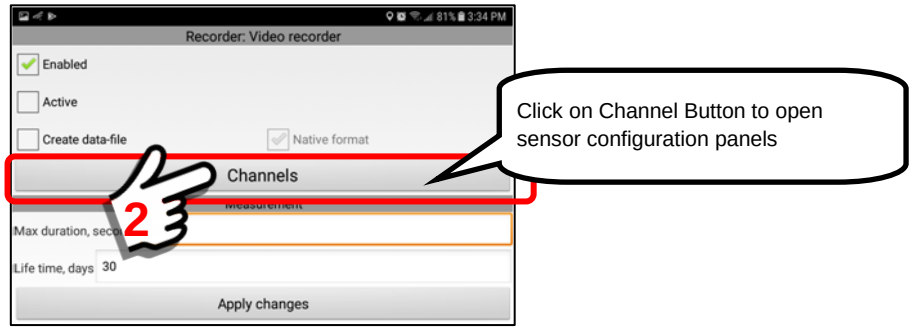
c. **Create data-file checkbox**
When “checked” this means that a recorded record will be automatically attached as a data file to the current user activity (see Content on User Information Panel). When active, this also allows the “Native format” checkbox to become available for user modification.

d. **Native format checkbox**
In the recording of audio-video, the recorded file uses the native Android video format when saving the file. When “checked” this means there is no data conversion. When “unchecked” the application will convert the video file to .mp4 format from the native video format.

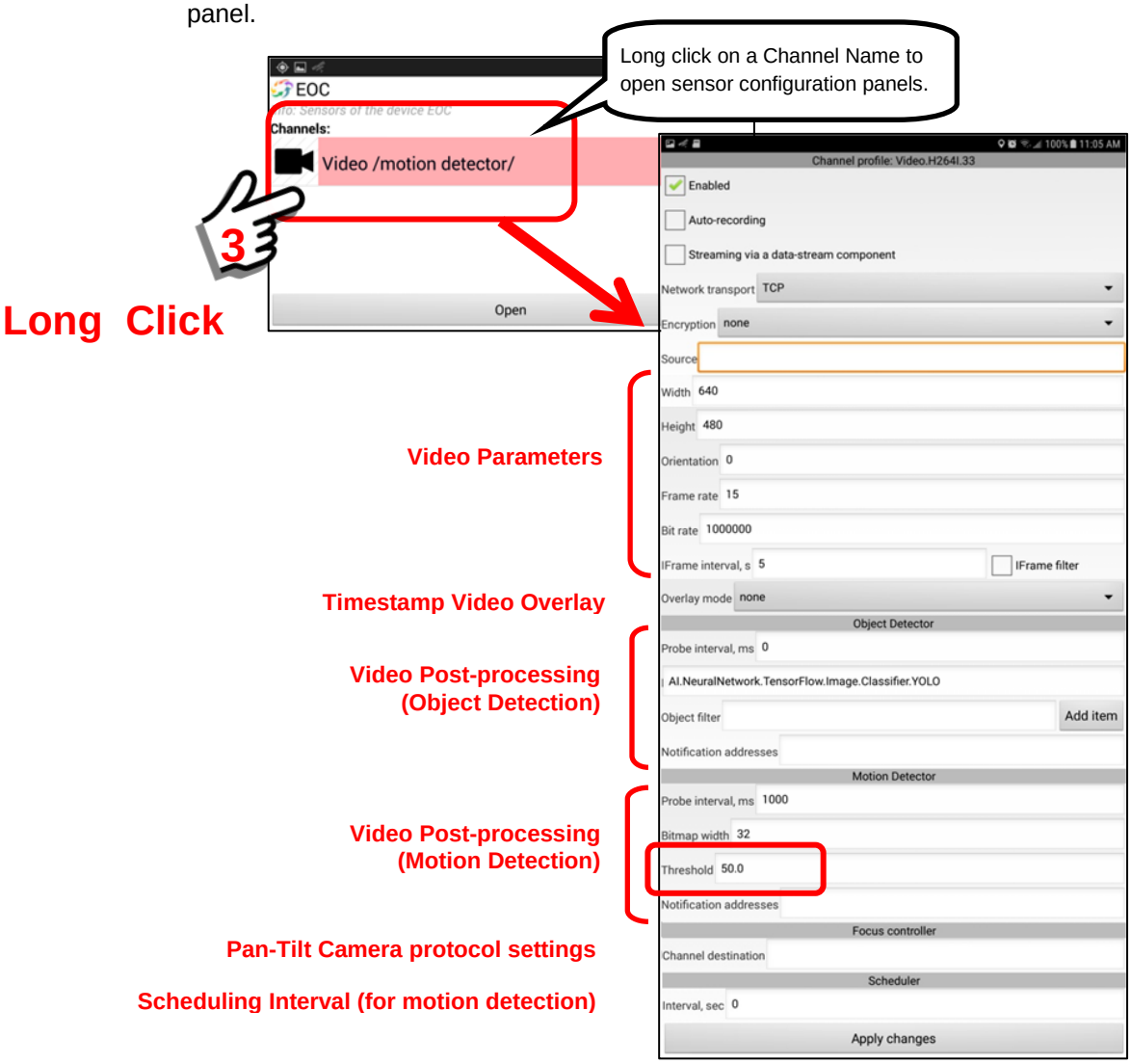
e. **Max duration in seconds**
This is the maximum length of a single data record in seconds. For example, the default is 3600 seconds (60 minutes). This means the application will record a single data file for a maximum of 60 minutes and then start a new file. If a recording is to last 3.5 hours, the resulting data files would be 3 files @ 60 minutes each and 1 file @ 30 minutes.

f. **Life time in days**
This is the “life time” of a recorded file on the mobile device before it is automatically removed. The Sentry MDU System has settings for the mobile device and the Data Server. They are set independently. This setting is for the mobile device and the default is 2 days. If a record is not saved to the Data Server it will be automatically removed after this time interval setting.

In addition to the recorder configuration options, the individual sensor elements (ie audio and video channels) have configuration settings.



Clicking on the Channels Button will open the individual channels for the audio and video configuration. In this example, we only have the Video Channel … which we edited in the previous section. To review the settings, select the sensor and perform a "Long Click" on the text name to open the panel.



7. ***Determine the other Users to receive Notification Alerts.***
To configure the mobile device to send Notification Alerts to other users, we will enter the Notification Address of "where" the alerts are sent. This will be the User ID number.

<u>The Notification Address has a specific "format" that must be followed.</u>

Factory default setting = "blank/empty" (no notifications sent)

The notification feature allows a User to send other Users a "timestamped message notification" when a trigger event occurs. In the case of the video parameter, if a motion detection signal exceeds the set threshold, a message notification with an attached picture "snapshot" will be sent.

(1) If "blank" there will be NO notification.
(2) An entry must start with the prefix "MBIM".
(3) A colon, " : " separates the prefix from the User IDs.
(4) Users are designated by their "User ID" number.
(5) If multiple users are to be notified, they are separated by a comma ",".
(6) There can be no whitespace in the text string.

<u>An example entry would be as follows (no quotes):</u>

"MBIM:123,345,567" …… 3 users to notify

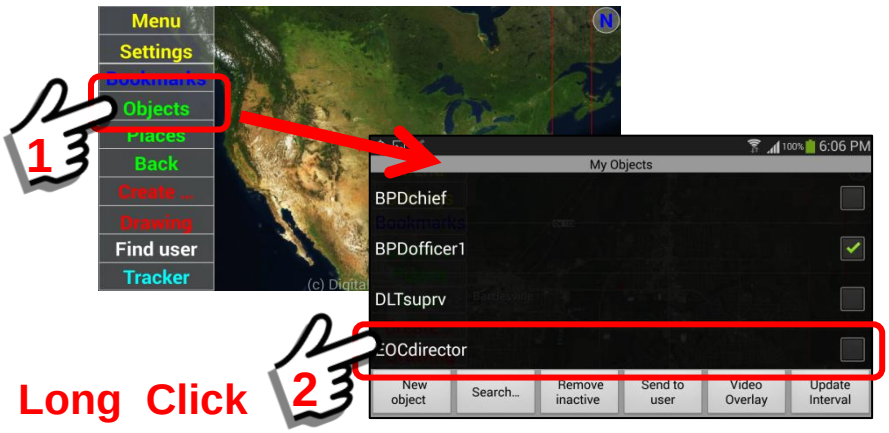
"MBIM:478" …… a single user to notify

In this example, we will send notification alerts to two (2) User devices. The two User devices will be:

User = EOCdirector (User ID: 140)
User = BPDchief (User ID: 154)

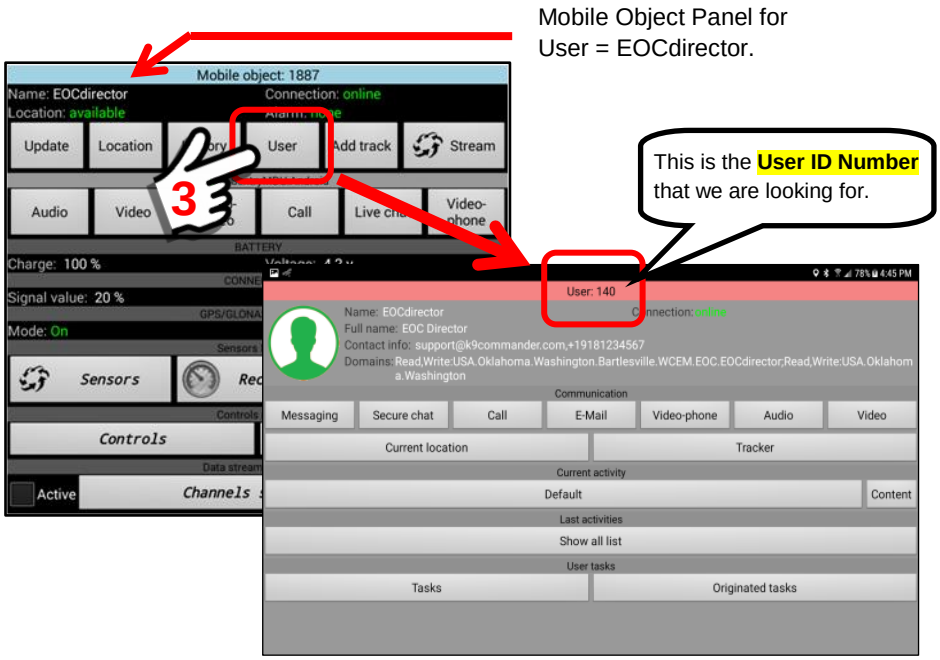
<u>First, we will retrieve the User ID for User = EOCdirector.</u>

At the Main Map Screen, click on the Objects Button.



At the Objects Panel, perform a “Long click” on the User Name of the desired person. This will open the Mobile Object Panel for that User.

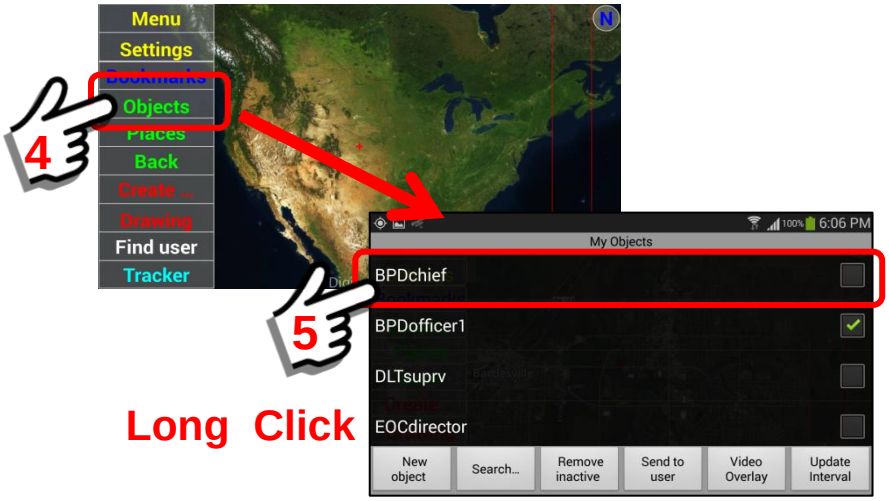
Click on the User Button to open the User Information Panel for EOCdirector.



As we see, the **EOCdirector** user has a User ID = 140.

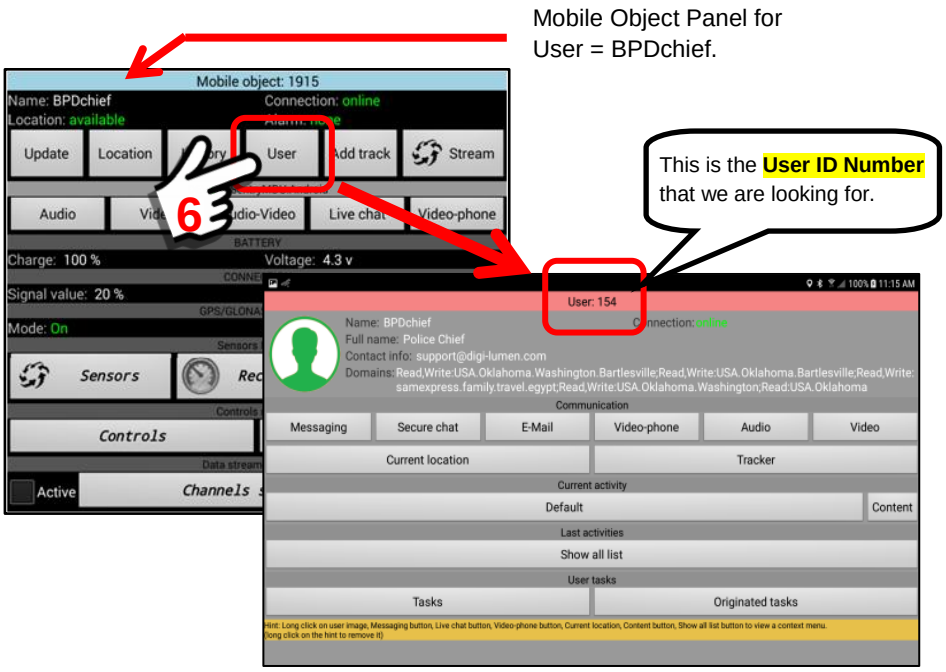
<u>Next, we will retrieve the User ID for User = BPDchief.</u>

At the Main Map Screen, click on the Objects Button.



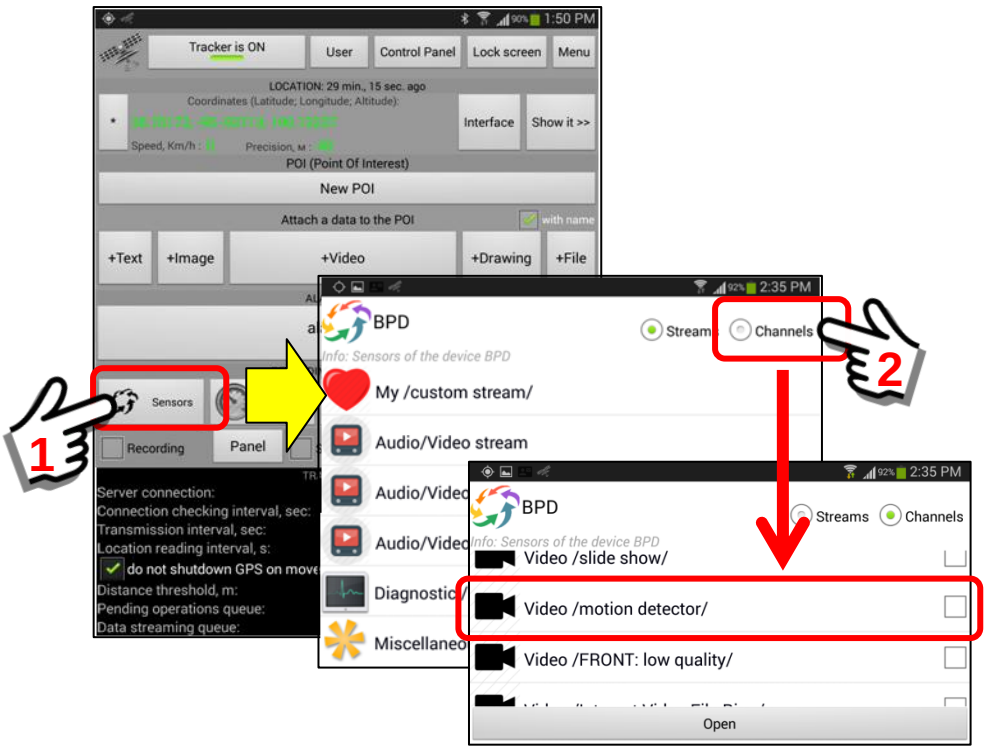
At the Objects Panel, perform a “Long click” on the User Name of the desired person. This will open the Mobile Object Panel for that User.

Click on the User Button to open the User Information Panel for BPDchief.



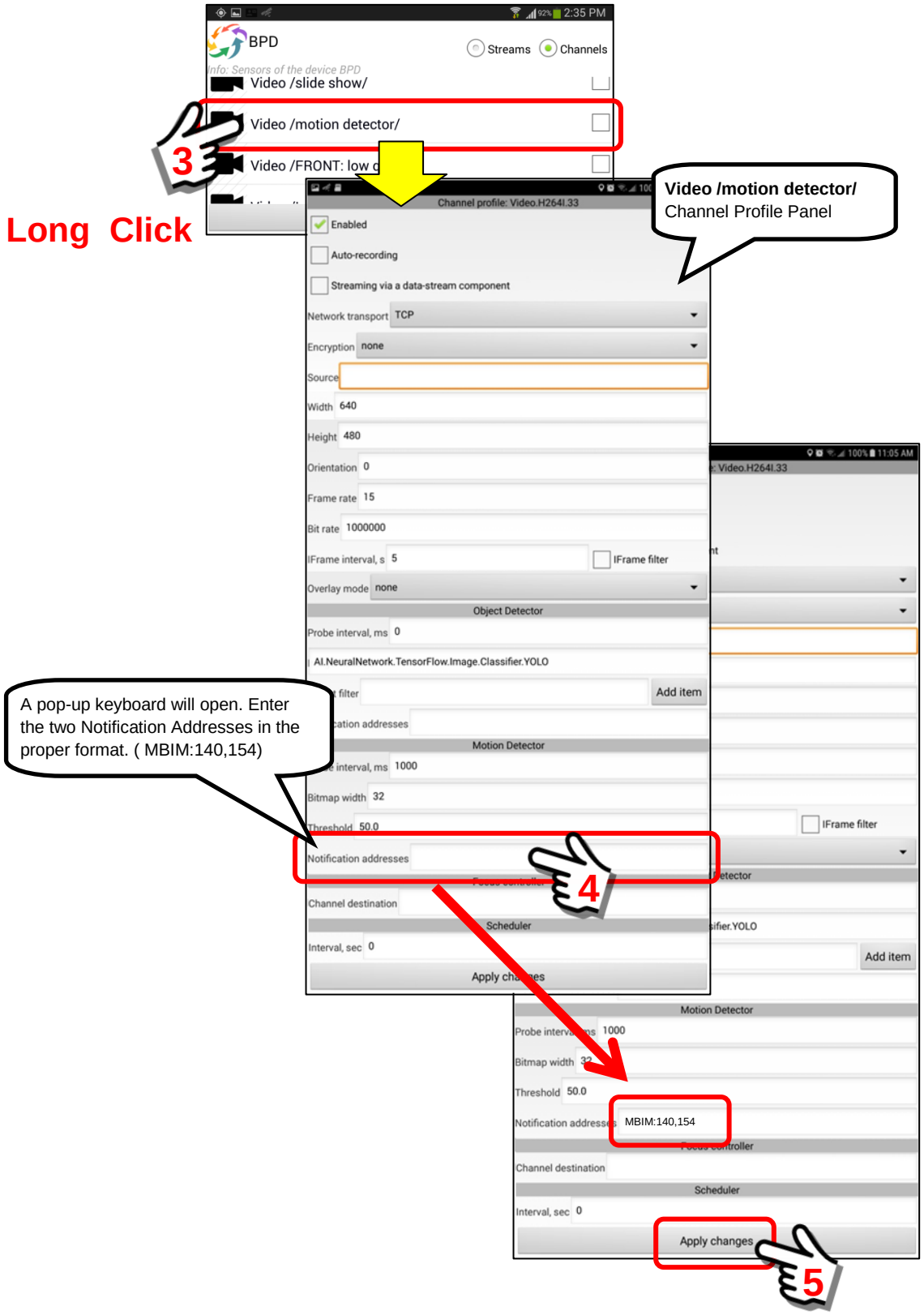
As we see, the **BPDchief** user has a User ID = 154.

8. ***Add the selected User IDs to the Notification Address block on the "Video /motion detector/" Channel Profile.***
   Edit the channel profile for ***"Video /motion detector/"*** and add the two Users that will be receiving Notification Alerts.



Perform a “Long click” on the “Video /motion detector/” channel profile name to open and edit the parameters. Make sure to SAVE the changes.

The correct format = MBIM:140,154



9. ***Set up the "motion detecting" surveillance camera in an office window and test the video coverage area.***

The next step is to "aim" the camera on your mobile device to cover the area that you would like included in the camera view. Depending on the camera "lense" arrangement (ie telephoto or not), the distance to the target area and the parameters below, you will need to experiment and determine the optimum settings for **Items s, t and u**. Generally, the default settings are a good start.

s. Motion Detector - Probe interval, ms

Factory default setting = 1000

The default is 1000 milliseconds (1 sec). To determine motion detection, this is how often the image is processed in order to determine if there is a "change" in the image (or image section).

t. Motion Detector - Bitmap width

Factory default setting = 32

The default is "32". This means that the motion detection process (video frame comparison) is performed on a size-reduced image that is 32 pixels in width. This reduces load on the mobile device CPU. We do not need to compare full size images (ie 640x480) in order to determine "motion". We simply reduce the selected video frame (one per probe interval) to reduced bitmaps and compare them. The default is 32x24 to check motion on a 640x480 reduced size image. If a bitmap = 64, this means it will monitor the motion on more distant objects.

u. Motion Detector - Threshold

Factory default setting = 50.0

The default is "50.0", this means the motion detector feature is turned "on" and is active. The value can range between 0.0 – 100. The higher the threshold number the larger the object must be to trigger an event.

Depending on the item monitored and the distance from the camera sensor, you will need to experiment with various threshold numbers. Typically, a number between 25 – 50 works well and provides event triggering without too many false positives.

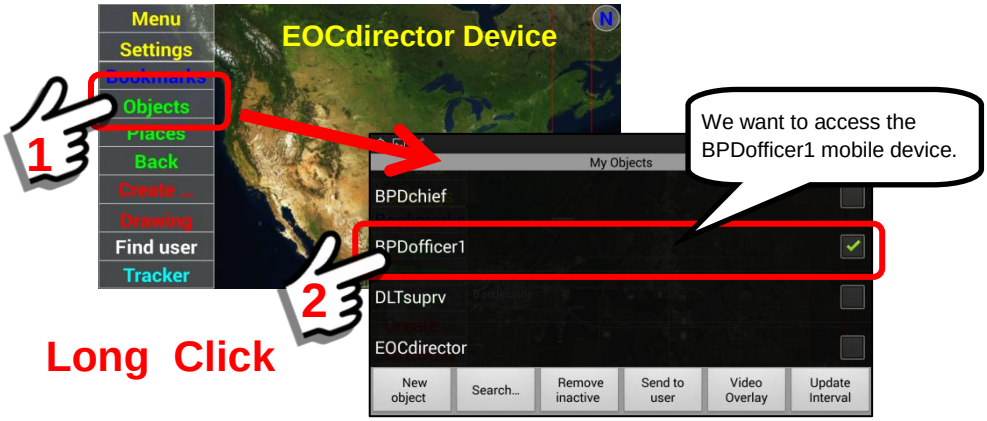
In this example, we are looking to cover the area and roadway in front of the building.

Once the Camera has been set, we have the following "view area" when we activate the camera.

10. ***Create a "masking area" so the motion detection will not trigger an event when someone goes to a parked vehicle in front of the bulding.*** One feature of most "motion detection" systems is the ability to "mask" or exclude certain regions of the camera view. The SentryMDU system also has a "masking" feature. This section will illustrate how to implement "masking" for your surveillance application.

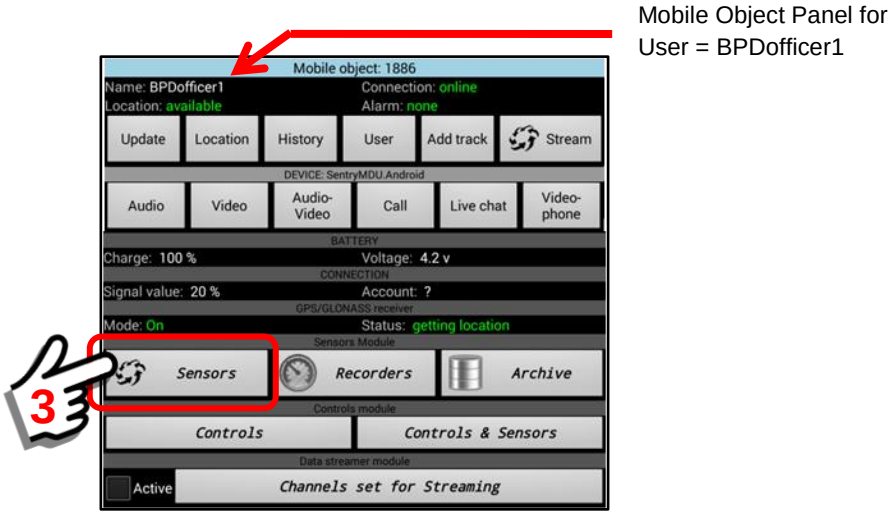
At this stage of our exercise, we will assume that BPDofficer1 mobile device is now installed as a "motion detecting" surveillance camera. We are using another mobile device (EOCdirector) to access the BPDofficer1 mobile device.

At the Main Map Screen, click on the Objects Button. Perform a "Long click" on the BPDofficer1 mobile object "name" in order to access the Mobile Object Panel for that device.

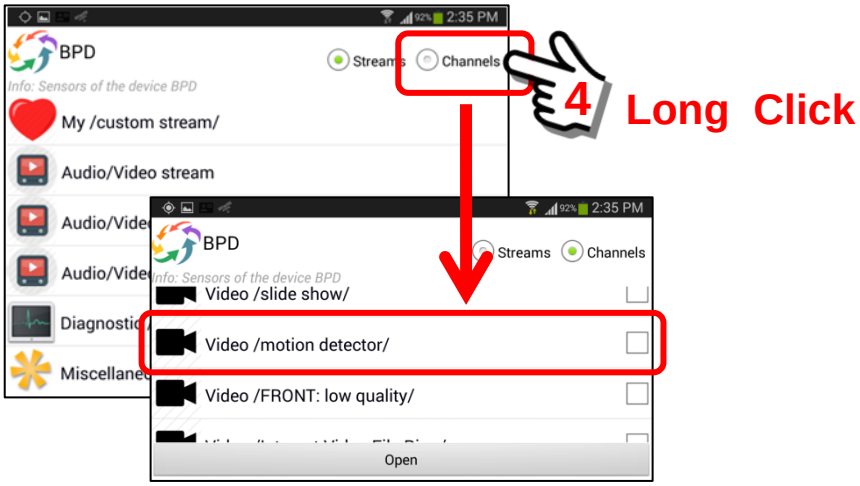


At the Mobile Objects Panel, click on the Sensors Button. We will need access to the "Video /motion detector/" channel profile in order to set screen "masking".

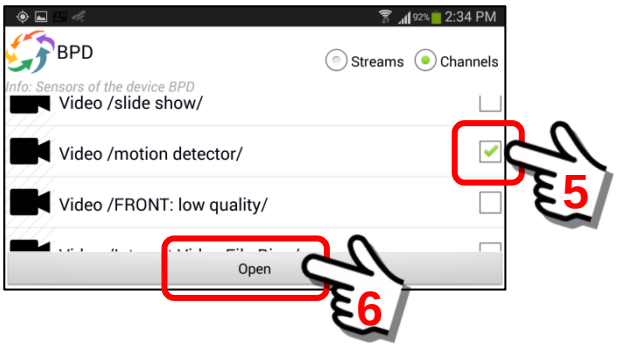
Click on the Sensors Button to open the Sensors Panel for BPDofficer1.



The Sensors Panel will open. Select the Channels Button in order to access the “Video /motion detector/” channel profile.

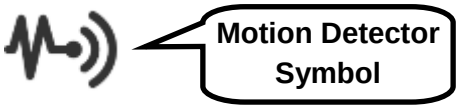


Put a “checkmark” in the checkbox of the “Video /motion detector/” channel profile name and click “Open” to launch a “live” video display panel.



At this point in the exercise, the Recorder is NOT running, we are not recording anything, we are simply opening the Video Stream to view the display panel. This will give us access to the Motion Detector filters.

Whenever a Video Panel has the Motion Detection parameter “enabled”, an extra symbol will be present in the title block. This is the Motion Detector symbol.



<u>The full panel description is shown below</u>

The video output of the mobile device may be paused by clicking on the video camera icon on the indicator bar.

Video is turned “on” (Default)

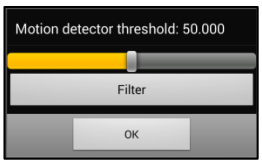
Video is paused, stopped but active

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” the flow control and let the system use the settings provided during configuration. However, if poor video output exists, clicking the “flow control” feature (turning it “on”) may help.

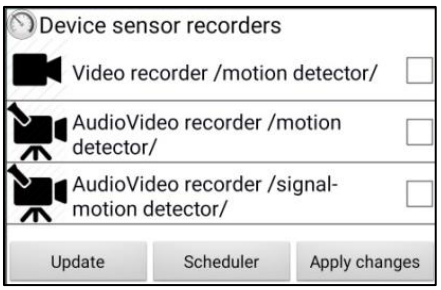
Flow control is turned “off” (Default)

Flow control is turned “on”

The **Motion Detector** symbol, when clicked, will launch a pop-up menu that will allow adjustment of the detection threshold and configuration of the “masking” filters.



This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The video output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

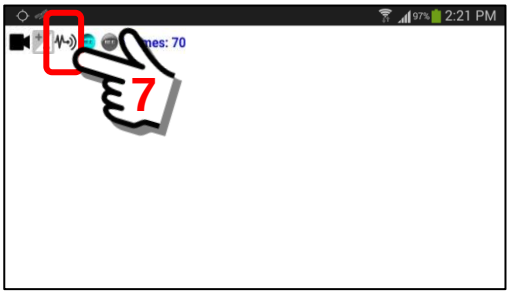
Recording is turned “off” (Default)

Recording is turned “on”

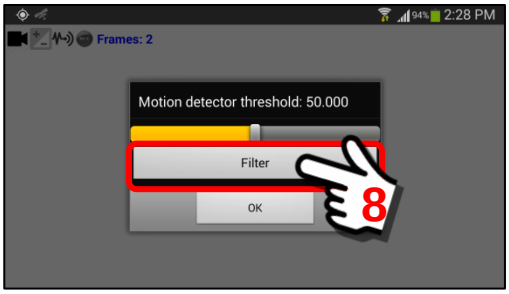
Once a recording has been made, there are additional options for the User. Navigate to the Data Archive and select the file.

The first time you launch the motion detection panel, you may get a “blank” panel, as the device has not yet detected motion. You should hear two “bell” ringing sounds. These indicate that the motion detector feature is active.

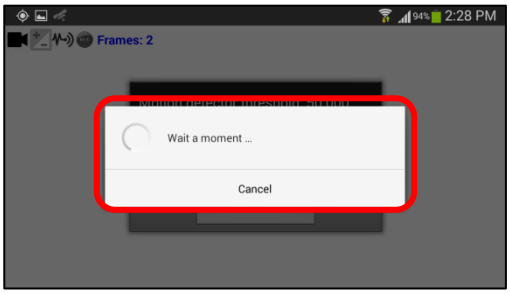
Click on the Motion Detector Symbol.



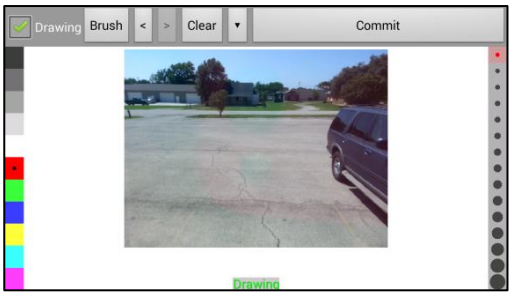
A pop-up Motion Detector Panel will appear.
Click on the “Filters” Button to open the screen “masking” feature.



The screen will process the Filter Request. This may take a moment.



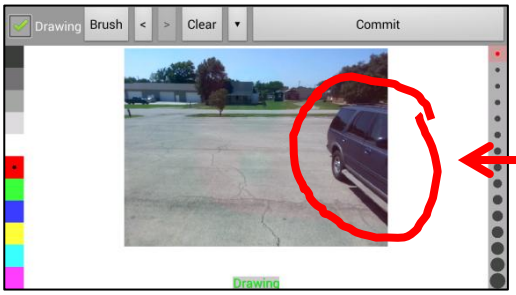
The screen will transition to the **Drawing Tools Mode** with a picture of the current Camera View.



Drawing Tools Mode with a snapshot of the current Camera View.

The picture aspect ratio will be the same as the settings in the Sensor Channel Profile (ie 640x480)

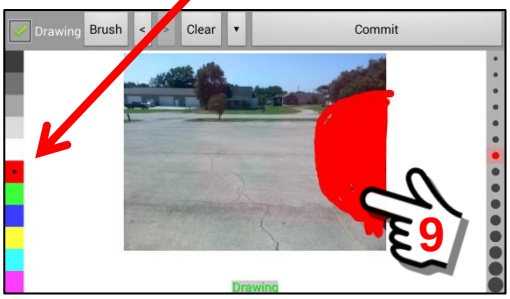
If you need a refresher on the Drawing Tools Mode, see **Section 13**.
In this example, we want to exclude the region on the right side of the screen, around the parked vehicle, from motion detection triggers.



Parts of the picture we want to exclude from motion detection.

Using the Drawing Tools, and your finger as a stylist, color the area of the screen SOLID. This will mask the motion detection feature from looking at that area.

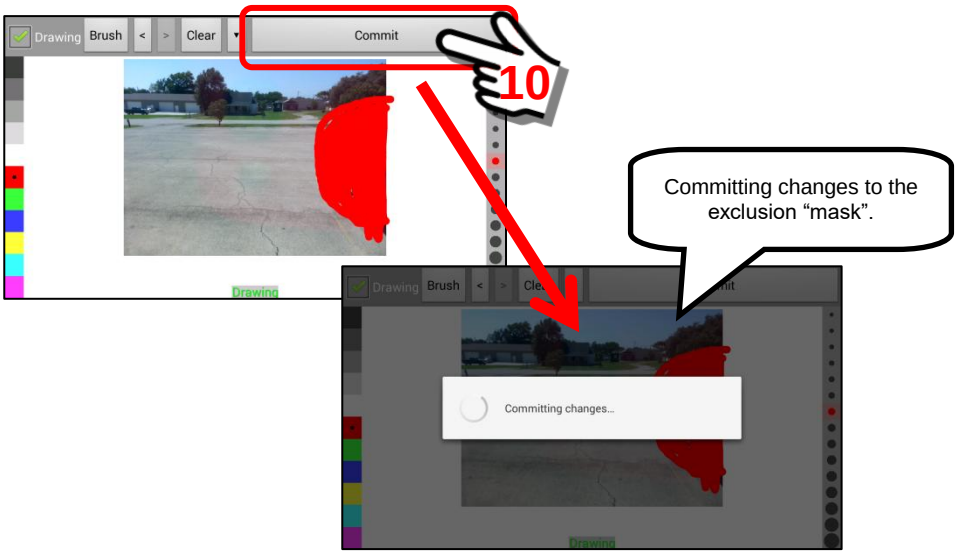
We stayed with the RED color.



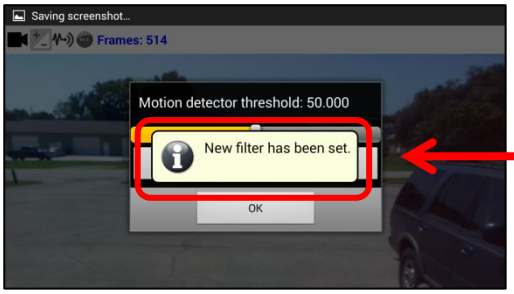
Notice that we used a larger pen tip

The colored area does not have to be contiguous, you may have several colored regions on the screen. Use the “Clear” Button to undo parts that you don’t want colored.

When finished, click the “Commit” Button to save your exclusion “mask”.



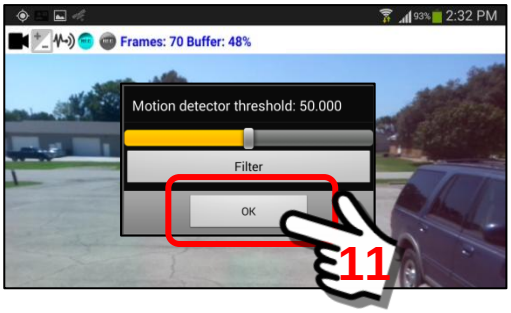
As the exclusion “mask” is processed, you will be returned to the Video display screen. The pop-up motion detector Panel will display with a message that a “new” filter has been set.



Confirmation message that a NEW filter has been set for this channel.

You have now created a Filter Mask for the Video Scene. You may also adjust the Detection Threshold if you want.

When finished, click the “OK” Button to continue.



At this stage of our exercise, we have completed the following steps:

(1) Configured the video sensor for motion detection.
(2) Identified a “recorder” to use.
(3) Completed the “masking” of the camera view.

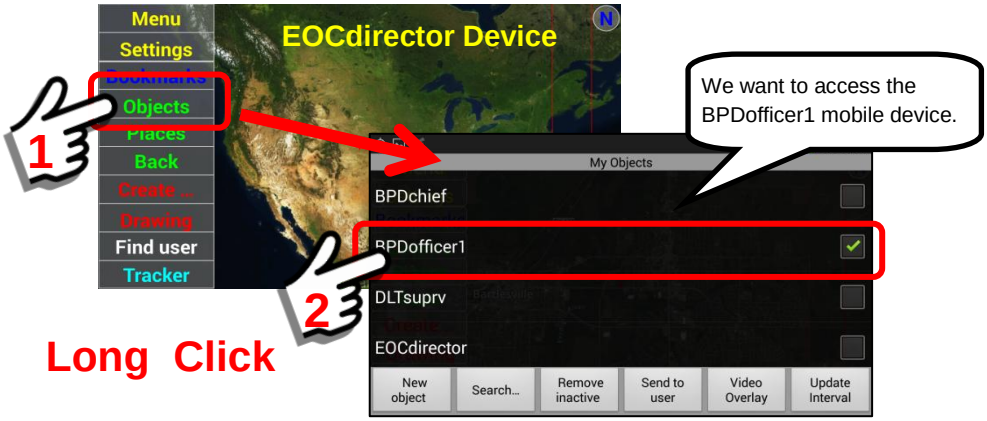
The next step is to “activate” the recorder and process motion triggered events.

11. ***Activating the Recorder to implement the Motion Detection feature.***
There are two primary ways to implement the motion detecting surveillance camera feature. (1) Manually and (2) Scheduled. We will cover BOTH methods in this exercise.

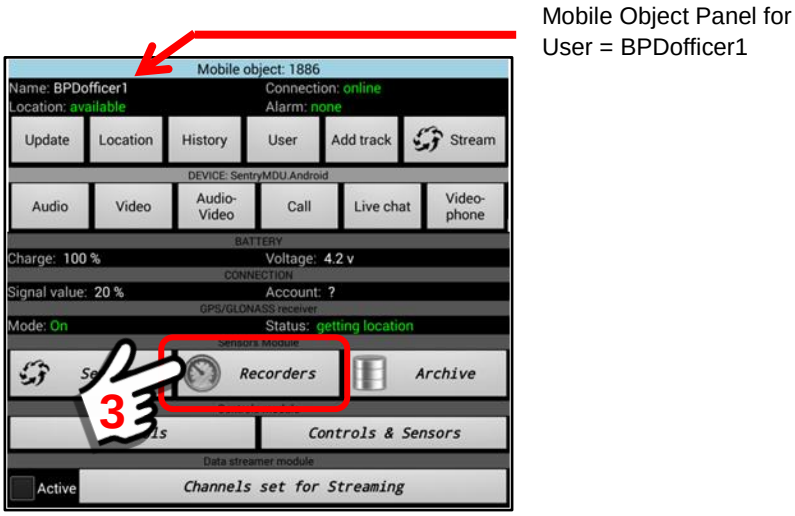
Starting the recorder manually

To start the recorder "manually", we will assume that the BPDofficer1 mobile device is now installed as a "motion detecting" surveillance camera. We are using another mobile device (EOCdirector) to access the BPDofficer1 mobile device.

At the Main Map Screen, click on the Objects Button. Perform a "Long click" on the BPDofficer1 mobile object "name" in order to access the Mobile Object Panel for that device.

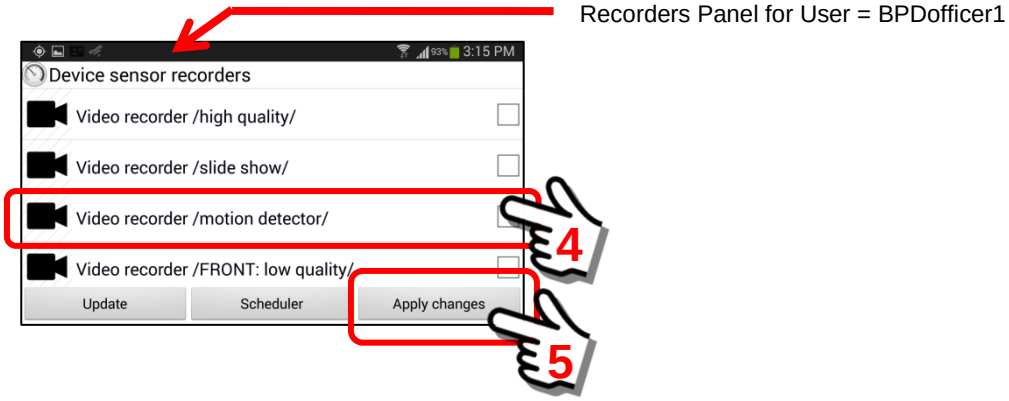


At the Mobile Objects Panel, click on the Recorders Button. We will need access to the "Video recorder /motion detector/" item.

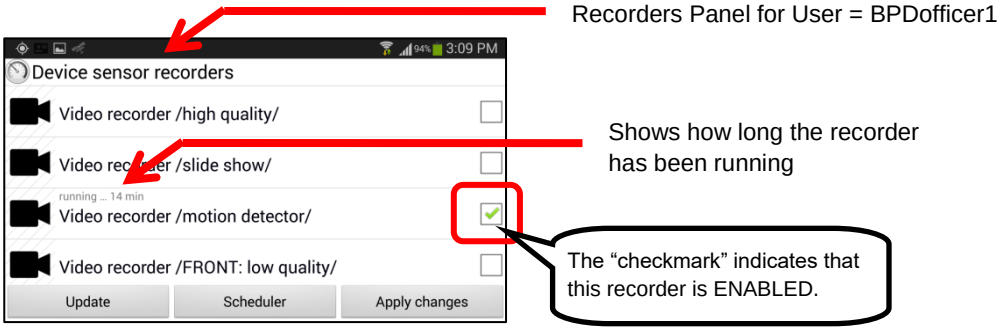


The Device Sensor Recorders Panel will open. Scroll down the list until you find the “Video recorder /motion detector/” item in the list.

Put a “checkmark” in the checkbox, then click the “Apply changes” Button.



When you click the “Apply changes” Button, the Video Recorder will begin recording video and monitoring for “motion detection” trigger events.

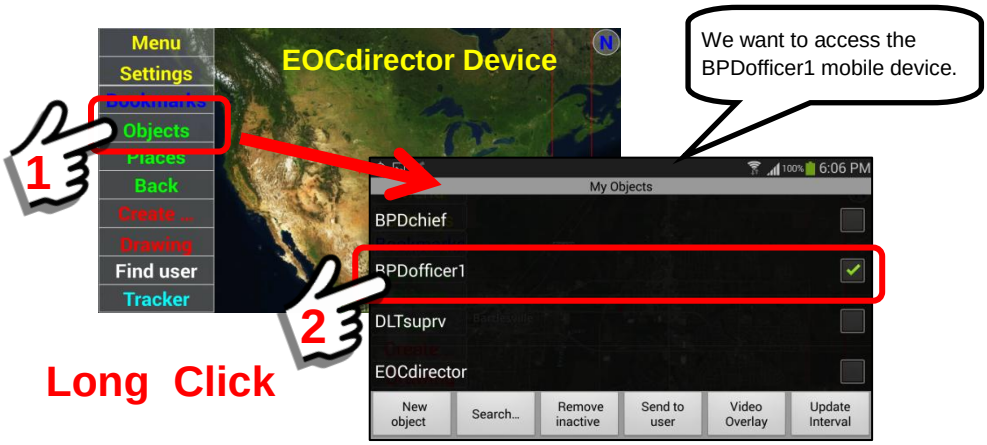


You may now “close” the Recorders Panel for the BPDofficer1 mobile device. Since the recorder was “manually” started, it will run until you stop it (or someone else with the proper security credentials will stop it). You may now “remotely” start and stop the surveillance camera mobile device.

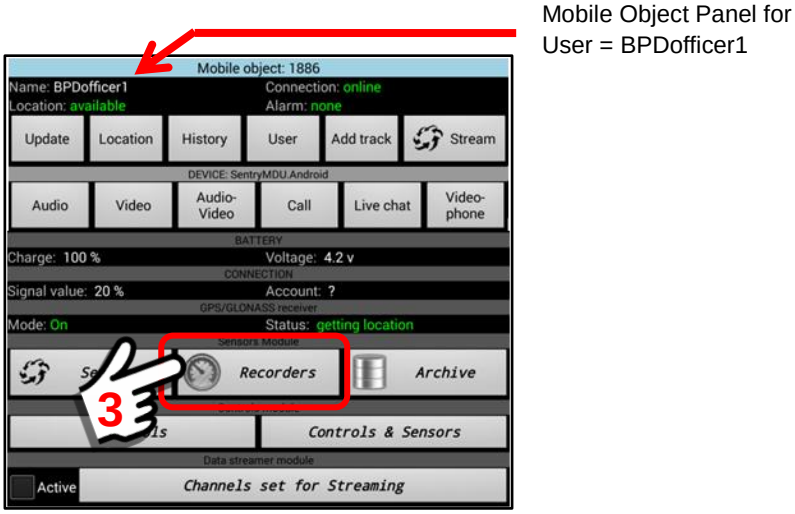
Starting the recorder by using the Scheduler Feature

To start the recorder with the “Scheduler”, we will assume that the BPDofficer1 mobile device is now installed as a “motion detecting” surveillance camera. We are using another mobile device (EOCdirector) to access the BPDofficer1 mobile device.

At the Main Map Screen, click on the Objects Button. Perform a “Long click” on the BPDofficer1 mobile object “name” in order to access the Mobile Object Panel for that device.

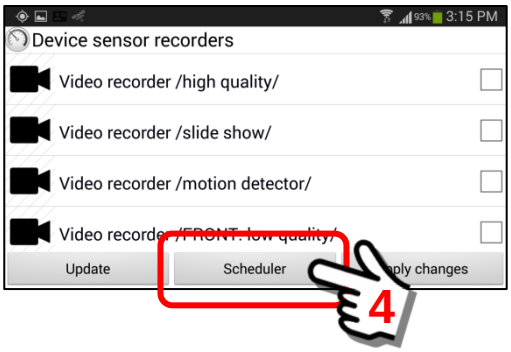


At the Mobile Objects Panel, click on the Recorders Button. We will need access to the “Video recorder /motion detector/” item.

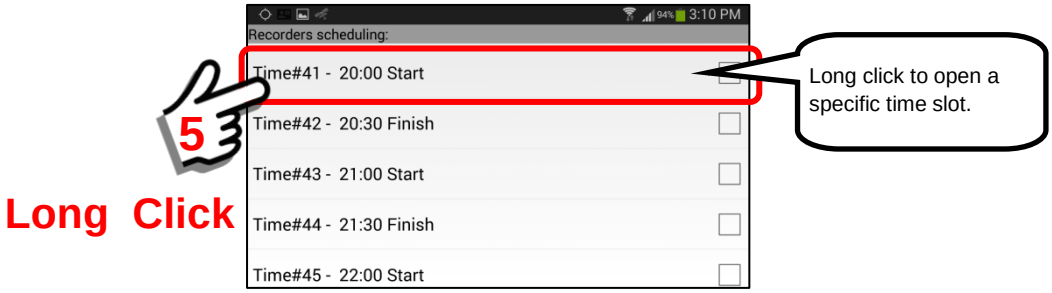


The Device Sensor Recorders Panel will open. Scroll down the list until you find the “Video recorder /motion detector/” item in the list.

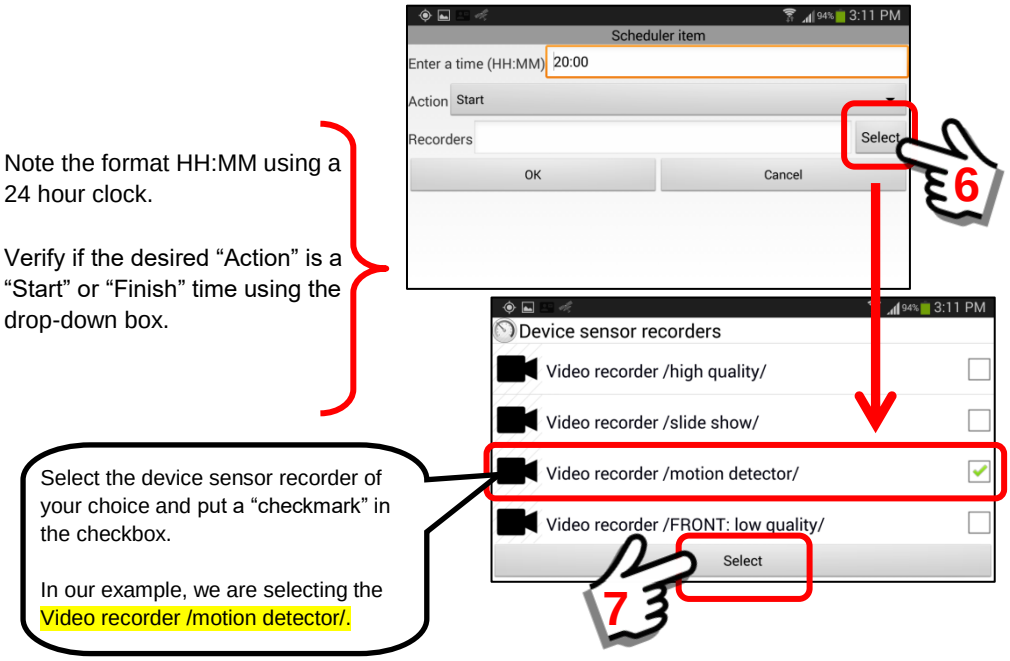
We will be using the “Scheduler” Feature.



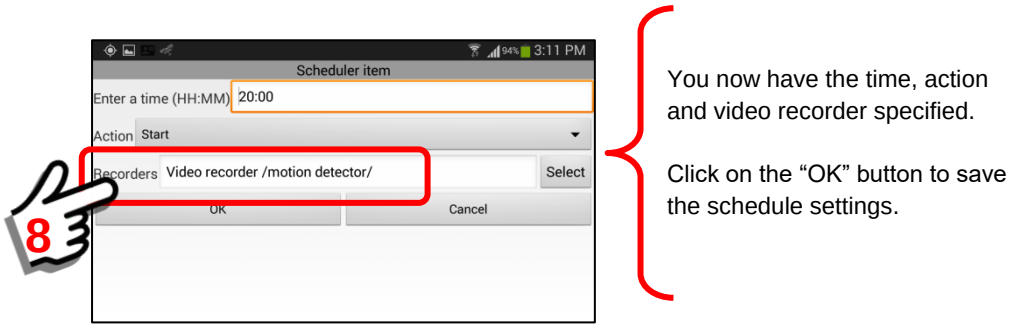
The scheduling feature provides 46 time slots during which various sensor recorders may be started and stopped. Perform a “Long click” to open a specific time slot scheduler configuration panel.



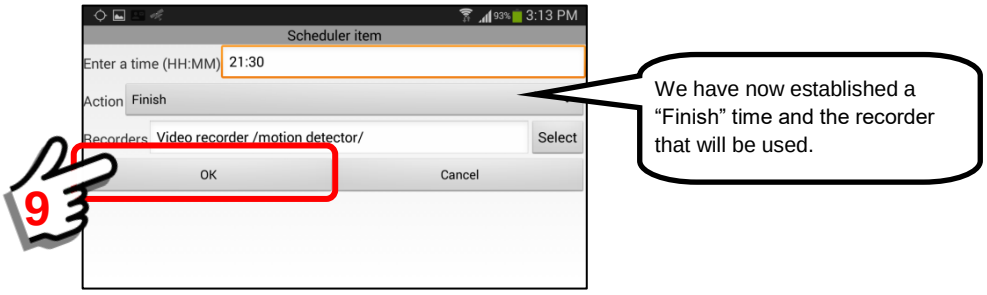
Select the time slots you wish to use.
Use the existing periodic time slots or enter your own time.



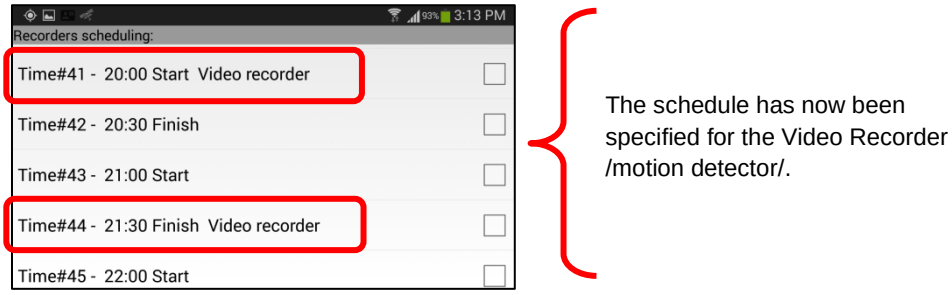
Once you have completed the “Start” time selection for the Video Recorder, your screen will look similar to the following:



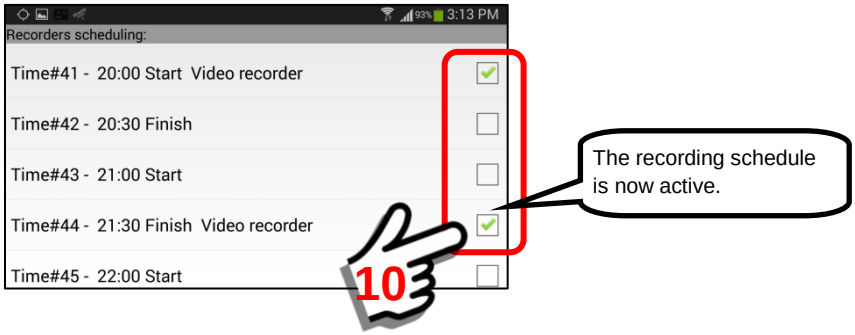
Repeat the same procedure to establish a “Finish” time for the schedule. Click on the “OK” button to save the schedule.



You will be returned to the Scheduler Panel. The start and finish times should be displayed adjacent to a time slot and the type of recorder should be indicated.



To activate the schedule, simply “click” and put a checkmark in the “Start” checkbox and the “Finish” checkbox.



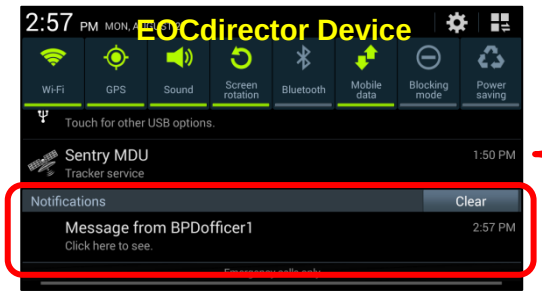
The schedule is now active. The recording will be triggered at the selected times.

Important Note: The recording schedule will remain active until it is removed or turned off. Pay special attention because it is easy to “forget” that you have an active schedule. Also remember, that depending on the Security Settings of your account, other users MAY have access to create a recording schedule on your device.

12. *Receiving a Notification Alert. What to do next?*

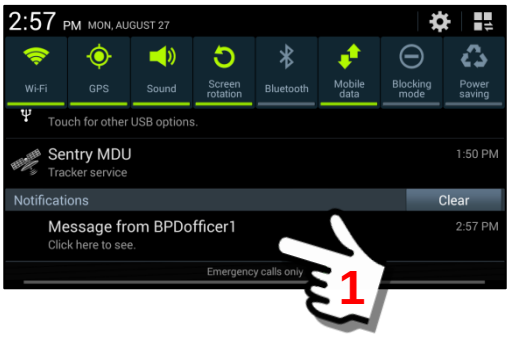
The motion detection feature of the SentryMDU System will send an Notification Alert message to designated mobile devices. As explained earlier in this exercise, you may configure the system to send one or many alert notifications when the motion detection has a trigger event.

Depending on your particular mobile device, a Notification Alert message may appear on the Notification Bar and trigger a “ringtone” sound.

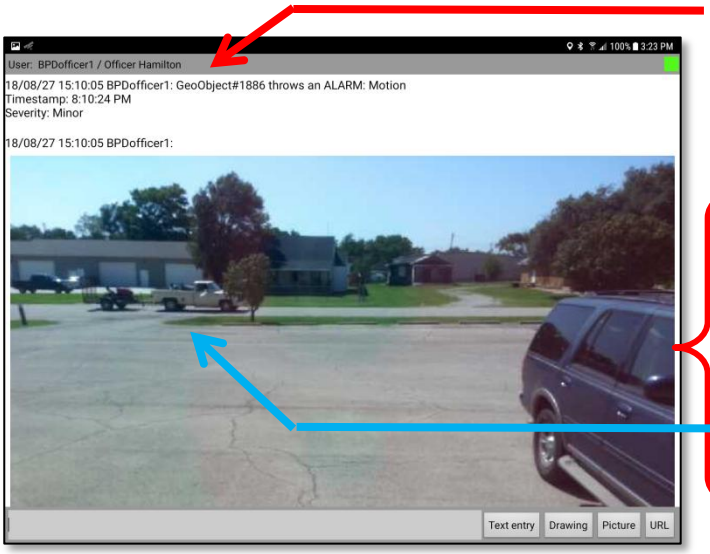


Notification message from BPDofficer1 for a motion detection trigger event.

To access the Message, click the Notification Block of the message.



The motion detected “event” was captured in a snapshot and sent to those users specified on the “Video /motion detector/” channel profile parameters.



Description of Alarm Condition and timestamp of event. Note that time is displayed in both “local” time and UTC time since the remote event may be in a different timezone.

Snapshot of the camera scene when the “trigger event” occurred.

Vehicle that triggered the notification.

15.6. Set up a "Stream Tunnel" to monitor multiple channels

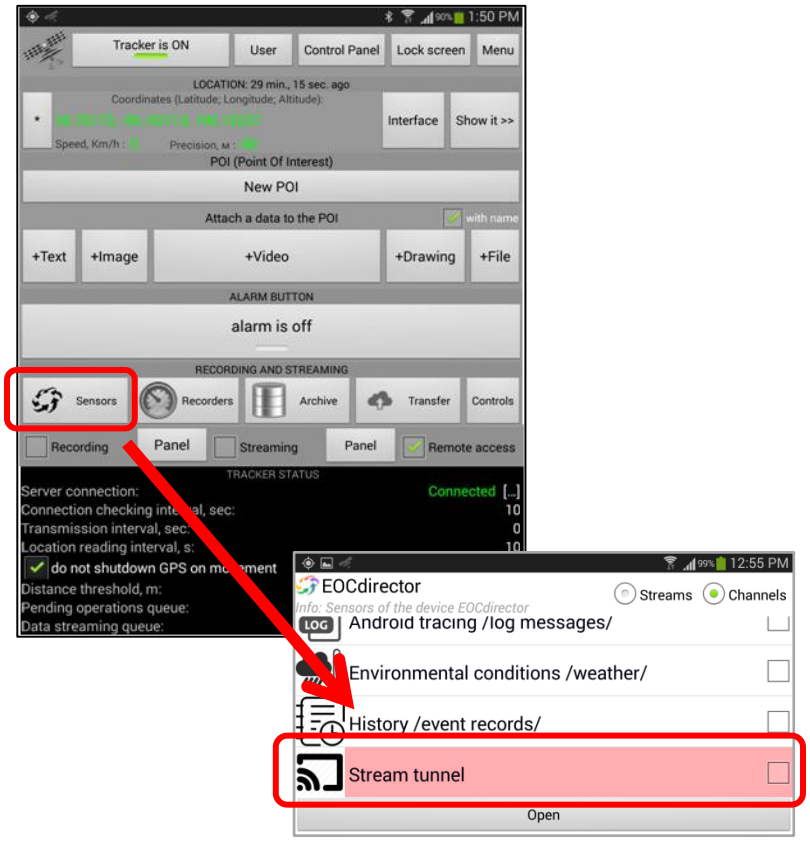
Overview:

The Sentry MDU System has a Stream Tunnel feature that allows a User to configure multiple data channels into a single combined data "stream". A Stream Tunnel would be a group of channels desired by a User that are grouped by some common meaning.

This feature enables a user to pre-configure multiple data streams, save it as a stream tunnel, and transmit the data as a single network connection (reducing bandwidth requirements).

Tracker Panel - Stream Tunnel feature:

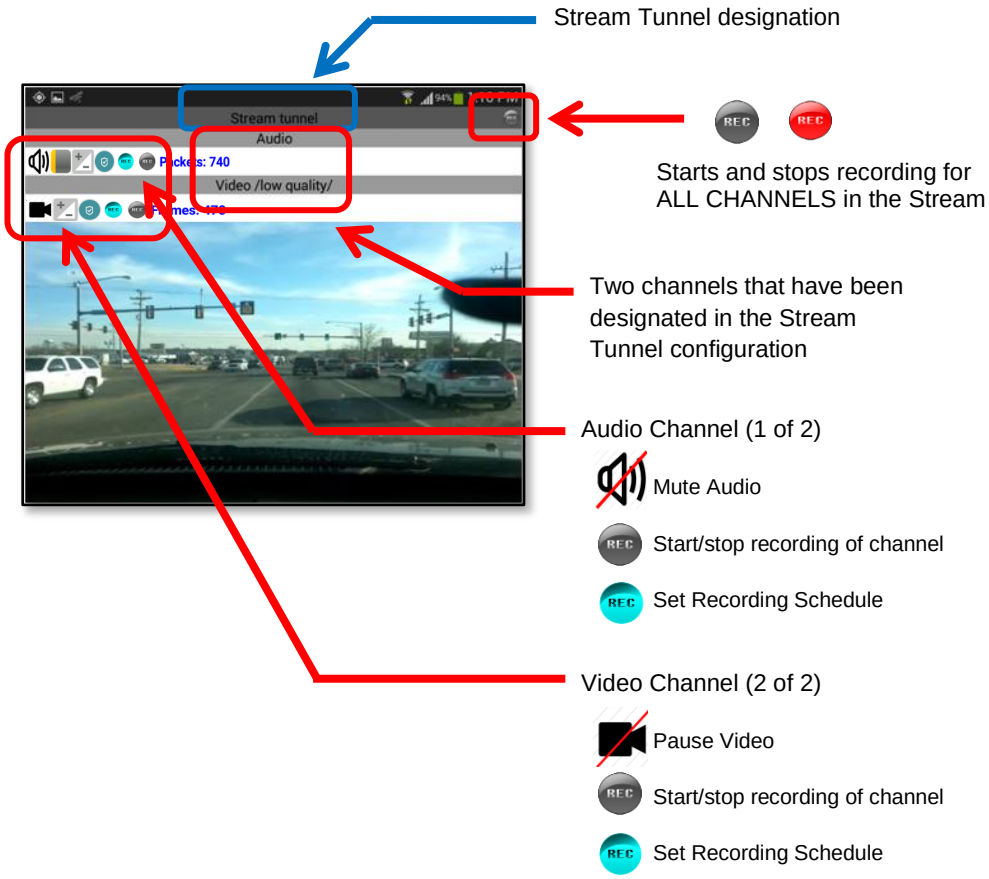
The "Sensors" Button is located on the left-lower side of the Tracker Panel. This button will allow user access to the sensor setup, configuration, testing and use on the local mobile device. The Stream Tunnel configuration is the last item in the Sensor listing.



This "Sensors" Button, located on the Tracker Panel, is the primary method for a User to configure their mobile device and the Stream Tunnel feature. Although the Sensors Button on the Mobile Object Panel may be used (accesses many of the same functions), the Sensors Button on the Tracker Panel is the preferred location for configuring the Stream Tunnel feature.

Stream Tunnel display general screen layout:

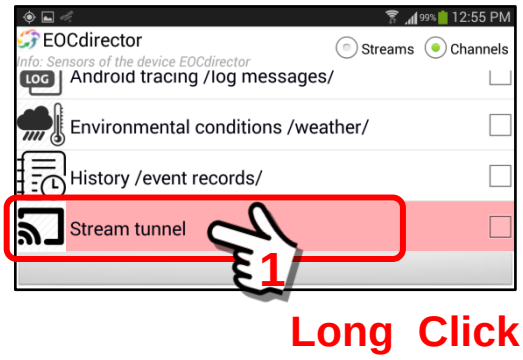
A Stream Tunnel sensor display is similar to other sensor displays. However, users have the option to record data from a single channel or the combined group of channels. This concept will be illustrated below with an example of two channels.



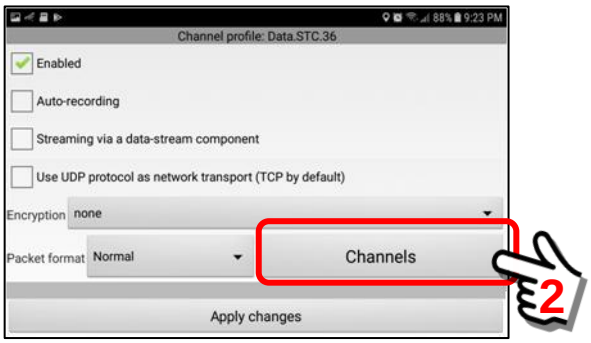
Description of the Stream Tunnel function and features:

1. ***Setting up a Stream Tunnel.***
   This example will illustrate how to set up and configure the Stream Tunnel feature.

   To open the configuration options, perform a “Long click” on the Stream Tunnel title in the Sensors Listing.

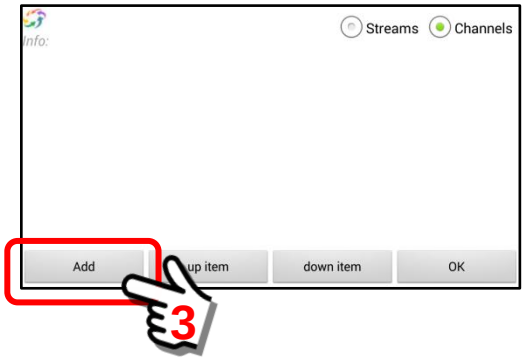


Select the “Channels” Button. From here we will select the sensor channels we want to combine into our Stream Tunnel.



You will be presented with a blank screen in which you will select and load the channels for the Stream Tunnel.

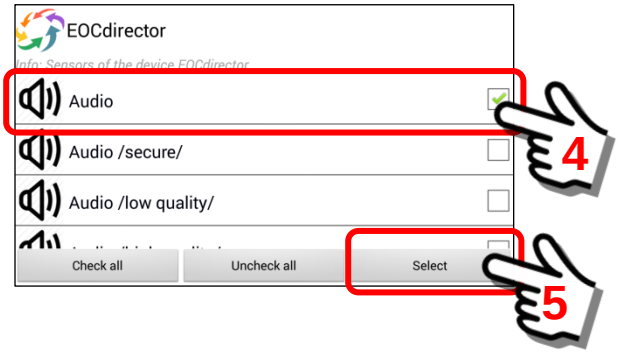
Click on the “Add” Button, lower left of the panel.



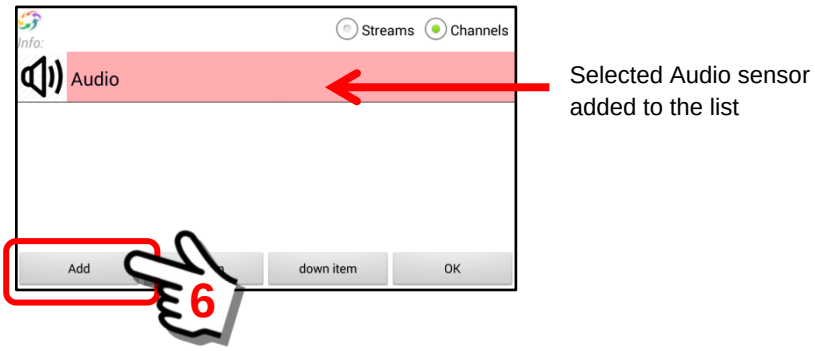
Clicking the “Add” Button will open a listing of the available Sensor Channels that may be included in a Stream Tunnel.

In this example, we will select an “Audio” channel to add to our Stream Tunnel configuration.

Click on the “Audio” sensor.

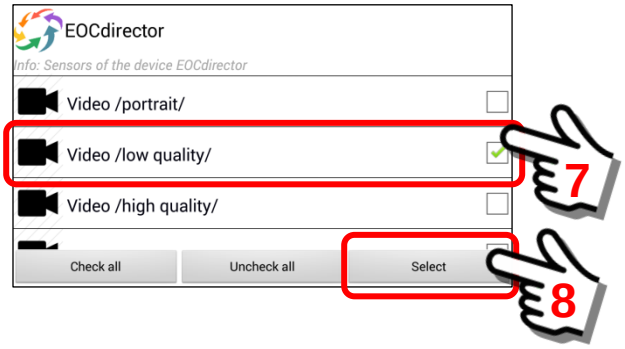


When the sensor is selected, the screen will return to the configuration panel. The selected sensor (ie Audio) should now be displayed.



Now, we will selected another channel … “Video /low quality/” and add it to our Stream Tunnel configuration. Click on the “Add” Button to again select a sensor from the available listing.

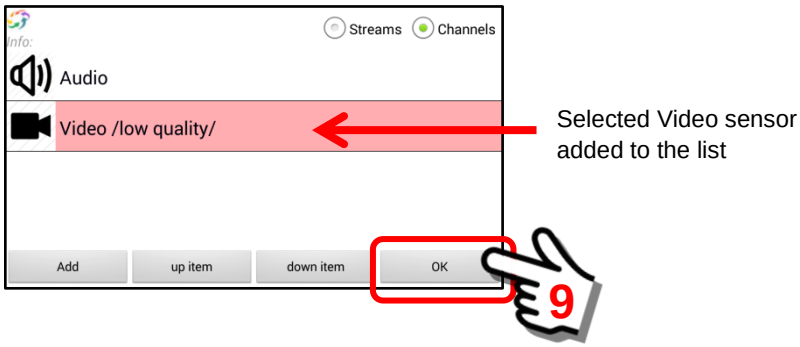
Select the “Video /low quality/” item from the list.



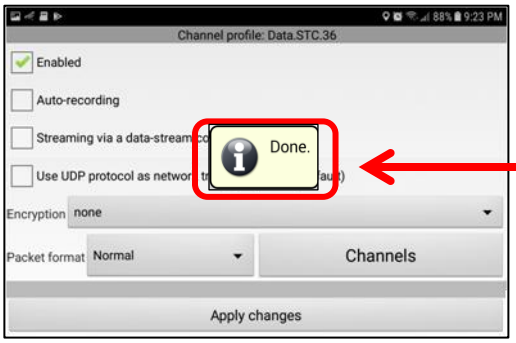
Important Note: Do not select duplicate sensors for streaming. For example, do not select multiple video sensors to stream data since each would have different parameters for the same camera device. This would result in an error.

We now have two sensors that are added to the Stream Tunnel configuration.

When you are finished, click the “OK” Button to save the changes.

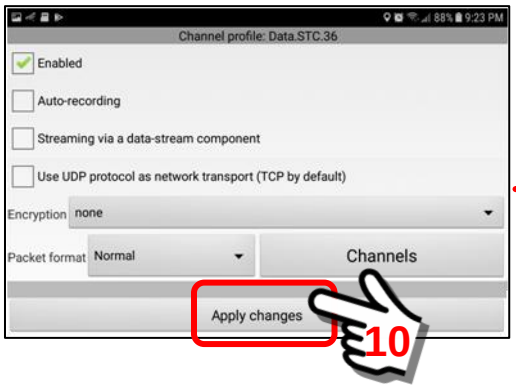


The Stream Tunnel configuration screen will now be displayed. If adding the new configuration is successful, you will see a “Done” message displayed for a few seconds.



Indicates that the adding of sensor channels was completed.

The final step is to apply the changes to the User Settings. Click on the “Apply changes” Button at the bottom of the screen.



Note:
You MUST click the Apply Changes Button or the configuration will not be saved.

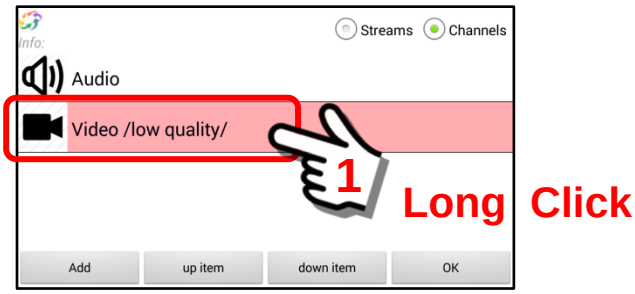
The Stream Tunnel configuration is now complete for two channels (Audio and Video).

2. ***Additional screen options.***

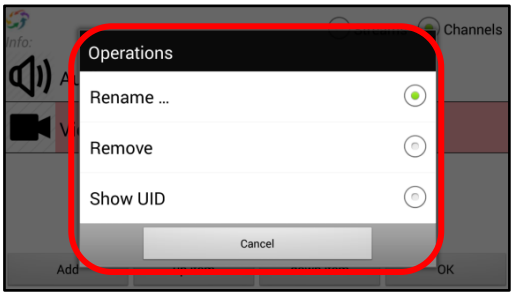
The Stream Tunnel feature has many of the same editing options as other features in the Sentry MDU Application. These will be highlighted below.

<u>To rename or remove a channel</u>

Perform a “long click” on the sensor channel.

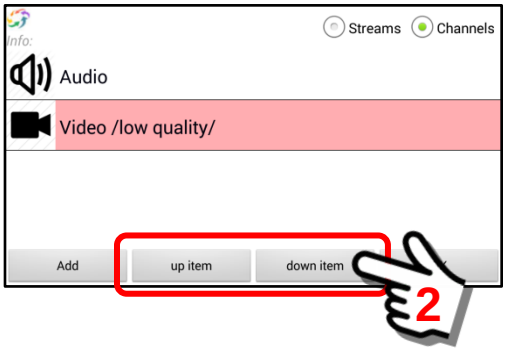


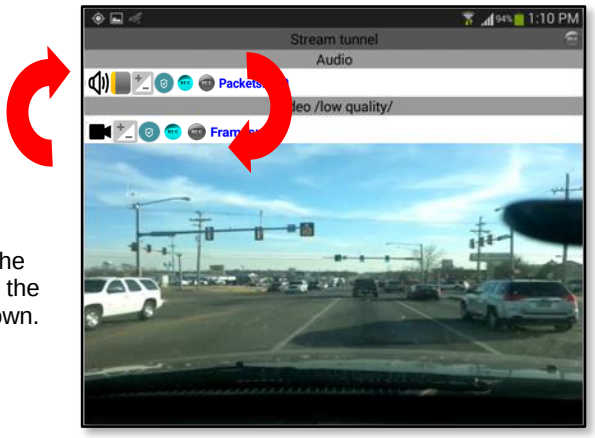
An Operations box will open with options to rename or remove the sensor channel.



<u>To change the order in which channels are displayed</u>

The “Up item” and “Down item” Buttons allow a user to change the order in which the channels are displayed on the panel.





Note:

You may adjust the ORDER in which the channels are shown.

15.7. Record data automatically to the User Content Folder

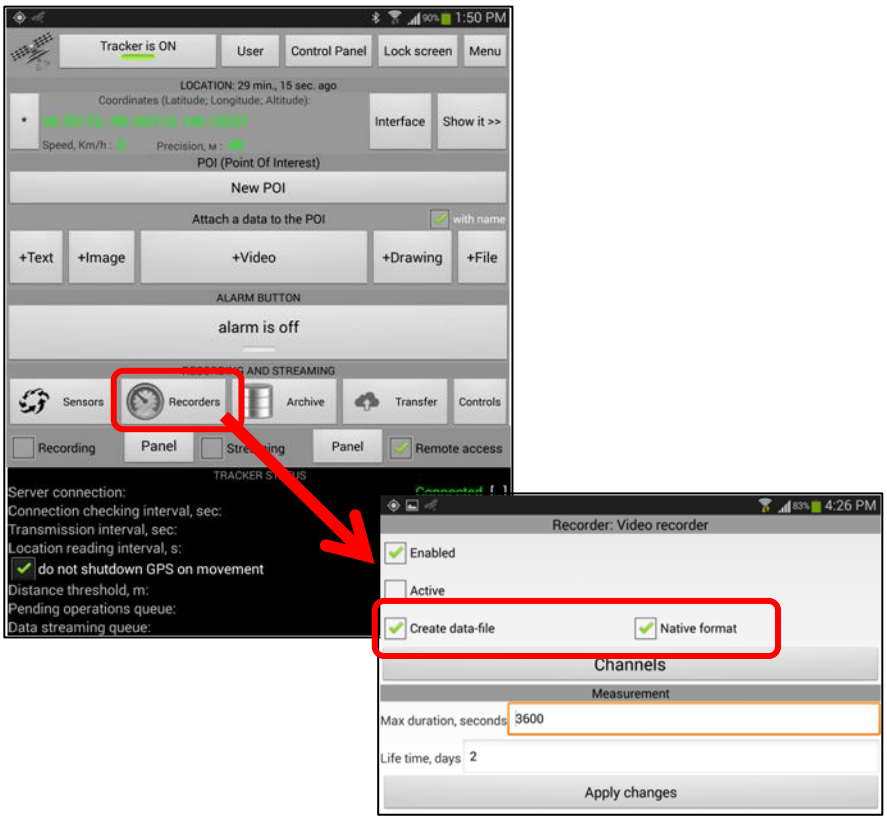
Overview:

The Sentry MDU System has an option whereby a User may record content directly to BOTH the user's Current Content Folder and the Data Archive. This will allow the user to easily segregate the data into Activity Categories for future reference.

This feature and the set-up required will be described in detail in this section.

Tracker Panel – Automatic data transfer feature:

This feature is set up from within the "Recorders" Section located on the left-lower side of the Tracker Panel. This button will allow user access to the sensor setup, configuration, testing and use on the local mobile device. The "Create data-file" option is a checkbox available on each sensor recorder configuration panel.



This "Recorders" Button, located on the Tracker Panel, is the primary location for a User to configure this feature. The Recorders Button on the Mobile Object Panel may be used (accesses many of the same functions), however, the Tracker Panel is the preferred location.

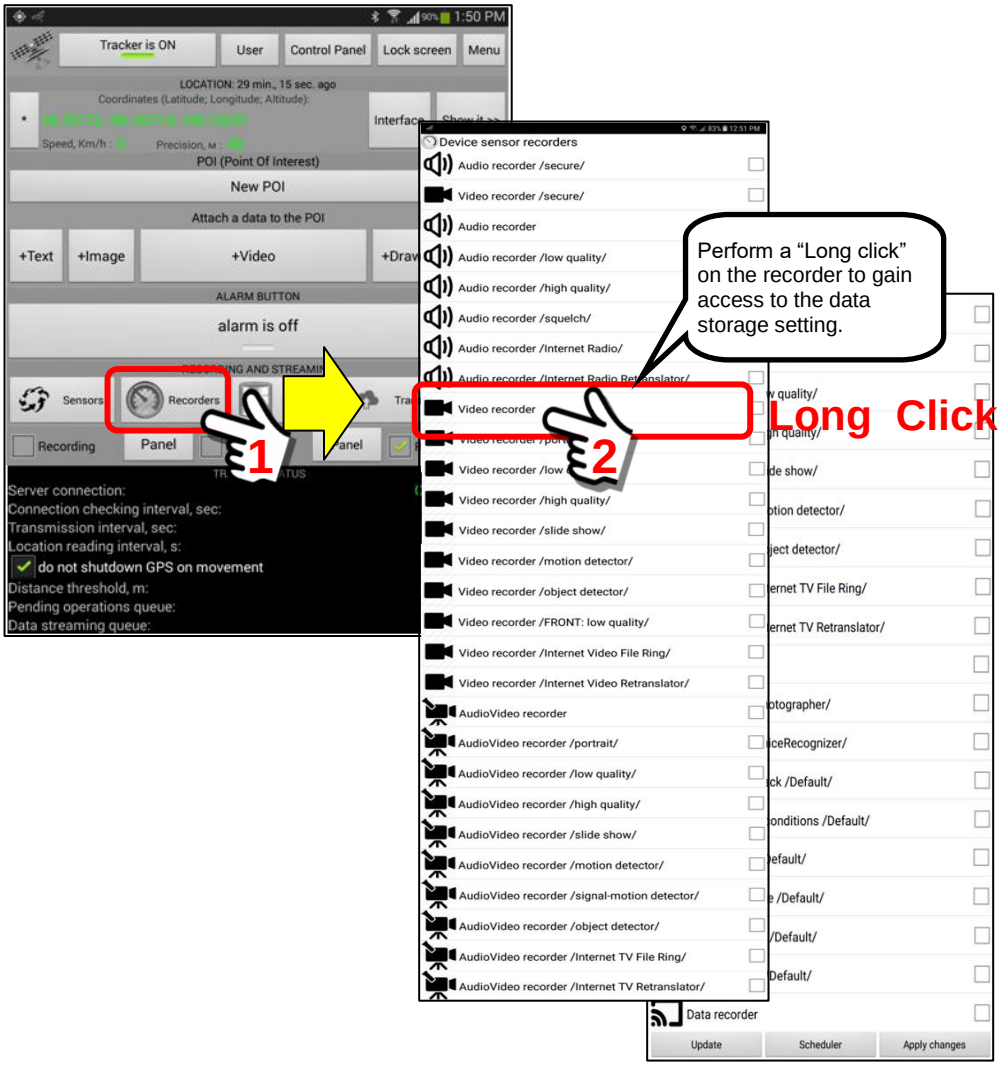
Description of the automatic data transfer function and features:

1. ***Setting up the automated data transfer.***
   This example will illustrate how to set up and configure the automated data transfer feature.

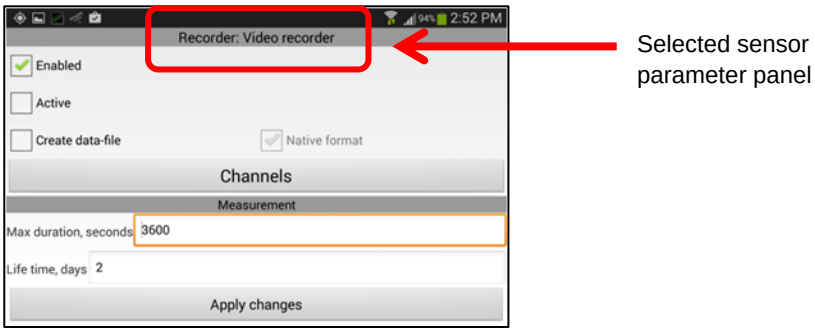
   <u>The following steps will be covered:</u>
   a. Select the desired recorder to automate.
   b. Activate the “Create data file” option.
   c. Create/select a Current Activity category to store the data.
   d. Test the automated data transfer by recording a short video.
   e. Locate the Test Video data in both the Current Activity and Archive Folders to illustrate that it is copied to both locations.

2. ***Select the desired “recorder” to automate.***
   Navigate to the Tracker Panel and click on the “Recorders” Button.

   Perform a “Long click” on the desired sensor channel (ie Video recorder).

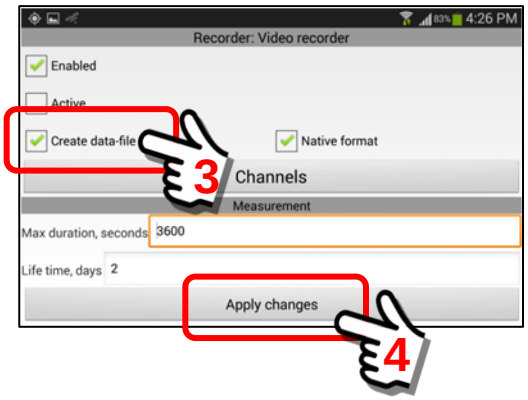


The parameters panel will be displayed for this recorder.



3. ***Activate the "Create data file" option.***
The "Create data file" option is a checkbox located on the upper left side of the Recorder Panel. By default, this option is "unchecked" (not active) which means that all recording by this sensor will go to the Archive Folder.

When checked, the "Create data file" option will copy all recordings to BOTH the Archive Folder and the User's Current Activity content folder.

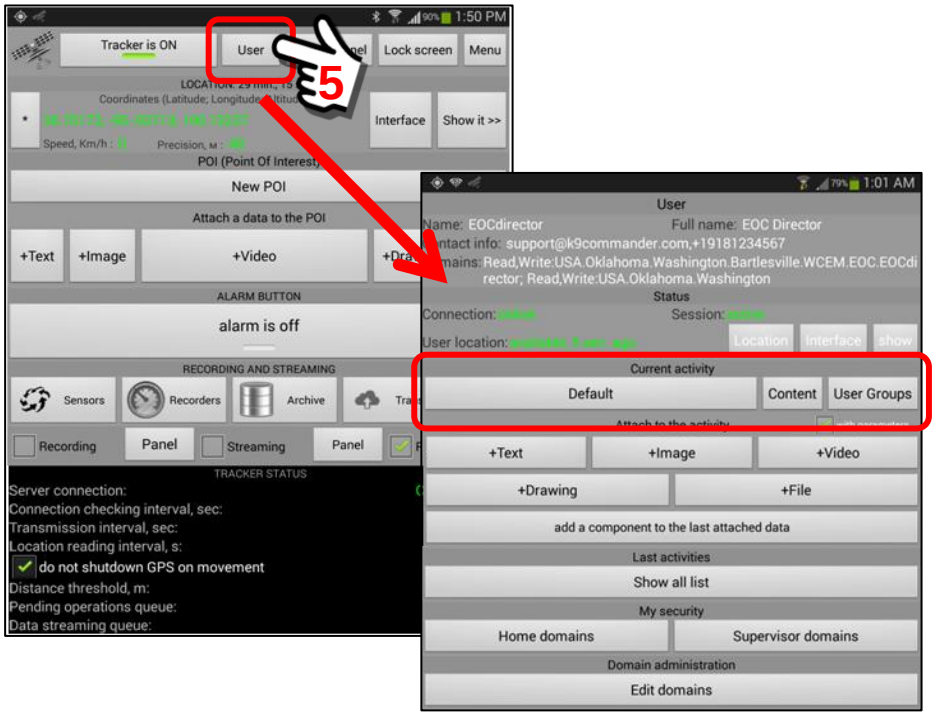


Click on "Apply Changes" to save the selected choice.
The sensor recorder is now configured to store the data in BOTH places.

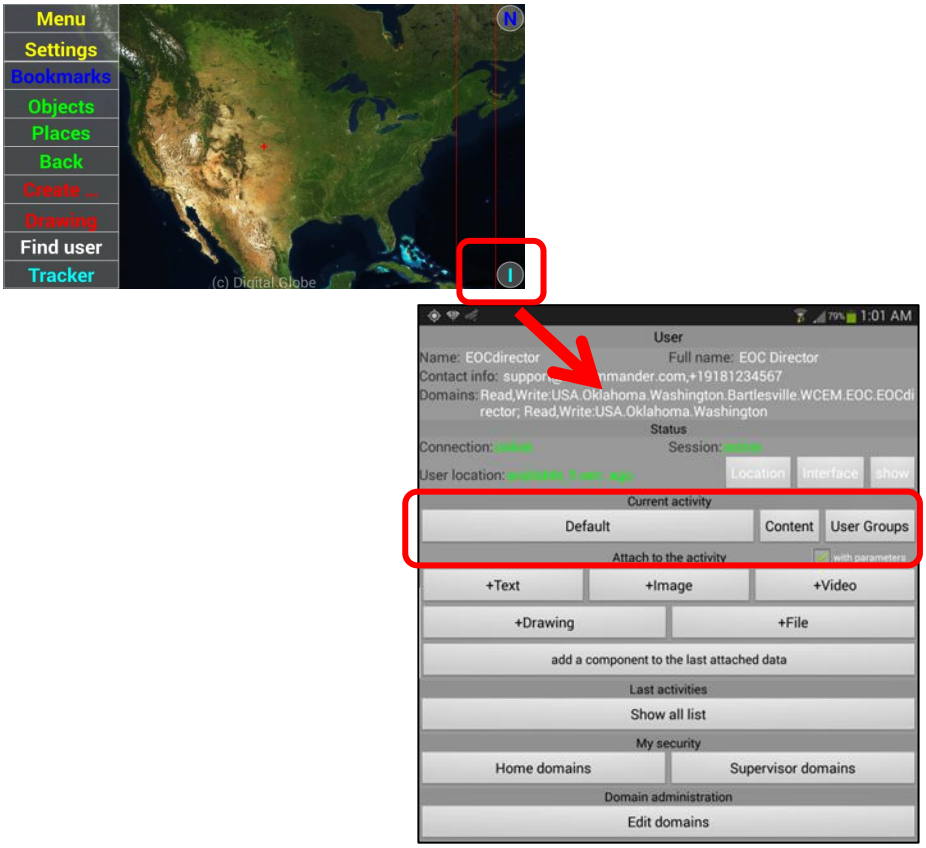
4. ***Create/select the Current Activity category to store the data.***
In most cases, if a User selects to save recordings to BOTH the Archive Folder and Current Activity content folder, the user will create a new/separate Activity Category for the data files. This section will illustrate how to create a new Current Activity Category for storing the data files.

Navigate to the User Information Panel from (1) the Tracker Panel or (2) the "I" Icon on the Main Screen.

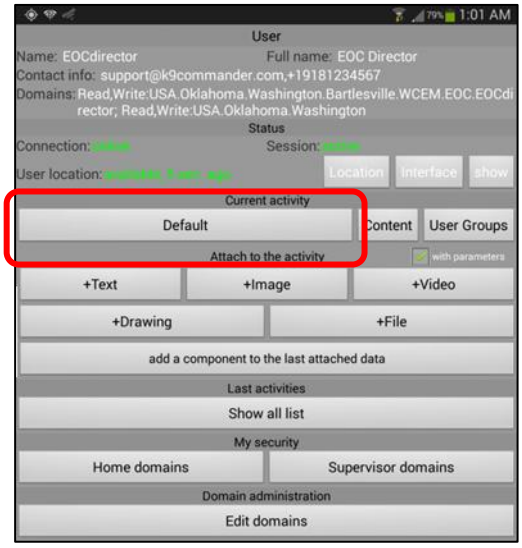
(1) Getting to the User Panel via the Tracker Panel



(2) Getting to the User Panel via the "I" Icon on the Main Screen



To create a “new” Current Activity Category, click on the current activity button as shown below. See **Section 16.6.5** for detailed instructions for creating another Category.

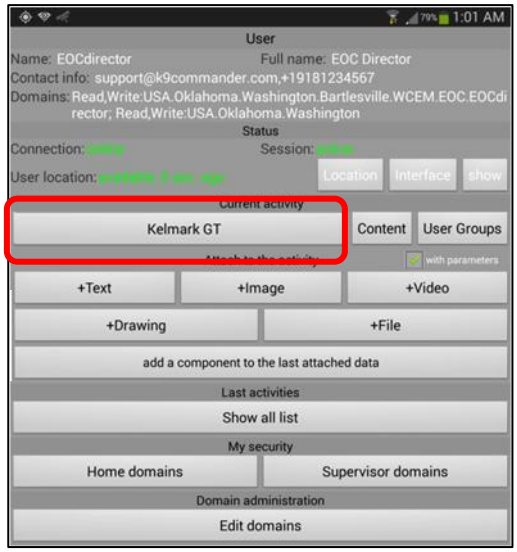


When data is copied into the User Content Folder it will be filed under the “Current Activity” heading that is active at the time.

In this example, the “Default” current activity is active.

We will create a new category to hold the recordings we are about to make.

Once you have created the “new” Current Activity Category, it will be displayed as the currently active category. In this example, we have created the Category = “Kelmark GT” to hold pictures/data about the car.

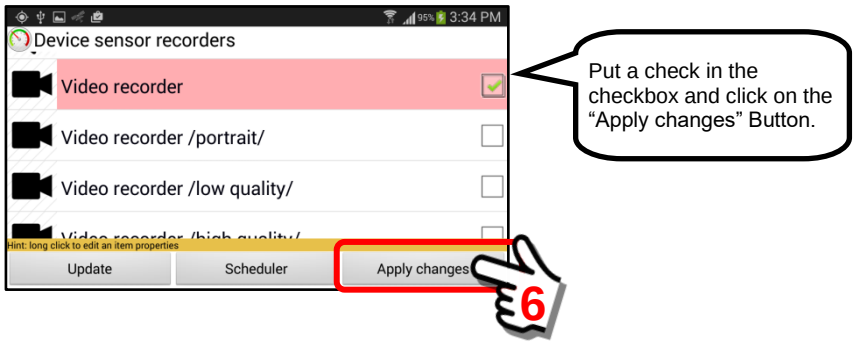


See **Section 16.3.5** for detailed instructions for creating another Category.

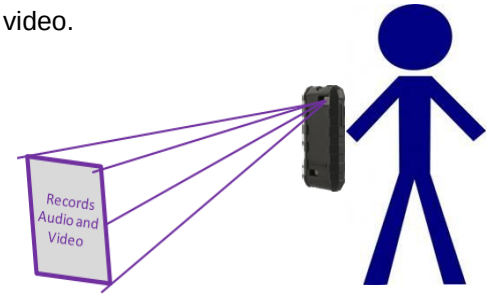
5. ***Test the automated data transfer by recording a short video.***
Now that we have configured the Video Recorder sensor to copy recordings to BOTH the Archive Folder AND the User’s current activity Content Folder, we are ready to record a test video for this example.

There are many methods by which to record video. It can be done manually, automatically, via Motion Detection, by schedule or remotely. In this example, we will manually start video recording from the Device Sensor Recorders panel.

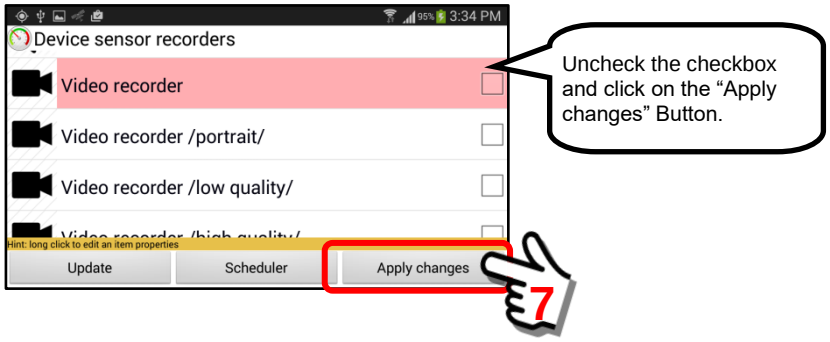
Select the Video Recorder from the list, put a “check” in the checkbox and click the “Apply changes” button. The device is now recording.



Record a brief test video.



When finished, return to the Device Sensor Recorders Panel and stop the recording by “unchecking” the Video Recorder and applying the changes (confirm we want to stop recording).



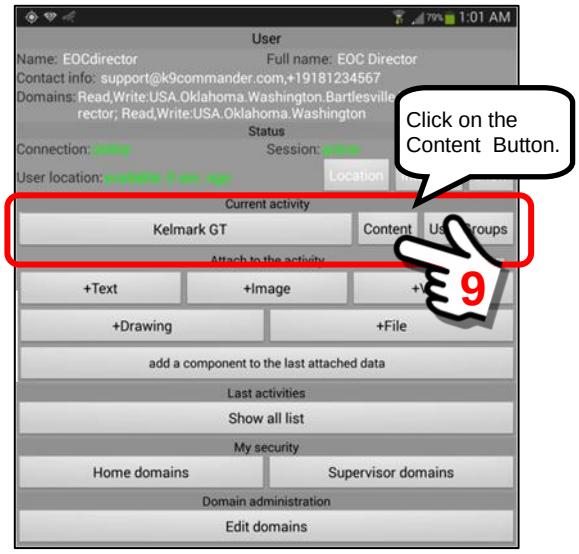
In the next section we will verify that the video was stored in two locations (Archive Folder and User Content Folder).

6. ***Locate the Test Video data in the Current Activty and Archive Folders.*** This section will illustrate how to find and review the recorder data that is stored in two locations.

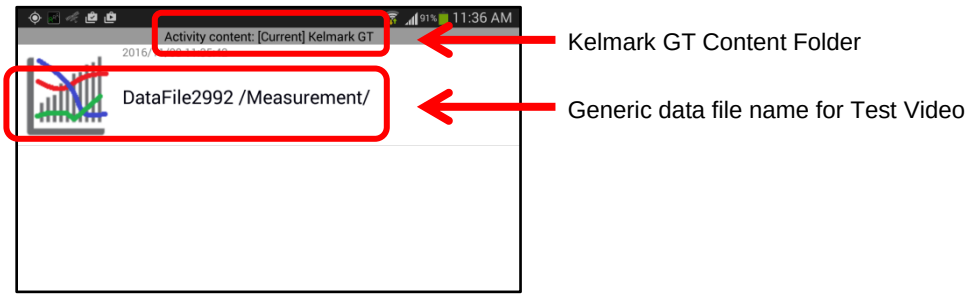
<u>To review the Test Video in the Current Content folder</u>

We will access the User Content folder by clicking on the **User Information Icon** from the Main Screen.

From the User Information Panel, select the desired Content Folder in which the video data was stored. In this example, we have created/selected the "Kelmark GT" content folder.

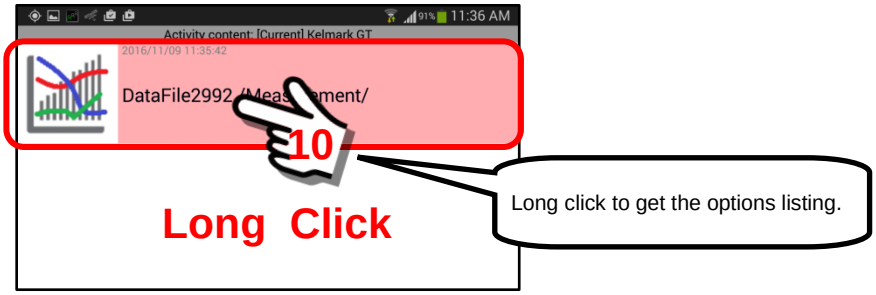


The Content Folder with the "Test Video" is now displayed. You will notice that the file name is a generic name created by the SentryMDU System (DataFile2992).

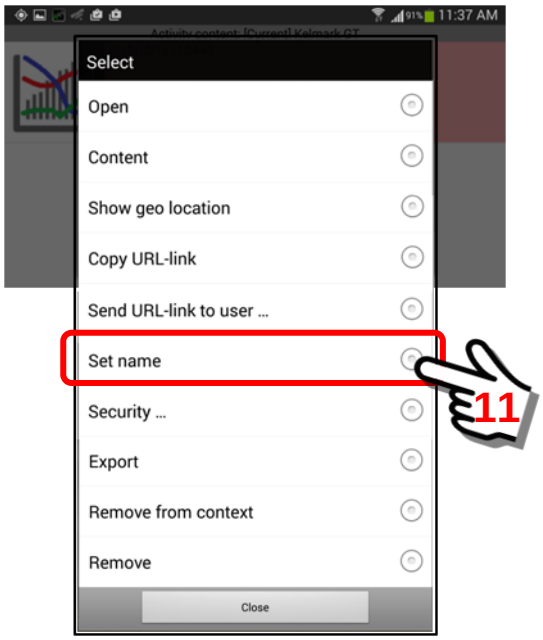


To make the content more “user friendly” we will re-name the test video file to another name. We do that in the following manner.

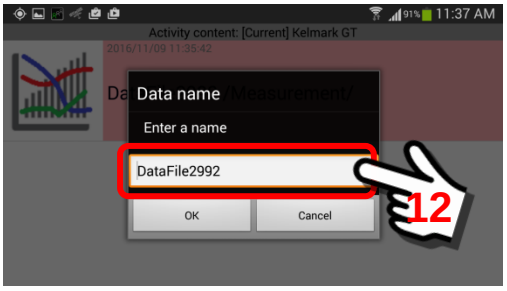
Perform a “Long click” on the content file name.



From the list of available choices, select the “Set name” option.



A pop-up box will appear with the existing generic name. Enter a “new” name in the field and click “OK”.

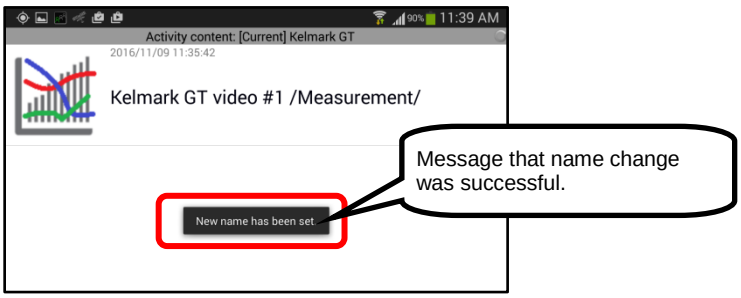


Click on the data field to open an on-screen keyboard and edit the name.

Clicking in the “text” area will result in a pop-up keyboard which will allow text entry.

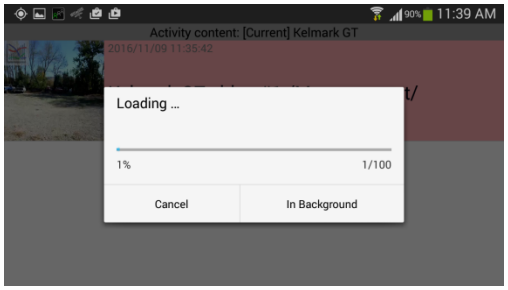
When finished, the name will be changed as follows.
Click “OK” to save the new name.

If a successful change occurs, a message will be displayed for a few seconds.



To view the video, click on the Video Name.

The video will load and begin to play.



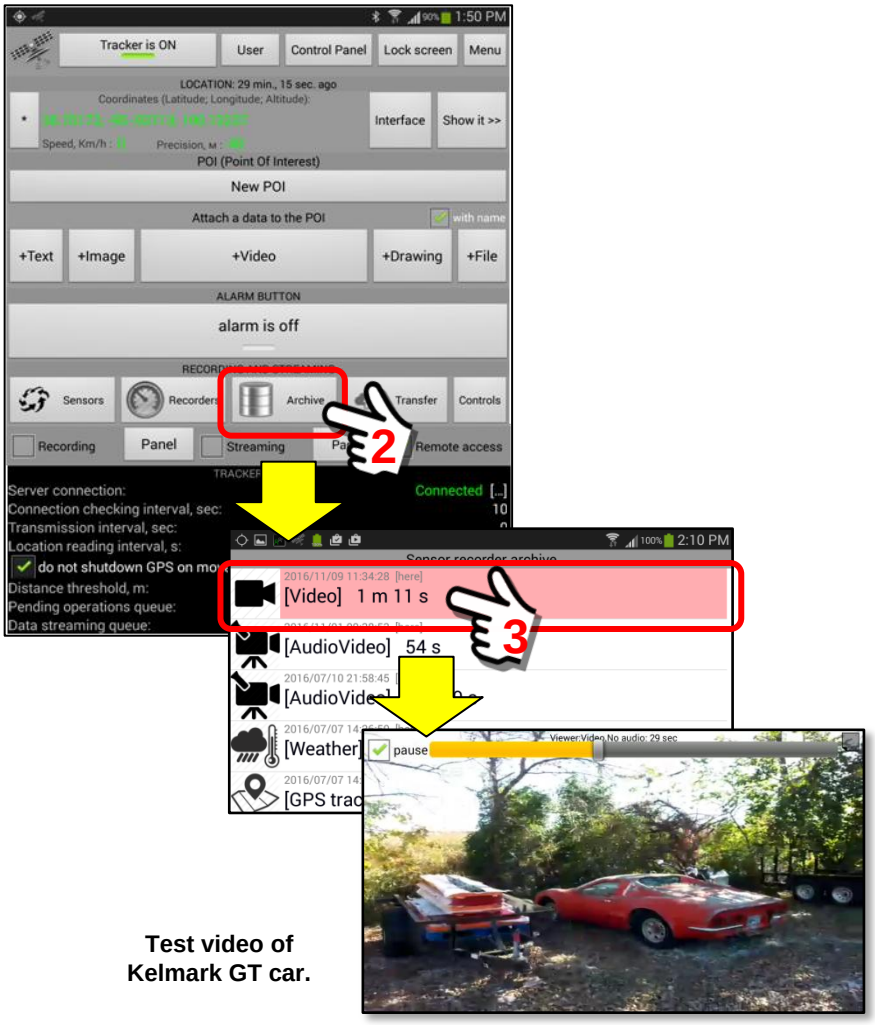
Test video of Kelmark GT car.

<u>To review the Test Video in the Data Archive Folder</u>

We will access the Data Archive Folder by clicking on the Tracker Button from the Main Screen.

From the Tracker Panel, select the Archive Button. It will be this folder in which the video data is stored.

Click on the Archive Button.
In this example, we have created a “test” video file of the Kelmark GT car.



Test video of Kelmark GT car.

15.8. Display user Content with the History Review Module

Overview:

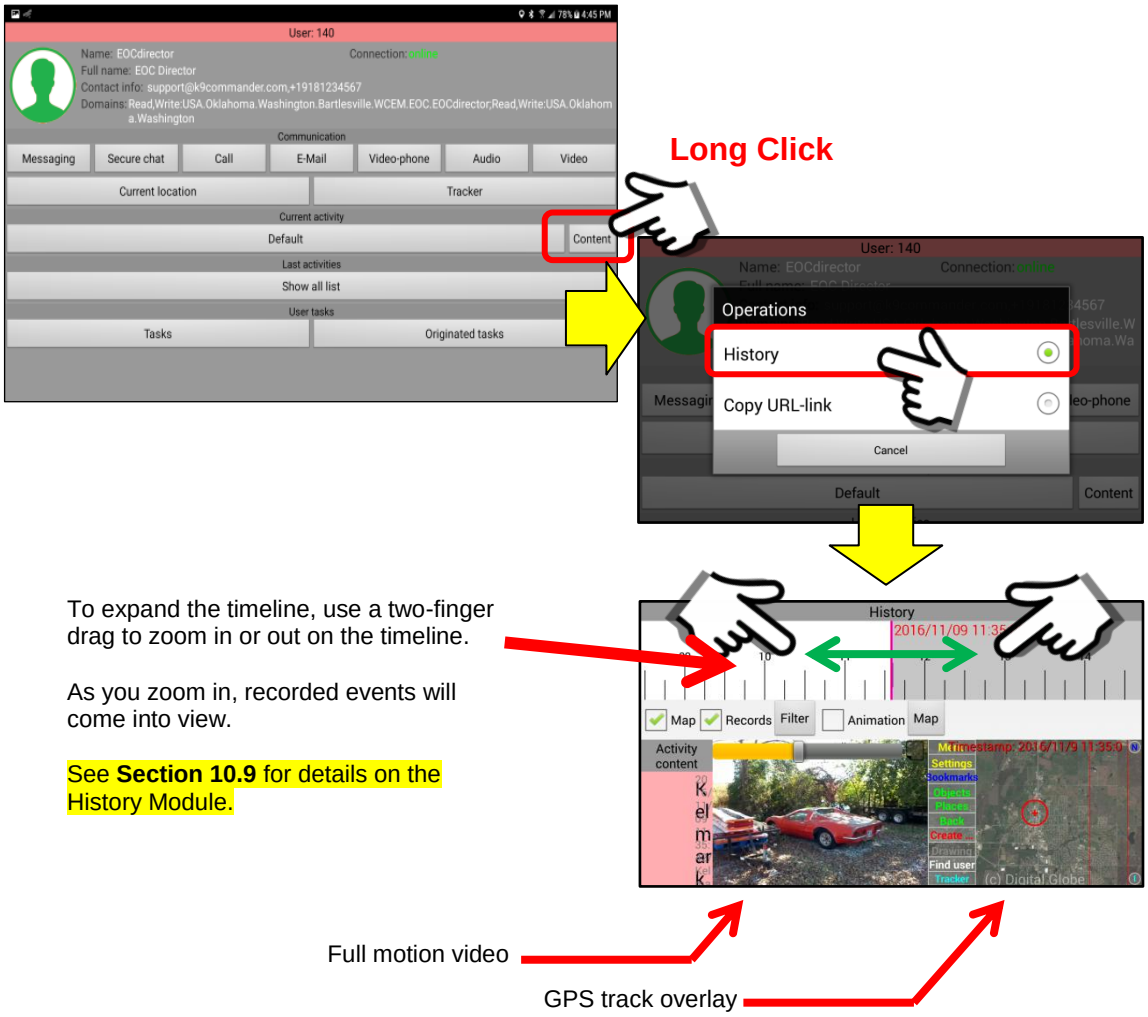
The Sentry MDU System has a History Review feature that allows a User to display a graphical "timeline" history of the content stored in their Current Activity Folder or another user's Current Activity Folder. As the data is displayed, the user then has the option to play videos, observe GPS tracks on satellite map overlays and quickly access the data in the content folder.

> **Important Note: This feature does not provide notification on the remote device that another user(s) is accessing the Content on the device.**

This section with illustrate the History Review Module feature.

User Panel – Historical Review of content data:

The historical review of content data is available from the User Panel. This content is available for your own device as well as the device of remote users (assuming you have the appropriate security access). This feature will allow review of data stored in the Content Folder by reviewing a historical "timeline". The user may scroll through the timeline and select items for display. Access to this feature is summarized below.



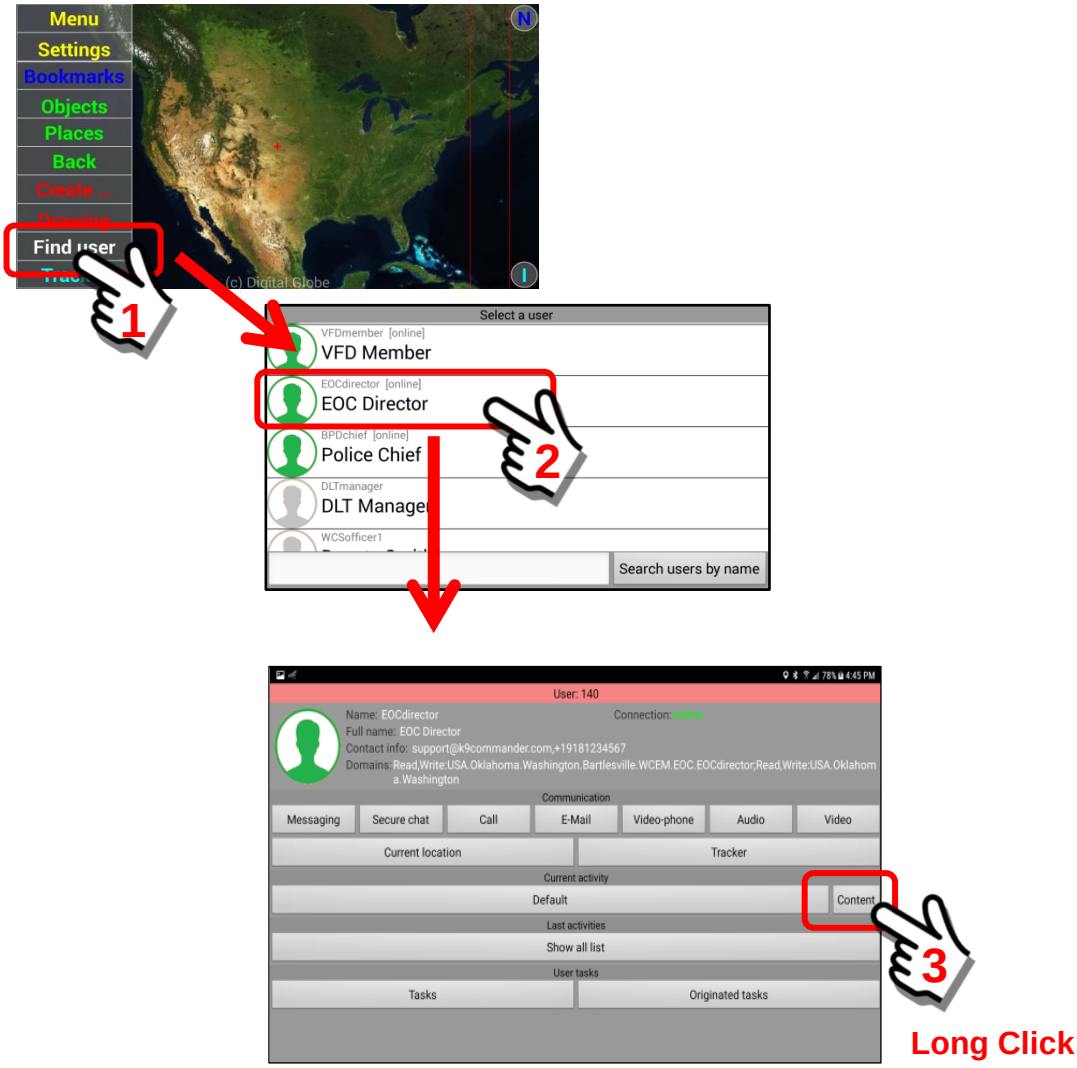
To expand the timeline, use a two-finger drag to zoom in or out on the timeline.

As you zoom in, recorded events will come into view.

See **Section 10.9** for details on the History Module.

Description of the Content History Review function and features:

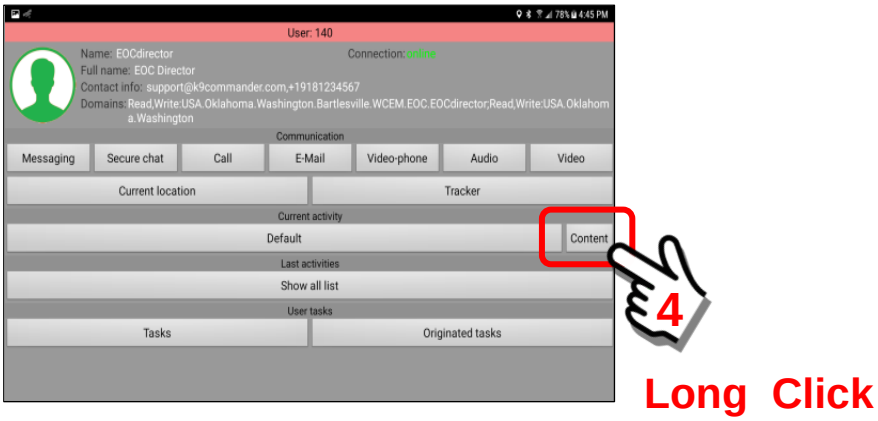
1. ***Select a User of the Content you want to review.***
   Select a User from which you want to review the Content History.
   Click on the “Find user” Button on the Main Menu. Select the user you want.



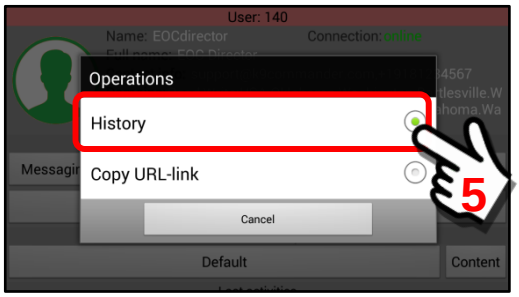
Perform a “long click” on the Content Button to access the History Module feature for the user content.

2. ***Open the History Review Module.***

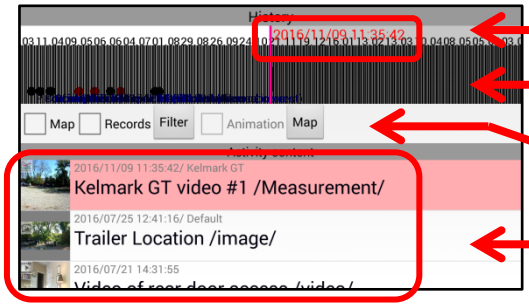
To access the Content History Review Module, perform a “long click” on the Content Button on the User Panel.



A “long click” action will open an Operations pop-up box that will have a “History” menu option. Click on this option to launch the History feature.



The content history screen will look similar to the following panel.

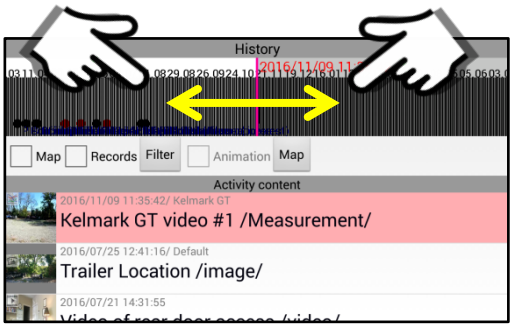


3. ***Navigate the content list and/or timeline for desired content.***
The data in the Content Folder can be selected by several methods.

a. Expand the timeline to view “data events” on the list.
b. Scroll through the list that is displayed below the timeline and select an item.
c. Drag the timeline bar to a date/time where events occurred. As the timeline is moved, the list of events will scroll automatically.

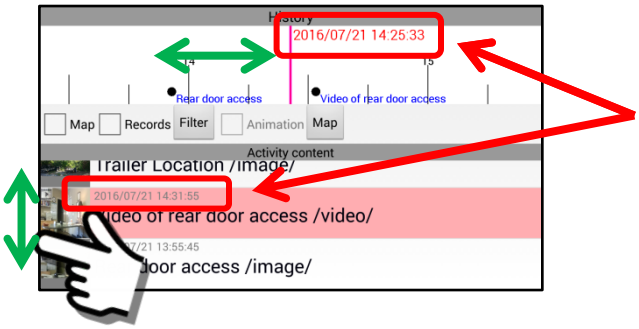
Expand the timeline

As the timeline is expanded using a multi-touch finger swipe, events will begin to be displayed.



Scroll through the list and select content events

Use a finger to swipe up/down to review the items of content in the list. As additional items are displayed the timeline will “move” to the new date/time represented by the data timestamp.



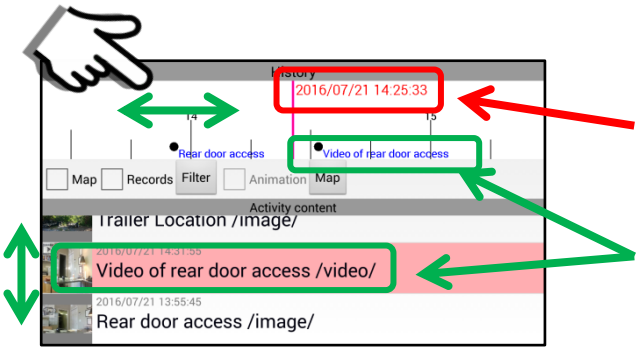
Date of selected Content item reflected in the timeline marker.

Scroll content list

Drag the timeline bar to the desired date/time of an event

Use a finger to swipe left/right to review the items of content displayed in the timeline. As additional items are displayed the

scrolling content list will “move” to the new date/time represented by the data timestamp

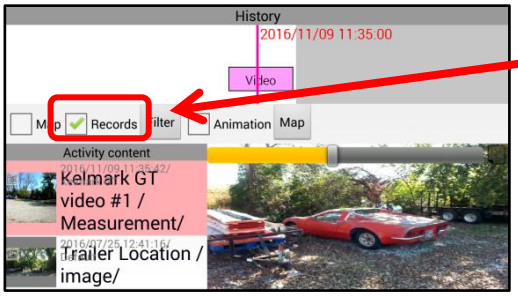


Date of selected Content item reflected in the timeline marker.

Name of selected Content item shown on the timeline.

4. ***Review screen options of the History Module.***
As the timeline is expanded, content data becomes visible.

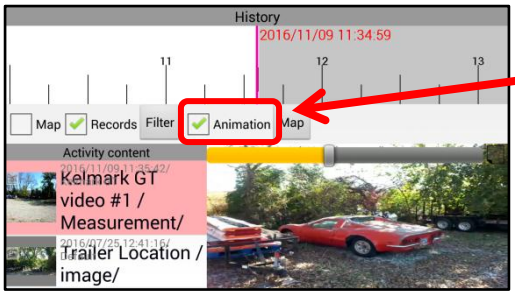
To display the data record … click on the “Records” checkbox. The video file will be loaded and indexed to the point on the timeline that is selected by the user.



Activate the Records checkbox to begin viewing the content data (ie video).

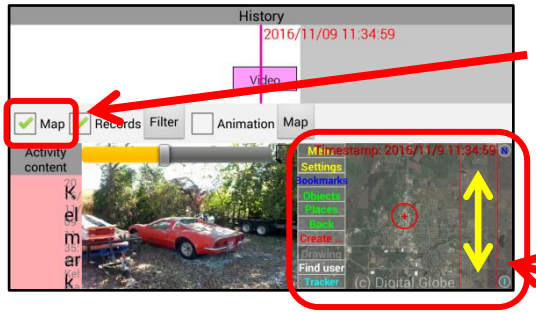
In this mode, the video may be advanced frame-by-frame.

To “play” the video, also select the “Animation” checkbox. The video will begin playing.



Activate the Animation checkbox to begin playing the content data (ie video).

To add the GPS overlay map to the displayed data, click on the “Map” checkbox.



Activate the GPS location Map Overlay by clicking on the “Map” checkbox.

In this mode, the GPS location will be in-sync with the video image playing on the screen.

As on the main Map Screen, you may swipe between the two red bars and zoom in to street level to see greater detail.

15.9. Big data transfer between two devices (Peer-to-Peer transfer).

Overview:

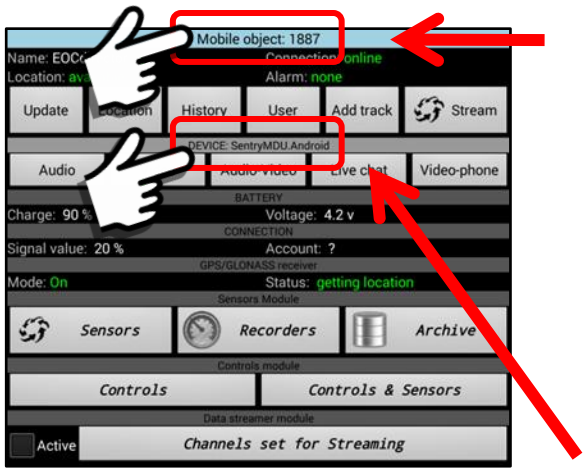
The Sentry MDU System has a peer-to-peer (device to device) data transfer feature that allows large files to be moved between mobile devices. This capability would most often be used to transfer large pictures, instruction manuals or audio/video files from one device to another. This section will illustrate how to transfer a 90Mb PDF file (User Manual) from one mobile device to another.

Important Note: If you have situations where large data transfers are paused/interrupted/lost due to network instability, the partial transfer is not lost. The data transfer progress will pick up where it left off once the process is restarted.

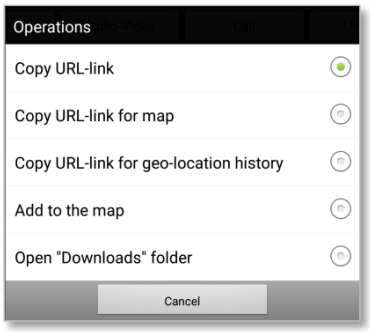
Mobile Object Panel – Big Data Transfer:

The transfer feature for large files is found on sub-menus of the Mobile Object Panel. Access to these menus is available via a "Long click" on the respective heading text.

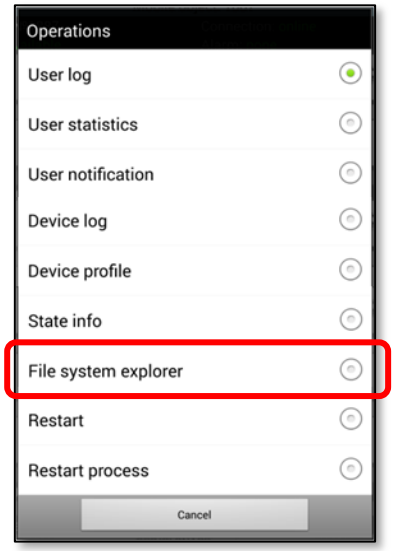
Long Click



Menu Option Set #1



Menu Option Set #2



The "File system explorer" on Menu Option Set #2 will be the option we are working with in this section.

Steps to perform a peer-to-peer data transfer:

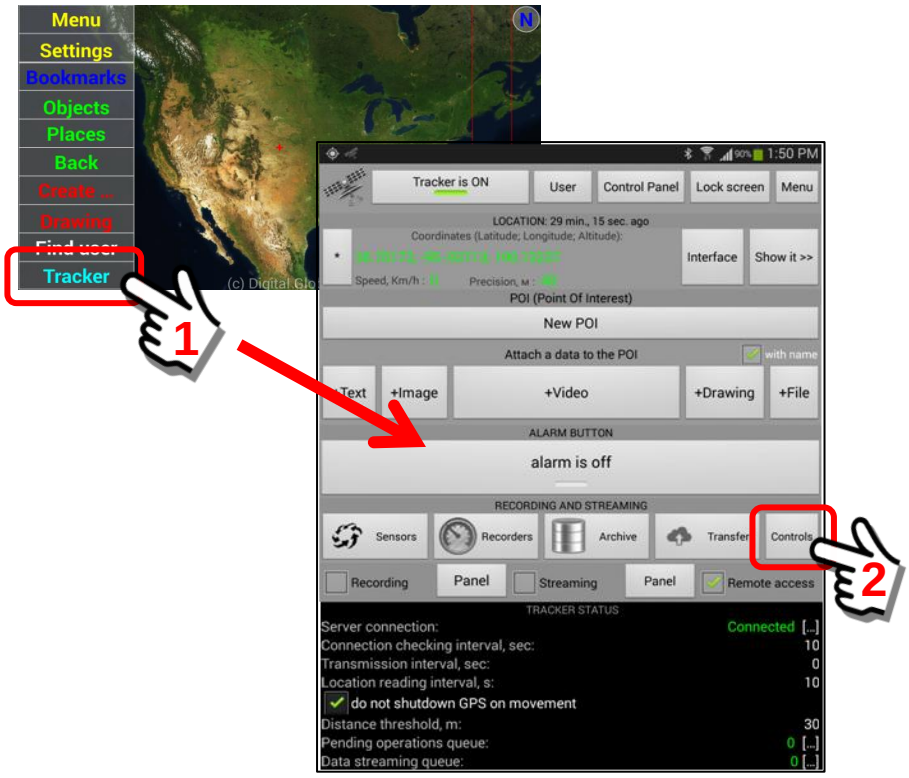
1. ***Verify that the "Internal Memory" channel profile is enabled on BOTH devices.***
   In order to do a peer-to-peer file transfer, we must verify that both mobile devices (sending and receiving) will allow access to the file systems on the devices. See **Section 5.7** for configuration details.

   Important Notes:

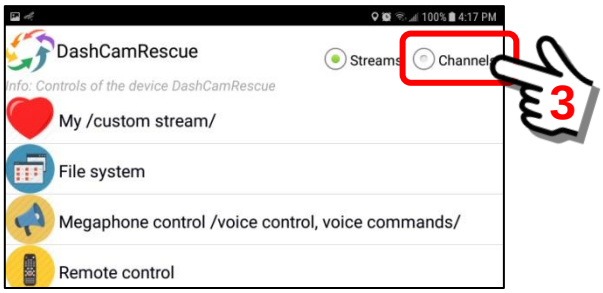
   a. This feature is turned "off" by default.
   b. It must be explicitly turned "on" (Enabled) by the User of the mobile device since it allows access to the internal file system of the mobile device by others.
   c. This feature CANNOT be changed by another user or by the system. Only the local user can adjust this setting.
   d. For YOU to access this feature on another persons mobile device you must have security credentials that allow access.

   Both users (sending and receiving) will have to make sure that the "Internal Memory" Channel is "Enabled". Generally, this would be set up during the mobile device initial configuration. The process to set this parameter is shown below.

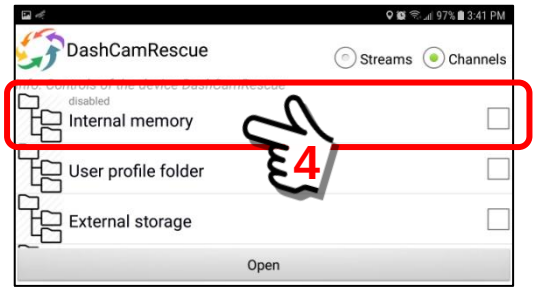
   <u>Open the Tracker Panel, click on the Controls Button</u>



Select the Channels Option in the upper right corner of the Panel.

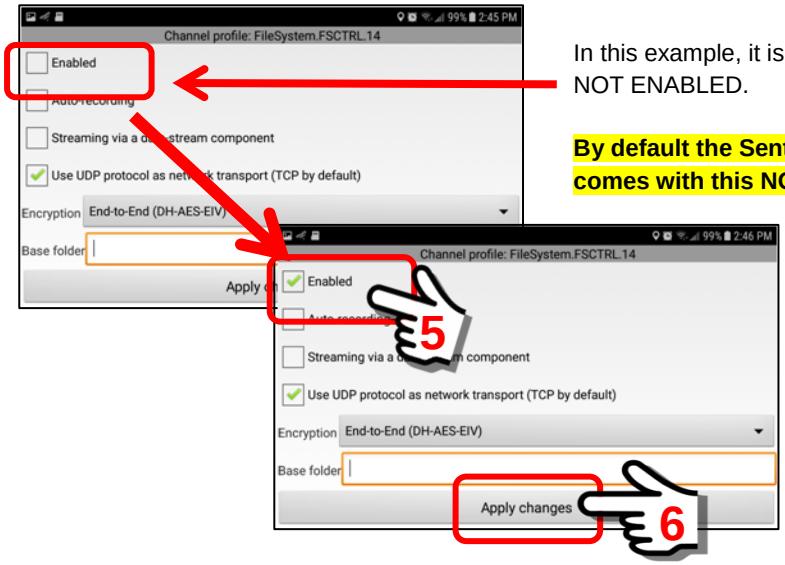


At the Controls Panel channels listing, perform a “Long click” on the Internal Memory option.



Long Click

Make sure that the channel is “Enabled”.
The Channel Profile for the “Internal Memory” parameter will be displayed. Put a checkmark in the **Enabled** box (by default it is disabled) and click “Appy changes”.

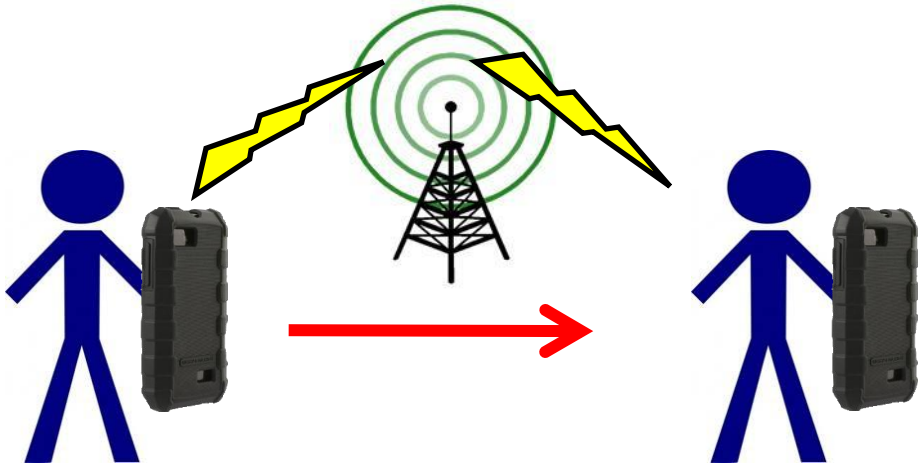


In this example, it is shown as NOT ENABLED.

By default the SentryMDU App comes with this NOT enabled.

The “Internal Memory” filesystem feature is now enabled. This means that the Sentry MDU System and users with sufficient security credentials can now access the file system on the mobile device (upload and download files).

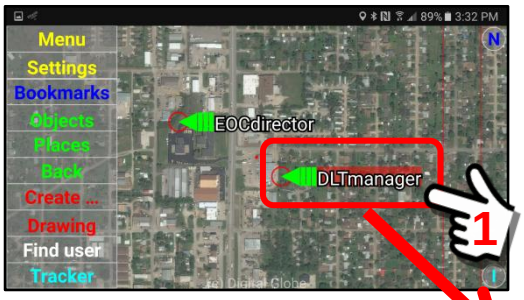
2. ***Determine on which device the file to be transferred in located.***
   In this example, we will assume that we are sending a 90Mb file FROM mobile device ***DashCamRescue*** TO mobile device ***DLTmanager***.



Device = DashCamRescue **Device = DLTmanager**

3. ***DashCamRescue user chooses a remote folder (on DLTmanager) as the destination for the uploaded file.***

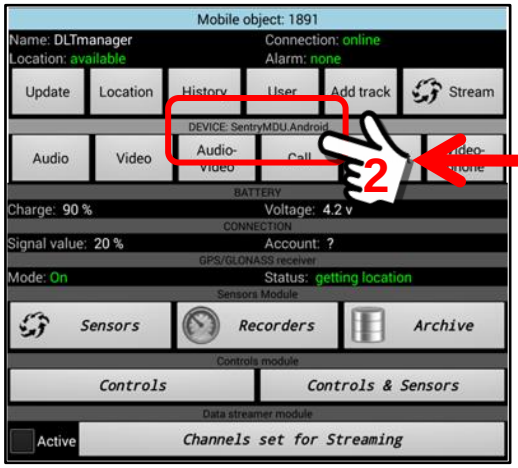
   <u>On the DashCamRescue device, open the Mobile Object Panel of the DLTmanager device.</u>



Click on the ***DLTmanager*** object marker to open the Mobile Object Panel for ***DLTmanager.***

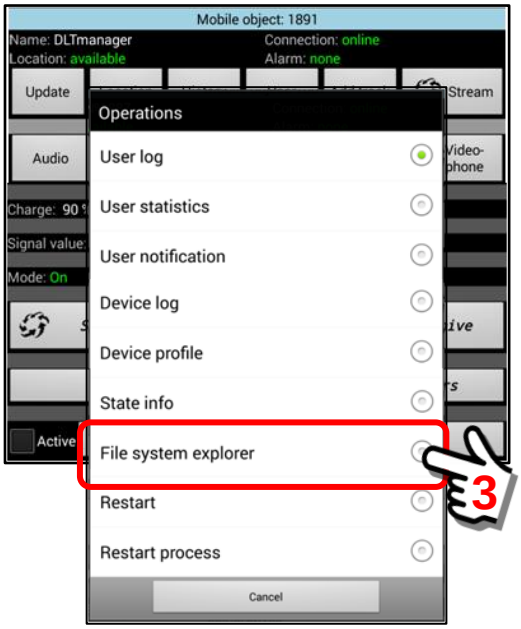
DLTmanager Object Panel

Navigate the file system of the DLTmanager device and locate a folder that you want to upload the 90Mb file to.



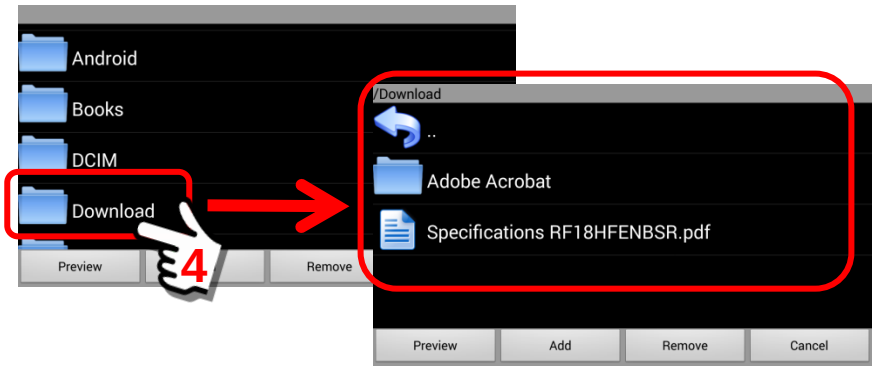
Long Click

Long Click on the device heading to open an options menu.



Click on the “File system explorer” menu option to open the file system on the DLTManager mobile device.

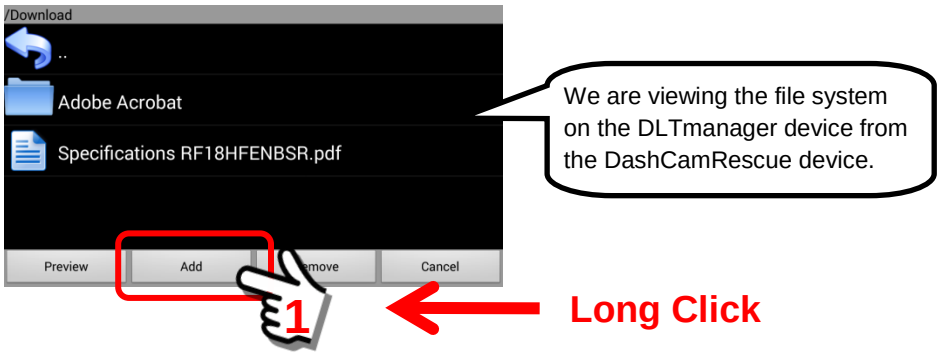
We will select the “Download” Folder on the DLTManager mobile device to be the location where we will upload the 90Mb file to.



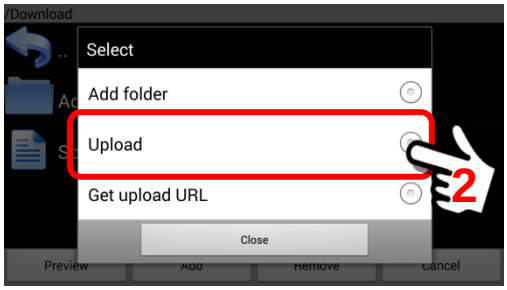
4. ***Select the option to "upload" the 90Mb data file from YOUR device to another User (upload from DashCamRescue to DLTmanager).***

To begin the "upload" process we are going to add a file from the DashCamRescue device to the DLTmanager device and put it in the DLTmanager "Download" folder.

Perform a "Long click" on the Add Button located at the bottom of the file explorer panel. This will open a menu of available options.



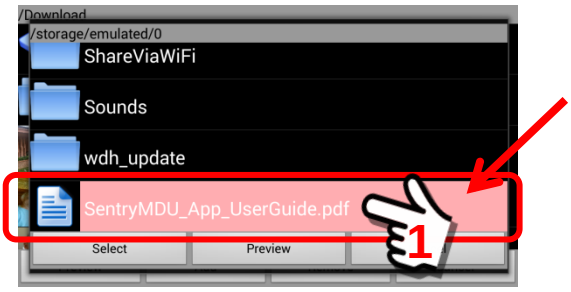
Select the "Upload" Option from the menu choices.



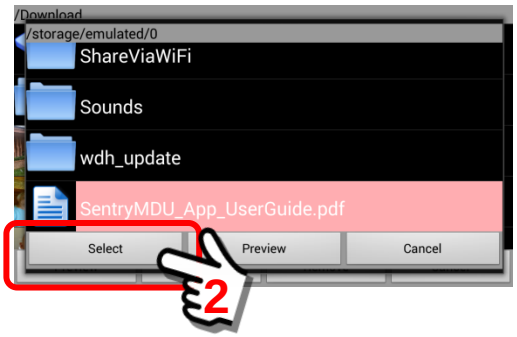
Click on the "Upload" menu option to locate the file that you want transferred to the DLTManager mobile device.

5. ***Select the 90Mb file you want to send to DLTmanager.***
When clicking the "Upload" Button, the application will open the file system on the DashCamRescue device (starting at the Root Directory). You may now navigate the DashCamRescue device file system until you find the file that you want to upload to the other user.

In this example, we are selecting the ***SentryMDU_App_UserGuide.pdf*** file that is resident on the Root Directory of the DashCamRescue mobile device.

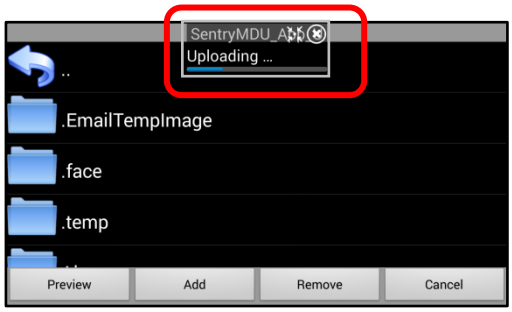


Click on the desired file to highlight the choice, then click the “Select” Button.

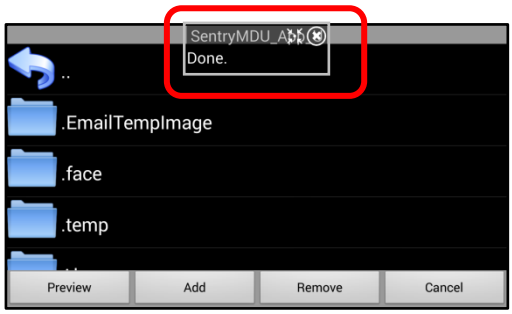


6. ***Uploading process will start. Verify the transfer was successful.***
As the uploading process begins, a Progress Panel will appear at the top of the screen. It will indicate the uploading status. At the final stage of uploading (when the bar is at 100%) the remote device (target = DLTmanager) starts calculating a CRC checksum of the file to verify that the file was successfully transmitted. This process may take a long time (several minutes) depending on the file size and CPU speed of the target device.

Upload progress is displayed at the top of the screen

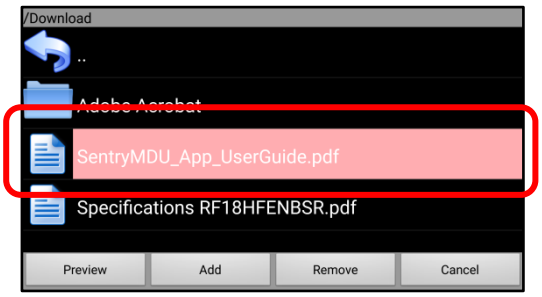


When finished, the Status Panel will indicate it is “Done”.



The file has now been transferred to the DLTmanager device.

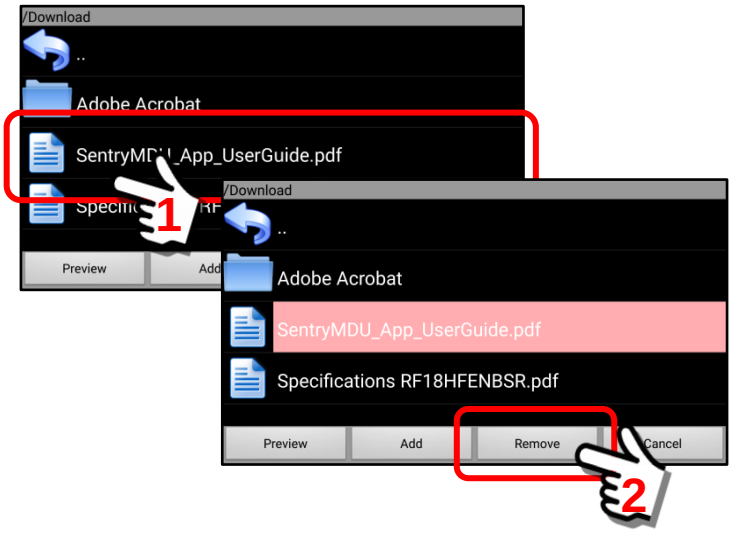
7. ***Uploaded file now installed on remote device (ie DLTmanager).***
A review of the “Download” Folder on DLTmanager will show that the selected file (***SentryMDU_App_UserGuide.pdf***) is now in the folder.



New file installed on the DLTManager mobile device.

8. ***To remove a file from the file system.***
To remove a file from the file system on the mobile device, perform the following steps.

<u>Select and highlight the desired file to remove</u>



<u>Click the “Remove” Button, then click “Yes” to confirm.</u>

9. ***Review “upload” vs “download” options.***
Using similar procedures files may be both uploaded and downloaded between mobile devices.

15.10. Example – Speech-to-text recognizer feature

Overview:

The Sentry MDU System has a "speech-to-text" recognizer feature. The **Text /voice recognizer/** channel profile will provide a *continuous* speech-to-text conversion utility on a mobile device.

> **Important Note: To use this feature on a remote device, you must be in the same Security Domain and have security credentials that allow access.**

Although you may open the feature directly, it is designed to be used as a "floating window" opened on a device (see **Section 9.13** for details on setting up a Floating Window). The **Text /voice recognizer/** Feature gives you the ability to make a timestamped transcript of a conversation and store it as a text file on your device.

> **Important Note: Speech-to-text conversion is not an exact science. This feature uses the "native" speech-to-text conversion code available in YOUR version of Android. As the Android OS gets better, the accuracy of the speech-to-text conversion will also get better. Currently only English is supported.**

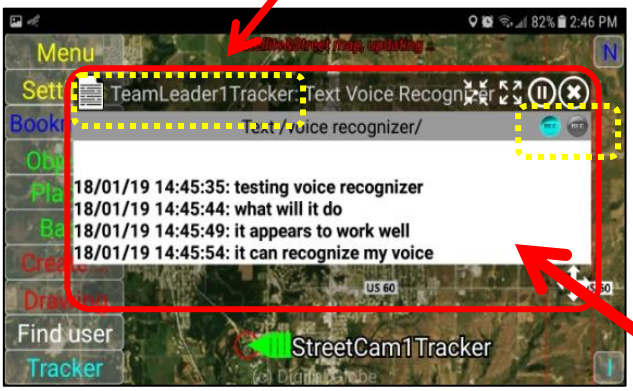
<u>You will have several options available with this feature.</u>

(1) To make a "Text Copy" of the conversation, click on the RECORD Button on the Floating Window Panel. Click on the Blue or Gray record buttons as desired.
(2) If you collapse the Floating Window panel to the Notification Bar, recording will stop. However, when restored, the panel will begin processing speech-to-text once again. Click the applicable Record button to begin recording again.
(3) Recorded data is stored in the Data Archive on the local (or remote) device. It will be marked as a "Text" Data Type.

Display Panel – Text /Voice Recognizer/ Feature:

The speech-to-text feature will typically be run within a floating window. The example below shows what a typical scrolling panel would look like.

Username of Remote Device



<u>Two Options for Recording the Content:</u>

Blue

(1) Starts recording and saving the data on the remote device where the speech-to-text sensor is running.

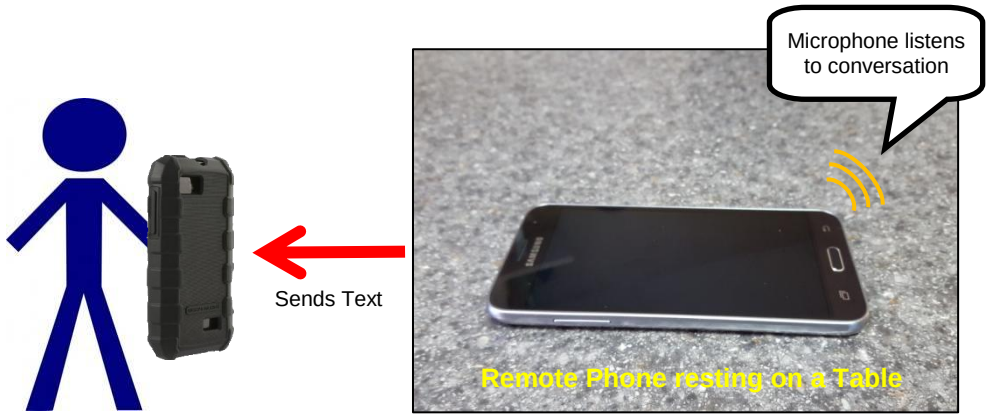
Gray

(2) Starts recording and saving the data on YOUR device if you are monitoring a remote device.

Voice Recognizer Panel on YOUR device monitoring speech-to-text input from a remote device.

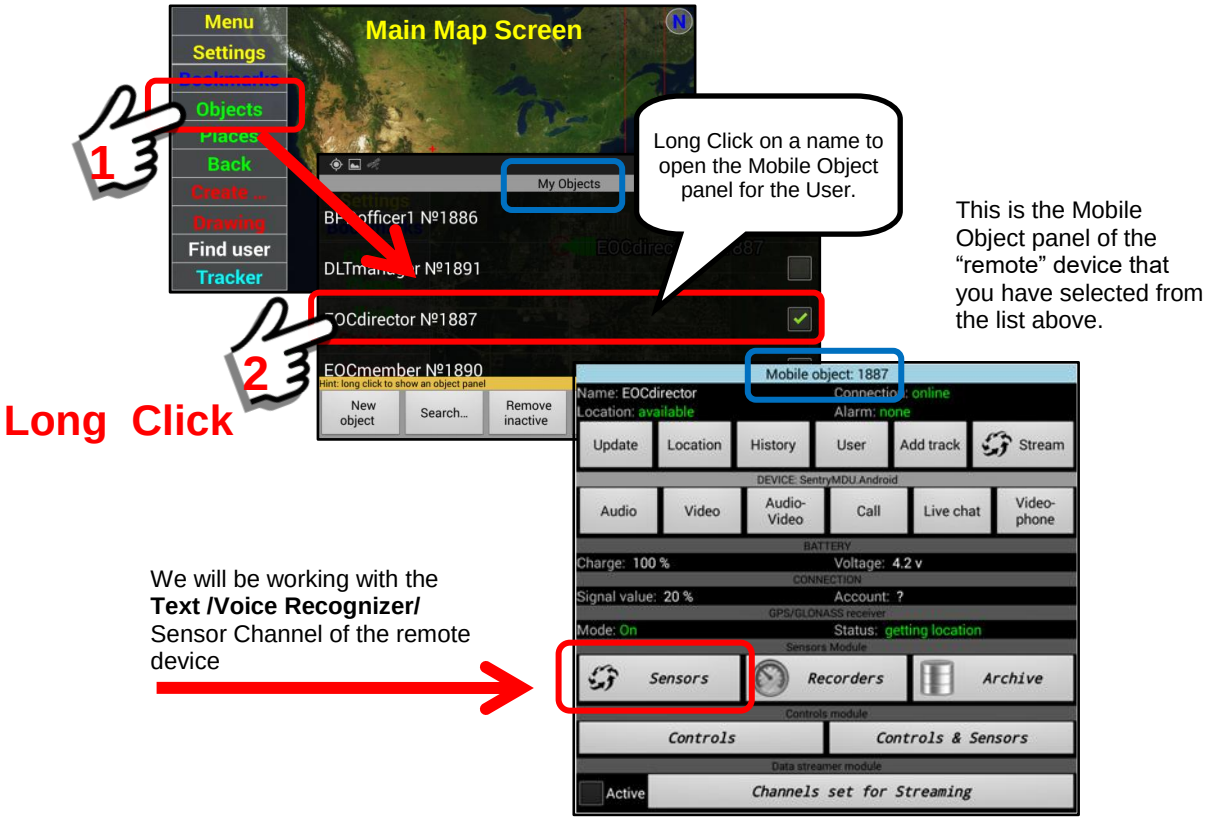
Steps to set up a speech-to-text recognition device:

1. ***Select the remote device where you want to activate speech-to-text***
   In this example, we will have two mobile devices. One device will be a "remote" mobile device and you will be holding YOUR device. We will be listening with the microphone on the remote device, doing a speech-to-text recognition function and then monitoring the resulting "text" output in a floating window on YOUR device.

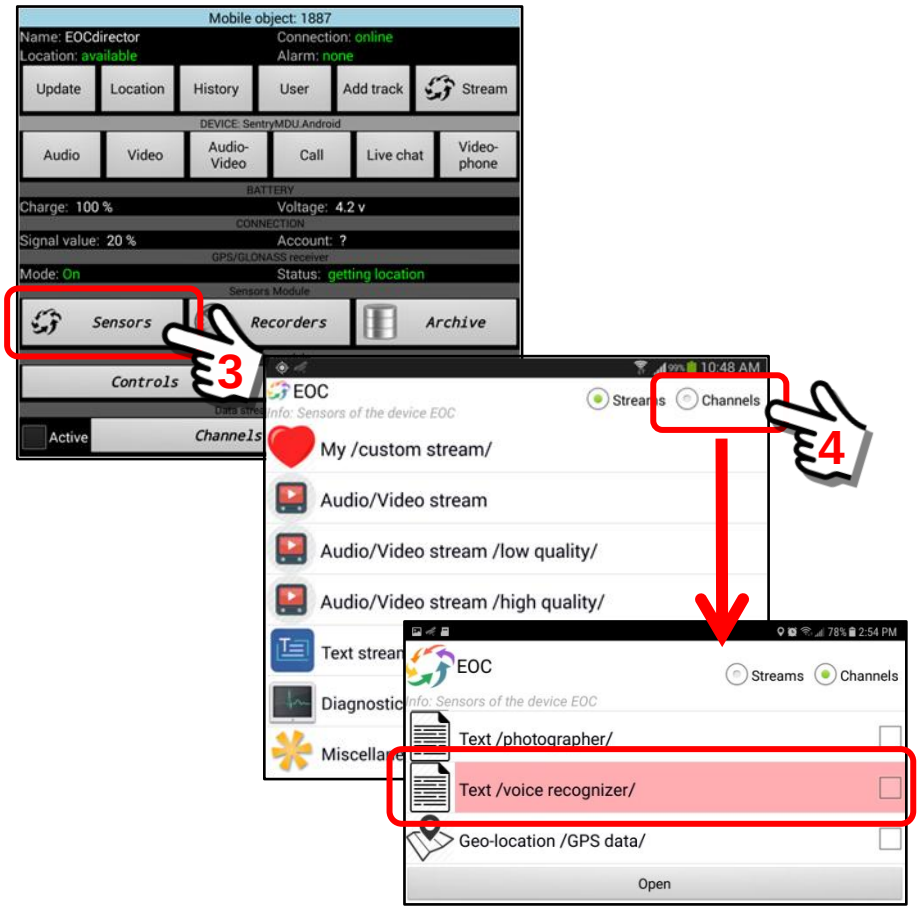


Mobile Device #1 **Mobile Device #2**

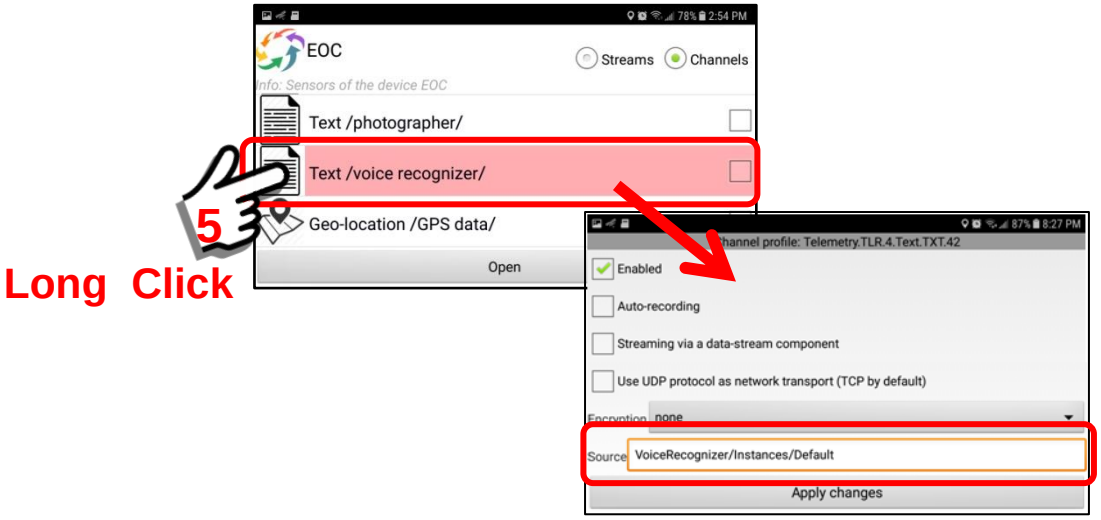
Start at the Main Map Screen.
Select the Objects Menu item. On the My Objects Panel, perform a "Long click" on the Username of the remote device you would like to access.



2. ***Access the Sensors Panel on the Remote Device.***
From the Mobile Object Panel of the remote device (Device #2) we will navigate to the "**Text /voice recognizer/**" sensor channel profile. We are doing this on Device #1.



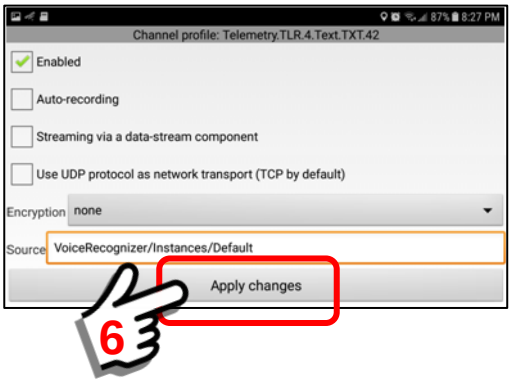
3. ***Verify that the "Text /voice recognition/" Channel is configured.***
To verify that the "**Text /voice recognizer/**" channel configuration is correct we will perform a "Long click" on the channel name.



The "**Text /voice recognizer/**" channel should have a Source entry as shown below:

VoiceRecognizer/Instances/Default

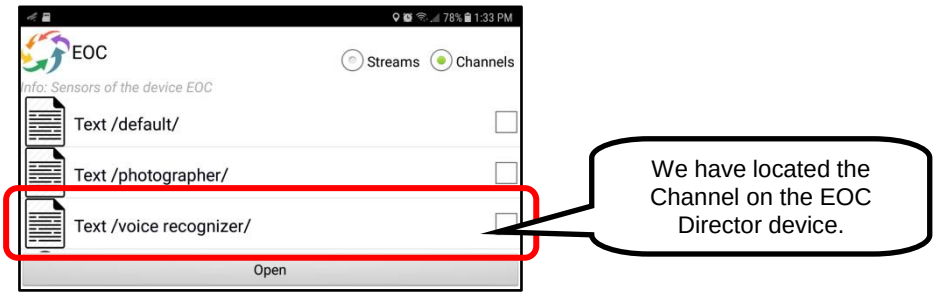
If for some reason, this Source URL is missing or has been changed, please replace and make sure the entry is "saved".



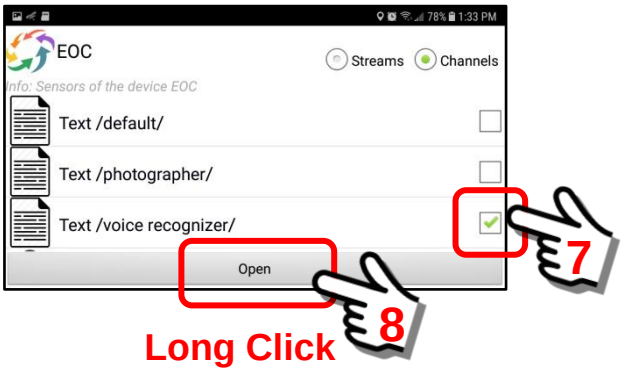
Click on the ***Apply Changes*** button to save the changes.

4. ***Create bookmark for the "Text /voice recognition/" Channel of the Remote device.***

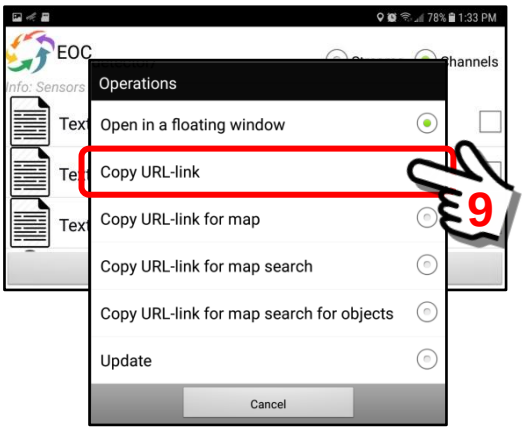
To create a bookmark, we return to the listing of sensors and locate the "**Text /voice recognizer/**" channel.



Put a "checkmark" in the checkbox next to the "**Text /voice recognizer/**" channel. Then preform a "Long click" on the "Open" Button.

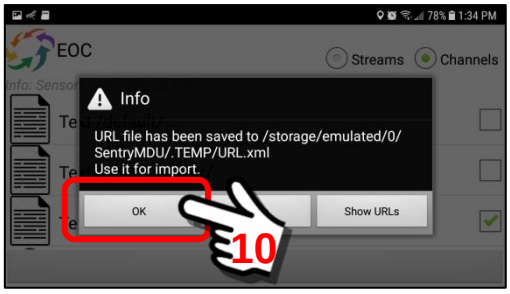


When the “Open” Button is long clicked, a pop-up “Operations” menu will appear. Select the “Copy URL-link” Option from the listing.



When the “Copy-URL link” option is selected, the system will create a entry into the .TEMP Folder which can then be imported into the Bookmarks Panel.

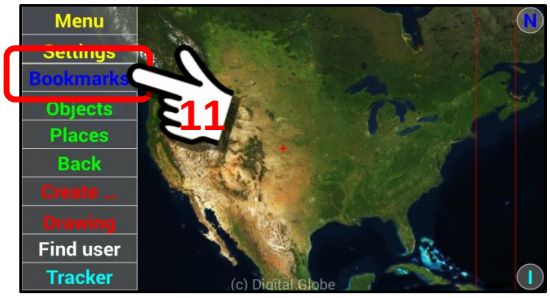
Click the “OK” Button to continue.



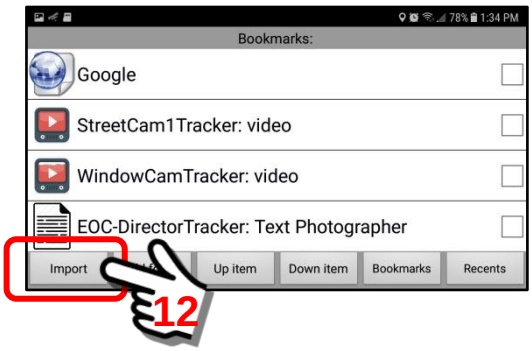
The channel URL Link for the “**Text /voice recognizer/**” profile has now been saved.

Our next step is to import the URL Link we have saved into the Bookmarks Panel listing. Navigate to the Main Map Screen and the bookmarks panel (Hint: Use the “Back” Button on your phone to return).

Click on the Bookmarks Button.



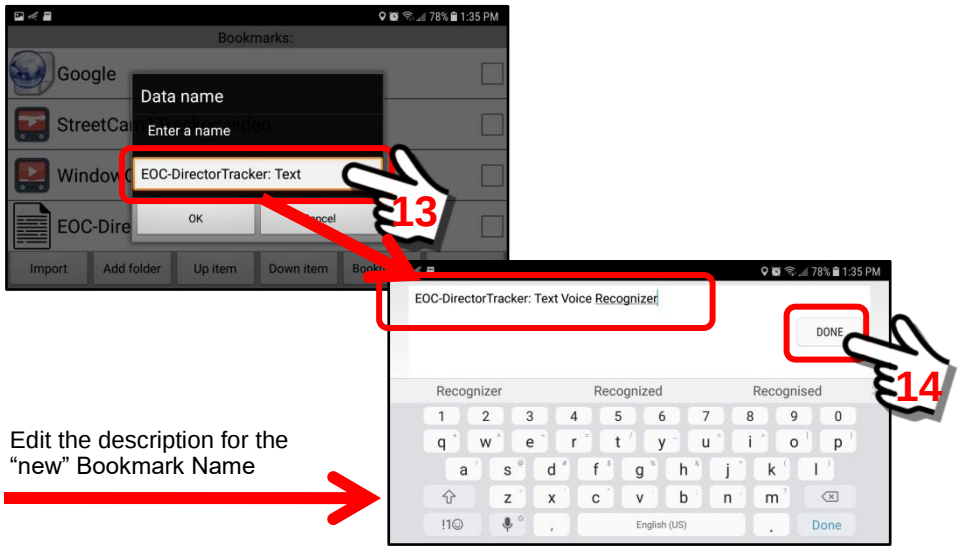
At the Bookmarks Panel, select the “Import” Button.



When the “Import” Button is clicked, a pop-up Data Name Panel will appear. It will have the default “name” of the Sensor Profile.

The “default” name assigned by the system is “**EOC-DirectorTracker: Text**”.

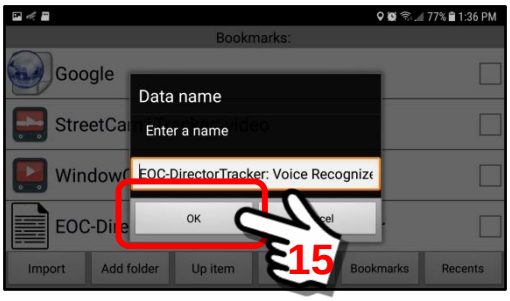
In this example, we will RENAME the system name to be more descriptive. To “edit” the system name, click inside the text box.



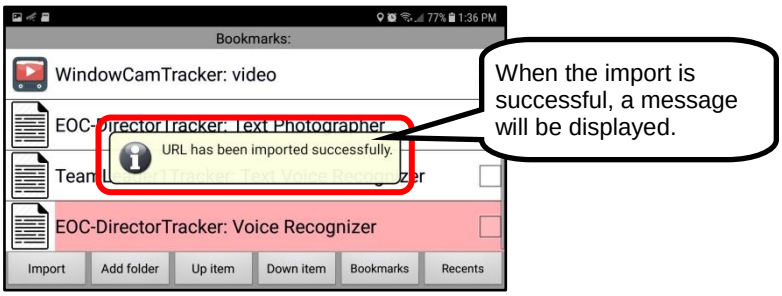
We have now “edited” the text and put a more expanded description as shown below.

EOC-DirectorTracker: Voice Recognizer

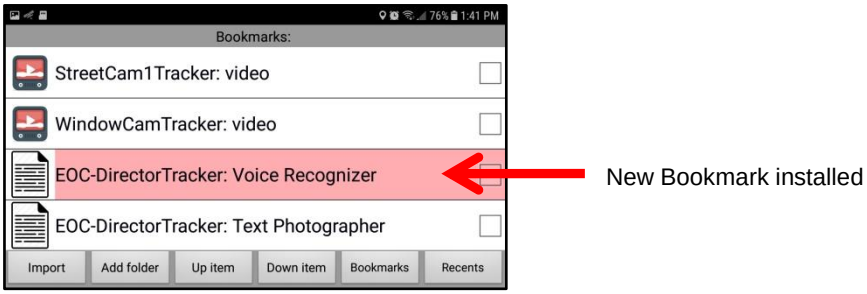
Click the “OK” Button to continue and accept the changes.



The “new” Bookmark has now been imported into the Bookmarks List. If the import is successful, a message will be displayed for a few seconds.



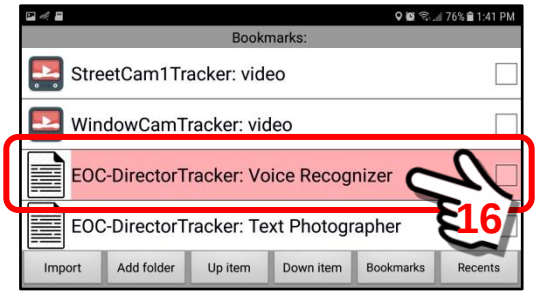
The new “**EOC-DirectorTracker: Voice Recognizer**” bookmark has now been installed on YOUR device. Now, any time you want to activate the Voice Recognition on the remote device, simply click on the bookmark.



5. ***Change the Bookmark “open type” to a floating window.***
When a “new” bookmark is installed, by default (depending on the type), it is not installed as a Floating Window type of bookmark. In most cases, when monitoring a remote device, you will want the bookmark to launch as a

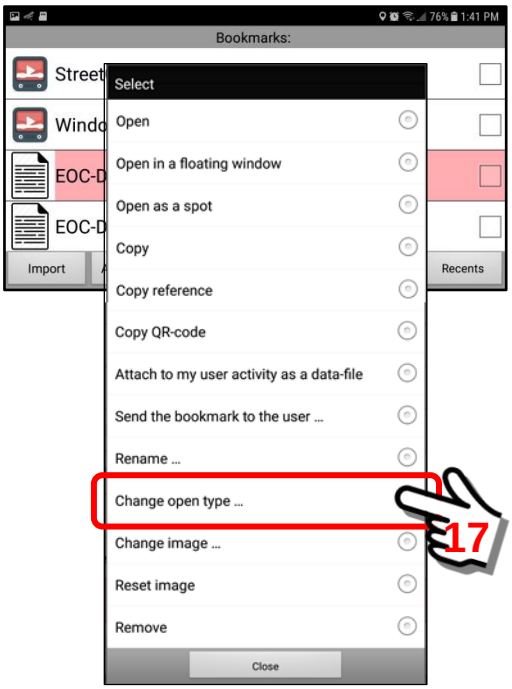
floating window so that it may be moved around, minimized and so it will sit on “top” of other windows.

In this section we will illustrate how to set the “Open Type” parameter so that the new “**EOC-DirectorTracker: Voice Recognizer**” bookmark will open each time you click on it, as a floating window.

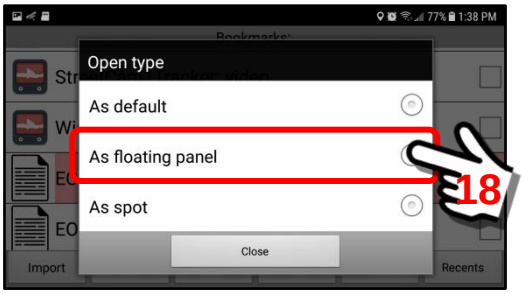


Long Click

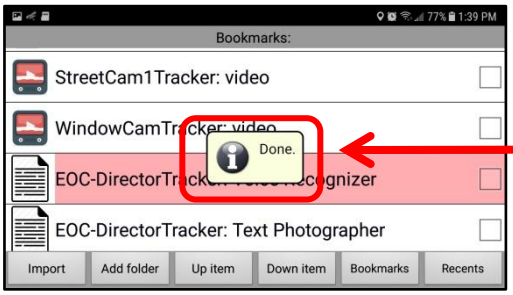
Performing a “Long click” will open a 13 option listing of menu options for Bookmarks. Select the “**Change open type …**” Menu Option.



When you click the “**Change open type …**” option, a pop-up Open Type selection box will appear. Select the “**As floating panel**” menu option.



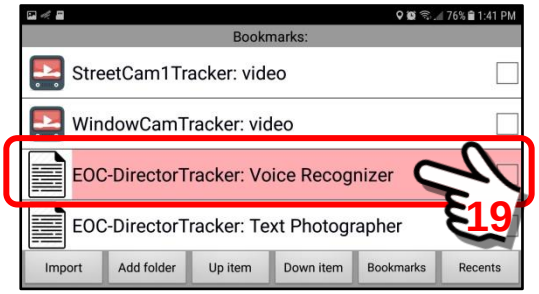
If the “change” is successful, a “Done” Message will be displayed on the screen for a few seconds.



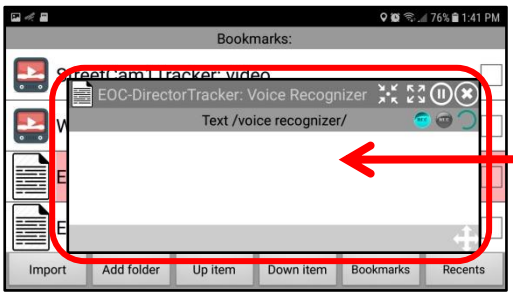
If the “Open Type” change is successful, you will see this message for 3 seconds.

6. ***Activate the bookmark to begin monitoring speech-to-text conversion.***
To use the new “**EOC-DirectorTracker: Voice Recognizer**” bookmark and start monitoring speech on the remote device, click on the bookmark to launch the floating window panel.

Click on the bookmark.



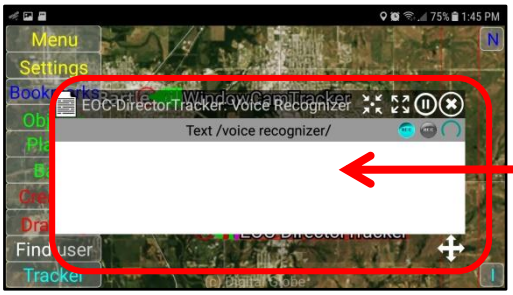
A floating window panel will open.
It will take a few seconds for YOUR device (Device #1) to “connect” to the remote device (Device #2).



It will take several seconds for the device to initialize..

Depending on the quality of your device, the location of YOUR device (Device #1), the location of the remote device (Device #2), and the available internet speed (ie WiFi or Cellular) … the initialization may take from 5 – 15 seconds for the devices to connect.

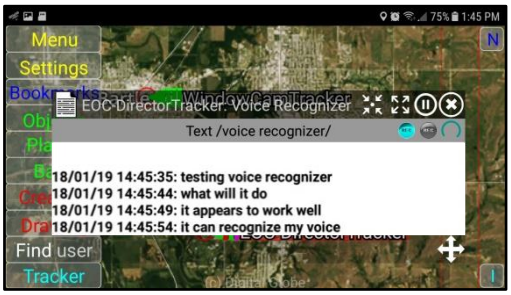
When the devices “connect”, use the “Back” Button on the phone to return to the Main Map Screen. You will notice that the “**EOC-DirectorTracker: Voice Recognizer**” floating window will remain on “top” of the Main Map Screen Panel.



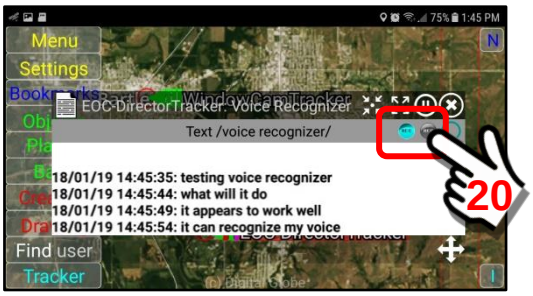
It will take several seconds for the device to initialize.

The remote device (Device #2) is now actively “listening” for sounds/speech. As English language speech is detected, it will be processed, converted to text via the speech recognition engine and transferred to YOUR device (Device #1).

An example of speech-to-text output is shown below.



7. ***Activate the Recording Option to save the conversation transcript.***
To “record” this text output on YOUR device (Device #1), click on the Gray Button. This will store the text in the Data Archive on YOUR device.



Two Options for Recording the Content:

Blue

(1) Starts recording and saving the data on the remote device where the speech-to-text sensor is running.

Gray

(2) Starts recording and saving the data on YOUR device if you are monitoring a remote device.

When finished, close the floating window panel (click the ⊗ Button).

15.11. Example – Object Recognition (A.I. Feature).

Overview:

The Sentry MDU System has an Object Recognition feature. This feature uses the Tensor Flow, Open Source, *Artificial Intelligence* (A.I.) Engine to identify "familiar objects". The current installed version will identify 20 different categories of objects including Cars, Boats, People, Animals and more. Object Recognition is different than "Motion" Detection. Object recognition will only trigger an event when a specific "object" (you may have several categories of objects) is recognized by the A.I. Engine.

> **Note: To access this feature on a REMOTE device, you must be in the same Security Domain and have security credentials that allow access.**

The following listing shows the currently available categories in alphabetical order.

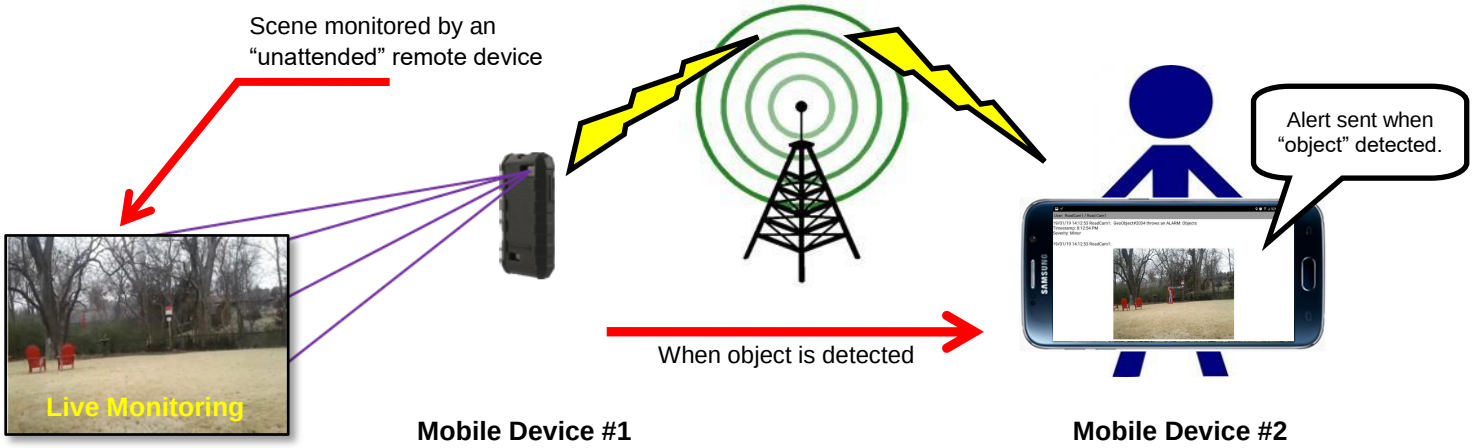
Aeroplane	Bus	Dining Table	Potted Plant
Bicycle	Car	Dog	Sheep
Bird	Cat	Horse	Sofa
Boat	Chair	Motorbike	Train
Bottle	Cow	**Person**	TV Monitor

In addition to selecting a category of objects (ie Person), you will select a "probability threshold" (such as 65%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

> **Important Note: Object recognition is not an exact science. This feature uses the "Open Source" Tensor Flow A.I. Engine code. As the A.I. Engine gets better, the accuracy of the object recognition will also get better.**

Display Panel – Object Recognition Feature:

The Object Recognition feature will typically be configured to trigger a Notification Event that will send an Alert to another User's device that is remote from the location of the monitoring device. The example below shows a typical scenario.

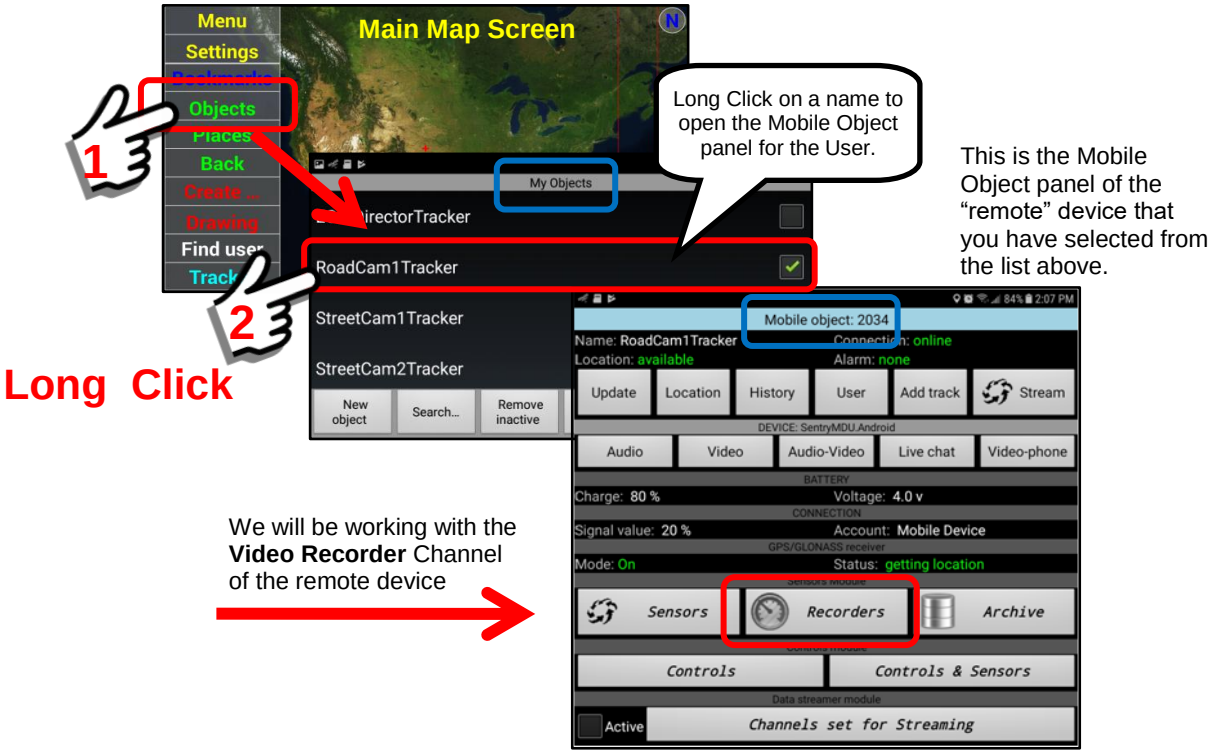


Steps to set up a device for Object Recognition:

1. ***Select the remote device where you want to activate Object Recognition***
   In this example, we will have two mobile devices. One device will be a "remote" mobile device and you will be holding YOUR device. We will be setting the remote device up to monitor an "outdoor" area to determine if any "people" (A.I. Object Category = person) trespass thru the area. If a person is "recognized" by the A.I. Engine we want the remote device to send us a Notification Alert Message with a timestamped snapshot photograph of the scene.

   In this example, we have the mobile device **RoadCam1Tracker** set up as an "unattended" video surveillance device monitoring the back area shown.

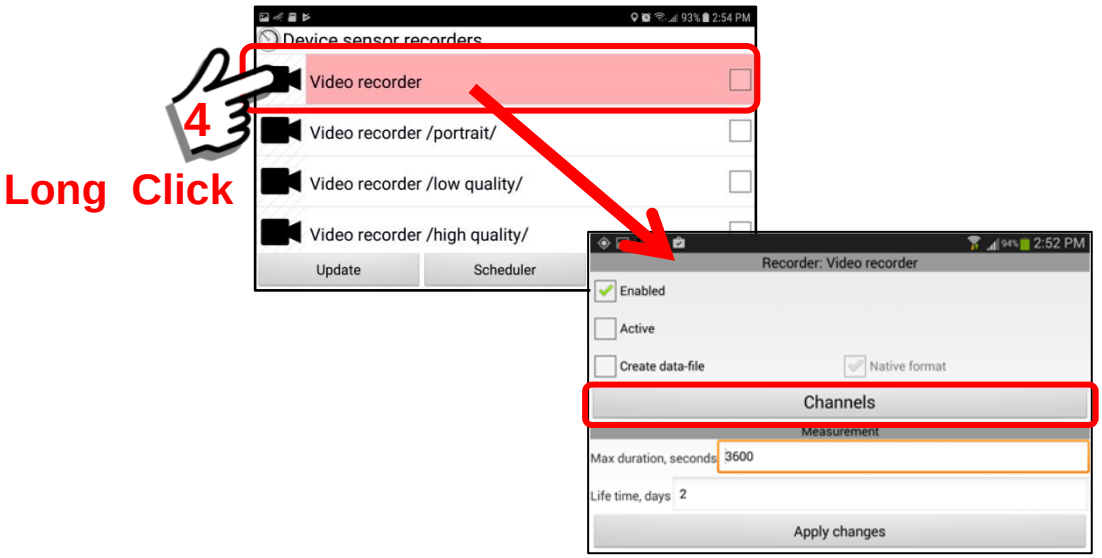
   To begin, start at the Main Map Screen.
   Select the Objects Menu item. On the My Objects Panel, perform a "Long click" on the Username of the remote device you would like to access.



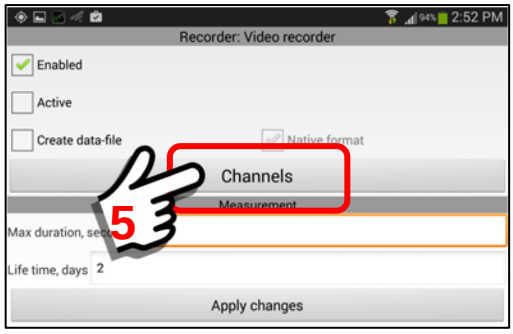
2. ***Access the Recorders Panel on the Remote Device.***
From the Mobile Object Panel of the remote device (Device #1) we will navigate to the "**Video Recorder**" sensor channel profile.

3. ***Verify that the "Video" Sensor Channel is configured.***
To verify that the "**Video**" channel configuration has been set for Object Recognition, we will perform a "Long click" on the channel name.

We will review the "Video" Sensor Channel that is used by the Video Recorder.

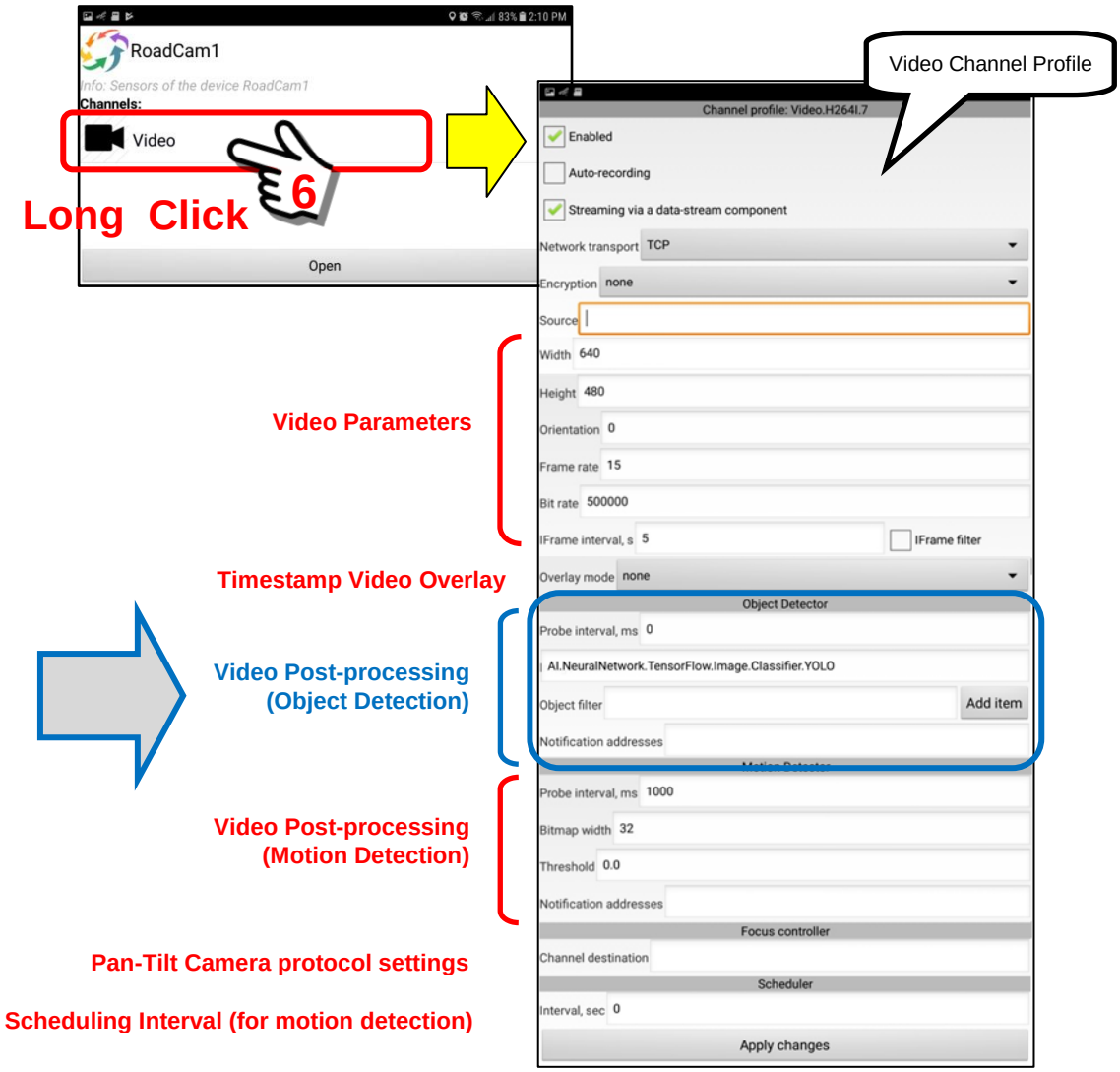


Click on the “Channels Button” in order to access the “**Video**” Sensor Channel Profile (you may use any of the video channel profiles you want).



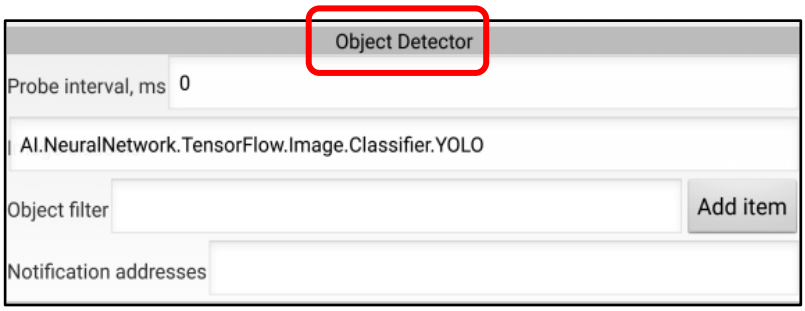
In this example, we are only monitoring and recording VIDEO and NOT both audio and video. Therefore, we have only selected a Video Channel Profile.

Perform a “Long click” to open the Sensor Parameters for the Video Channel.



4. ***Edit the Object Detector parameters and select a "Person" category.***
To implement Object Recognition, we must select a category for the A.I. Recognition Engine to "recognize" (you may select multiple categories).

Navigate to the Object Detector section of the screen.



<u>We will edit these 4 sensor parameters.</u>

1. **Object Detector - Probe interval, ms**
Factory default setting = 0

The default is "0", this means the object recognition feature is turned "off" and not active. To activate the A.I. Object Detection, set the probe interval to some number greater than zero.

A probe interval of 1000 – 5000 milliseconds (1 – 5 secs), is a good setting. This number is how often the image is processed in order to determine if there is an "object" in the image that meets the filter selection criteria.

2. **Object Detector – AI.NeuralNetwork.TensorFlow ….**
Factory default setting = "*A.I. Code reference"*

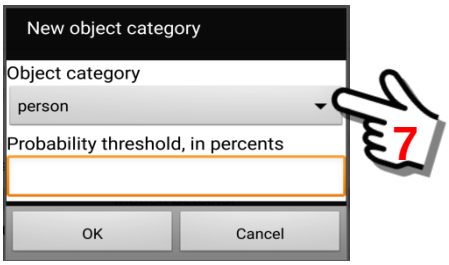
AI.NeuralNetwork.TensorFlow.Image.Classifier.YOLO

This instructs the Video Channel to use the Artificial Intelligence (A.I.) object detection code as a source for object recognition. Do not change this text unless you know what you are doing.

3. **Object Detector – Object Filter**
Factory default setting = "blank/empty"

The default is "blank", this means no object category has been selected. Click the "Add Item" Button to select one (or several)

categories of objects to search for. The available categories include people, cars, boats, animals, objects, etc.



In addition to a category of object, you will select a “probability threshold” (such as 60 … 60%) which the A.I. Engine will use to determine the likelyhood of a successful object recognition. When an object is recognized by the A.I. Engine, the system will provide an estimated probability that the object matches the selection criteria.

4. Object Detector - Notification Addresses
Factory default setting = “blank/empty”

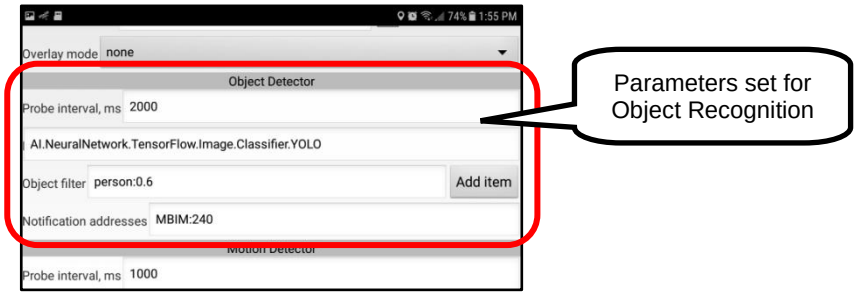
The notification feature allows a User to send other Users a “timestamped message notification” when a trigger event occurs. In the case of the A.I. Object Recognition, if an object exceeds the set probability threshold (ie 60%), a message notification with an attached picture “snapshot” will be sent.

(1) If “blank” there will be NO notification.
(2) An entry must start with the prefix “MBIM”.
(3) A colon, “ : ” separates the prefix from the User IDs.
(4) Users are designated by their “User ID” number.
(5) If multiple users are to be notified, they are separated by a comma “,”.
(6) There can be no whitespace in the text string.

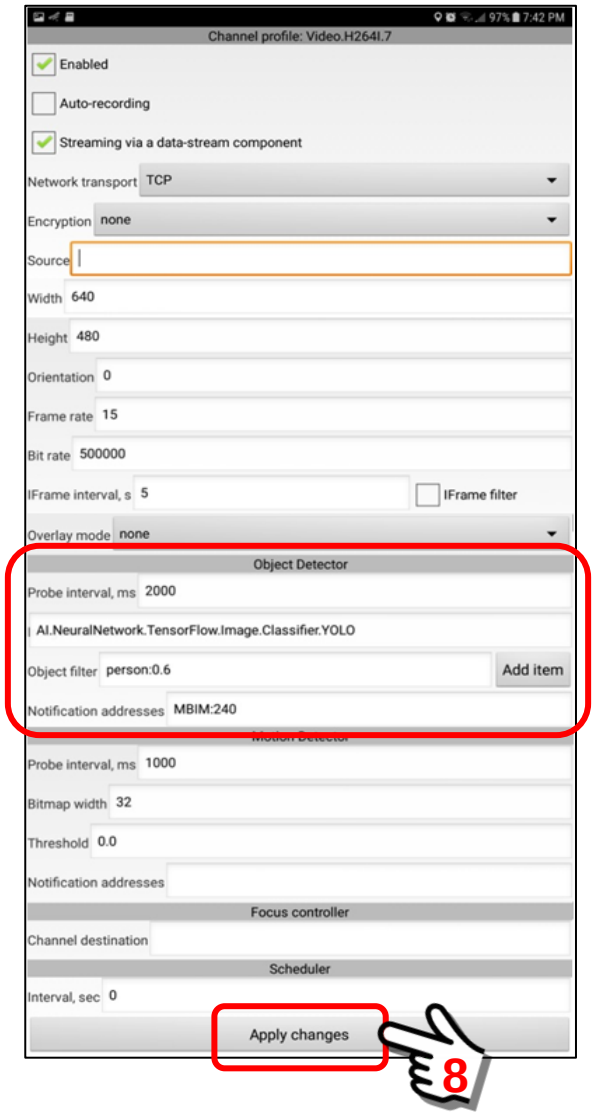
<u>An example entry would be as follows (no quotes):</u>

“MBIM:123,345,567” …… 3 users to notify
“MBIM:478” …… a single user to notify

A finished set of parameters may look as follows.

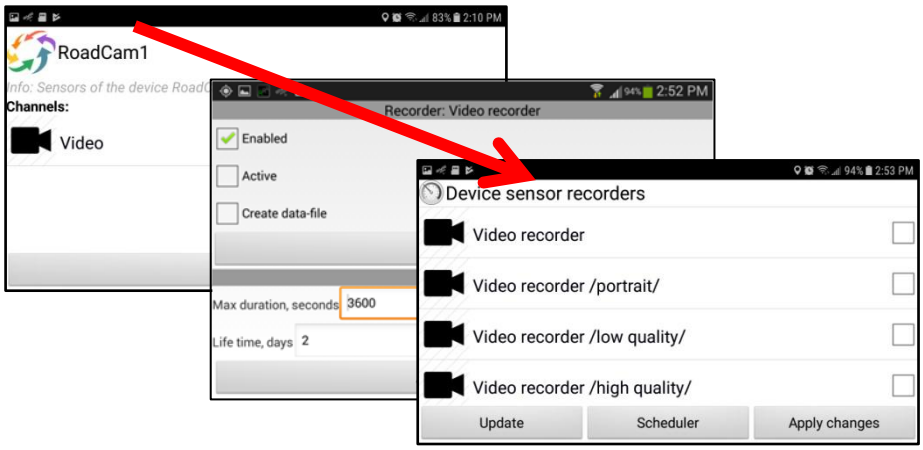


5. ***Save the changes you have made to the Video Channel Profile.***
When all parameter changes have been made, make sure to SAVE all your changes. Click the “Apply changes” Button at the bottom of the Panel.

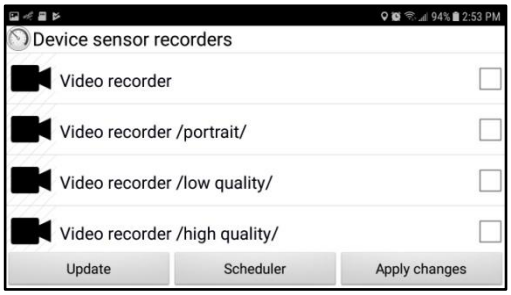


This is where we provided configuration for the Object Recognition Feature.

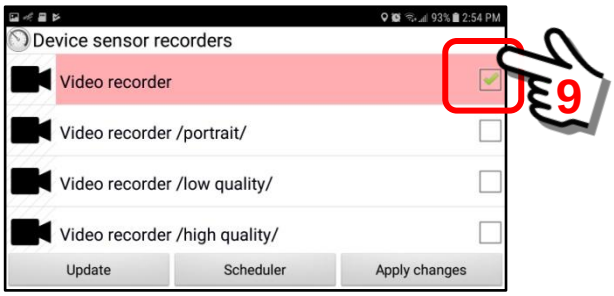
You will now be returned to the Video Channel. Click the “Back” Button two more times to return to the *Device Sensor Recorders Panel*.



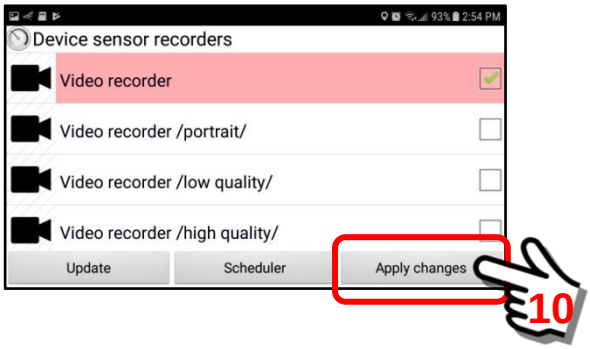
6. ***Activate the Video Recorder channel for recording.***
Once the Video Recorder configuration has been completed, you should navigate back to the *Device Sensor Recorders Panel*.



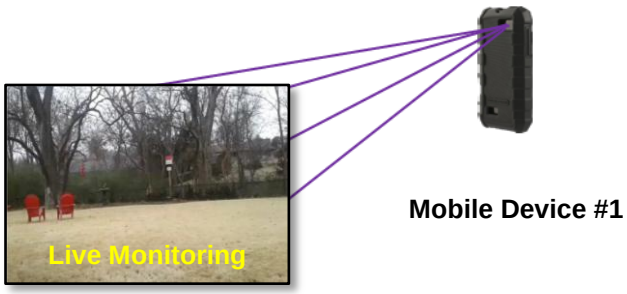
Put a "checkmark" in the checkbox next to the "**Video Recorder**" channel. When we apply the changes, this will activate the recorder.



Click the "**Apply Changes**" Button to activate recording. Optionally, you may also "schedule" recording for specific times during the day/night.



The Video Recorder on the remote device (Device #1) is now running.

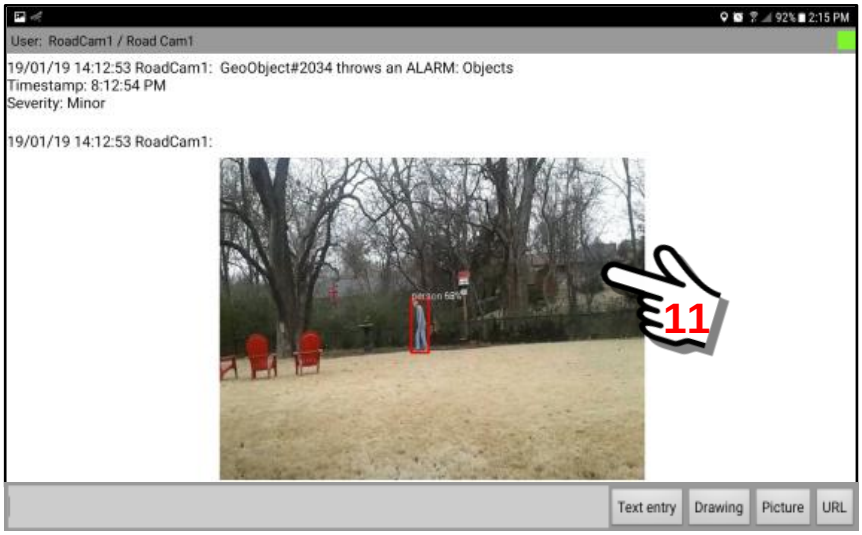


7. ***An event is triggered … and YOU receive a Notification Alert.***
At this stage of our example, you have created a video recorder on a remote surveillance device (Device #1) and and it is “activated”. The Object Recognition A.I. Engine is set to recognize a “person” (human beings) with a minimum 60% recognition threshold. This threshold will be used for triggering a notification event.

You can now go about your day.

Later in the day … Suddenly your phone emits a “ding” sound, which indicates that a Notification Alert has been received.

You “swipe down” from the top of the screen to show the Notification and click on the alert that has been sent from the “unattended” mobile device RoadCam1Tracker (Device #1).



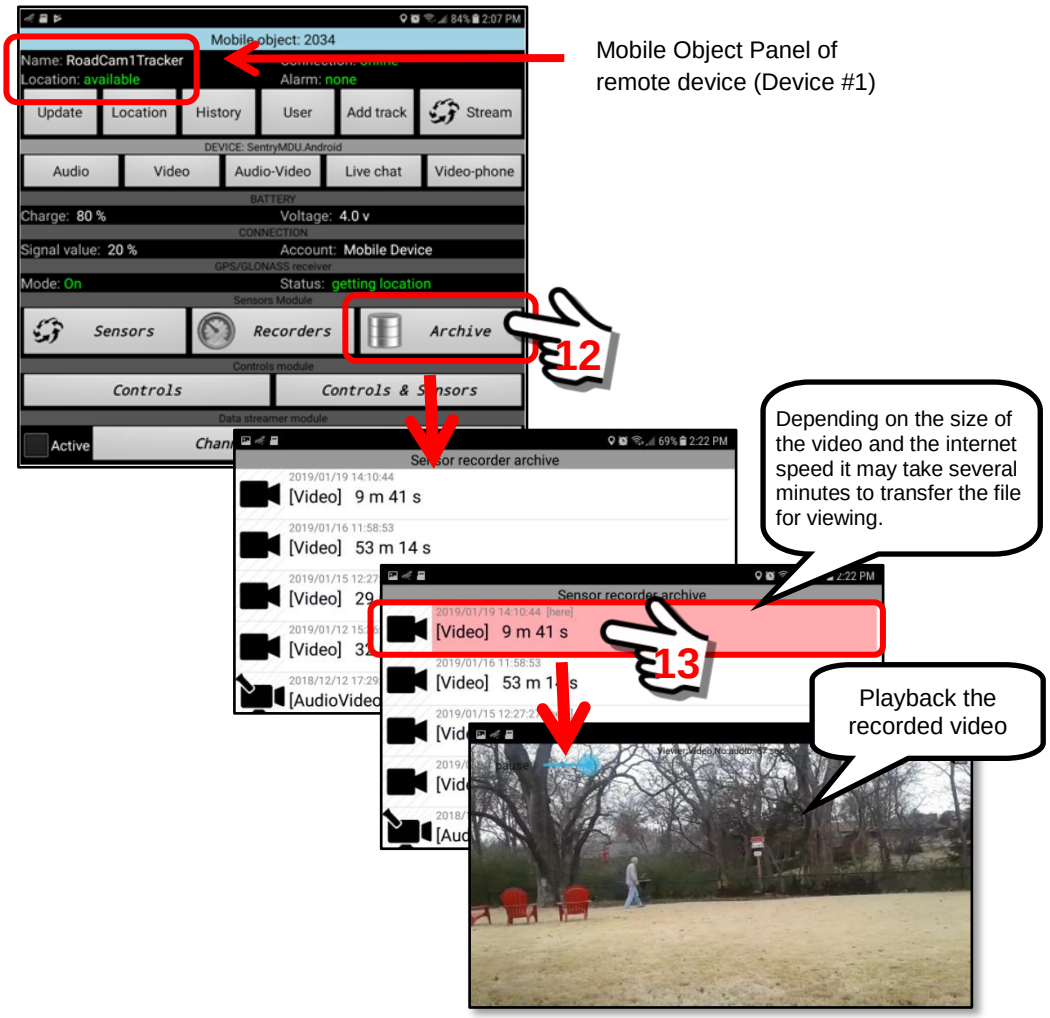
The “snapshot” picture of the object that was captured (recognized by the A.I. Engine) will be displayed in the Messaging App Feature panel. As you can see, a “person” was recognized in the field of view.

Click anywhere on the image to expand it to full screen, as shown below.

When an “object” is identified, it will be enclosed in a red box. The category will be listed and the probability value will be displayed.

Depending on the ***Probe Interval*** that you set during configuration, you may receive multiple notification events as long as the object (ie person) is within the field of view.

8. ***Access the Data Archive to view the recorded video.***
The video, when recorded, will be stored on the local device (Device #1) in the Data Archive. You may access the data on the remote device via the Mobile Object Panel for that device.



15.12. Example – Object Recognition Event Handler

Overview:

As explained in the previous section, the Sentry MDU System has an Object Recognition feature. This feature uses an *Artificial Intelligence* (A.I.) Engine to identify "familiar objects". Object recognition will only trigger an event when a specific "object" is recognized by the A.I. Engine. The **Object Recognition Event Handler** can be used to switch relays and control other devices via the "Control Channels" Feature. In this example we will show how to trigger an "Audio Message" ... such as "Person Detected" (or any message you want) by the remote device. This feature requires some technical skill and an understanding of file systems. Best attempted by Advanced Users.

> **Note: We will assume you have completed configuration of the previous section (Section 15.11) and have a working object recognition feature.**

The following listing shows the currently available categories in alphabetical order.

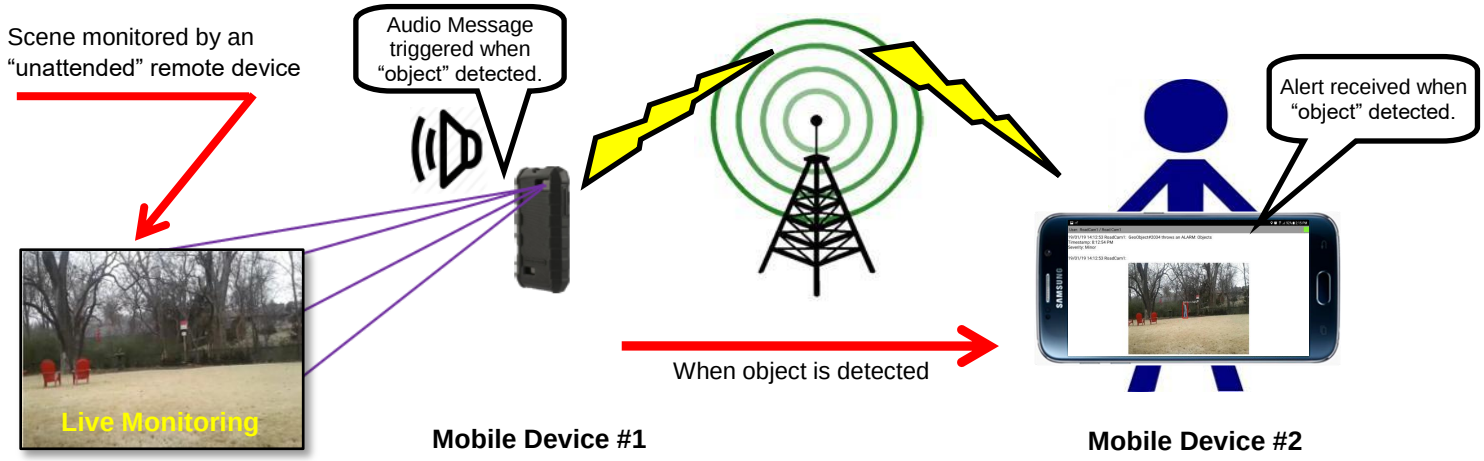
Aeroplane	Bus	Dining Table	Potted Plant
Bicycle	Car	Dog	Sheep
Bird	Cat	Horse	Sofa
Boat	Chair	Motorbike	Train
Bottle	Cow	**Person**	TV Monitor

We assume in the previous section you selected the "person" category for triggering object recognition.

> **Important Note: Object recognition is not an exact science. This feature uses the "Open Source" Tensor Flow A.I. Engine code. As the A.I. Engine gets better, the accuracy of the object recognition will also get better.**

Display Panel – Object Recognition Event Handler Feature:

The Object Recognition feature will typically be configured to trigger a Notification Event that will send an Alert to another User's device that is remote from the location of the monitoring device. In this example, we will also trigger a "local" Audio Message.



Steps to set up an event handler for Object Recognition Events:

1. ***Create the Audio Files that will be used for the Audio Messages.***
   The SentryMDU System comes with a “default set” of audio messages (in English) that indicate a detection event. For example, if a “person” has been detected using the Object Recognition Feature, a corresponding audio message is available that says … “Person Detected”. However, you may create your own set of messages and replace the default messages. This section will describe how you would create your own messages.

   In this example, we are using a Samsung Smartphone, so the screens may be somewhat different on your phone, but the voice recording process should be similar.

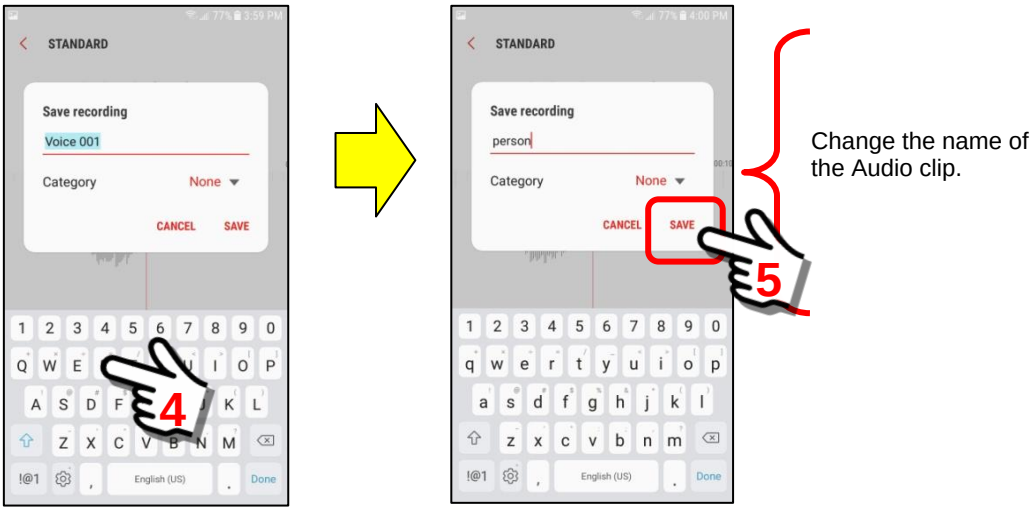
   <u>Locate a Voice Recorder App on your mobile device</u>
   Most smartphones have a “native” Voice Recorder App installed by default. In the case of this Samsung phone, the Voice Recorder App is installed in the Samsung Folder as shown below.

Record a short audio clip using the Voice Recorder

As shown below, open the Voice Recorder App and record a short audio clip. In this example, we are recording the words “Person Detected”. As you can see, the clip is 3.34 seconds of audio.

Rename and save the new file as “person”

In this Voice Recorder App, when a new file is created, it is given a default name of “Voice 001”. We will now change the filename to “person”.



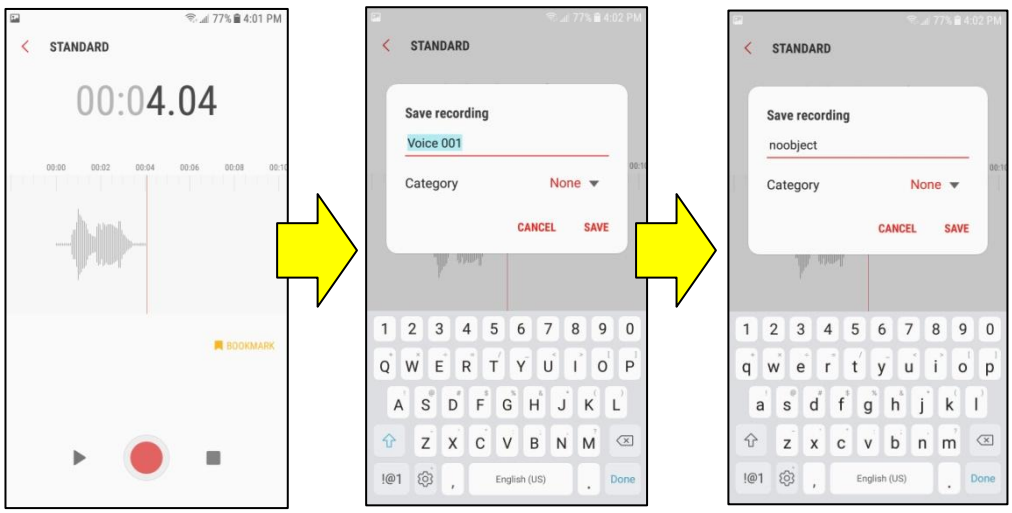
Create the “noobject” Audio clip

When Object Recognition is used, it will trigger on two connected events.

(1) When it detects an Object (ie a **person**)
(2) When the object is gone. (ie when the **person** is gone)

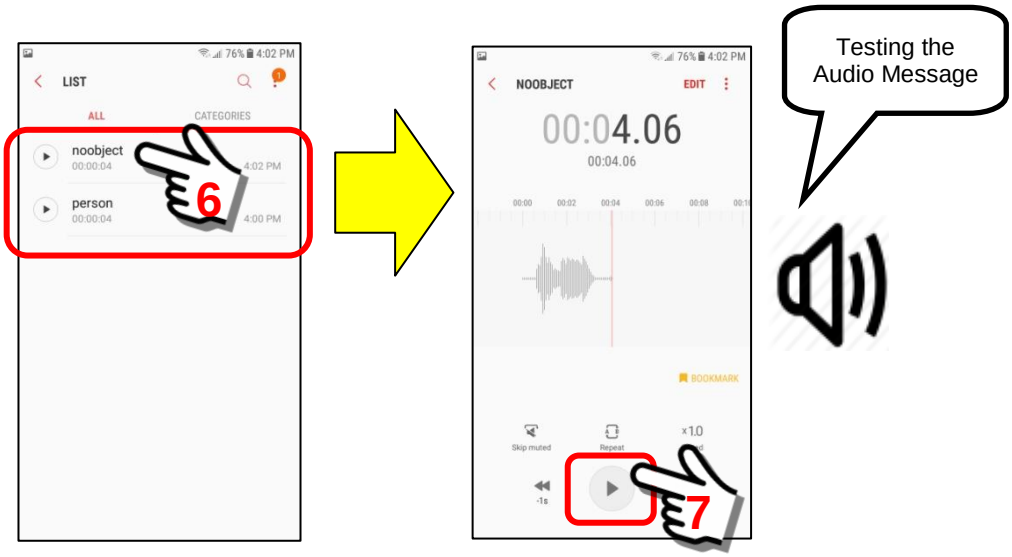
The Object Detector Event Handler will report BOTH of these events. For this reason we need two audio clips … one that says “person detected” and the other says “the Object is gone” (or can be anything you want).

For this exercise, we will create the “Object is gone” audio clip. In the SentryMDU System … the “Object is gone” audio clip is named “noobject”. We will leave this as an exercise for the reader to create the “noobject” audio clip. A few sample screens are shown below.



List the Audio Clips we have created for the Object Detector Handler

We have now created two audio clips that will be the Audio Messages that will be played when the Object Recognition feature detects a “person” trigger event. You may “play” the audio clips to see if they are what you want.



(Optional) Convert the audio files to a supported format

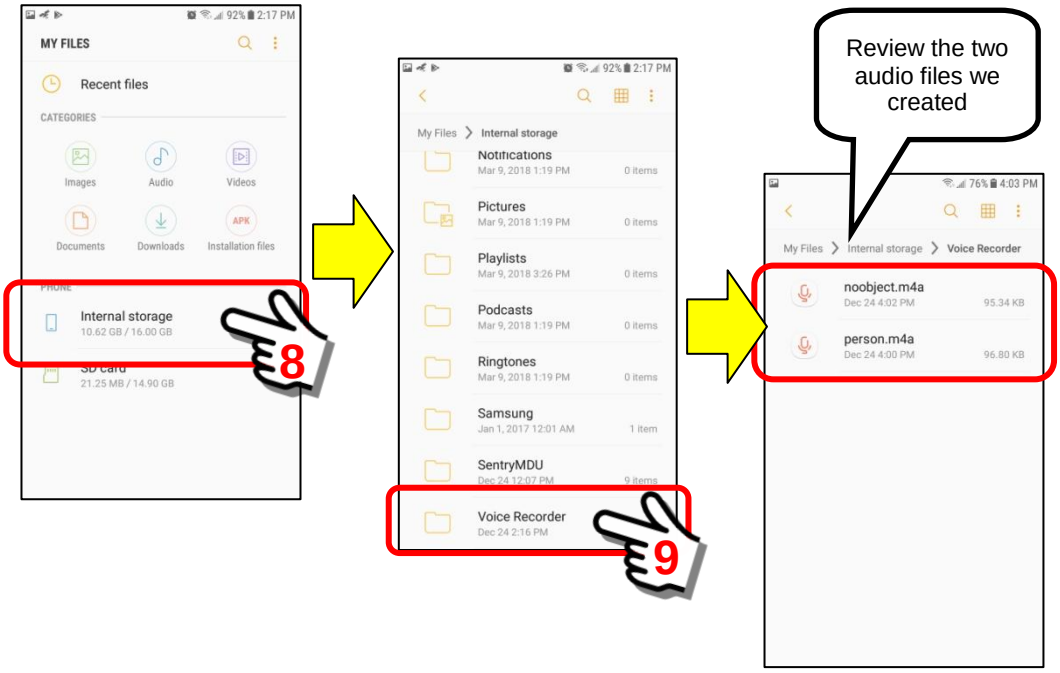
Since there are more that 10,000 different combinations of mobile devices, Android operating system versions and manufacturers Apps, there can be situations where the Voice Recorder App on your mobile device may record the audio clips in an “audio “format that is not supported by the audio player included in the SentryMDU Application.

If this is the case, you will need to either (1) Use a Voice Recorder App that records in a supported format, or (2) Convert the audio file to a supported format after you have recorded the audio clip.

The supported audio formats are as follows:

3gp, aac, ogg, wma, wav, mp3

In this example, we will assume that the Voice Recorder we used, created the Audio clips in the .m4a format as shown below. Since .m4a is not a supported format, we would need to “convert” this format to a supported format.



It is beyond the scope of this article to illustrate the conversion from one format to another, however the steps are listed below.

1. Find a computer that has an Audio Program that can convert from one format to another. Both free and commercial software is available for Windows, Mac and Linux operating systems.
2. Transfer the audio clips (ie person.m4a and noobject.m4a) to the host computer.

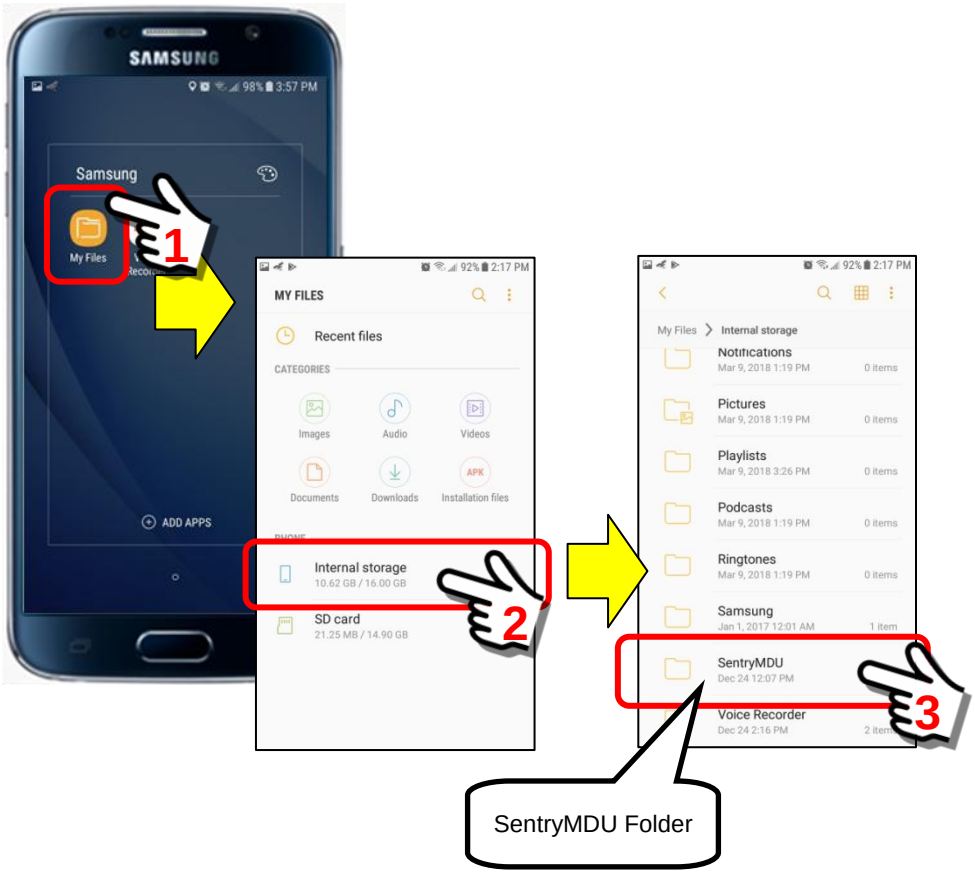
3. Import the clips into the conversion program (ie Audacity) and convert to a supported format (ie .wma).
4. Save the files in the new format (ie person.wma and noobject.wma).
5. Copy the files back to the mobile device.

2. ***Install the "new" audio files into the PROFILEs Device directory.***
In order for the Object Detection audio clips to be available when a "trigger" event occurs, we must install these audio files into a specific directory. As explained in other sections of this manual (**Section 5.3**) a User may create several PROFILES that can access different server instances and have different usernames. Each profile contains all configuration options and settings for the specific user. It will be important that we install these audio clips into the PROFILE of the user that we want.

In this example, our mobile device has 3 user profiles. We will navigate to the correct Device Profile folder.

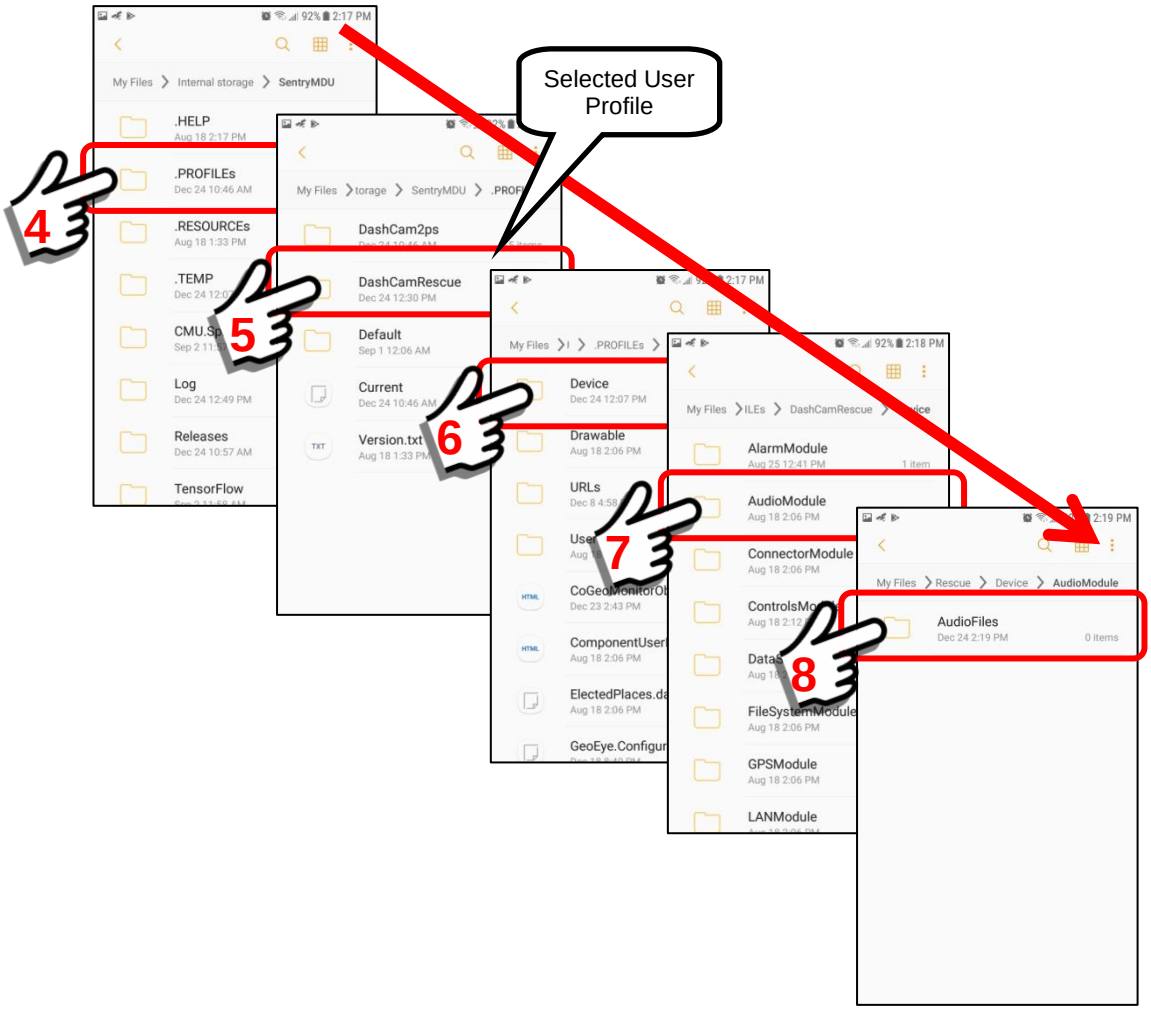
<PROFILE>Device/AudioModule/AudioFiles

<u>Open the File Manager App on your mobile device</u>
Navigate to the SentryMDU Folder on the mobile device.



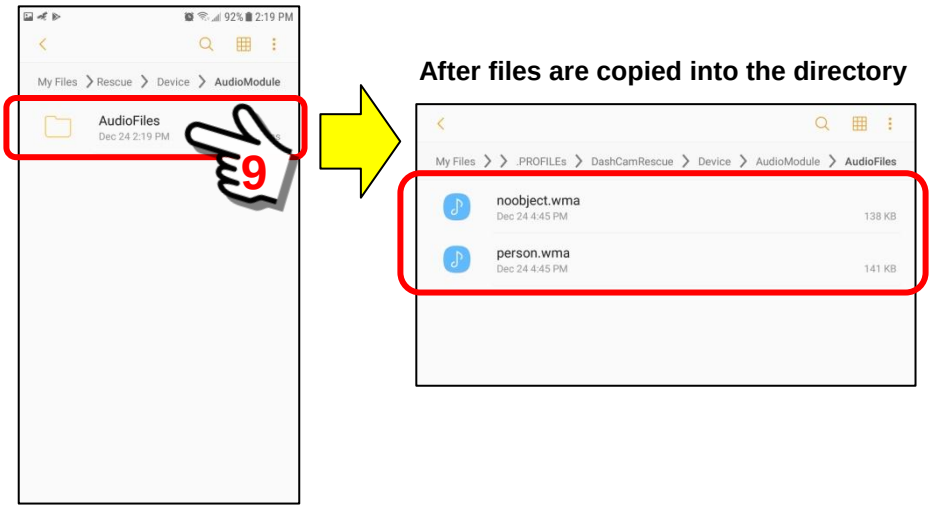
Select the desired user PROFILE and navigate to the **AudioFiles** folder

In this example, we will select the “DashCamRescue” user profile, and drill down the file system to the **AudioFiles** folder.



Copy the “new” audio files into the **AudioFiles** Folder

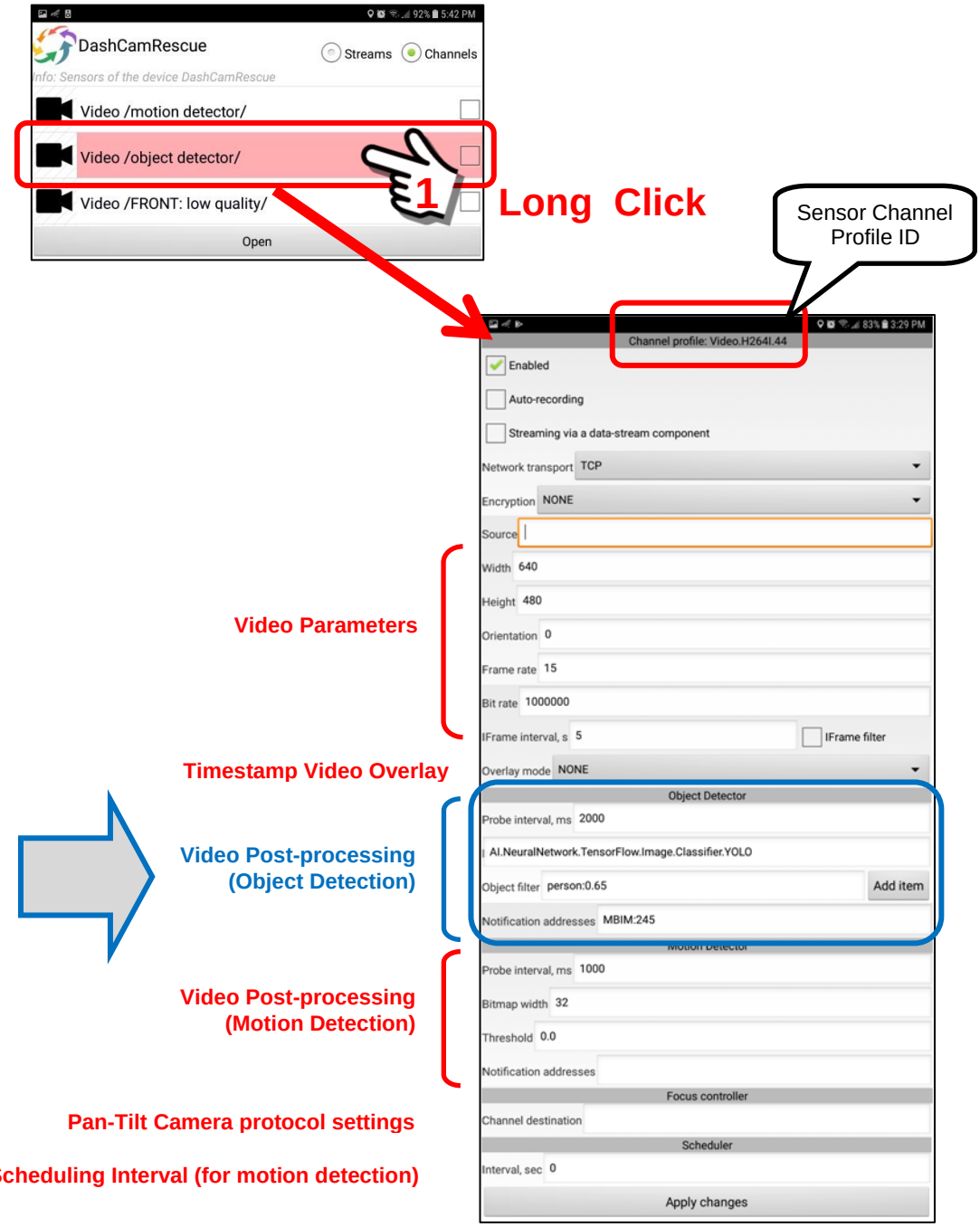
Navigate the file system and copy the two “converted” audio files into the AudioFiles folder. Your result should be as follows:



3. ***Select the Sensor Channel you will be using for Object Recognition.***
The next step is to select the Sensor Channel you wish to use with the Object Recognition event handler. The SentryMDU System will allow you to have different audio messages for different sensor channel event handlers.

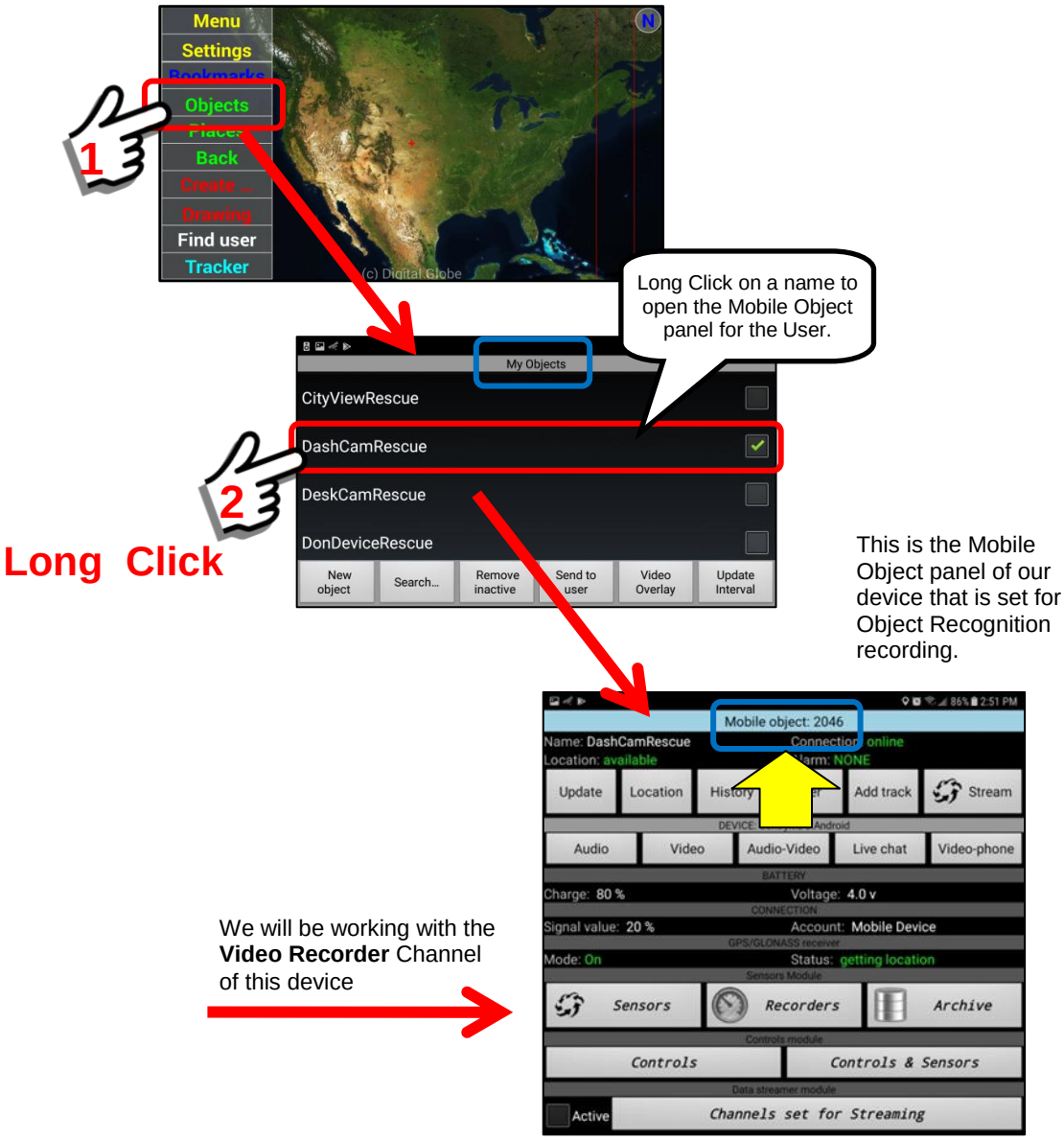
In this example, we will select the pre-designated object recognition Sensor Channel with the name = “Video /object detector/”.

Make a note of the **Channel Profile ID = “Video.H264I.44”.** We will need this to identify which Video Profile we are using when we install the ObjectDetectorHandler.xml file in the Sensor Profile folder.



4. ***Retrieve the Mobile Object ID of the device we are using.***
To configure the Object Detector event handler, we must be able to tell the SentryMDU System the identity of the Mobile Device (Mobile Object ID) that we are using for Object Recognition.

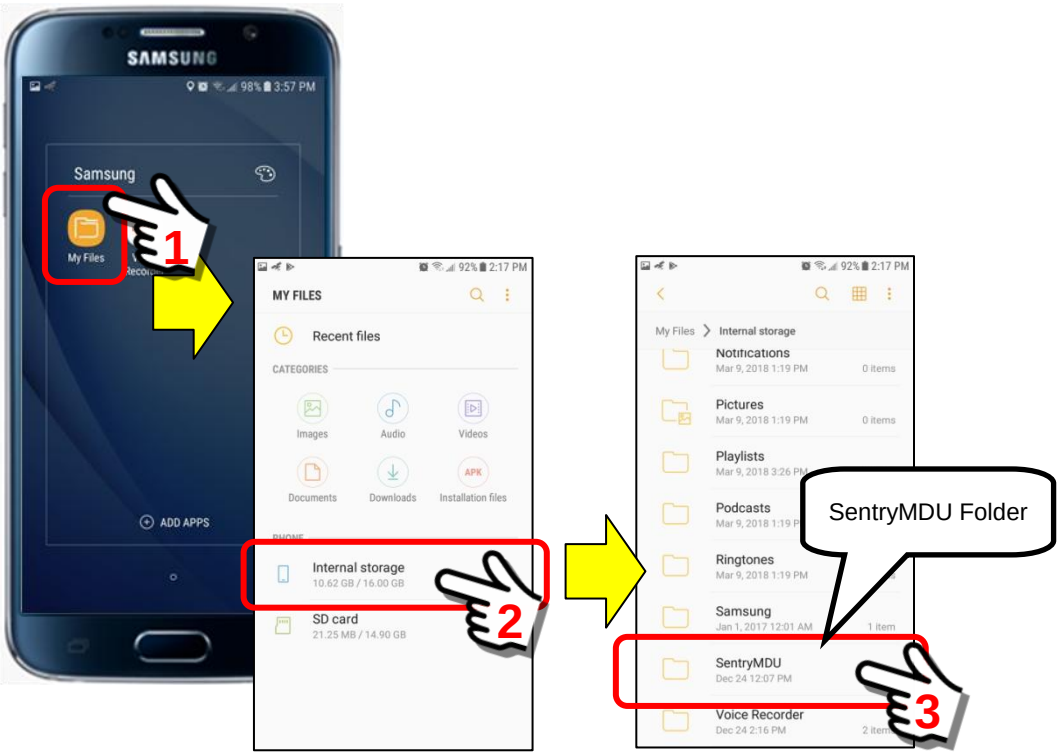
In this example, we retrieve the **Mobile Object ID** from the mobile object panel as follows.



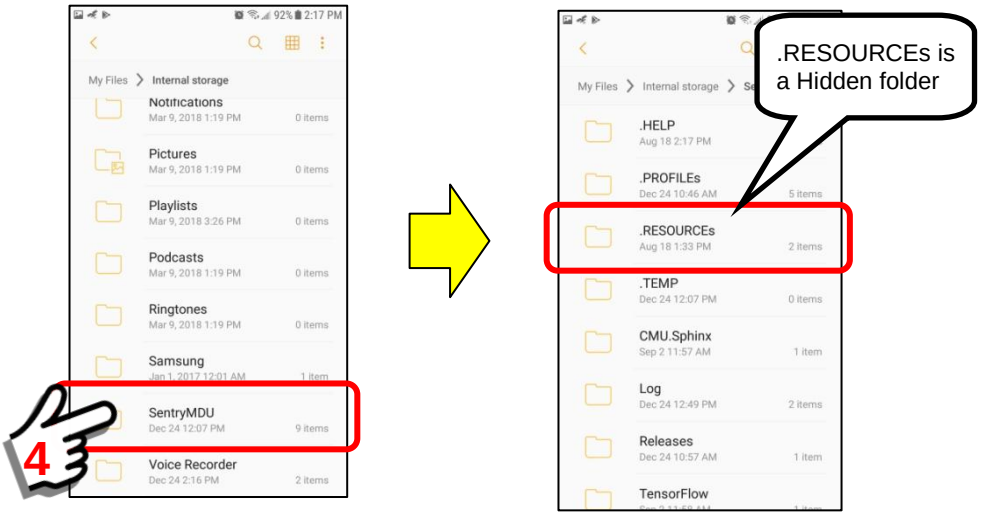
The **Mobile Object ID = 2046** … make a note of this number. We will need it when we edit the ObjectDetectorHandler.xml file.

5. ***Locate the ObjectDetectorHandler.xml file for use.***
The ObjectDetectorHandler.xml file sets the parameters for the Audio Message response when the Object Recognition engine triggers an event. This file will need to be manually "edited" to designate the user device and appropriate audio message.

<u>Navigate the file system to locate the default XML file to use as a template</u>



<u>Navigate the SentryMDU file system in the **.RESOURCEs folder**</u>
The .RESOURCEs folder is a hidden folder. You will need to adjust your file system settings to view hidden folders. See **Section 3.12** for details on access to hidden folders.



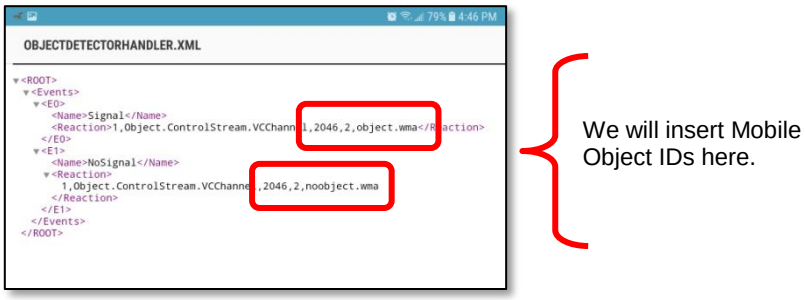
Locate the ObjectDetectorHandler.xml file

A default **ObjectDetectorHandler.xml** file that may be used as a “template” will be located in the **/Texts** folder of the SentryMDU file system.

SentryMDU/.RESOURCEs/Default/Texts

Review the ObjectDetectorHandler.xml template file

An example XML file is shown below. We will edit this file and insert the Mobile Object ID of the mobile device with Object Recognition enabled.



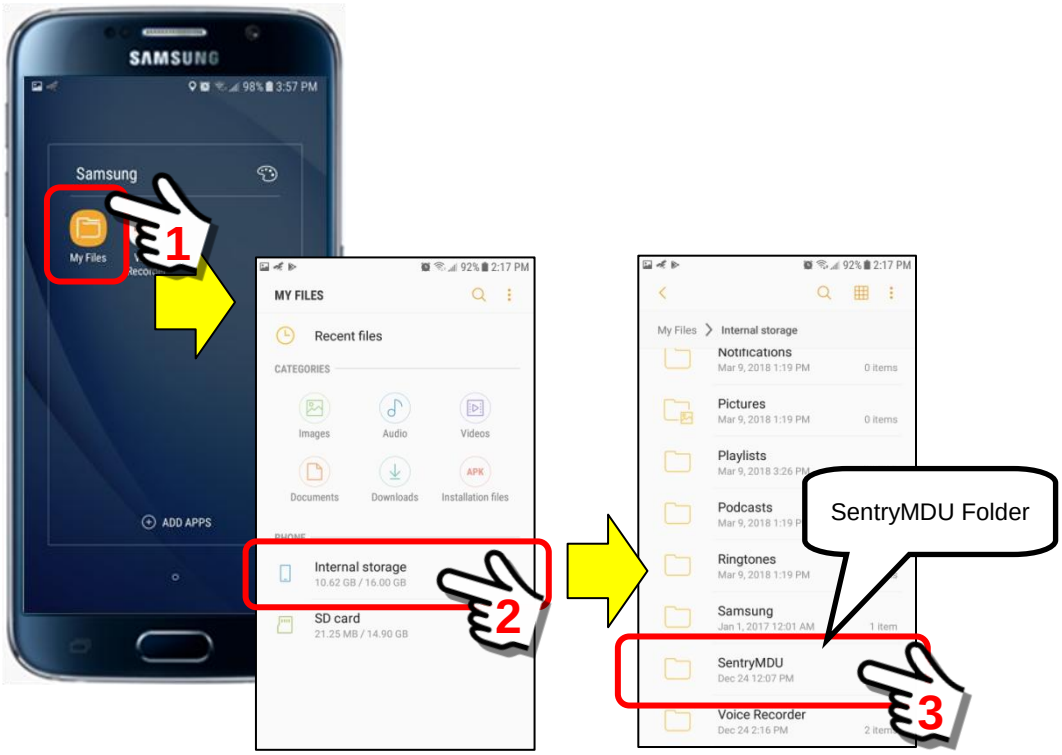
6. ***Copy the ObjectDetectorHandler.xml file into the Sensor Channel.***
To edit the ObjectDetectorHandler.xml file, we must first copy the default template into the file location of where the file will be used. In our example, the Sensor Channel is **Channel Profile ID = "Video.H264I.44".**

Make a COPY of the ObjectDetectorHandler.xml file
Use the native File Manager App on the phone to copy the file. We will navigate to the Sensor Channel and "paste" this file template there.

SentryMDU/.RESOURCEs/Default/Texts

Get the file from here ….

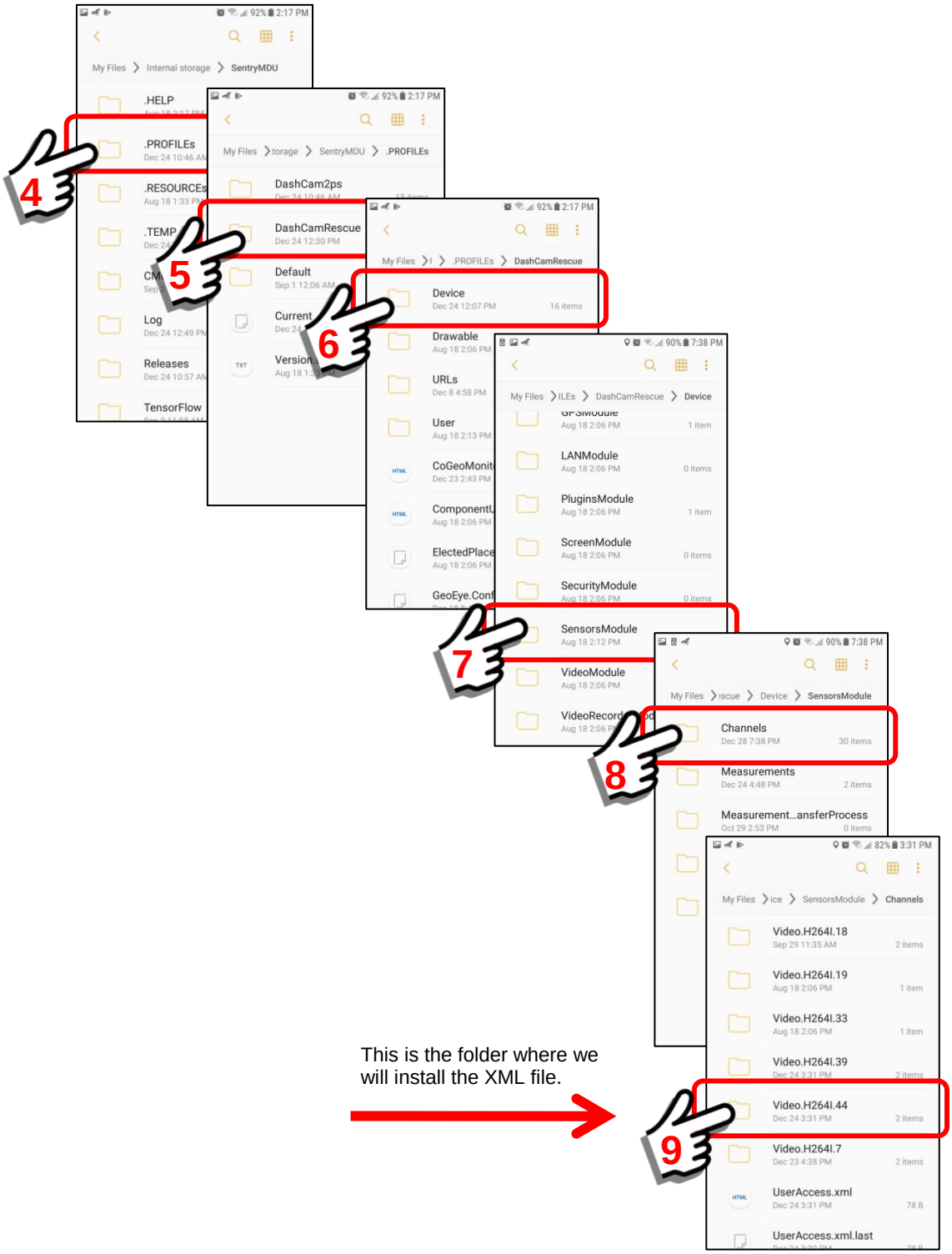
Navigate the file system to find the SentryMDU Folder



Navigate the file system to find Sensor Channel Folder **Video.H264I.44**

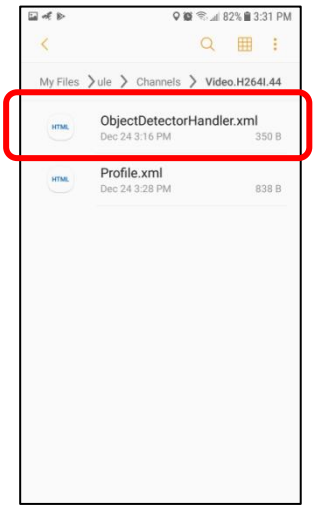
<PROFILE>/Device/SensorsModule/Channels/ Video.H264I.44

Locate the Video.H264I.44 folder and prepare to copy the **ObjectDetectorHandler.xml** file into the folder.



7. ***Install the ObjectDetectorHandler.xml file into the Sensor Channel.***
Copy the ObjectDetectorHandler.xml file into the **Video.H264I.44** folder.

When installed, the folder should be similar to that shown below.



The XML file template is now installed. Ready for editing.

8. ***Edit the ObjectDetectorHandler.xml file and change parameters.***
Now that the ObjectDetectorHandler.xml file is installed into the **Video.H264I.44** folder, it is time to change some parameters in the file.

<u>Parts of the ObjectDetectorHandler.xml file</u>
The Object Recognition event handler will detect two types of events. The first, (1) When an object is detected in a video frame and (2) When that object is no longer detected in the video frame. Typically, you will see two "alerts" sent when Object Recognition is used.

These are defined as:

Signal Event …… "**object.wma"** audio file is executed.

NoSignal Event ….. "**noobject.wma"** audio file is executed.

The two configuration parameters are shown in the code below.

Signal (detection occurs)

NoSignal (detection lost)

Analysis of the **Signal Event** configuration code

Signal Event (detection occurs)

When an Object Recognition event occurs, this part of the xml computer code is triggered.

(1) <Name>**Signal**</Name>
<Reaction>
1 ,Object.ControlStream.VCChannel,2046,2,object.wma
</Reaction>

Review of the TEXT String for the <Reaction> Section

1 ,Object.ControlStream.VCChannel,2046,2,object.wma

This will be the Mobile Object ID Number … such as 2046
(Mobile Object ID = 2046)

If the Audio Message recordings you created are **.wma** format, then leave this as **object.wma**. If they are **.mp3** format, then it should be **object.mp3.** Do not change the "object" name, only the file extension. The "object" name indicates that the program will look for the "object" you specified in the Sensor Profile configuration such as person, car, etc.

Analysis of the **NoSignal Event** configuration code

NoSignal Event (detection lost)

When an Object Recognition event occurs, this part of the xml computer code is triggered.

(2) <Name>**NoSignal**</Name>
<Reaction>
1 ,Object.ControlStream.VCChannel,2046,2,noobject.wma
</Reaction>

Review of the TEXT String for the <Reaction> Section

1 ,Object.ControlStream.VCChannel,2046,2,noobject.wma

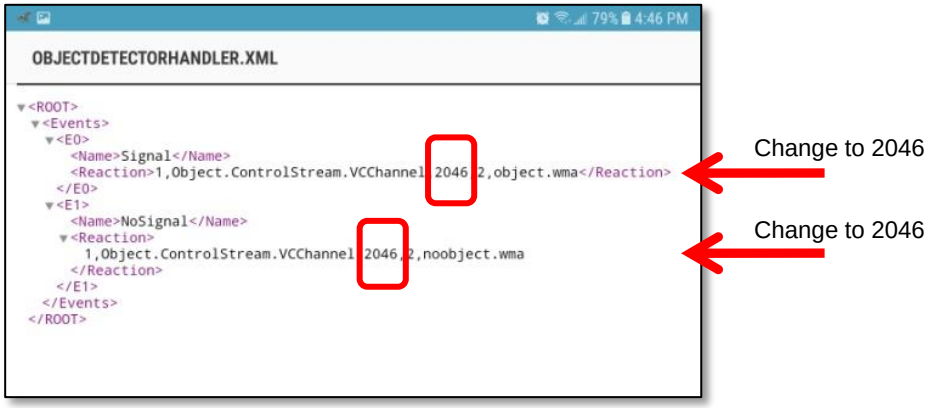
This will be the Mobile Object ID Number … such as 2046
(Mobile Object ID = 2046)

If the Audio Message recordings you created are **.wma** format, then leave this as **noobject.wma**. If they are **.mp3** format, then it should be **noobject.mp3.** Do not change the "noobject" name, only the file extension. The "noobject" name indicates that the program will look for the "noobject" audio file you created.

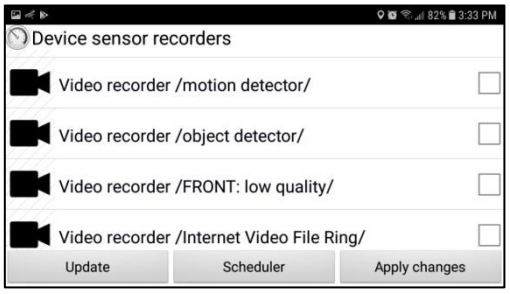
Edit the XML file and insert the Mobile Object ID number for the device.
Use a native App on the device to edit the **ObjectDetectorHandler.xml** file and change the parameters as required. If you do not have a native App to open and edit the file, you may need to copy it to another computer system for editing.

Edit the file and insert **2046** in the space shown below. Save the file when finished.

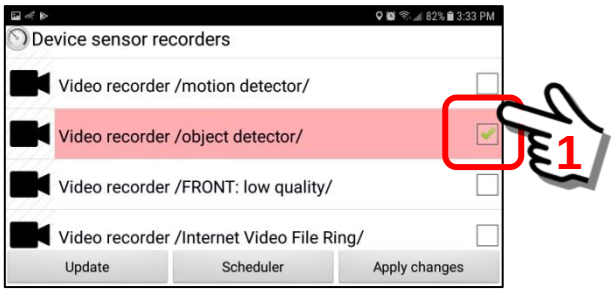
Mobile Object ID = 2046



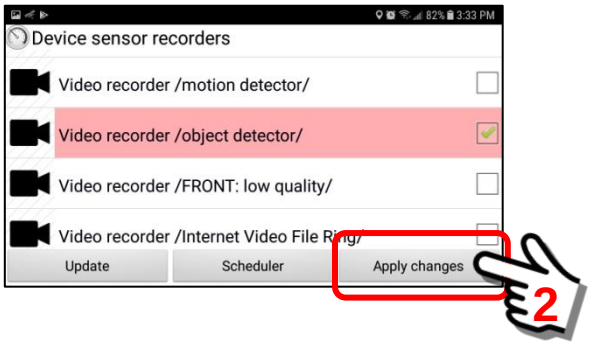
9. ***Activate the Video Recorder channel for recording.***
Once the Video Recorder configuration has been completed, you should navigate back to the *Device Sensor Recorders Panel*.



Put a "checkmark" in the checkbox at the "**Video Recorder /object detector/**" channel. When we apply the changes, this will activate the recorder.



Click the "**Apply Changes**" Button to activate recording. Optionally, you may also "schedule" recording for specific times during the day/night.



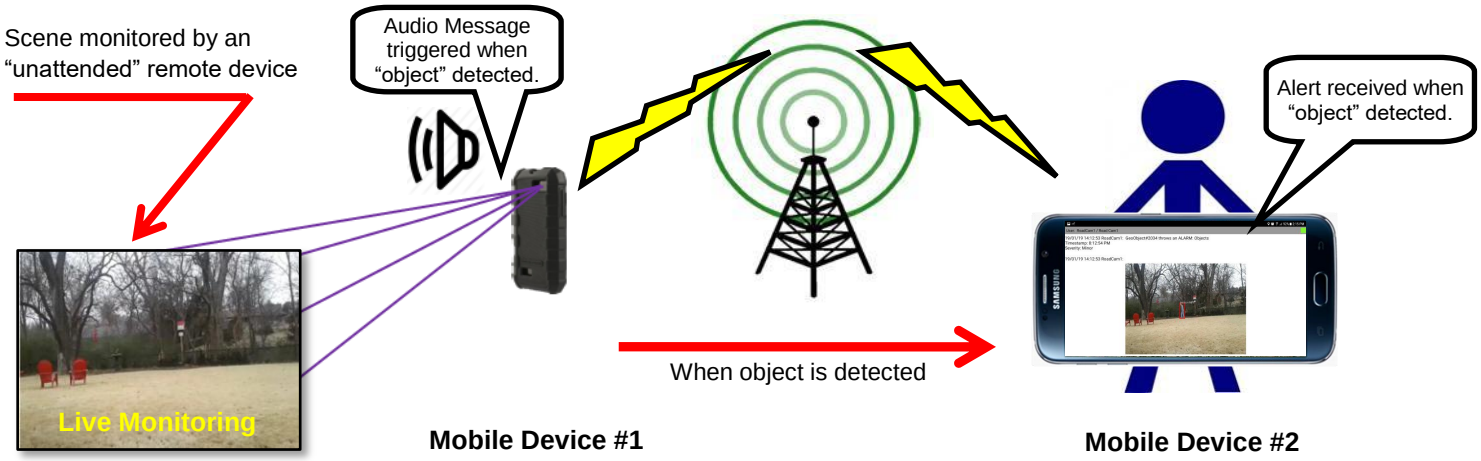
The Video Recorder on the remote device (Device #1) is now running.

10. ***An event is triggered … and YOU receive a Notification Alert.***
At this stage of our example, you have created a video recorder on a remote surveillance device (Device #1) and it is "activated". The Object Recognition A.I. Engine is set to recognize a "person" (human beings) with a minimum 65% recognition threshold. This threshold will be used for triggering a notification event AND a "local" announcement that a person has been detected.

You can now go about your day.

Later in the day … Suddenly your phone emits a "ding" sound, which indicates that a Notification Alert has been received. Open the alert.

An Audio Message has also been triggered on the remote device that a "person" has been detected.



15.13. Example – Walkie-Talkie Feature (two-way communication)

Overview:

The “Walkie-Talkie” Feature allows a user to establish two-way communication with a remote mobile device. This feature also has the ability for a user to “record” the remote audio if they would like to save it for future analysis. This feature uses “Floating Window” panels. See **Section 9.13** for details.

This capability is only available if the User requesting access has the appropriate security credentials to access the remote device.

Mobile Object Panel – Audio Button:

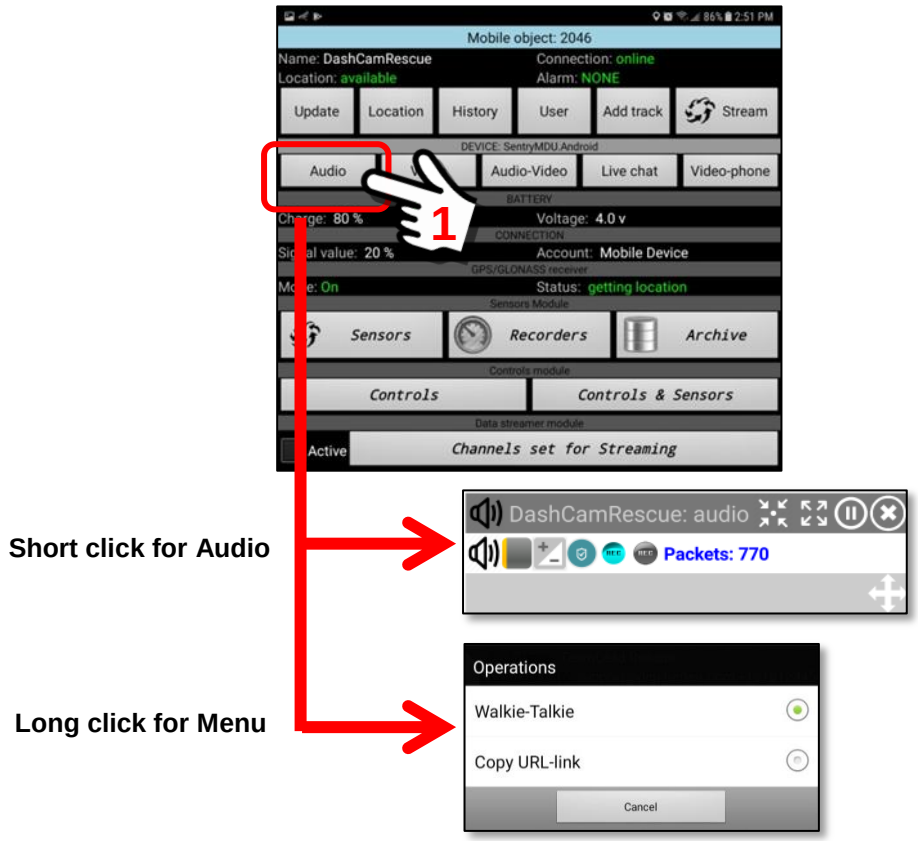
The “Audio” Button is located on the left side of the Mobile Object Panel. This button will initiate a connection to listen to the microphone on the remote user device.

> **Important Note: This feature does not provide notification on the remote device that another user(s) is listening to the audio.**

This Audio Button is a shortcut to the same capability available through the Sensors Section. The audio parameters (digital sampling rate, bitrate, etc.) must have been configured previously for this feature to work. To learn more, see **Sections 10.19 or 15.2** on configuration of sensors for a mobile device.

Two functions available with the Audio Button

The Audio Button has two functions. A “Short click” will launch the Audio Feature and a “Long click” will open an Operations Menu with two additional options.



Operations Menu, “Long click” options

The Operations Menu has two options. The first will open an audio channel (“Walkie-Talkie” Feature) between two mobile devices. The second will copy a URL-Link that may be used to create a Bookmark of the Audio Feature for easy access (see **Section 9** for details).

In this example, we will review the available features and screen panels.

Click on the “Walkie-Talkie” Button to launch the feature.

To use the Walkie-Talkie Feature, you will “open” a User Information Panel for another user … someone you want to talk with. When you click the “Walkie-Talkie” Button, it will establish a two-way audio connection between YOUR device and their device. A floating window panel will open with additional controls for adjusting volume, recording the conversation and more.

The audio indicator bar provides the user with a progress indicator on the number of data packets that have been received by the mobile device.

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned “on” (Default)

Speaker is muted, turned “off”

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

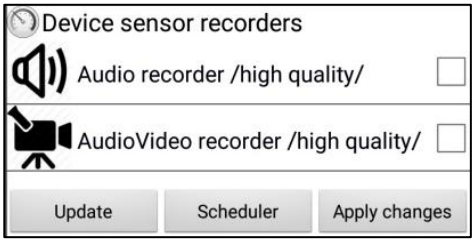
High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

Flow control is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The audio output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

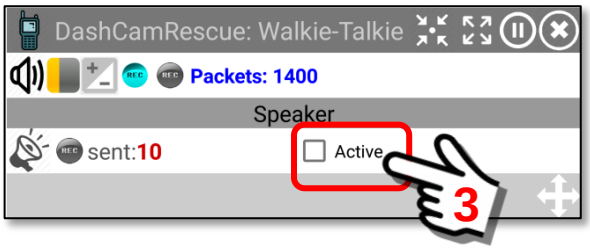
Recording is turned “off” (Default)

Recording is turned “on”

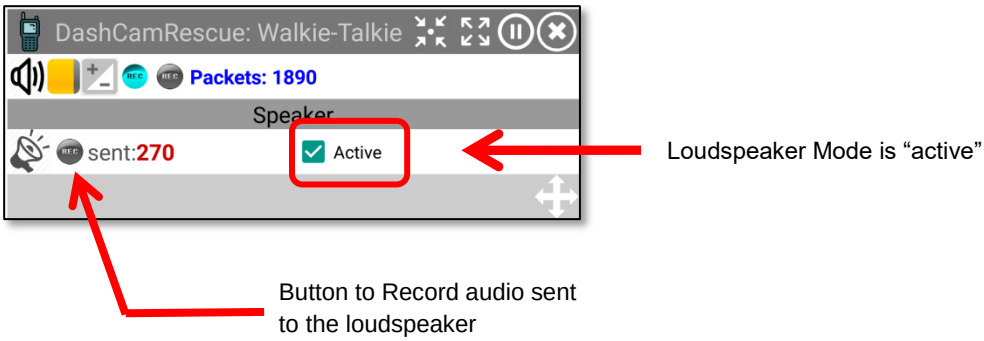
Speaker Access Option

The Walkie-Talkie Feature also has an option to turn on the external speaker of the remote device such that it acts as a “loudspeaker”. Typically, this would be used in conjunction with an External Bluetooth Speaker. This will enable increased volume and coverage.

Click the “Active” Button.



The speaker on the remote device is now in “loudspeaker” mode.



15.14. Planet-Satellite Feature (Beta Test - control many devices)

Overview:

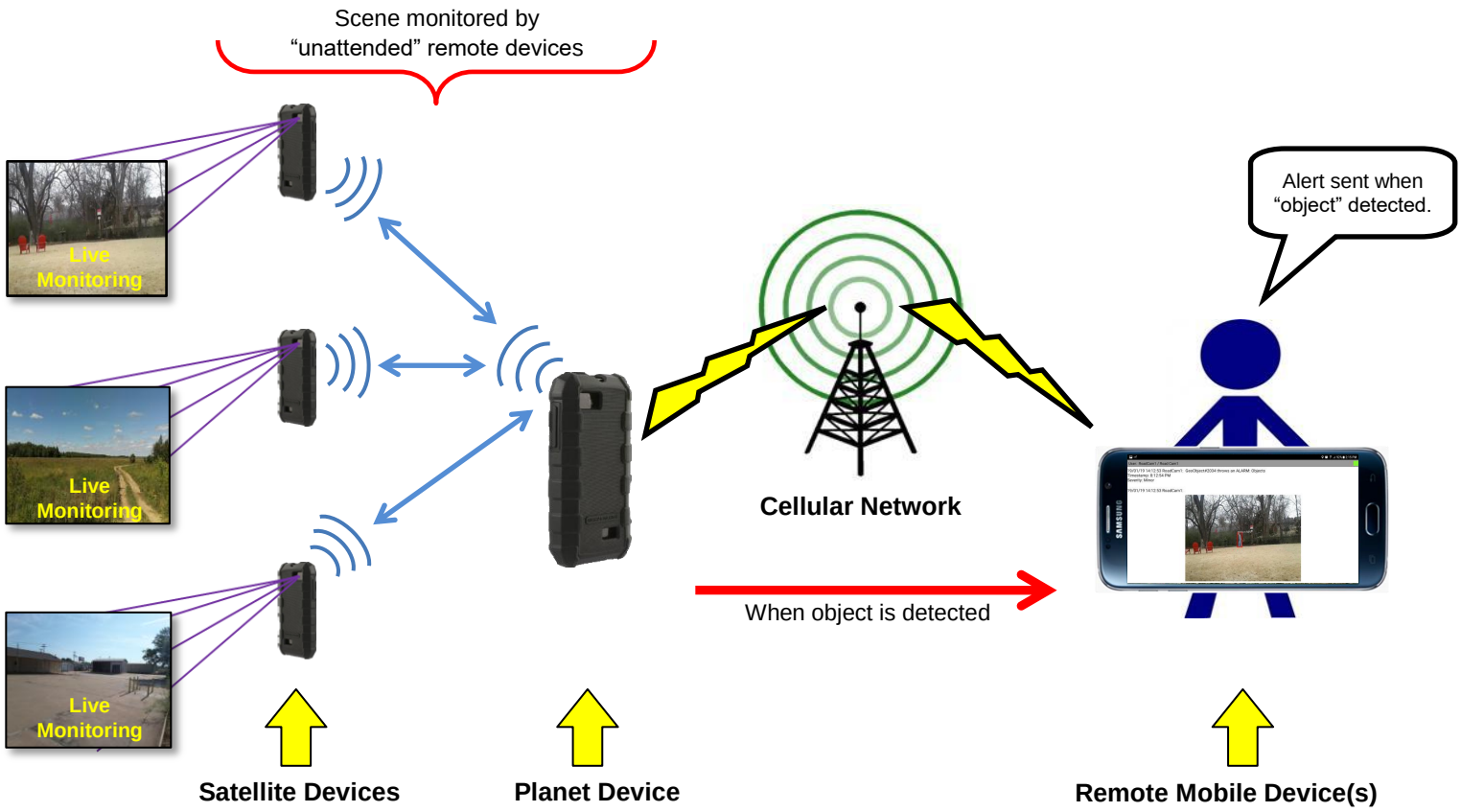
The Sentry MDU System has a feature we call the **Planet-Satellite Feature**. This feature uses one device (the Planet) to control many "satellite" devices. There can be up to 256 satellite devices all controlled by a single SentryMDU enabled mobile device. In practical terms, generally you would control perhaps 2 - 5 other remote devices. The limitations are the available internet bandwidth and the processing power of the Planet Device.

This feature is currently in "Beta Testing". We have encountered issues with how different device manufacturers control WiFi connections during unattended operation (signal strength, sleep, battery optimization, etc.). We were going to remove this item, but decided to leave it as a Beta Test item. It works but we have issues on some devices with losing connection when running for extended periods of time.

In this scenario, the Planet device becomes a cellular "hotspot" and the Satellite devices connect to the Planet device via WiFi connectivity. The performance of this feature is dependent on the available cellular bandwidth (ie 3G, 4G-LTE, 5G) and the quality of the WiFi radios. Satellite devices must be within close proximity to the Planet device such that WiFi connectivity will occur.

Note: To use this feature with a REMOTE device, you must be in the same Security Domain and have security credentials that allow access.

Typical System Configuration:

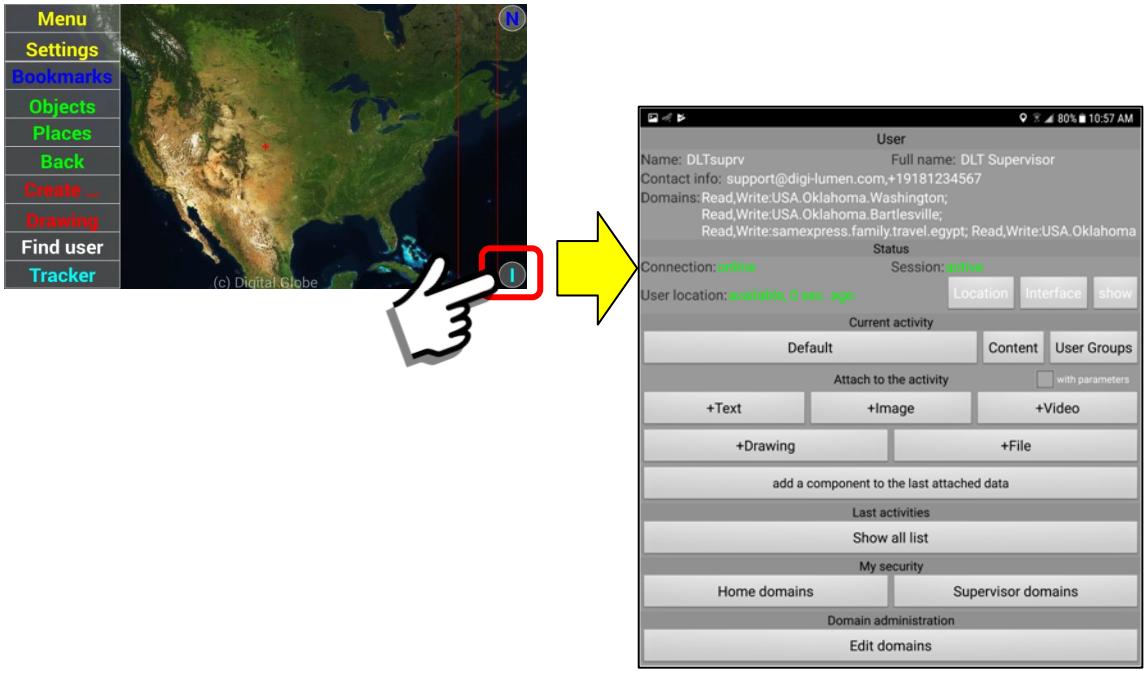


16. The “Information” Button features

16.1. Overview of the User Information panel

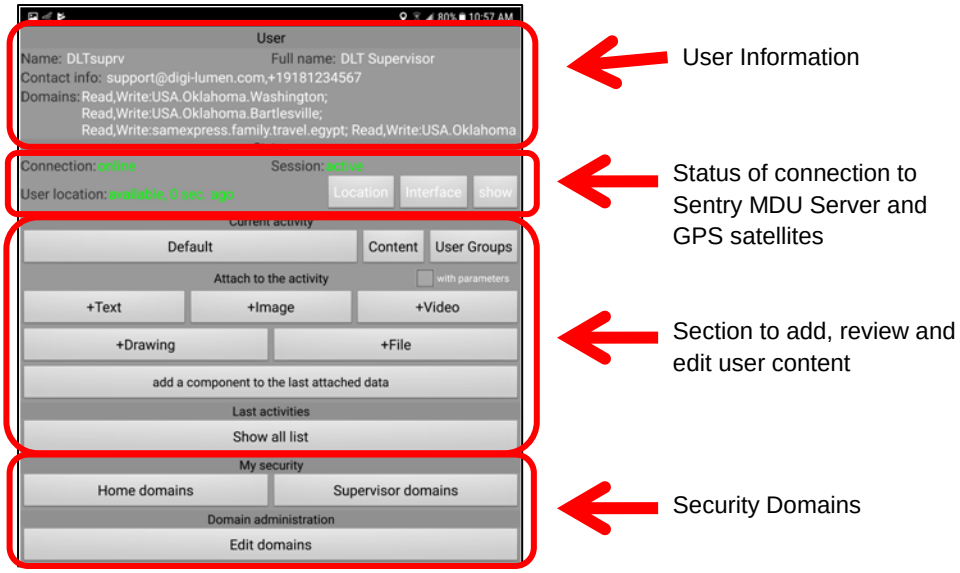
Overview:

The User Information Panel will provide the user a gateway from which to add content such as text, pictures, video, drawings and files. This section will describe the general layout of the panel and the features available.



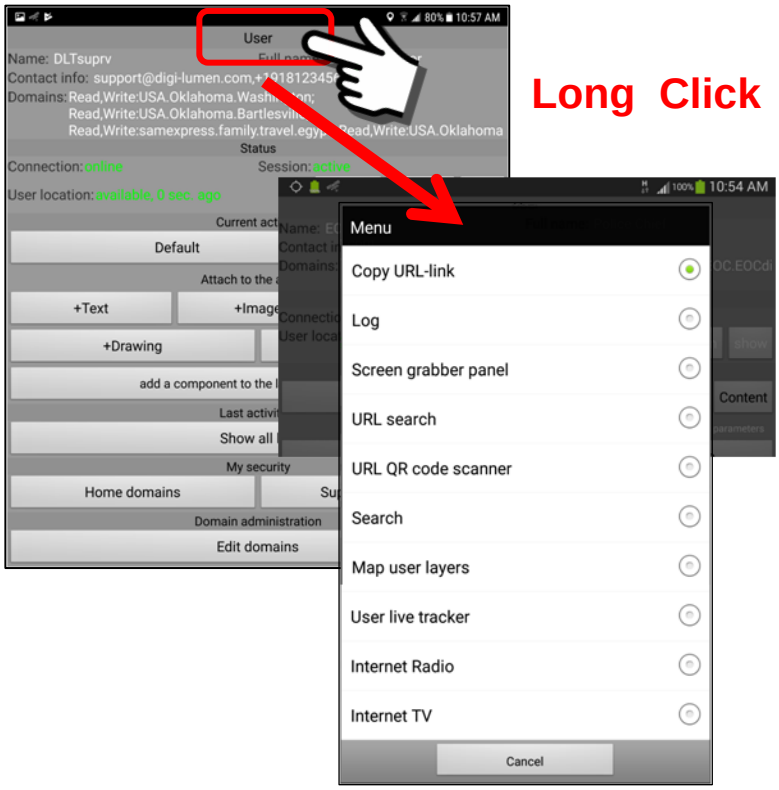
General layout of the User Information Panel:

The User Information Panel has a set of buttons and features that are available to the User. These are detailed below.



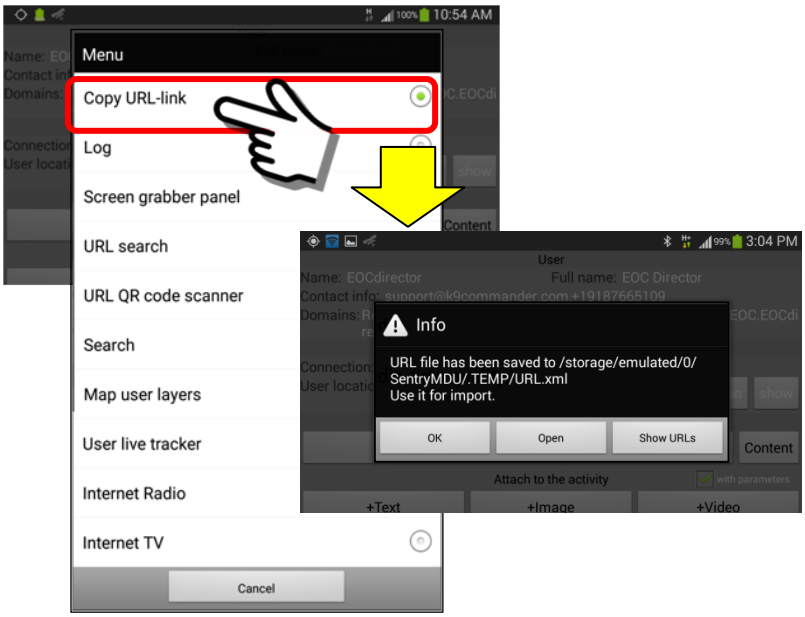
Description of User Panel options:

The User Information panel has 10 menu options that are available by performing a “long click” on the “**User**” name located at the top of the panel.



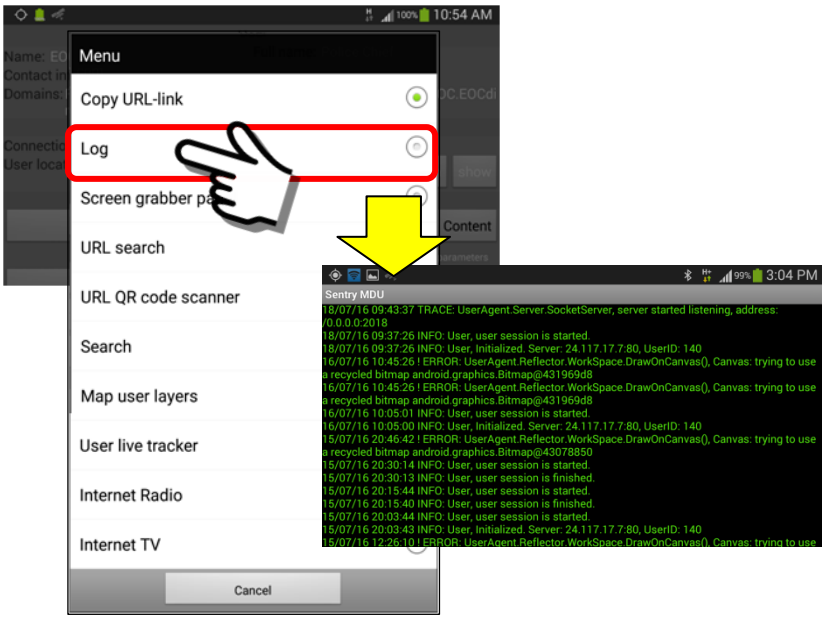
<u>Copy URL – link</u>

This option creates a URL link that may be imported into a Bookmark to provide a user shortcut to the User Information panel. See the Bookmark section for details.



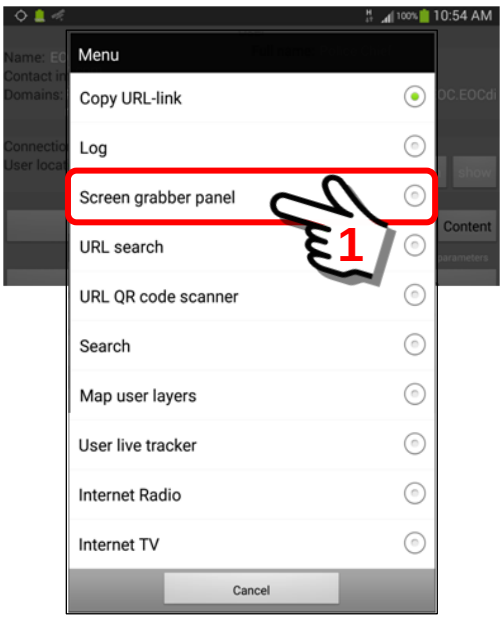
Log

This option provides a set of log messages that detail the operation of the Sentry MDU App. These log messages are generally used for troubleshooting and development activities.



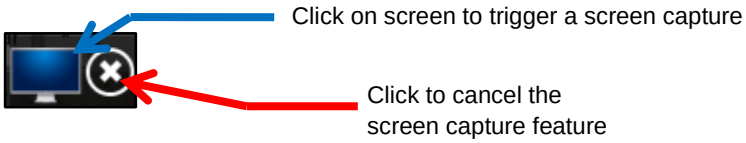
Screen grabber panel

The screen grabber option provides a floating icon which is a screen capture button. This feature can be used to capture any of the Sentry MDU screens displayed on the mobile device.

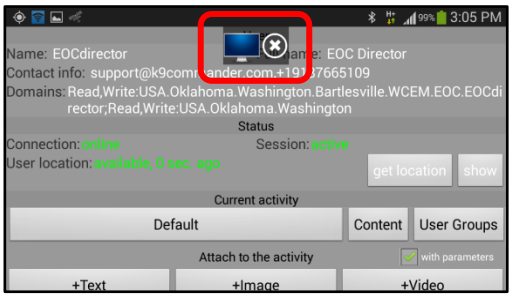


Click on the “Screen grabber panel” option to launch this feature.

The Screen grabber icon will be displayed as a “floating” icon on your screen. You may navigate other Sentry MDU menu items and the floating window will remain in position. The actions are as follows.



Since the “Screen Grabber” is launched from the User Information menu options, this is where the icon is first displayed.

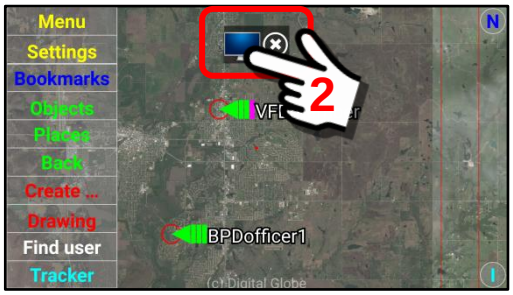


Once you see the screen grabber icon, you can navigate to any/all other SentryMDU App screens and the floating icon will stay in position.

This example will illustrate how to capture the Main Map Screen in two different formats.

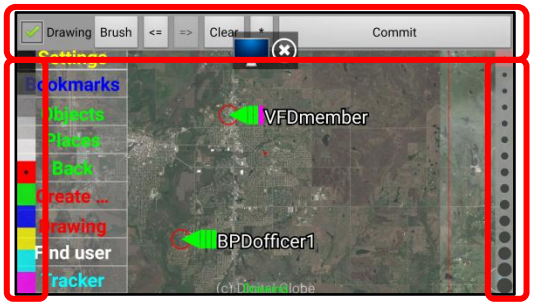
1. Short click … captures screen **WITH** all menus and object marker overlays.
2. Long click … captures screen **WITHOUT** menus and object markers (ie blank map)

<u>Short Click Action</u>



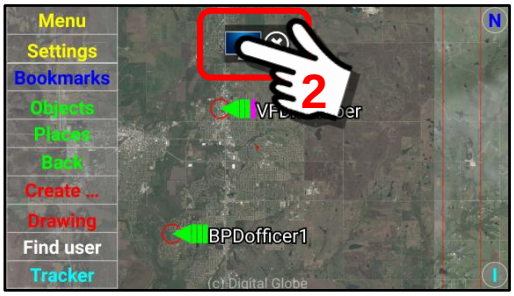
Short Click

A short click action will capture the main map screen WITH all menus and user icon markers. Notice the screen is now bounded by the Drawing Features (ie pen colors, pen sizes, brush strokes, etc.). See **Section 13** for detailed instructions on the Drawing Module.



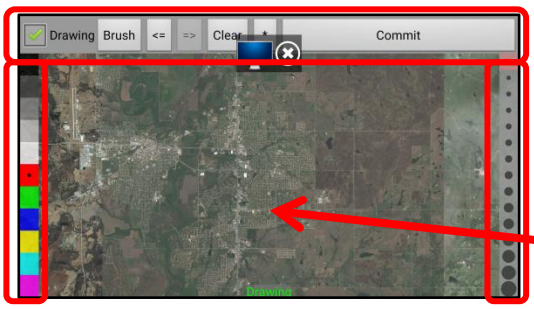
Drawing Feature Tools

Long Click Action



Long Click

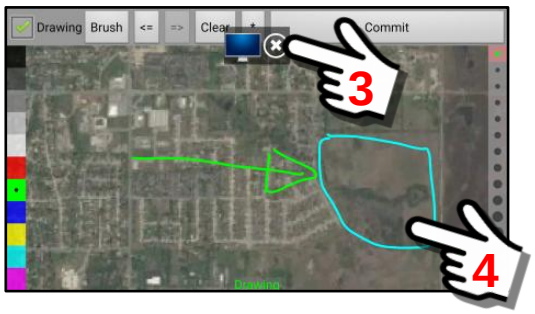
A “Long click” action will capture the main map screen WITHOUT menus and user icon markers. Notice the screen is now bounded by the Drawing Features (ie pen colors, pen sizes, brush strokes, etc.). See **Section 13** for detailed instructions on the Drawing Module.



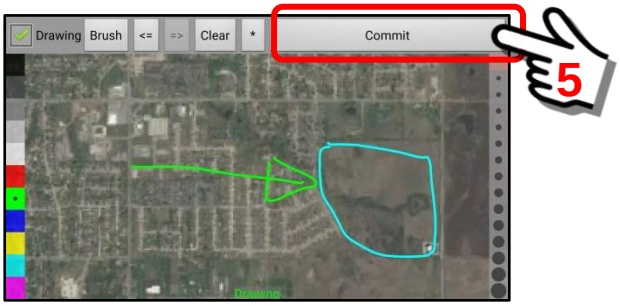
Drawing Feature Tools

Note that there are NO menus or object markers on the screen. It is a blank map screen.

Since we are done with the screen capture, click to remove the screen capture icon. We can now “draw” on the screen and make notations.

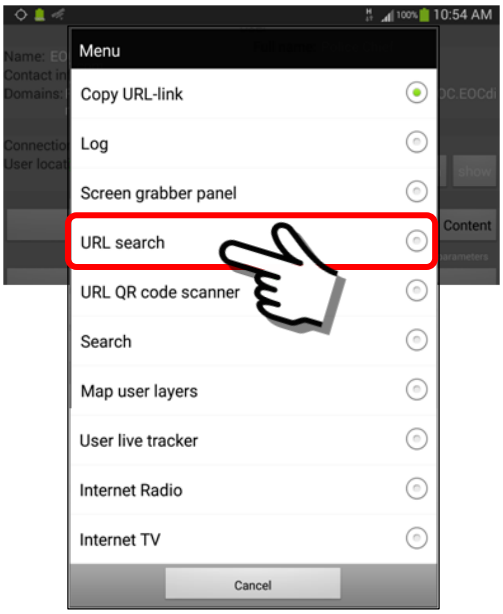


When finished, “Commit” changes and store the edited drawing.

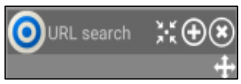


URL Search

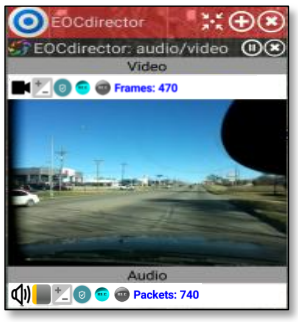
This option provides a Floating Window panel with a “target” button that can launch bookmarks and URL search functions across the SentryMDU App. See **Section 16.2** for a detailed discussion of the URL Search Panel.



This is an example of the “target panel button” that is launched by the URL Search function.



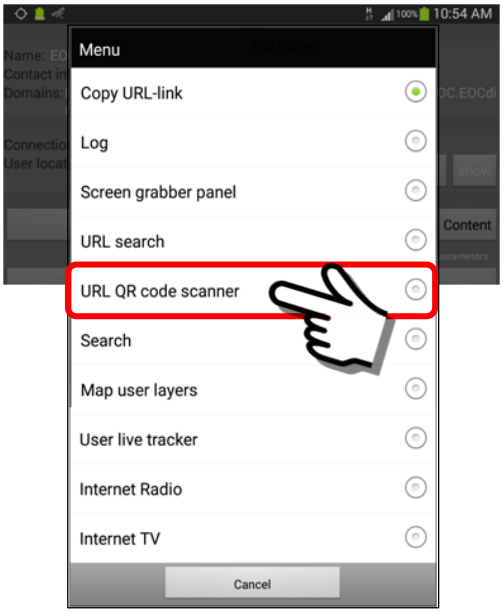
The following is an example of a floating window that is a result of using the Target Button.



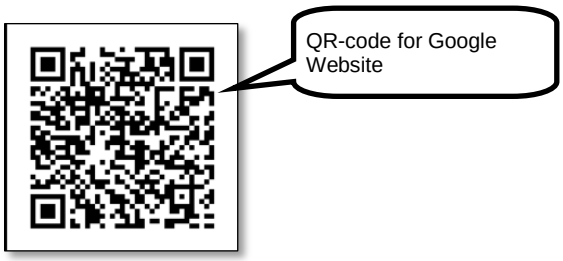
Typical result of a URL Search Panel floating window

URL QR code scanner

The “URL QR-code scanner” Menu item launches a QR-code scanner application that will enable a User to “scan” a QR-code of an internet website or another floating window bookmark. The website (or bookmark URL) will then “open” on the mobile device.



In this example, we will scan the QR-code for Google’s Search Website.

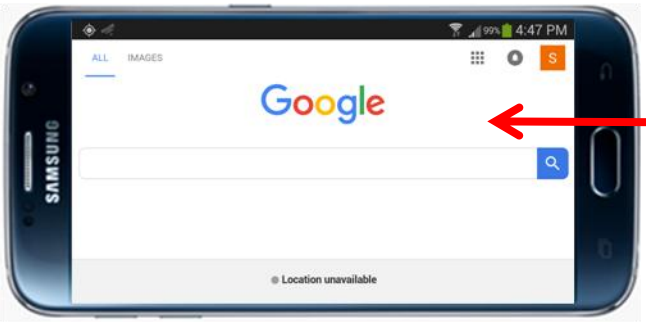


Click on the QR-code scanner Menu item, you will be viewing through the camera lense. Place the “red box” over the QR-code, hold the phone still until the scanner has locked on to the image.

QR-code Scanner Panel

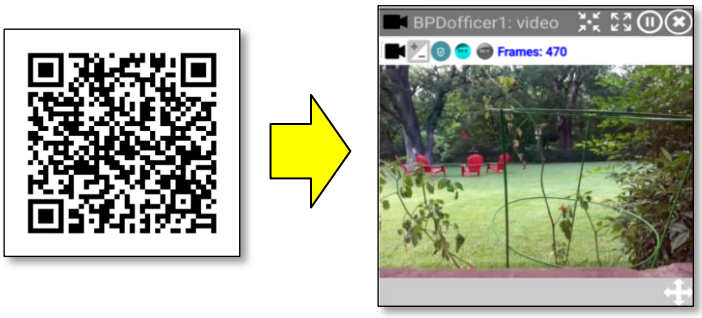
QR-code for the Google Search Website

The Google Website will launch on your mobile device.

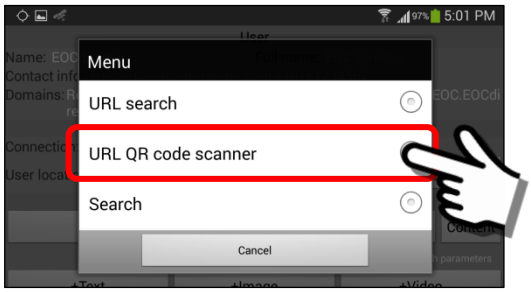


Google Search Website

In addition, we can scan a QR Code for a user created bookmark URL and it will launch a floating window. For example, the following QR Code is for a URL that will display a live streaming video.



For this exercise, we will assume user EOCdirector will select a QR Code for a streaming video panel of user BPDofficer1.
Select the “URL QR code scanner” menu item from the menu.



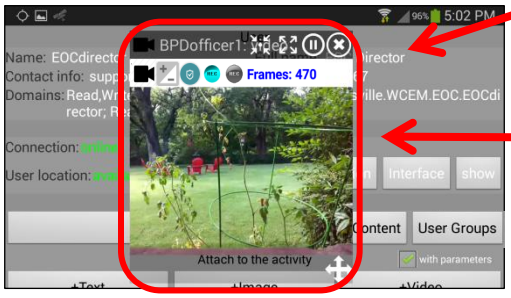
EOCdirector’s mobile device.

The QR Code Scanner panel will open. You will be viewing through the camera lense. Place the “red box” over the QR-code, hold the phone still until the scanner has locked on to the image.

QR-code Scanner Panel

QR-code for the BPDofficer1 streaming video

The QR code will launch a streaming video floating window panel on the EOCdirector’s mobile device, as shown below.



User EOC Director

Floating Window Panel

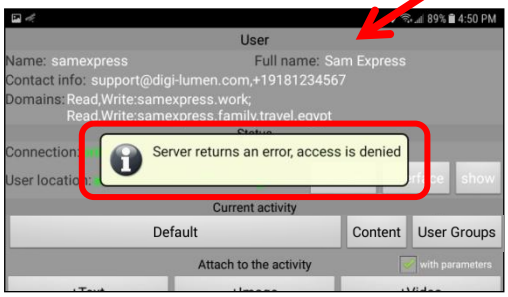
The floating window panel may now be “resized”, moved on the display canvas or minimized to the notification bar.

Important Note:

EOCdirector was able to access the BPDofficer1 streaming video because BOTH were in the SAME security domain AND the EOCdirector mobile device had security credentials to view the video.

If a User does NOT have adequate security credentials when they scan the QR Code, they will receive an error message as shown below.

User Sam Express



The user Sam Express does **NOT** have authorization to view the video from user BPDofficer1.

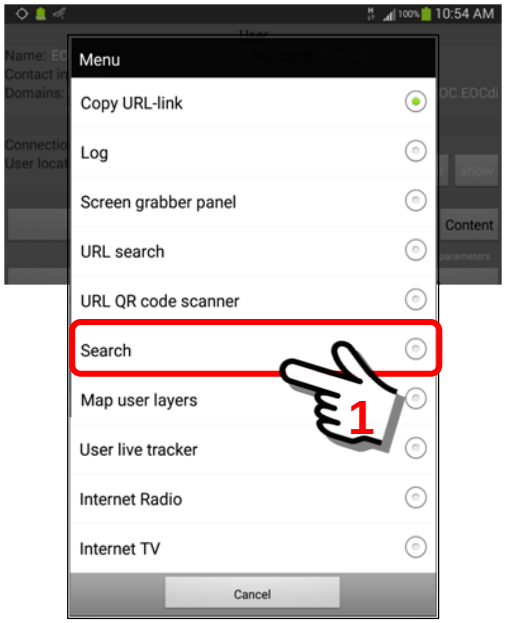
Gets an error message.

Search

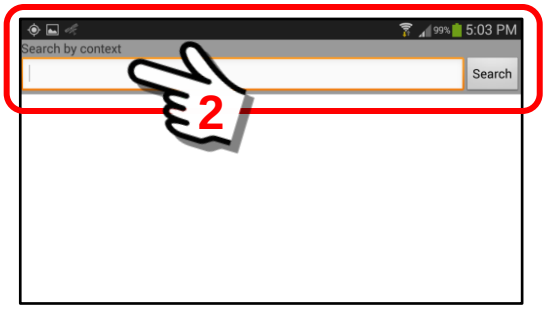
The search option provides the ability to search for content by “text search”. This feature can be used to sort through **ALL** data of **ALL USERS** on the particular Sentry MDU Server instance. The data can be on another user’s mobile device or stored on the Data Server.

Important Note: To search for data from other users, they must be in the same Security Domain (or the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to search for data from their device.

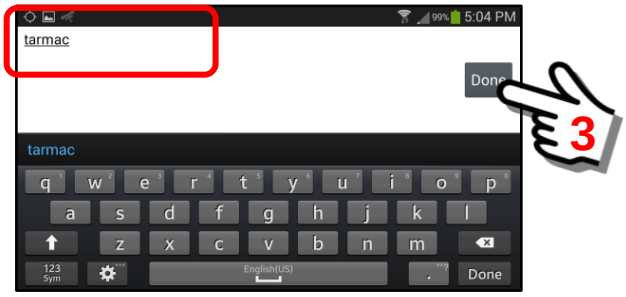
In this example, we will search for all data that has “tarmac” in the name … as in “Airport tarmac”.



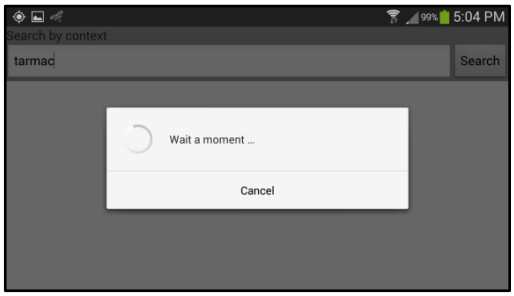
Click on the Search Option to open the “Search by Context” data entry panel.



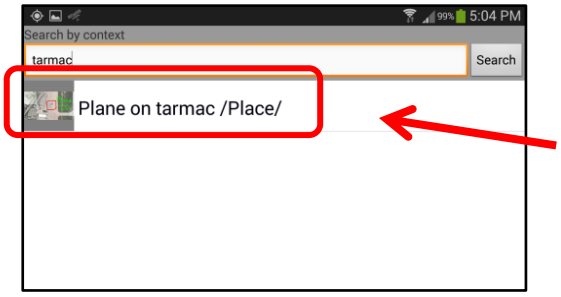
Click in the data entry box and the on-screen keyboard will be displayed. Enter a text string. This text string will be matched against all files, of all users, on the particular Sentry MDU Server instance.



When finished, click “Done” and the system will search for a match. If a file is found with the selected “text string” (ie tarmac), the file(s) will be listed below.

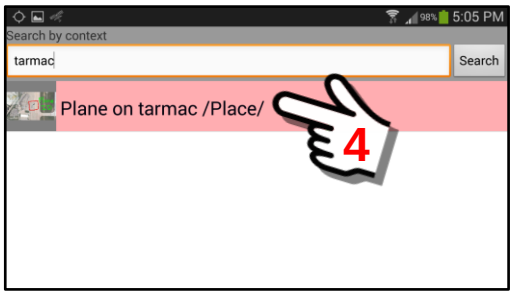


In our example, one file was found. This file is a “Place” point-of-interest map image that was edited in the Drawing Module and saved (/Place/).

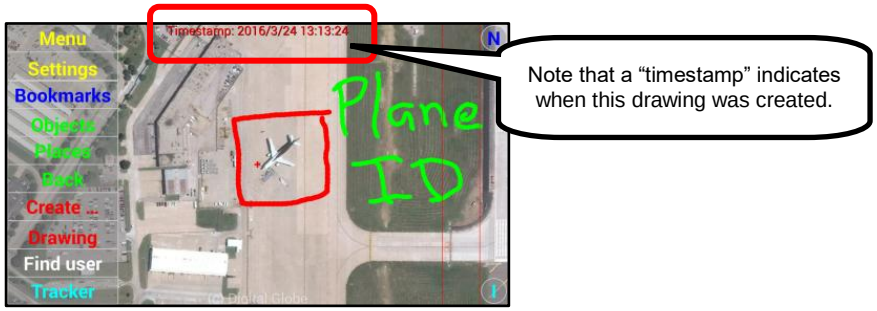


File was found. The text string “tarmac” was found in a file name.

To display this “Place” drawing, click on the file name and the image will be shown.

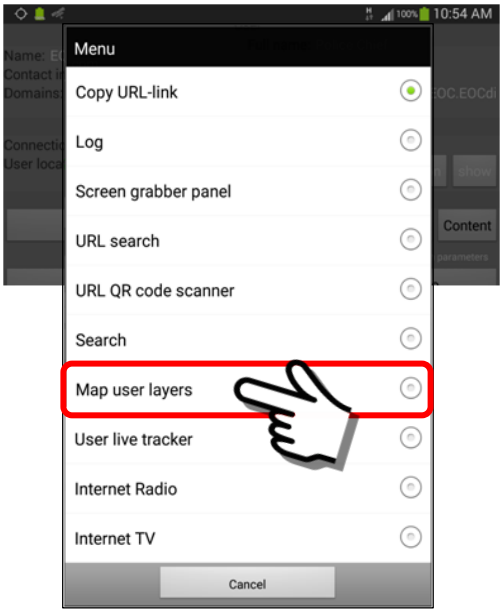


The system will retrieve and display the “Place” image that was saved on the system.

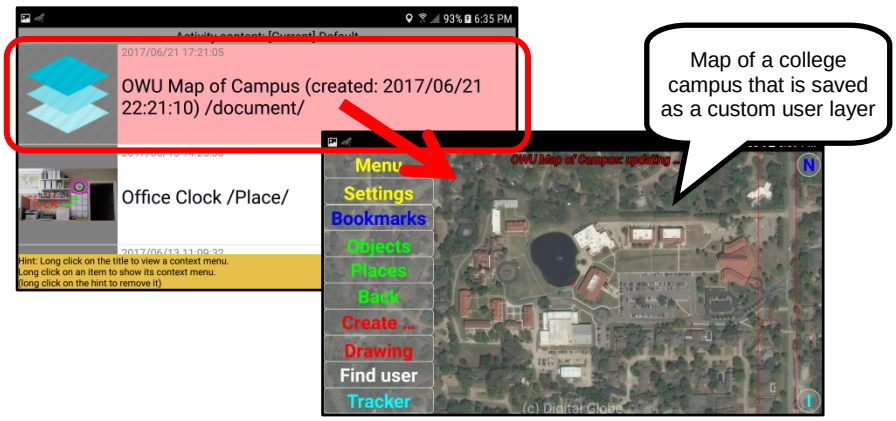


Map user layers

This option allows a user to create custom Map Layers of specific regions of a satellite (Map) view and populate this map with custom objects. See **Section 16.3** for a detailed discussion of the “Map user layers” Feature.



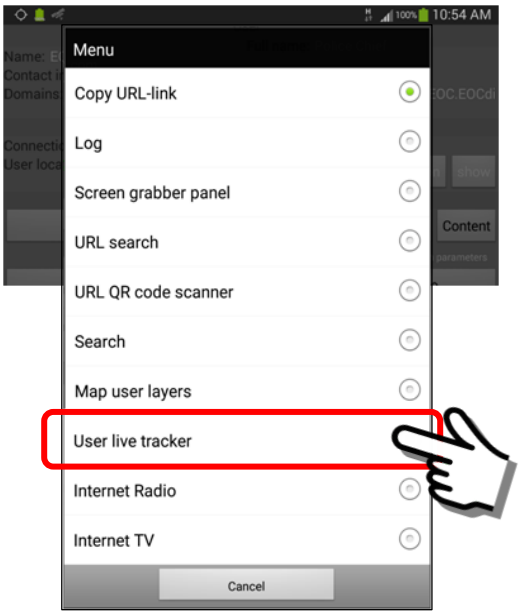
The following is an example of a “Map user layer” screen that has been saved.



User live tracker

This option allows a user to link his own Mobile Object bookmark URL to a “User live tracker” function. The live tracker function uses a motion calculation algorithm to smooth the movement and rotation of GPS enabled mobile objects. It shows object “motion” and postion with a 10 second delay. This feature is for Mobile Objects that are embedded in a Custom Map Layer.

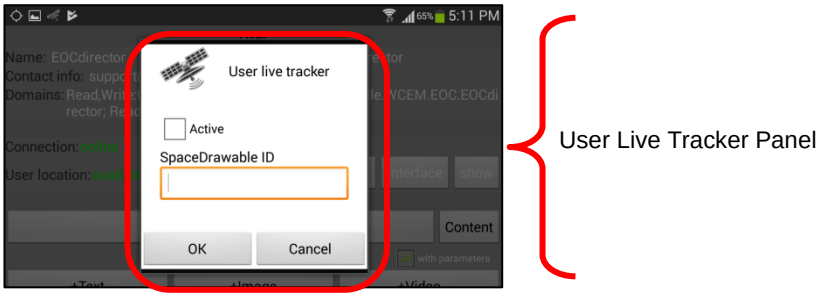
The “User live tracker” function should be “deactivated” when not being used because it sends data to the server every 10 seconds. This may result in increased use of resources and battery drain on the mobile device.



The SpaceDrawable ID value (integer number)

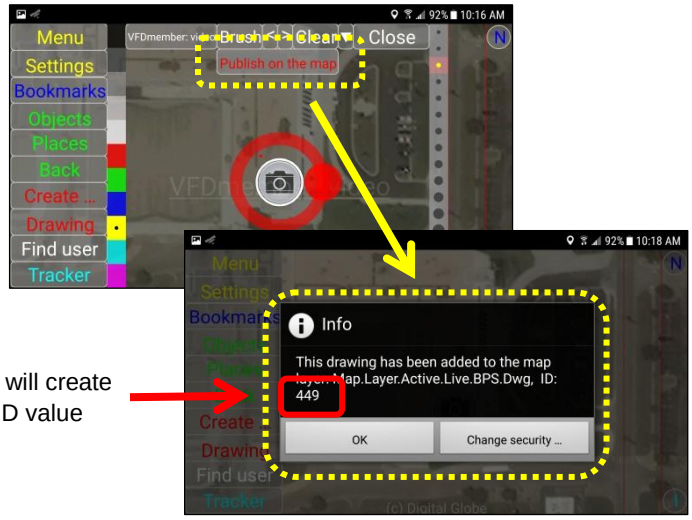
When a User embeds a “Mobile Object” into a map layer, the resulting pop-up dialog box will display a SpaceDrawable ID value that is assigned to the object (for this feature it will be YOUR mobile object that is being monitored).

To use the **User Live Tracker** feature, you will need to know the SpaceDrawable “Map” ID of the object you want to track.



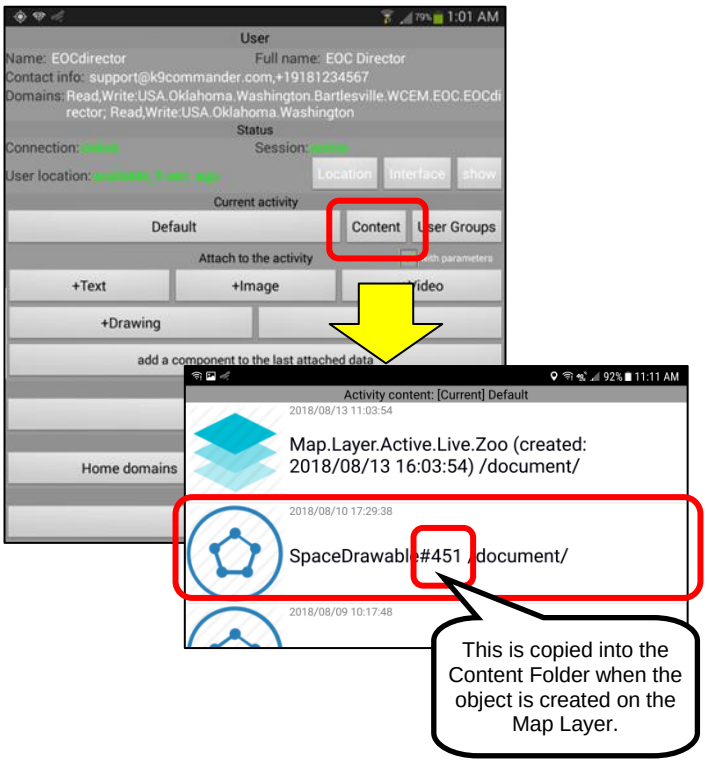
The SpaceDrawable ID value may be found in the following locations.

(1) When you embed a “new” object in a Map Layer you will receive a confirmation pop-up panel.

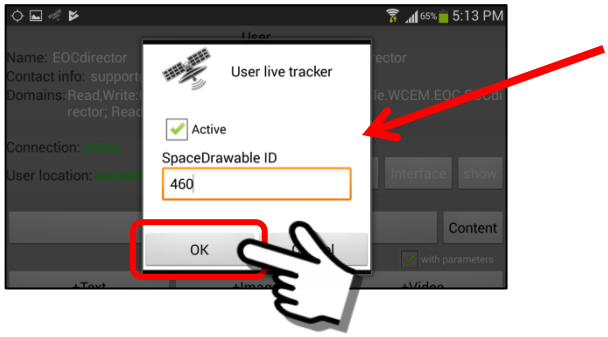


Publish on the Map will create the SpaceDrawable ID value

(2) Listed in the Content Folder of the originator of the Map Layer. Copied there after the object is created.



To launch the **User Live Tracker** feature, enter the SpaceDrawable ID value, check the “Active” box and click “OK”.



Enter the SpaceDrawable ID value and check Active.

As you open the Custom Map Layer (usually a Foreground Layer) the Mobile Object URL “marker” associated with the SpaceDrawable ID number, should start moving (if it is a moving object). The movement should be smooth as the object motion position is updated every 10 seconds.

> **Important Note: The user Live Tracker feature is typically used on a “temporary” basis. Since it provides a continuous GPS adjustment update, it can be very resource intensive. Do not leave it active all the time.**

In typical operation, once you have created a Foreground Layer that contains YOUR mobile object URL … AND you have identified and SET the SpaceDrawable ID number for that Map Object … you will not need to adjust it further. Simply “activate” the User Live Tracker feature whenever you need to know exactly where you are.

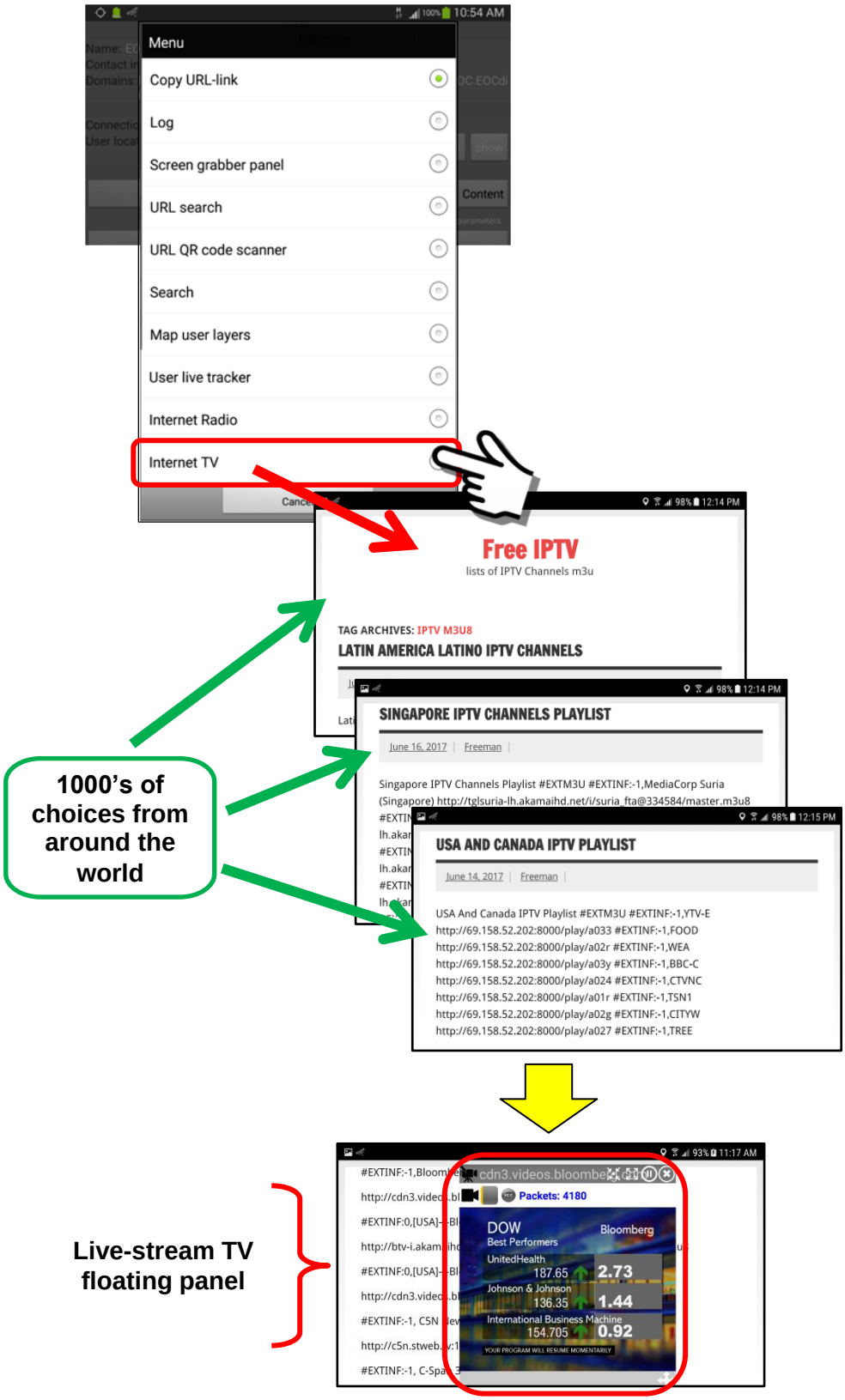
See **Section 16.7** for details on embedding mobile object URLs into a Custom Map Layer. In most cases, for this application, you will want to create/use a specific “icon” to represent your Mobile Object Marker. Usually, graphic “arrows” work best as they indicate direction of movement.

Internet Radio

This option allows a user to access online live-stream Radio Stations from around the world. See **Section 16.4** for a detailed discussion of the "Internet Radio" Feature.

Internet TV

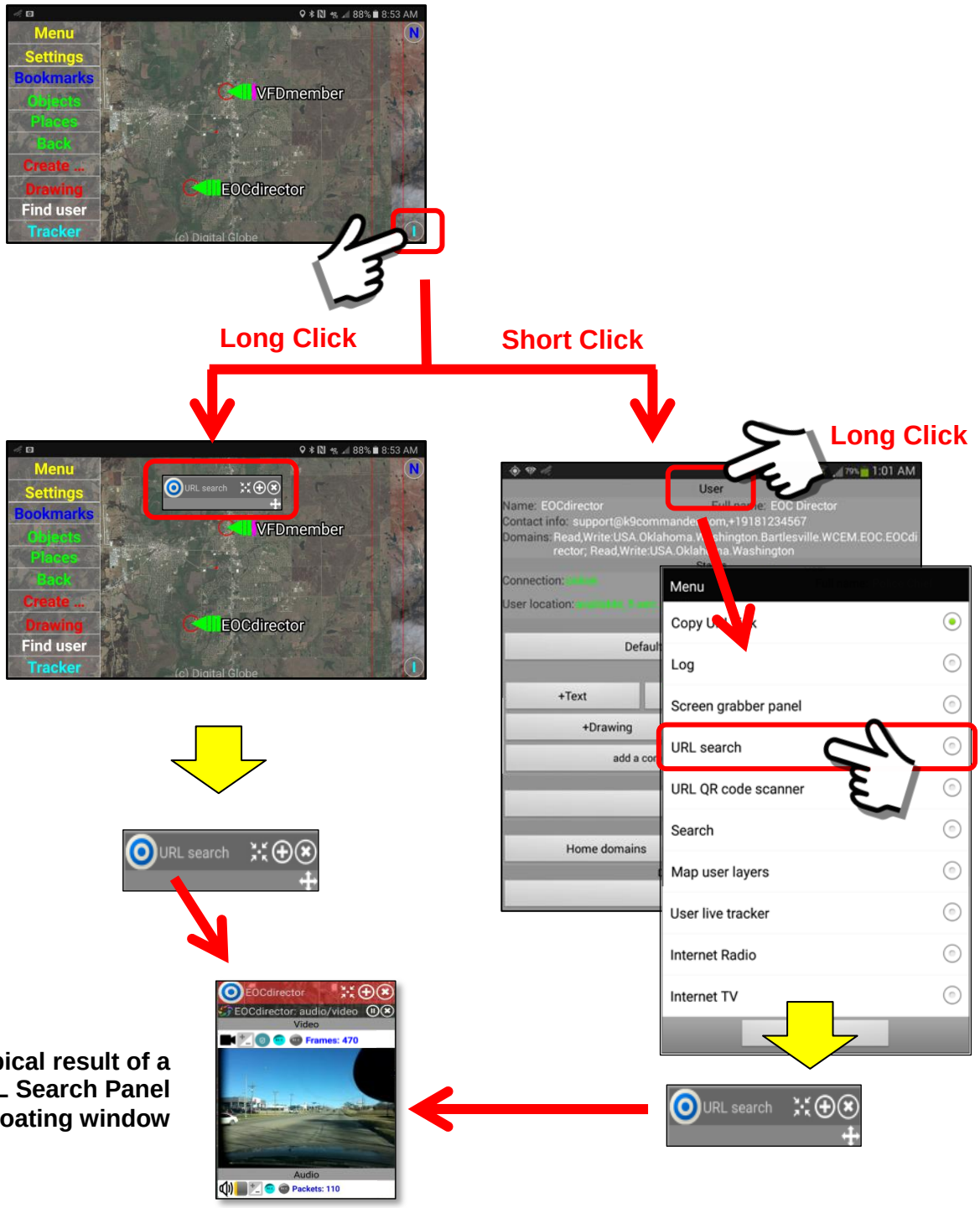
This option allows a user to access online live-stream TV Stations from around the world. See **Section 16.5** for a detailed discussion of the “Internet TV” Feature.



16.2. The URL Search Feature (floating Target Panel)

Overview:

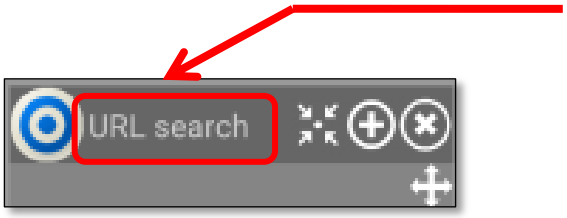
The User Information Panel provides two methods to access remote URL content by using a floating window “Target Panel”. This target panel may be moved between pages (screens) on the SentryMDU application and then “clicked” when hovering over the desired “target” device URL. When the target icon is “clicked” the content is displayed within a floating window screen. This section will describe the general layout of the panel and the features available.



Typical result of a URL Search Panel floating window

General layout of the URL Search Panel:

The URL Search Panel has a set of buttons and features that are available to the User. These are detailed below.



This text is replaced with the name of the selected User's mobile device ID.

The Target Button. When this target icon is "hovered" over an Object Marker or Bookmark, and "clicked" it will launch the underlying URL code in a floating window.

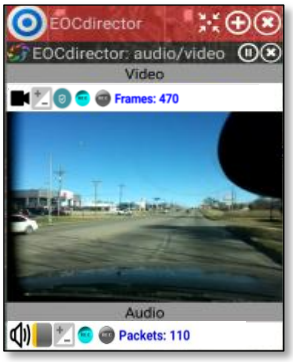
The "Minimize to Notification Bar" Button. This button will minimize the URL Search Panel to the mobile device notification bar. The underlying code is still active and may be restored to the display screen when desired.

The Duplicate Button. When clicked, this button will create a "new" instance (duplicate) the URL Search Panel. Where their was one, now there would be two URL Search Panels available for the User.

The Remove Button. When clicked, this button will remove an active URL Search Panel.

The Resize Button. When clicked and dragged, this button will resize the URL Search Panel. Depending on the screen size of the mobile device (ie phone, tablet, wearable, etc.) and the native "Font Settings" that the user has specified for the device, the Marker Text may not fit within the box border. This button allows the user to slide with a finger and resize the panel so the text fits as desired.

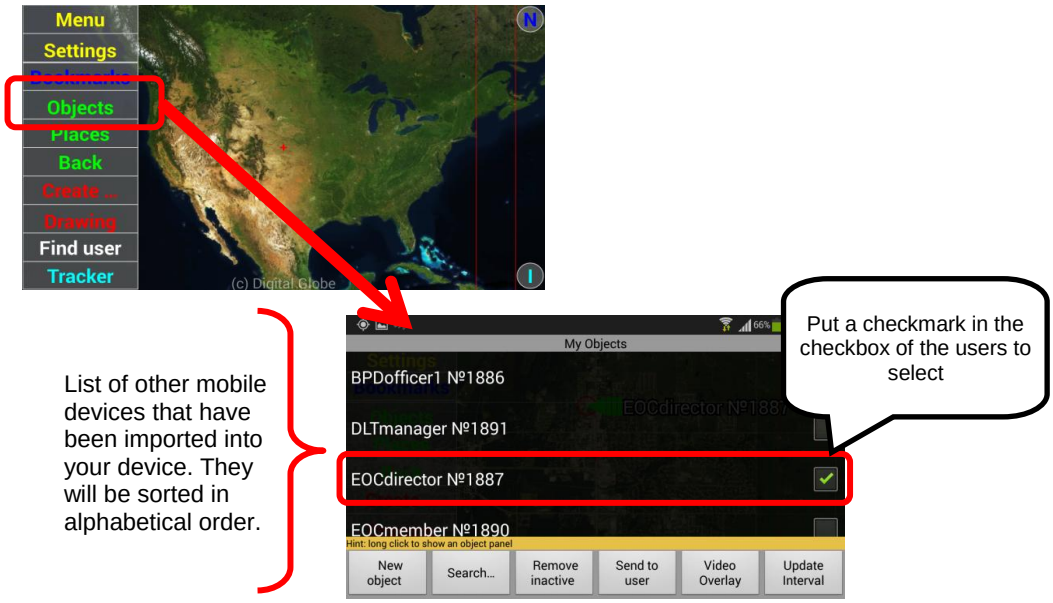
<u>Example of a typical URL Search Panel output</u>



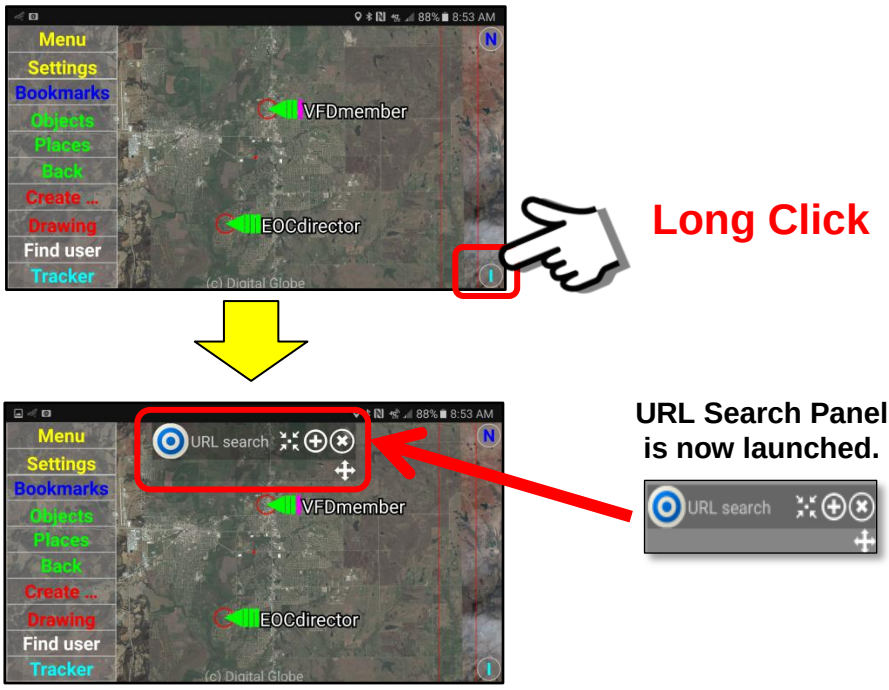
Example URL Search Panel showing a live audio-video feed from a vehicle Dash Cam using EOCdirector's mobile device.

Using the "URL Search" feature on an User's Object Marker:

1. ***Select Users to display from the Object Panel screen.***
   From the Main Map Screen, click on the Objects Button to select the users to display on the Main Screen. In this example, we are selecting both the ***VFDmember*** and ***EOCdirector*** users to display on our screen.



2. ***Launch the URL Search feature*.**
   With the selected users now displayed on the Main Map Screen, perform a "Long Click" on the User Information Icon ("I" Button) located on the lower right corner of the display. This will launch the *URL Search Panel* floating window.

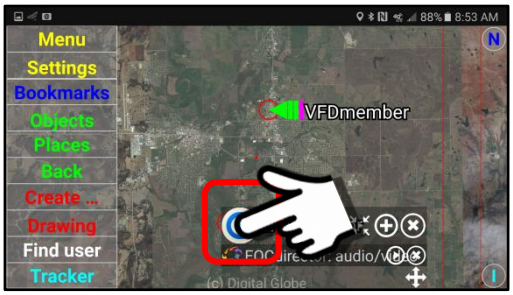


3. ***Select the User to display.***
Using your finger, drag the URL Search Panel down the screen and place the “target” over the Object Marker of the desired user.

Drag the URL Search Panel down and hover over the Icon Marker of the desired User.

In this example, we are selecting the EOCdirector user.

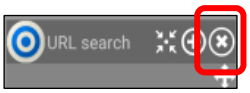
4. ***Activate the audio-video transmission from the selected User.***
Click on the “target” button. The system will execute the URL code that has been pre-configured for this object marker. In this example, the EOCdirector user has configured his device as a Dash Camera for his car. Clicking the “target” Button will start the audio-video data transmission from the remote device and display it on your device.



Click the “target” icon when centered over the Icon Marker of the desired User.

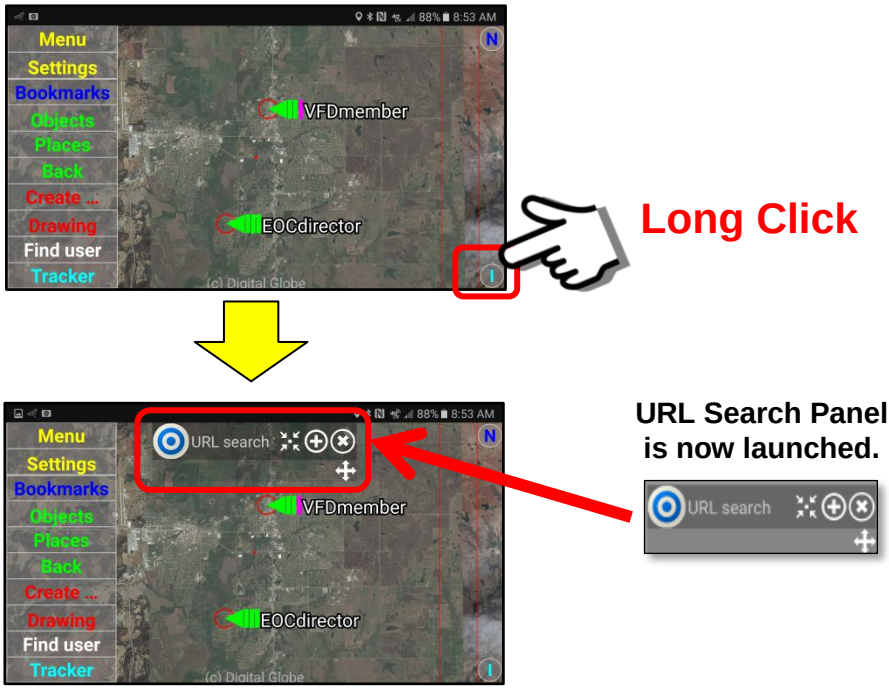
This will launch the pre-configured default audio-video setting of the selected user (EOCdirector).

To close the floating panel, click the “X” Icon in the right corner of the URL Search Panel.



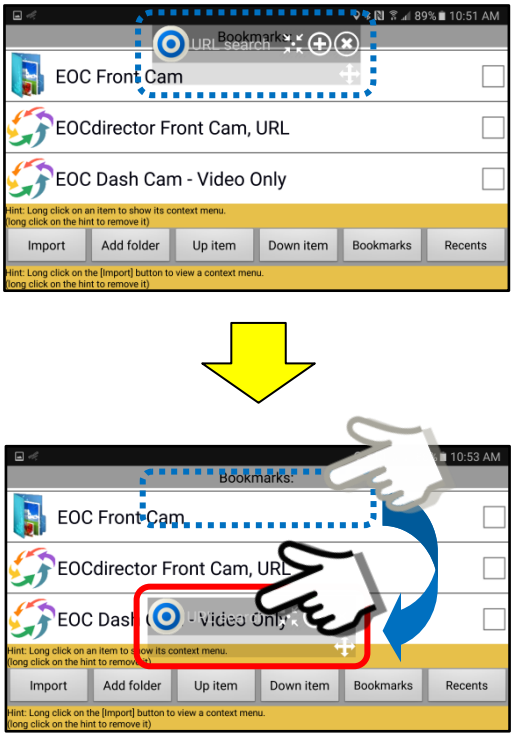
Using the “URL Search” feature on a Bookmark entry:

1. ***Launch the URL Search feature.***
   From the Main Map Screen, perform a “Long Click” on the User Information Icon (“I” Button) located on the lower right corner of the display. This will launch the *URL Search Panel* floating window.

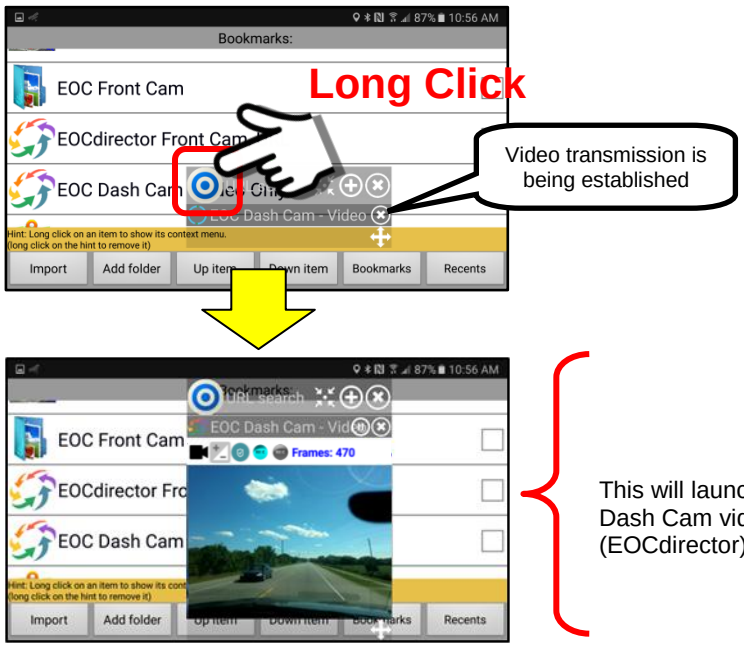


2. **Select the desired User “Bookmark” from the Bookmarks Panel.**
   The URL Search Panel is now displayed as a “floating window” on the Main Map Screen. Click on the Bookmarks Button to open that feature.

Select the desired Bookmark by dragging the URL Search Panel box such that it “hovers” over the desired bookmark you want to launch.



3. ***Activate the audio-video transmission from the selected User.***
Perform a “Long Click” on the “Target” button. The system will execute the specified URL code and launch a floating window panel. In this example, we are launching the “EOC Dash Cam Video” bookmark. It may take a few seconds for the live-stream video to be established (depends on available network bandwidth, mobile device radio performance, etc.).



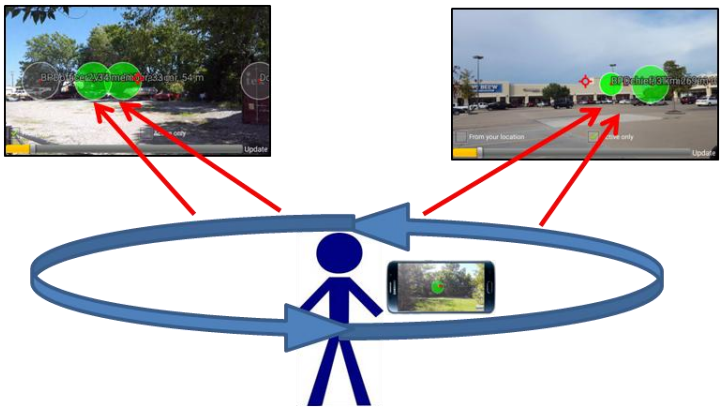
Using the "URL Search" feature on a Live Search display:

1. ***Set the Main Map screen to the desired GPS reference location.***
   This example will be using the "Live Search" feature of the Sentry MDU System. If you need a refresher, see **Section 10.5, Item #3** for a full discussion of "Live Search".

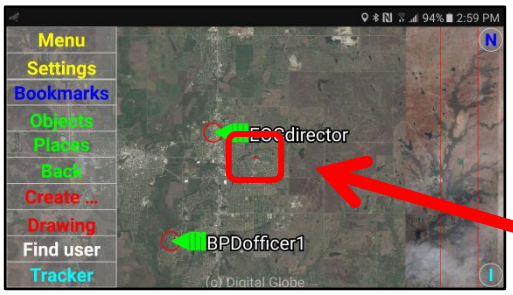
   The Live Search option will allow a user to search for other users on the system by simply pointing your phone in the direction of the other users. As the phone is rotated around, a green icon with the User's Name will come into view when you are pointed in the direction of the location of the other user(s).

   A key aspect of the Live Search feature is that a User may select the GPS reference point from which to conduct the live search. Two options are available.
   a. Your present GPS location as determined by the system.
   b. Any GPS reference point on the map (a virtual location).

   However, remember that all users must be within 100km of the searching device position (actual or virtual). In this example, we will select a "virtual" location such that we will conduct a live search from a GPS location WE SELECT from the Main Map Screen.

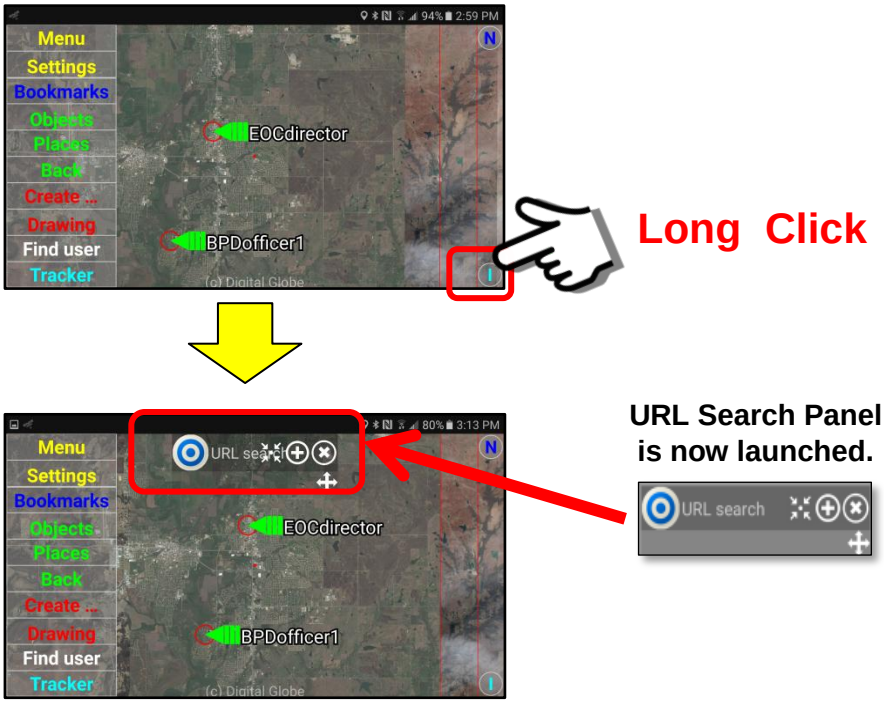


   To select a virtual location from which to conduct the "Live Search", we will center the main map screen (the red "+" mark) at the location that we want to use as the reference point. In this example, we will be searching for the user EOCdirector … that is located north-northwest from our virtual location.

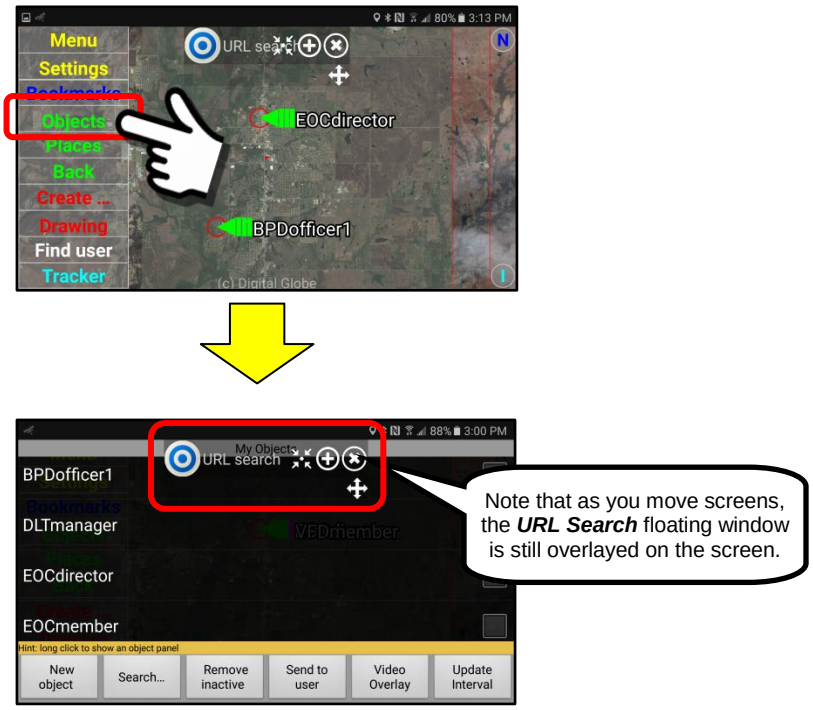


The red "+" mark indicates the location that the system will use as the GPS reference point relative to a "Live Search" scan.

2. ***Launch the URL Search feature*.**
Once we have selected our "virtual" GPS reference point, launch the URL Search Panel. From the Main Map Screen, perform a "Long Click" on the User Information Icon ("I" Button) located on the lower right corner of the display. This will launch the *URL Search Panel* floating window.

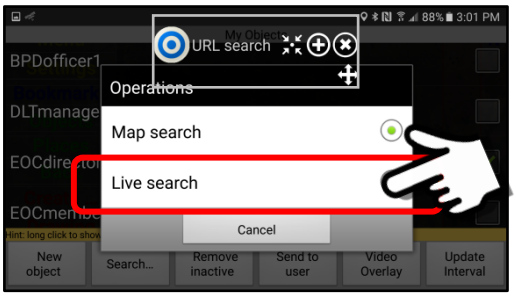


3. ***Open the Objects Panel and launch the "Live Search" function.***
Now that the URL Search Panel is active, we must launch the "Live Search" function. It is available as one of the menu options on the **My Objects Panel**.

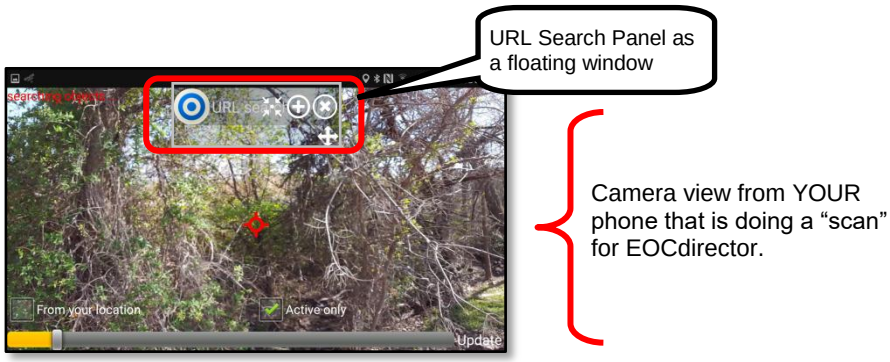


Access to the Map Search and Live Search features is available by performing a long click on the “Search …” Button located on the bottom of the My Objects Panel.

Select the “Live Search” option.



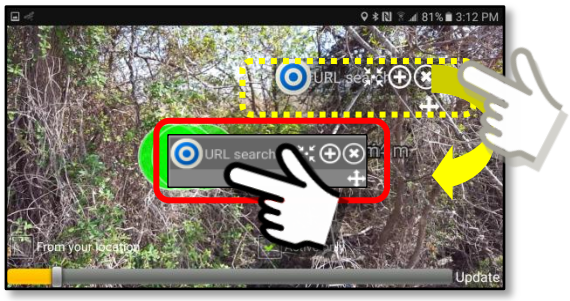
The ***Live Search*** panel will appear. The ***URL Search Panel*** will still be superimposed on top of the Live Search Panel.



4. ***Adjust the GPS reference point, scan distance and active user settings.***
Uncheck the “From your location” checkbox since we want to use the virtual GPS reference point. Set the “Active Only” user parameter so that we only display users that are currently active in the system. Adjust the search/scan distance to the estimated range to include those users of interest. Point the camera on the phone in the north-northwest direction and begin a scan to look for the EOCdirector user.

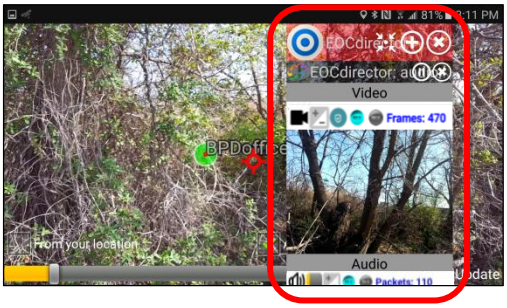
5. ***Sweep scan the surrounding area to locate the desired user.***
As we sweep/scan the surrounding area, several “active” users come into view in the north-northwest direction.

6. ***Overlay the URL Search “target” on the desired user icon.***
Click and drag the URL Search Panel on the screen and center it over the green dot that belongs to the desired user (in this example = EOCdirector).



7. ***Activate the URL "target" switch and open the audio-video transmission from the selected user.***

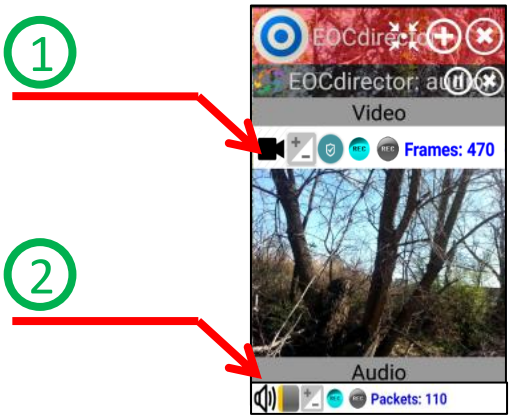
Click on the "Target" button as it hovers over the EOCdirector user green dot. This action will launch the audio-video associated with the user. A floating window panel will open displaying a live-stream video from the EOCdirector mobile device.



Live-streaming video from EOCdirector mobile device using the audio-video parameters set on that device.

<u>Reminder</u>

The standard features such as pause audio or video, save the recording and more are available from this floating window.



1 The video indicator bar provides the user with a progress indicator on the number of data packets of video information that has been received by the mobile device.

The video output of the mobile device may be paused by clicking on the video camera icon on the indicator bar.

Video is turned "on" (Default)

Video is paused, stopped but active

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” the flow control and let the system use the settings provided during configuration. However, if poor video output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

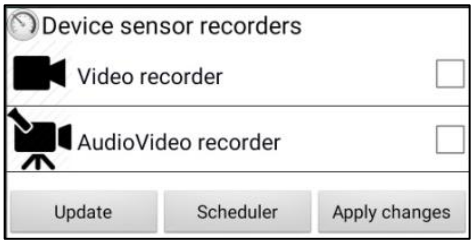
Flow control is turned “on”

The Adjustable Reliability Mode Button is available to implement “custom” settings for the UDP RSPP protocol. This can decrease latency in video transmissions.

RSPP Reliability Mode is turned “off” (Default)

RSPP Reliability Mode is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The video output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the video for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

Recording is turned “on”

Once a recording has been made, there are additional options for the User. Navigate to the Data Archive and select the file.

2 The audio indicator bar provides the user with a progress indicator on the number of data packets that have been received by the mobile device.

The audio output of the mobile device may be turned on-off by clicking on the speaker icon on the indicator bar.

Speaker is turned “on” (Default)

Speaker is muted, turned “off”

The audio microphone sensitivity-volume is shown as a grey block with yellow overlay. The amount of yellow showing will indicate the intensity of the sound picked up by the remote device.

Low sound volume or sensitivity

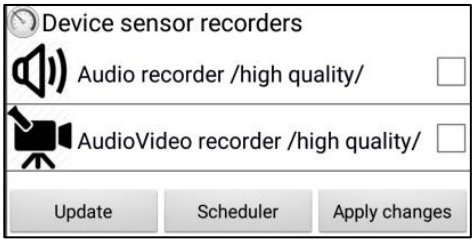
High sound volume or sensitivity

The Sentry MDU software has “Flow Control” technology that attempts to optimize the data stream in the event an unstable network condition exists. The default setting is to turn “off” flow control and let the system use the settings provided during configuration. However, if poor audio output exists, clicking the “flow control” feature (turning it “on”) may help.

Flow control is turned “off” (Default)

Flow control is turned “on”

This button provides access to the Sensor Recorders on the remote device. Recorders may be turned on-off and scheduled, if needed. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.



The audio output of the mobile device may be “recorded” at any time by simply clicking on the “record” button. This feature will record the audio for storage on the local device (the remote device). This recording may then be reviewed in the Archive section of the Mobile Object or Tracker Panel.

Recording is turned “off” (Default)

Recording is turned “on”

Using the "URL Search" feature on a Map Search display:

1. ***Set the Main Map screen to the desired GPS reference location.***
   This example will be using the "Map Search" feature of the Sentry MDU System. If you need a refresher, see **Section 10.5, Item #2** for a full discussion of "Map Search".

   The Map Search option will allow a user to search for other users on the system by setting a GPS reference point and then specifying a search "radius". All users on the system that are within the search radius will be displayed as green dots on the screen.

   A key aspect of the Map Search feature is that a User may select the GPS reference point from which to conduct the live search. Two options are available.
   a. Your present GPS location as determined by the system.
   b. Any GPS reference point on the map (a virtual location).

   In this example, we will select a "virtual" location such that we will conduct a map search from a GPS location WE SELECT from the Main Map Screen. The Map Search screen is illustrated below:

   <u>Parts of the Map Search Panel</u>

Text shows the radius of the search area. In this example, the default of 10 km is shown.

Red circle is the designated search area selected by the User

Users, both active and inactive that are within the search area criteria.

Active Users

Inactive Users last position

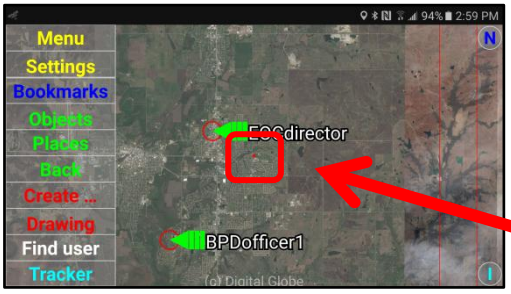
Update Button, provides 3 options in a "new" search for objects.

Active checkbox. When "checked" only looks for currently active users.

"From your location" checkbox. When checked, all measurements are from YOUR current location and not the screen center.

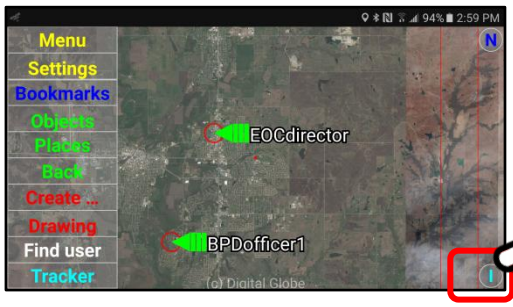
Search area adjustment slide bar. Move slide to expand/contract the search area circle.

To select a virtual location from which to conduct the “Map Search”, we will center the main map screen (the red “+” mark) at the location that we want to use as the reference point. In this example, we will be searching for all users within a 10km radius of our virtual location.

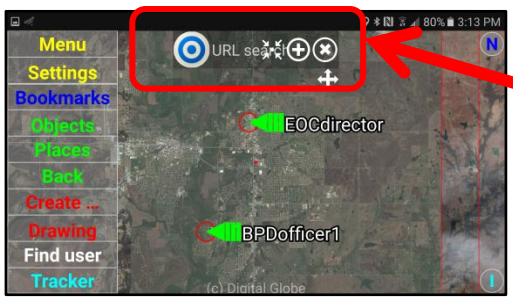


The red “+” mark indicates the location that the system will use as the GPS reference point relative to a “Map Search” scan.

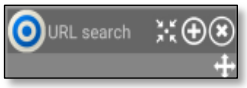
2. ***Launch the URL Search feature*.**
Once we have selected our “virtual” GPS reference point, launch the URL Search Panel. From the Main Map Screen, perform a “Long Click” on the User Information Icon (“I” Button) located on the lower right corner of the display. This will launch the *URL Search Panel* floating window.



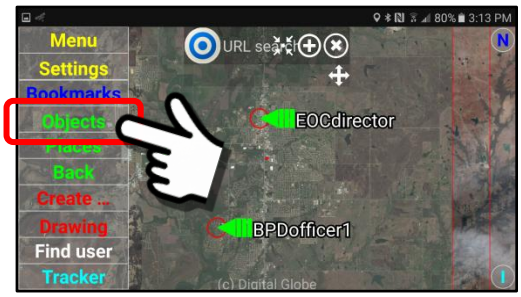
Long Click



URL Search Panel is now launched.

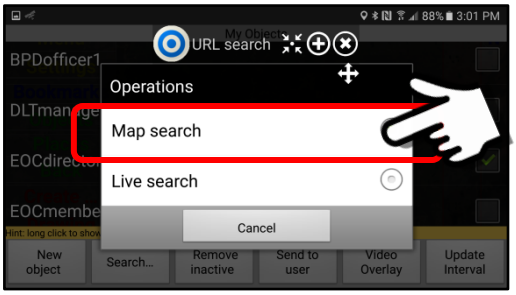


3. ***Open the Objects Panel and launch the "Map Search" function.***
Now that the URL Search Panel is active, we must launch the "Map Search" function. It is available as one of the menu options on the **My Objects Panel**.



Access to the Map Search and Live Search features is available by performing a long click on the "Search …" Button located on the bottom of the My Objects Panel.

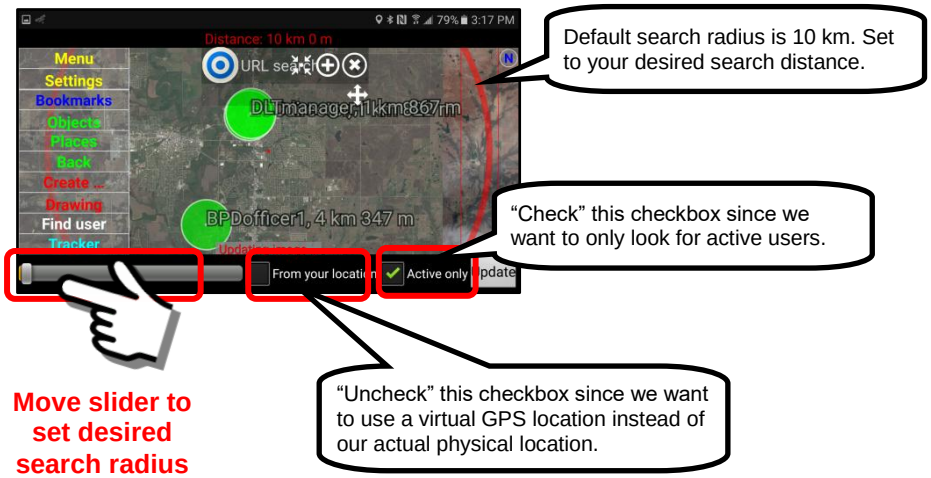
Select the “Map Search” option.



The ***Map Search*** panel will appear. The ***URL Search Panel*** will still be superimposed on top of the Live Search Panel.

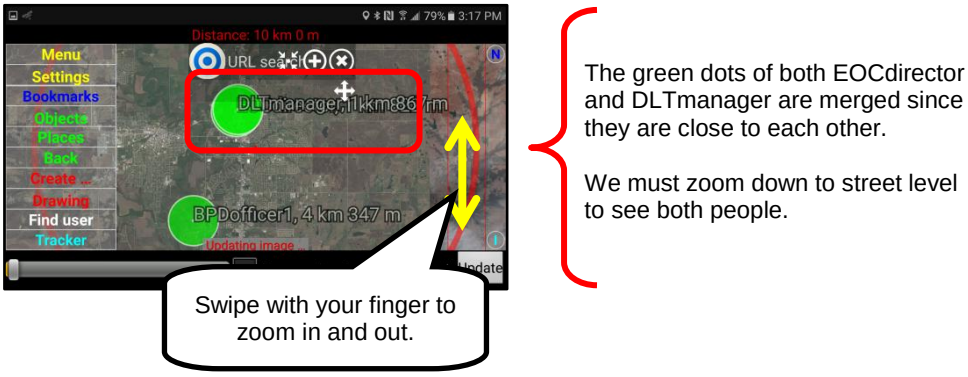
4. ***Adjust the GPS reference point, search diameter and active user settings.***

Uncheck the “From your location” checkbox since we want to use the virtual GPS reference point. Set the “Active Only” user parameter so that we only display users that are currently active in the system. Adjust the search radius distance to the desired range to include those users of interest.



.

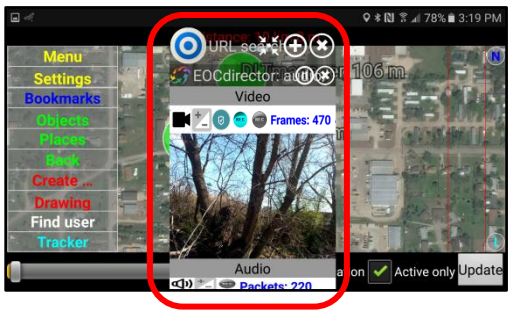
5. ***Locate the desired user from within the search radius.***
In this example, we will locate the EOCdirector user within the search radius. We use the “zoom” feature to zoom in and find that both the EOCdirector user and DLTmanager user are in close proximity to one another. Once we get down to street level we now see the EOCdirector user on our map.



6. ***Overlay the URL Search “target” on the desired user icon.***
Once we have found the desired user (EOCdirector), drag the URL Search panel from the top of the screen panel down such that it hovers over the EOCdirector green dot.
.

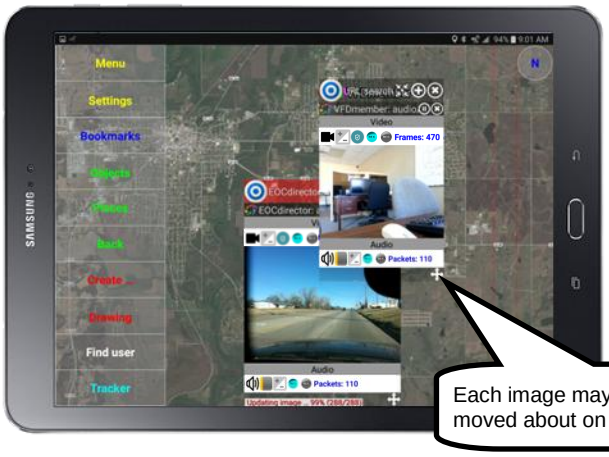
7. ***Activate the URL “target” switch and open the audio-video transmission from the selected user.***
Click on the “Target” button as it hovers over the EOCdirector user green dot. This action will launch the audio-video associated with the user.

A floating window panel will open displaying a live-stream video from the EOCdirector mobile device.



Live-streaming video from EOCdirector mobile device using the audio-video parameters set on that device.

Below is an image of what it may look like as displayed on a 10” Tablet with two ***URL Search*** floating windows shown. You may have as many windows open as resources allow.

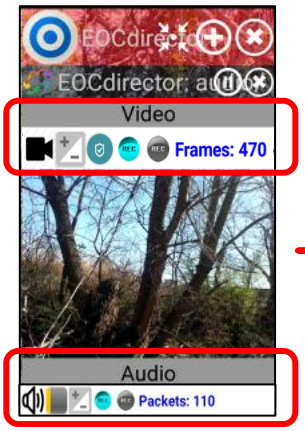


10” Tablet showing two floating windows

Each image may be resized and moved about on the screen.

<u>Reminder</u>

The standard features such as pause audio or video, save the recording and more are available from this floating window.



Options to save recordings of both audio and video data.

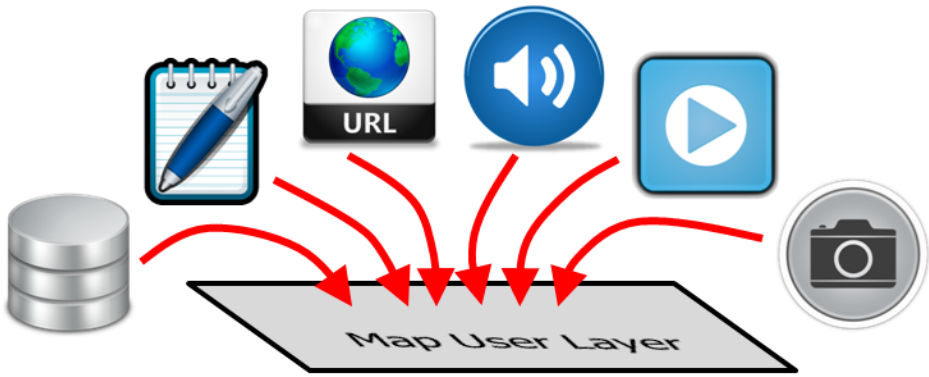
16.3. The “Map user layers” option

Overview:

The “Map user layers” feature is a modern map system based on an SQL Server and integrated into the SentryMDU System. This option allows a user to create custom Map Layers of specific regions of a satellite (Map) view and include icons and data references in this custom view. These “layers” will be available to all users on the system (assuming security credentials allow) and may be used standalone or as Foreground and Central layers in association with the Main Map Screen. Each “map user layer” has the following 3 elements:

(1) A layer that objects will attach to (usually a map layer)
(2) Icons and/or user drawings that are attached to the layer
(3) Content data that is attached to the icons (available when clicked)

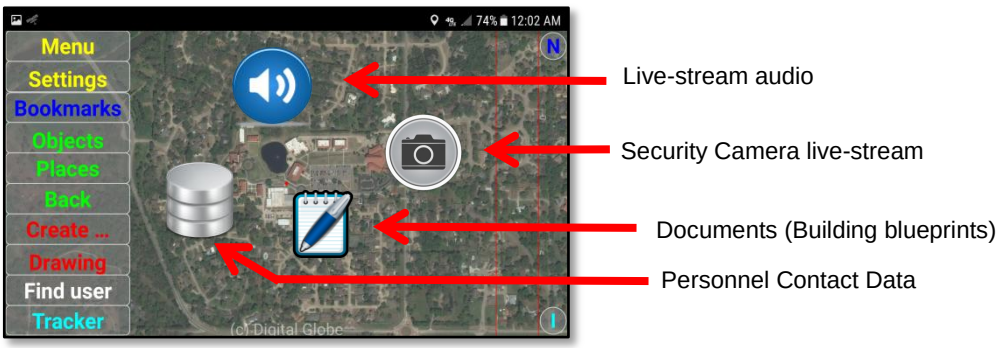
When a “layer” is first created, it is empty (has no map or objects attached). The user will decide what map screens, objects, video, text and reference data to associate with this custom map view. This view may then be stored as a bookmark or Foreground/Central Layer to use with the Main Map Screen.



This section will illustrate the setup and use of the “Map user layers” feature.

Example screen created with the “Map user layers” feature:

Shown below is an example of a screen created using the “Map user layers” feature set.



How the “Map user layers” are used:

A map user layer can be opened in a map screen or added to the Main Map Screen as a custom layer (Foreground Layer or Central Layer). Map user layers created by one user can be used by other users on the SentryMDU System.

There are two primary methods by which a “Map user layer” is used:

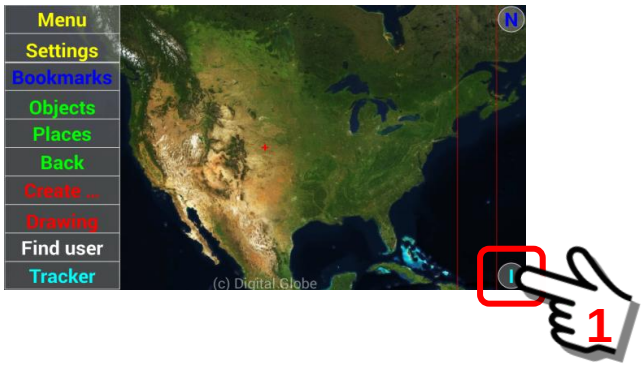
1. Each user can create their own “Map user layer” (ie their own custom map).
2. Each “Map user layer” can be viewed via its URL by saving it as a bookmark or Foreground/Central Layer.

This section will describe these two uses.

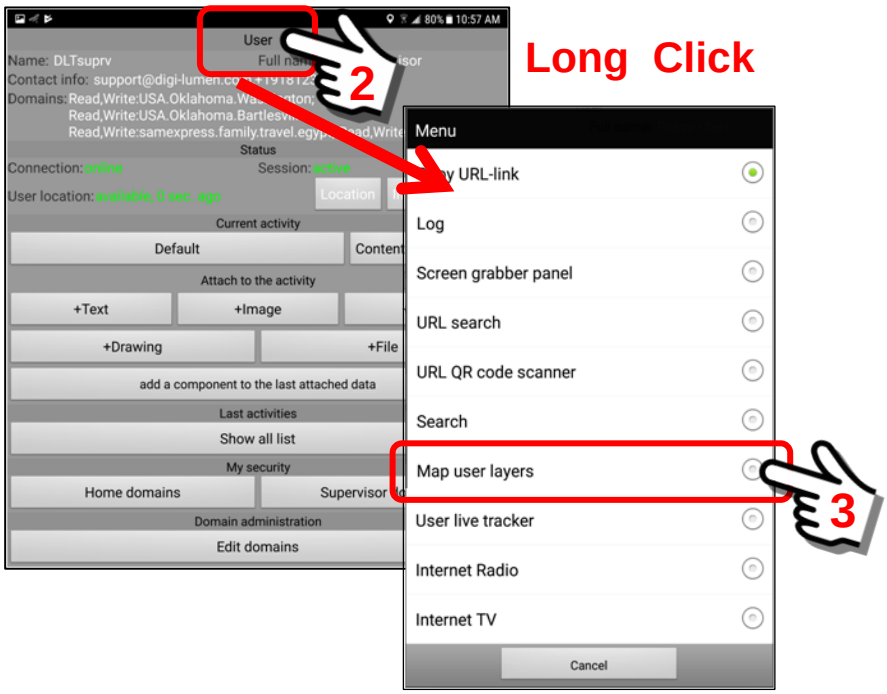
Steps to set up a “Map user layer”.

1. ***Create a Map User Layer***

   Click on the “I” Button located on the lower right side of the Main Map Panel.



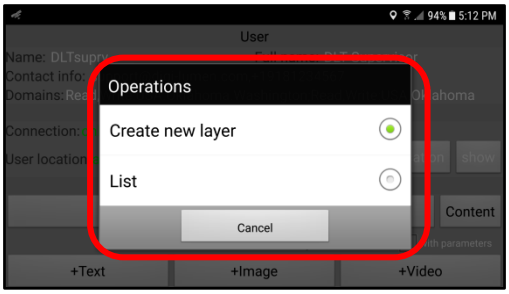
   The User Information Panel will open. Perform a “Long click” on the User Header Title. This will open a pop-up with 10 menu options.



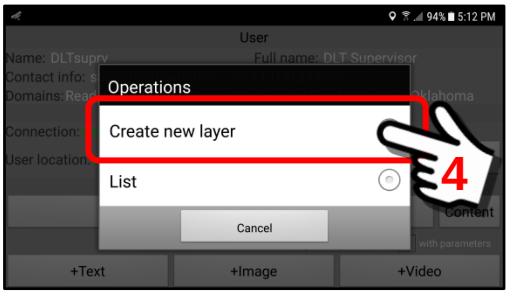
Click on the “Map user layer” menu option (No. 7). This will open another pop-up menu with two choices.

(1) <u>Create new layer</u>
The “Create new layer” option will allow the User to create a new “Map user layer”. This new map layer will be available to all users on the system (assuming security credentials allow).

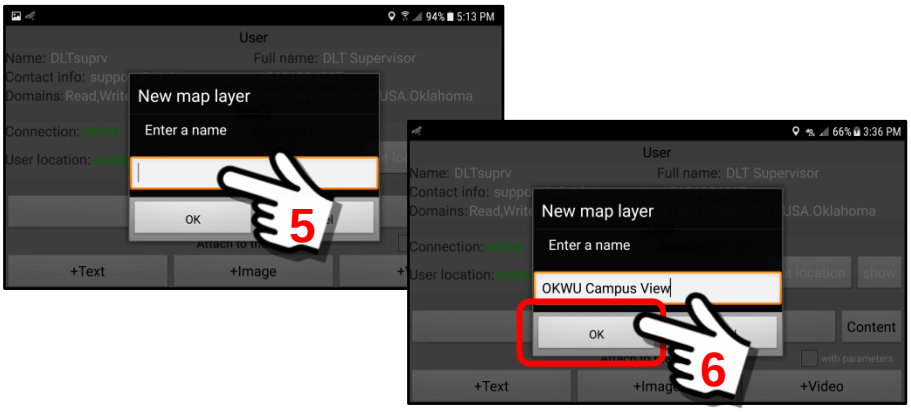
(2) <u>List</u>
The “List” option will produce a list of the Map User Layers that are currently available to this User on the mobile device. The list will include ALL custom “Map user layers” created by ALL users on the system (assuming security credentials allow).



Select the “Create new layer” menu option.



A pop-up box will appear to enter a “name” for the new user layer. Click inside the data entry area to launch and use the on-screen keyboard to enter a name. Click “OK” when finished to SAVE the entry.

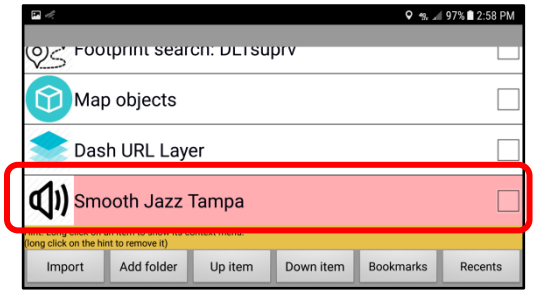


In this example, we have now created a “new” map layer. However, this map layer is “empty” and has no objects/data associated with it. Our next task is to attach objects to this layer.

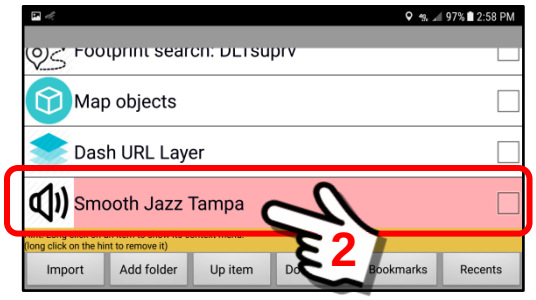
2. ***Copy a URL file to the “clipboard” (.TEMP) so it can be added to the new “Map user layer” and attached to an object.***
In this example, we will select and copy a radio station broadcast URL from the Bookmarks Section and install it into our new “Map user layer”.

Click on the Bookmark Button at the Main Menu Screen.

At the Bookmarks Panel, we will select the “Smooth Jazz Tampa” bookmark URL to copy onto our “Map user layers” screen.

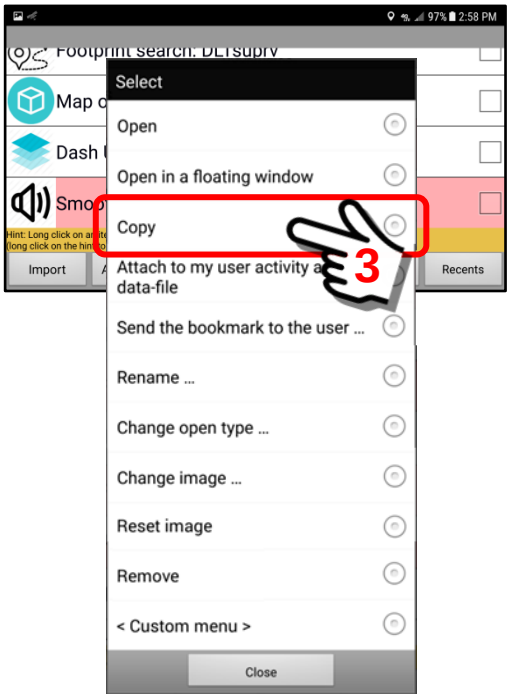


Perform a “Long click” on the “Smooth Jazz Tampa” bookmark to open the Options Menu.

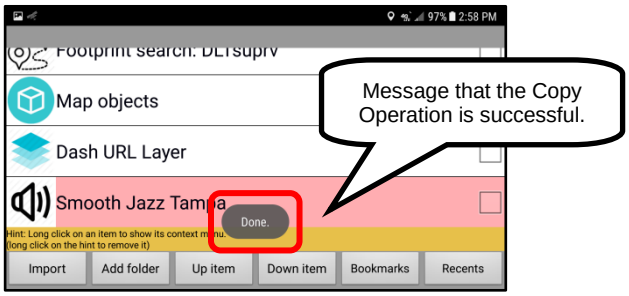


Long Click

A pop-up options menu will appear.
Click on the “Copy” option to copy the URL for ***Smooth Jazz Tampa*** to the .TEMP folder. We will use this URL to install the Radio Station link on the “Map user layers” custom screen that we are working on.



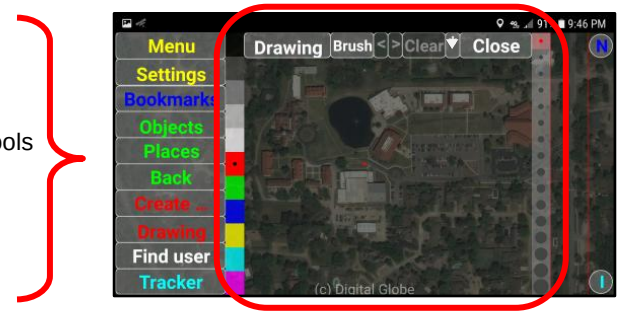
If the “Copy” operation is successful, you will see a message on the bottom of the screen.



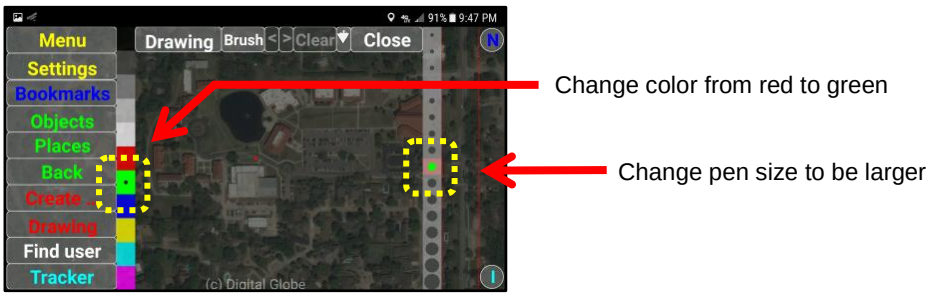
3. ***Add (or attach) an Object to a “Map user layer”.***
In the preceeding section we made a copy of a Radio Station URL link so we can add this URL to the “Map user layer”. This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

Begin by selecting the map view you want for the Map User Layer. Navigate on the Main Map Screen to the desired map location and zoom level. In this example, we will focus on a small college campus.

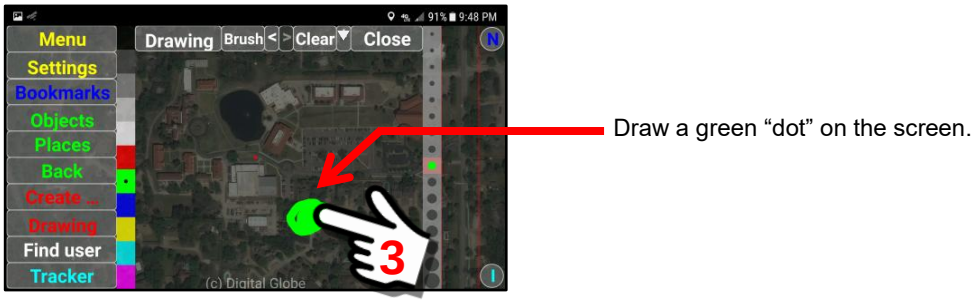
Perform a “Short click” on the Drawing Button to launch the Drawing Tools mode. The drawing tool mode will use the current screen view of the small college campus as the default screen view.



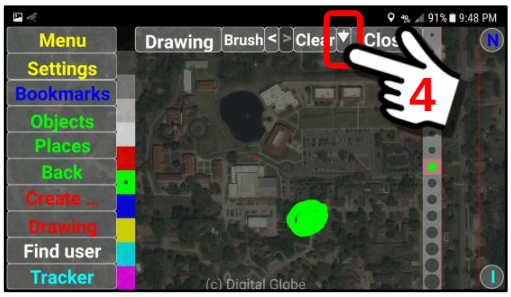
Select the desired drawing tool color/size and prepare to make a “mark” using your finger as a drawing instrument.



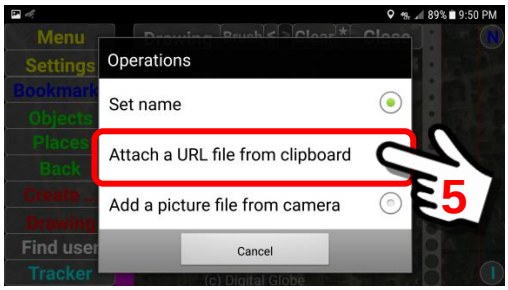
Make a “mark” on the Drawing Panel. This will be an “object” upon which we will attach a URL for a Radio Station audio feed.



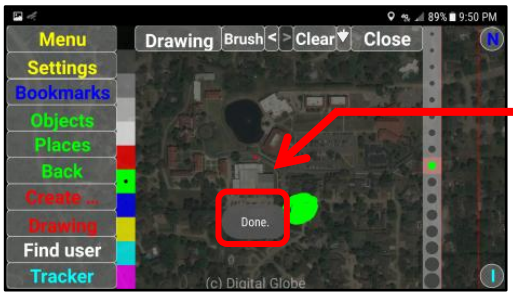
When finished with “drawing” the new object it will be necessary to attach the Radio Station URL (remember that it is stored in the .TEMP folder) to this object. Click the Operations Button (▽) to open the Menu Options.



A pop-up list of Menu Options will appear. Select the “Attach a URL file from clipboard” option from the list.



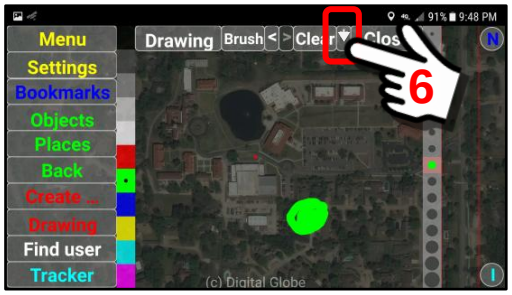
When the Radio Station URL is attached to the object (green dot) by the system, a “Done” message will display briefly on the lower portion of the screen.



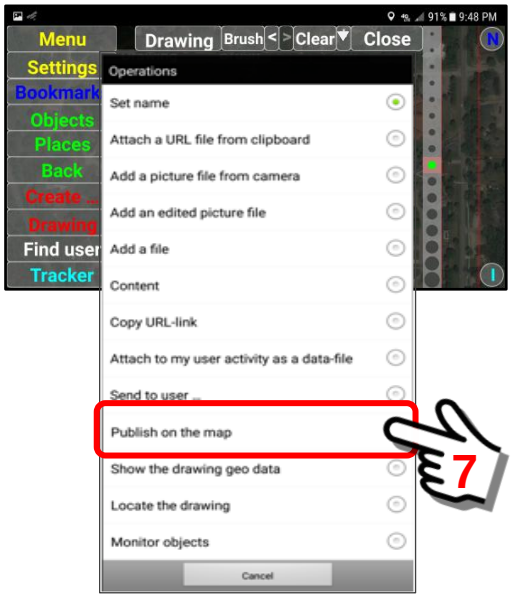
Brief message (3 secs) that the URL file was attached to the Object.

To SAVE the changes we have made (drawing the object and attaching the URL) we must now “Publish” the drawing and designate it to be part of the custom “Map user layer” we have named ***OKWU Campus View***.

To access the Menu Options, click on the Operations Button (▽).

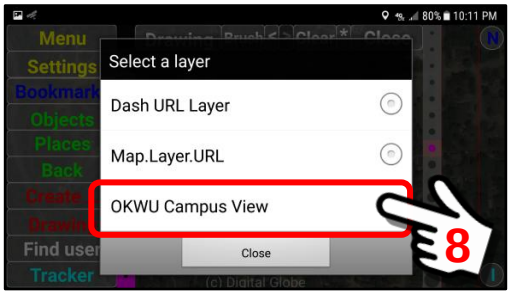


A pop-up Operations Menu will appear.
Scroll down to Item #10 and select the “Publish on the map” Option.



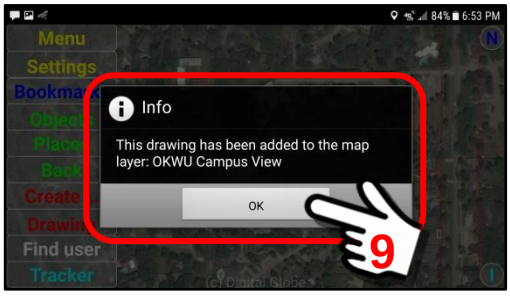
Selecting the “Publish on the map” Option will open a pop-up box with a list of available custom “Map user layer” files. You will select the custom layer that you want this object and URL link to be associated with.

In this example, we are going to use the “***OKWU Campus View***” custom map layer. Click on it.

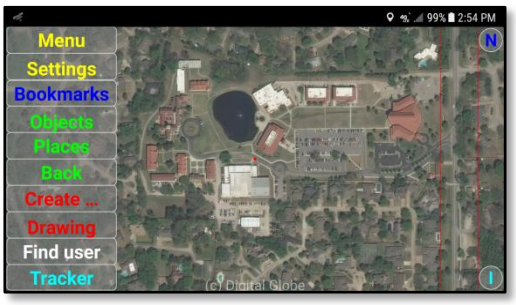


It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing/Object has now been saved with the “OKWU Campus View” custom map layer.

Click “OK” to acknowledge the successful completion.



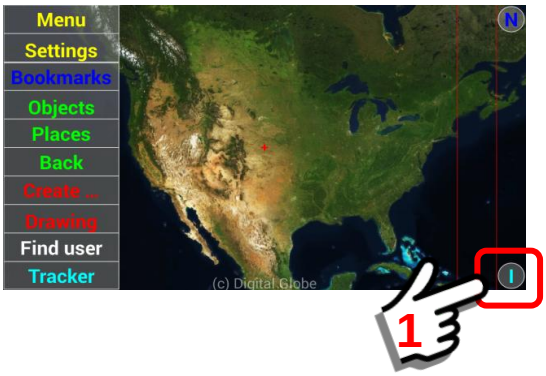
When the “OK” Button is clicked, the screen will return to the Main Menu Screen view.



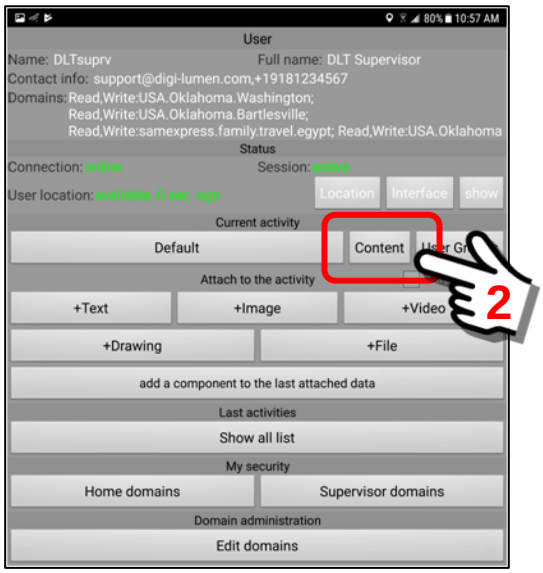
4. ***Testing the new "Map user layer" (OKWU Campus View).***

To verify that the new "Map user layer" we have just created is working properly, it is always good to test it. This section will outline the steps necessary to test the object and the URL link to that object.

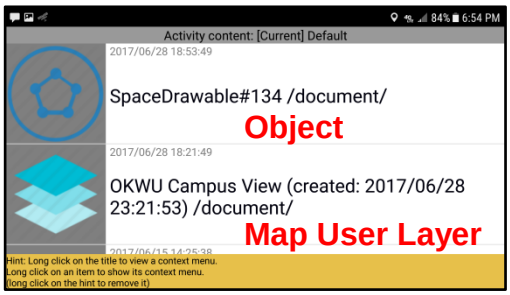
At the Main Map Screen, click on the User Information Button.



Perform a "click" on the Content Button located at the middle right-side of the User Information Panel.



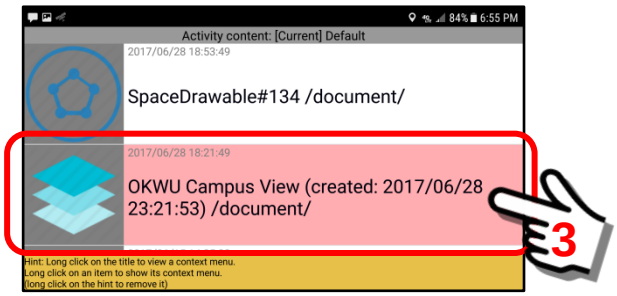
The Current Activity content will be displayed. In this example, we are looking for the "OKWU Campus View" custom layer that we created. Although the functional layer is made up of two parts, we will test the Map User Layer.



There are two parts to the custom "Map user layer".

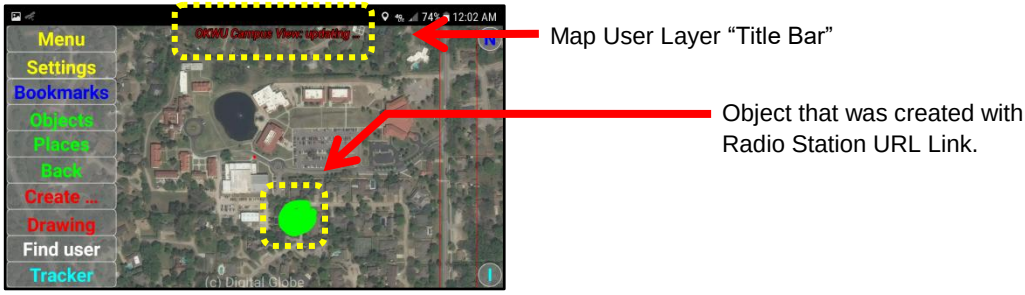
(1) The Object (the green dot)
(2) The Map user layer

In this example, to test the Map User Layer, click on the “OKWU Campus View” content header.

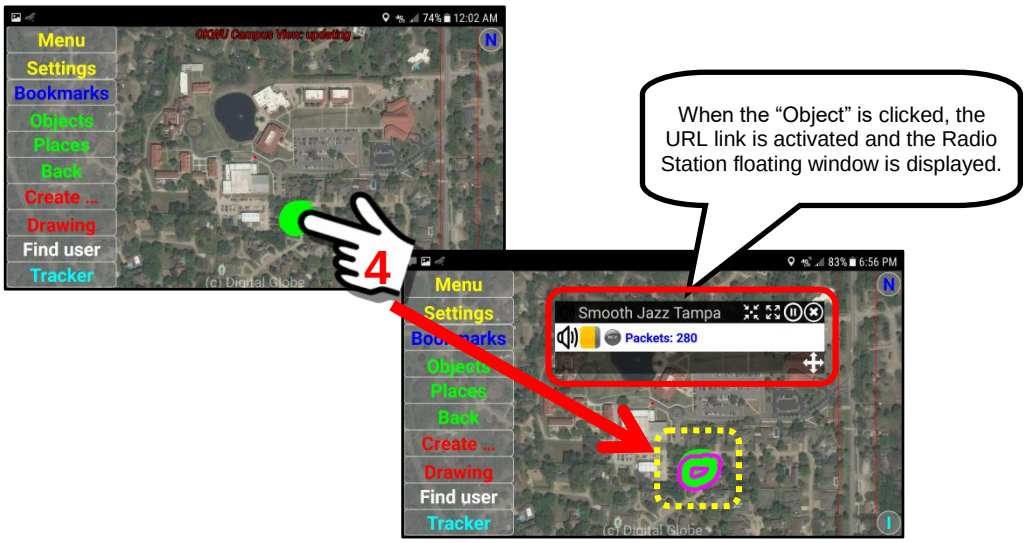


The Map User Layer will be displayed on the screen. Depending on the zoom level and screen coordinates, you may need to navigate to the general area of the college campus before you see the “green dot” that you created. When located, zoom in to a lower level to see the OKWU College Campus area.

As shown below, the Object (green dot) should be visible.

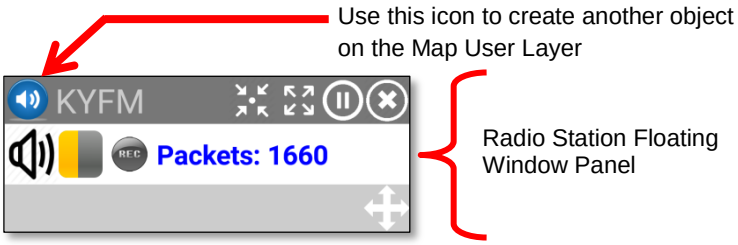


To test the Object URL link, click on the Object icon (green dot). The object will be “highlighted” in color and the URL link will be processed.

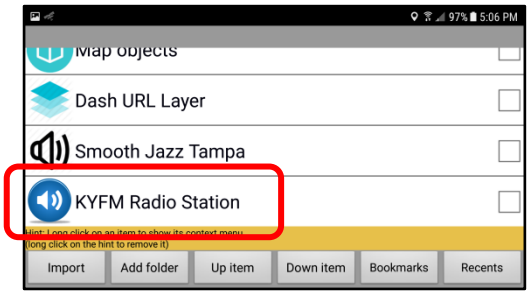


5. ***Adding a 2nd object to the "Map User Layer" (OKWU Campus View).***
In the first example, we added an object that was "drawn" using the Drawing Tools (green dot). Now we will add another Radio Station using the icon that is part of the floating window panel.

This section will outline the steps necessary to add another Radio Station URL link to the "Map User Layers" custom screen. We will use the link "icon" to create an object for the Map User Layer.



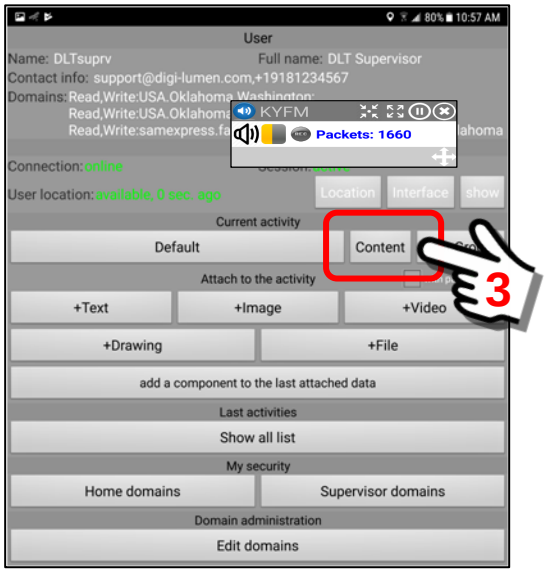
We will assume that the desired Radio Station currently exists as a Bookmark URL, as shown below.



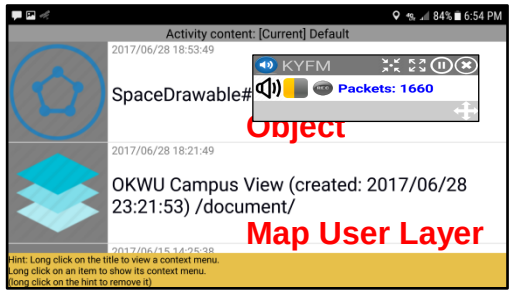
Click on the KYFM Radio Station bookmark to launch the URL Floating Window.

Return to the Main Map Screen, click on the User Information Button.

Perform a "click" on the Content Button located at the middle right-side of the User Information Panel.



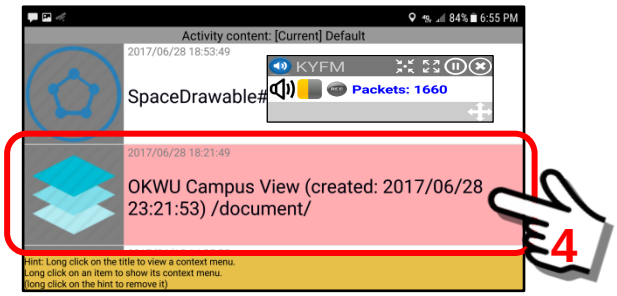
The Current Activity content will be displayed. In this example, we are looking for the "OKWU Campus View" custom layer that we created previously. Although the functional layer is made up of two (or more) parts, we will be editing the Map User Layer in order to add another Radio Station URL link.



There are two parts to the custom "Map user layer".

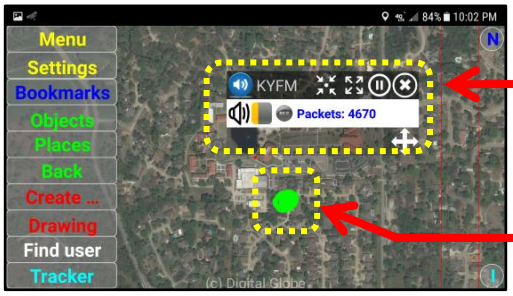
(1) The Object (icon or green dot)
(2) The Map User Layer

In this example, to edit the Map User Layer, click on the “OKWU Campus View” content header.



The Map User Layer will be displayed on the screen. Depending on the zoom level and screen coordinates, you may need to navigate to the general area of the college campus before you see the “green dot” that you created previously. When located, zoom in to a lower level to see the OKWU College Campus area.

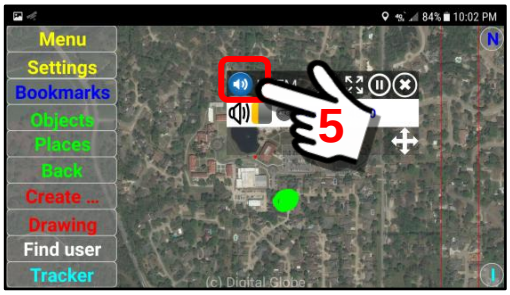
As shown below, both the Object (green dot) and the KYFM floating window panel should be visible.



The “new” Radio Station floating window that will be used to create the KYFM Radio Station URL link.

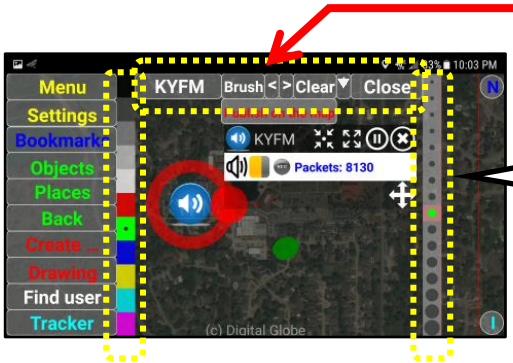
Object that was created with 1st Radio Station URL Link.

To install the KYFM Radio Station URL link, perform a “Long click” on the Speaker Icon located in the upper left corner of the floating window panel. An object (blue speaker) will be created with red editing “handles”.



Long Click

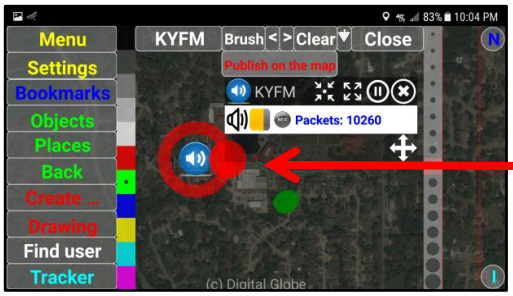
Performing a “Long click” will copy the “icon” from the floating window panel and install it on the Map User Layer. Notice that as the icon is installed, the Map User Layer panel is put into Edit Mode.



As the new icon is installed, the Map User Layer panel is put into Edit Mode for the KYFM object.

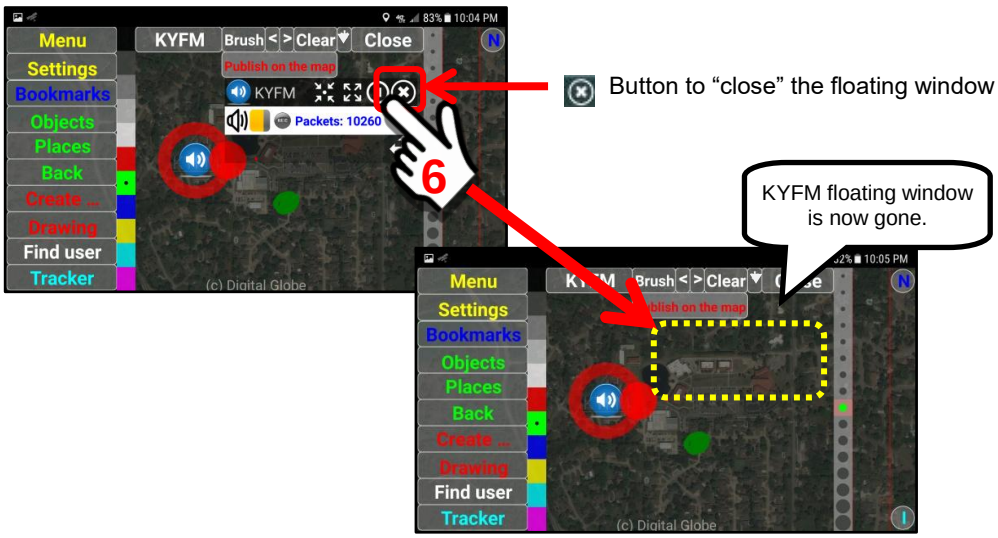
When the “Object” is created, the URL link is activated and the KYFM Radio Station Icon is displayed.

The standard Drawing Mode Tools may be used to move and re-size the icon we have just installed on the screen.



The “new” KYFM Radio Station URL link has been moved to another location on the screen and made smaller to match the size of the other object (green dot).

Since we are now DONE with the KYFM floating window, we can remove it from the screen for now. Click on the “X” Button to remove the floating window.

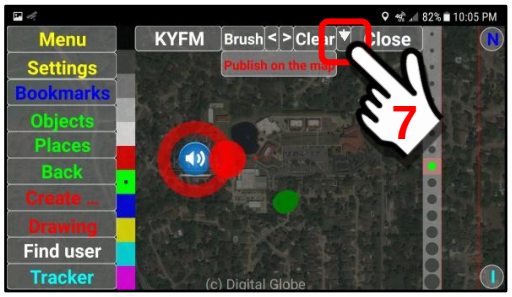


When finished with editing the KYFM object icon (size and position), we will need to save this “new” object onto the Map User Layer ***OKWU Campus View***.

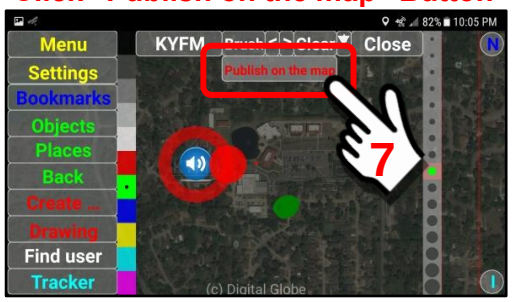
We are provided with two menu options to save the object.

(1) Click on the Operations Button to gain access to the pop-up menu.
(2) Click on the “Publish on the map”, red text button

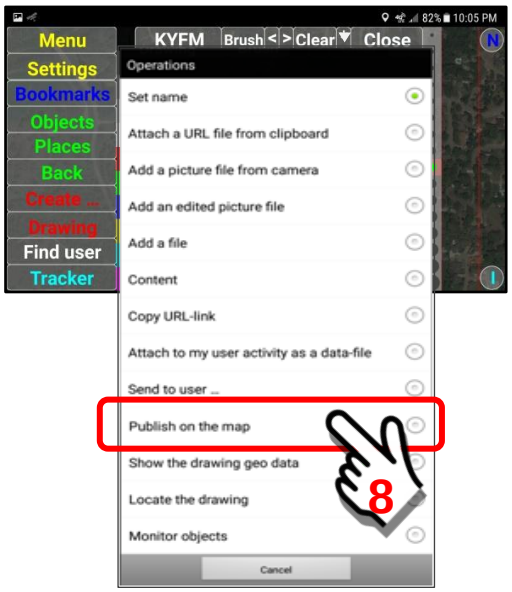
Click on Operations Button



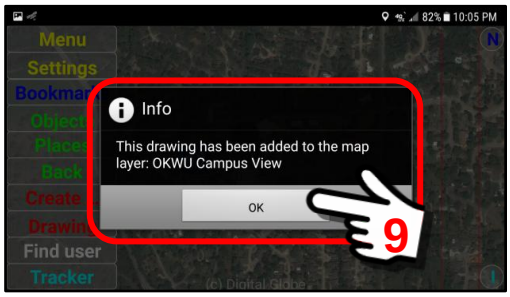
Click “Publish on the map” Button



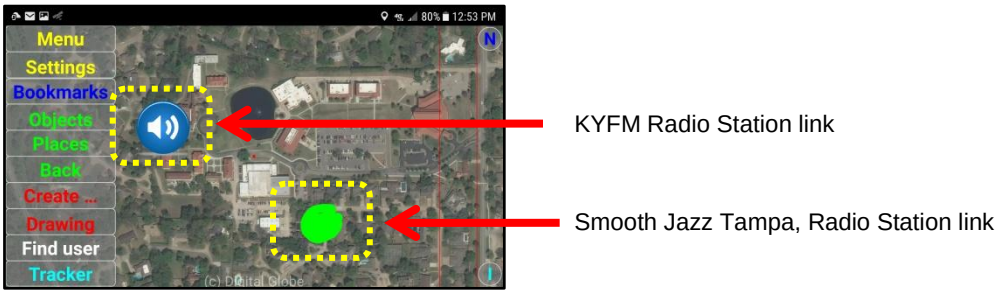
For this illustration, we will click on the “Publish on the map” menu option to SAVE the new KYFM Radio Station link, this will lock in the change.



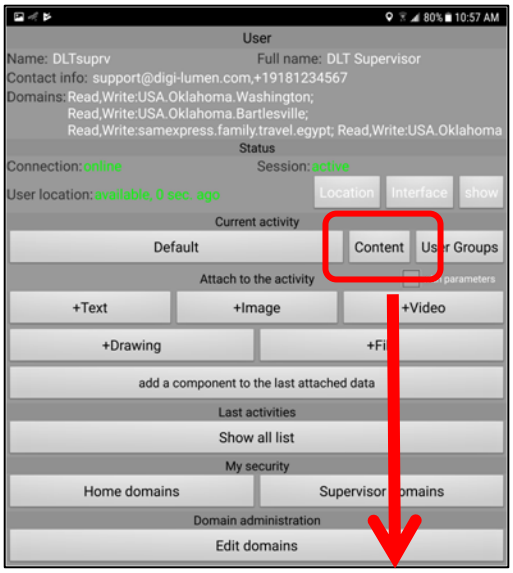
When the “new” object is successfully saved, a message will be displayed. Click on the “OK” Button to continue.

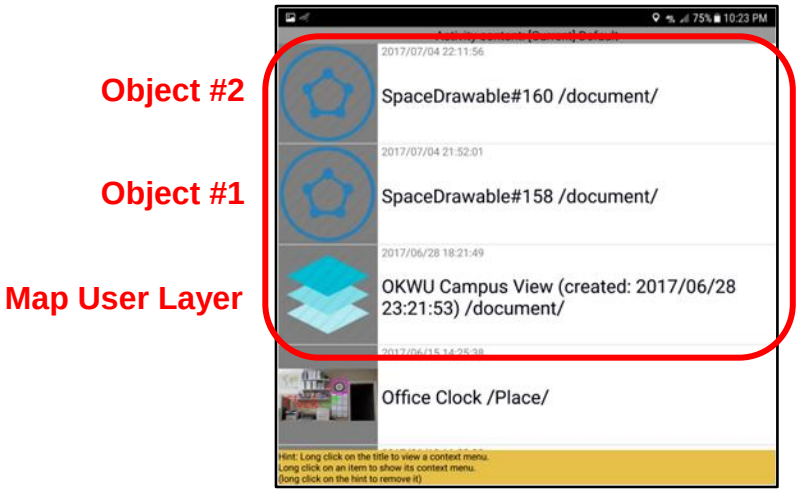


The screen will now display the 2 Radio Station links on the “Map User Layer” ***OKWU Campus View*** as shown below.



To review the “Map User Layer” and the objects that have been installed (2), look in the Content Folder on the User Information Panel.

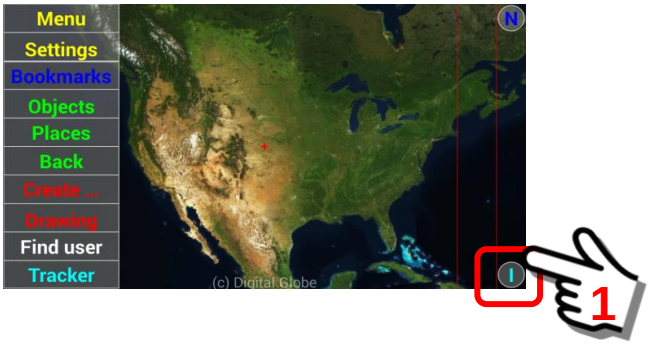




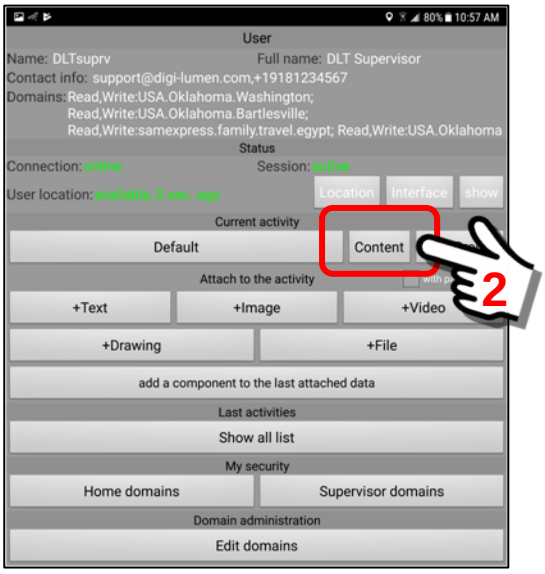
6. ***Edit (move) an existing Object on the "Map user layer".***

This section will illustrate how to EDIT an existing "Map User Layer" and move an object to another location on the map. The EDIT feature could be used to add more "objects" to the Map User Layer or change the actions that occur when an object is "clicked". In this example, we will move one of the three objects to another location on the screen.

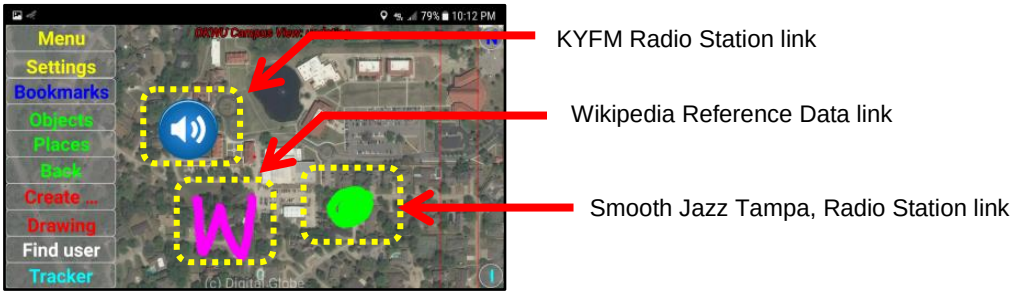
At the Main Map Screen, click on the User Information Button.



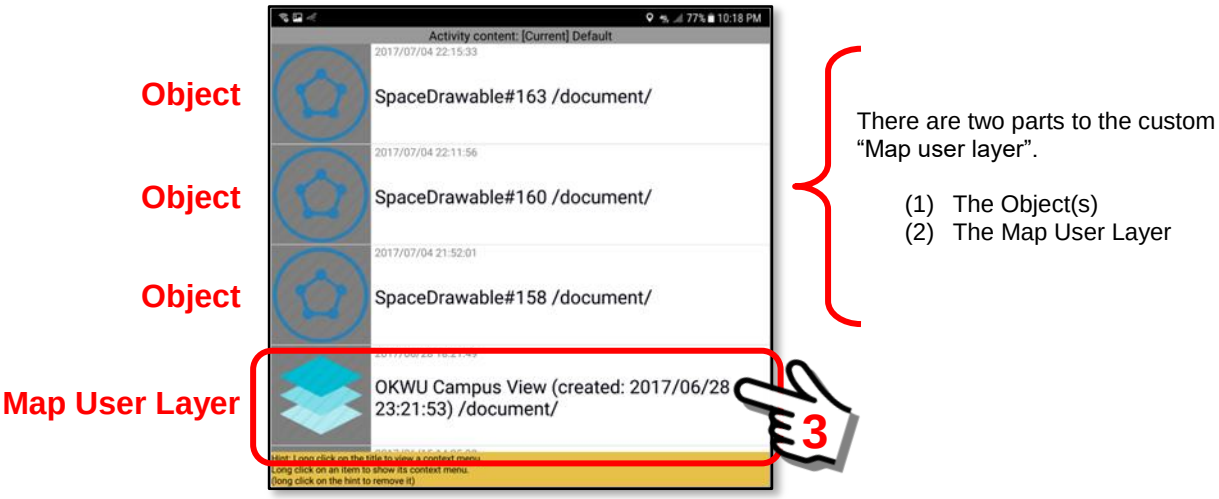
Perform a "click" on the Content Button located at the middle right-side of the User Information Panel.



The Current Activity content will be displayed. In this example, we are looking for the "OKWU Campus View" custom layer that we created. In this example, we have added a third object (Wikipedia Data) to the available objects.

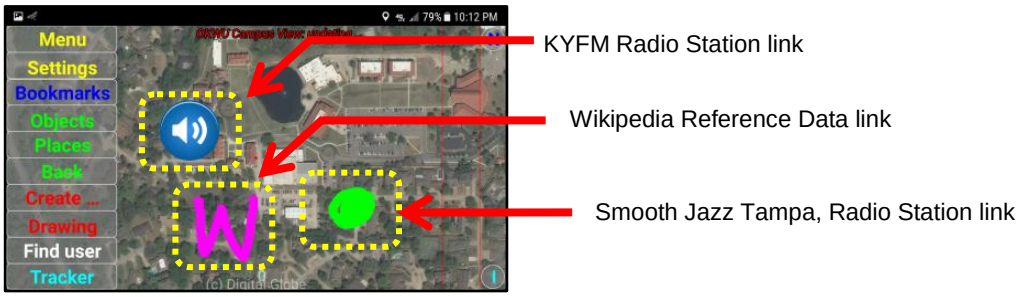


We will edit the Map User Layer. Click on the “OKWU Campus View” content header.



The Map User Layer will be displayed on the screen. Depending on the zoom level and screen coordinates, you may need to navigate to the general area of the college campus before you see the three (3) objects that were created. When located, zoom in to a lower level to see the OKWU College Campus area.

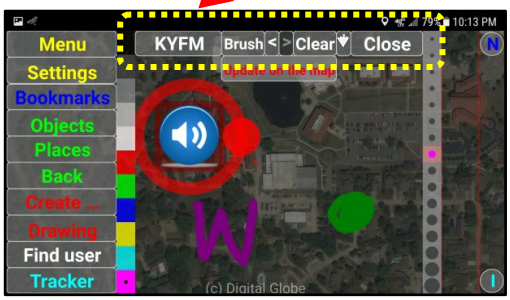
As shown below, 3 objects (green dot, purple “W” and blue speaker icon) should be visible.



To edit (change) the Object location on the screen, we will need to access the Edit Mode. We will change the location of the KYFM Radio Station icon. To do this, perform a “Long click” on the desired Object icon (blue speaker).

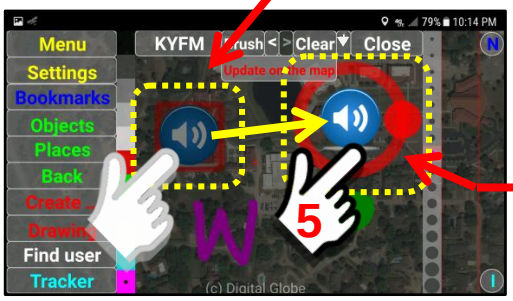
In edit mode (since we clicked on the KYFM blue speaker), the Drawing Mode is launched and all actions will be relative to the KYFM object.

Drawing Mode for the KYFM Object



In the Drawing Mode, using the drawing tools, click inside of the red circle and drag the blue speaker icon to another location on the screen. Release your finger. You will now see two blue icons. The blue icon surrounded by the red "square" is the original location, the blue icon surrounded by the red "circle" is the proposed "new" location.

Original location

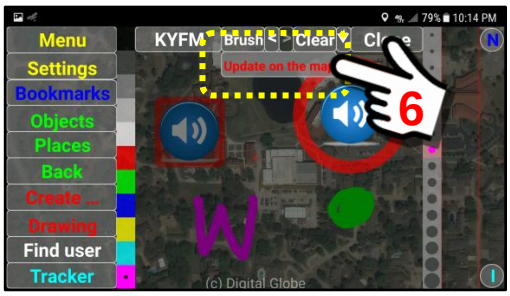


New location

To save the "new" location we will need to update the map with the new location we have selected. Once again, we have two options.

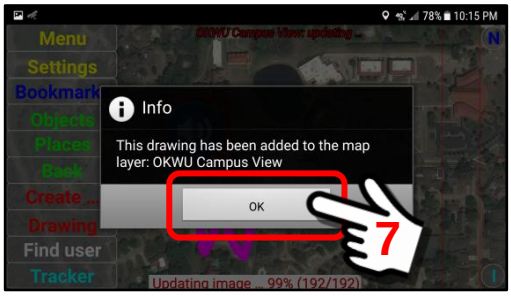
(1) Click on the Operations Button to gain access to the pop-up menu.
(2) Click on the "Update on the map", red text button

Click "Update on the map" Button

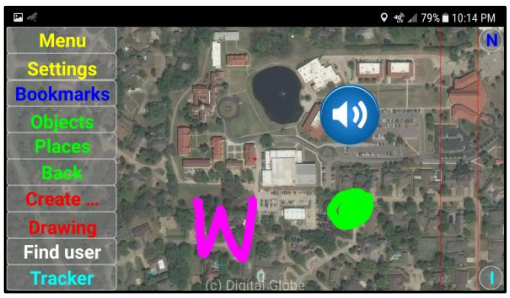


If the Map User Layer “OKWU Campus View” has been successfully updated with the new location, a pop-up box will appear with a message that the drawing has been added.

Click “OK” to continue.

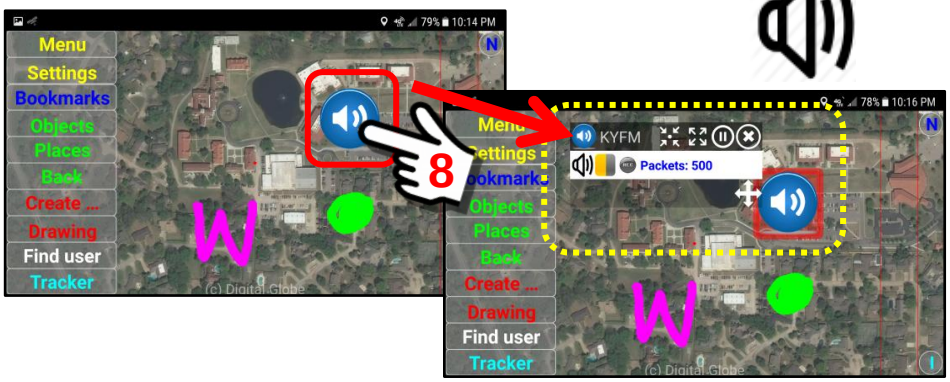


The Map User Layer should now look as shown below.

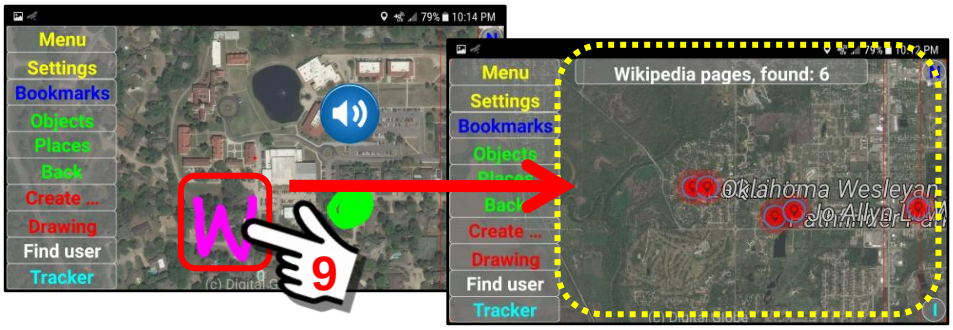


To demonstrate the features, follow the examples below:

KYFM Radio Link



Wikipedia Link



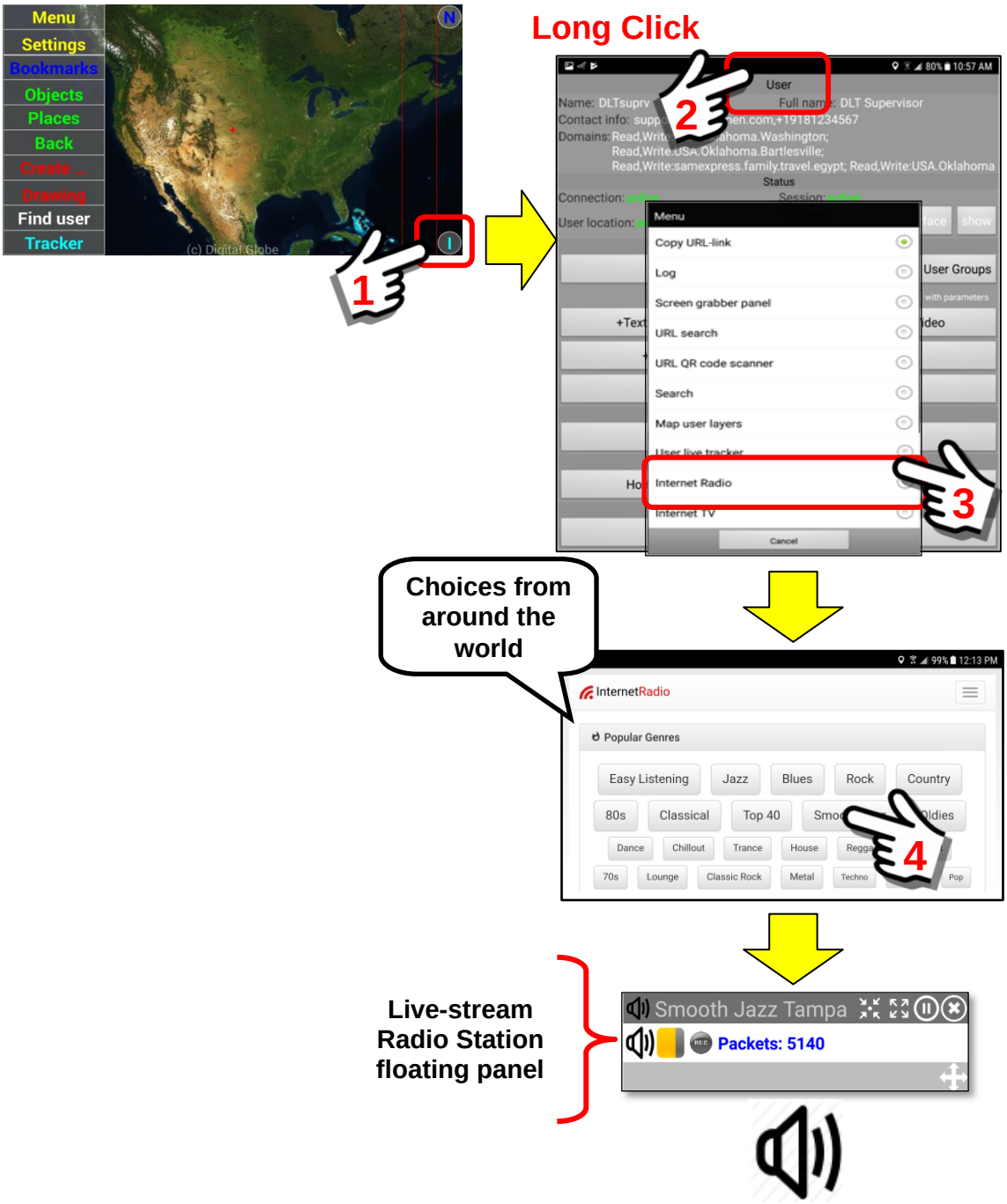
16.4. Example – Configure the "Internet Radio" option

Overview:

The "Internet Radio" option will allow a user to access and create floating panels that will live-stream audio feeds (music, news, talk-radio) from thousands of radio stations worldwide. Although most are "free", some may require subscription services. This feature will allow a user to set up stations/broadcasts that are of interest.

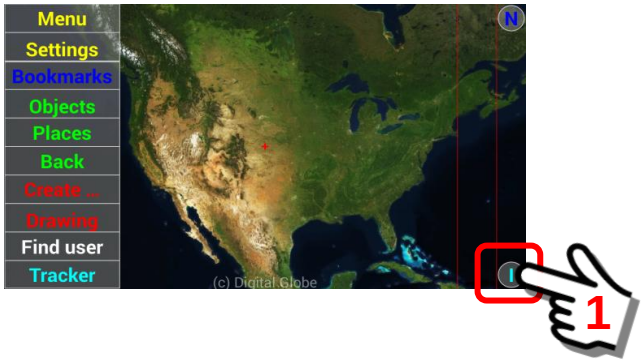
Accessing the Internet Radio feature set:

Shown below is the navigation process to access the "Internet Radio" feature set.

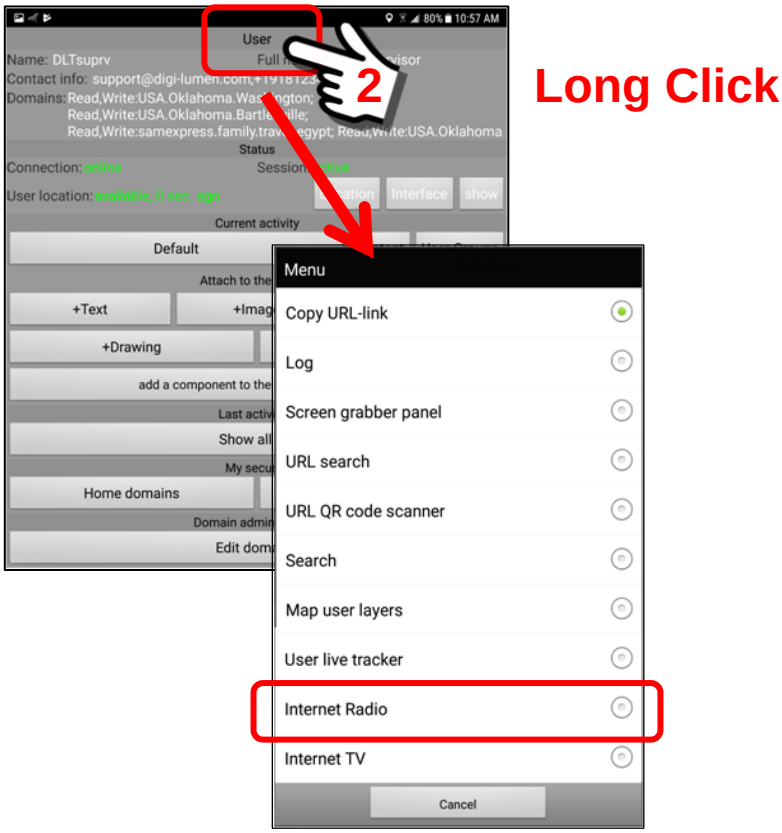


Steps to create an “Internet Radio” floating panel:

1. ***Navigate to the “Internet Radio” menu item.***
   At the Main Map Screen, click on the User Information Button.

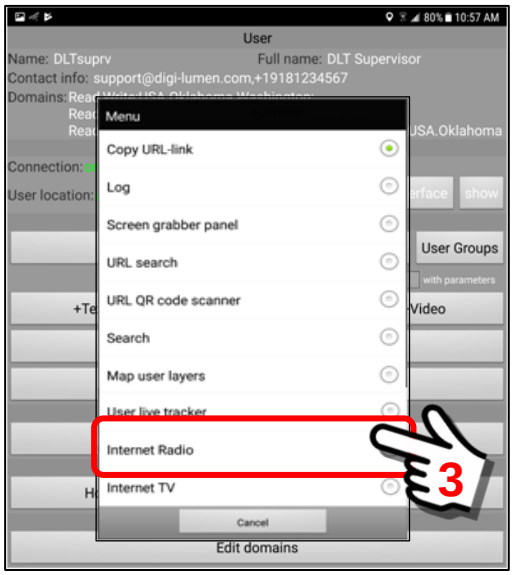


Perform a “Long click” on the “User” text heading located at the top of the User Information Panel.

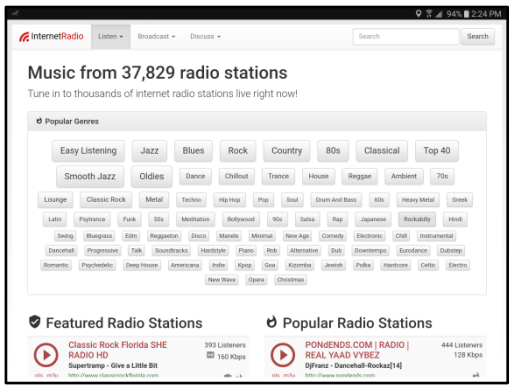


A pop-up menu will open with 10 options.
We are interested in Option #9 – Internet Radio.

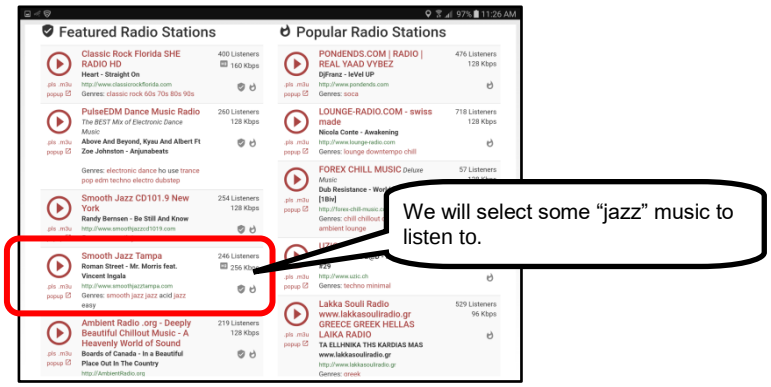
2. ***Access the Internet Radio website and select desired genres.***
Click on the “Internet Radio” menu item.



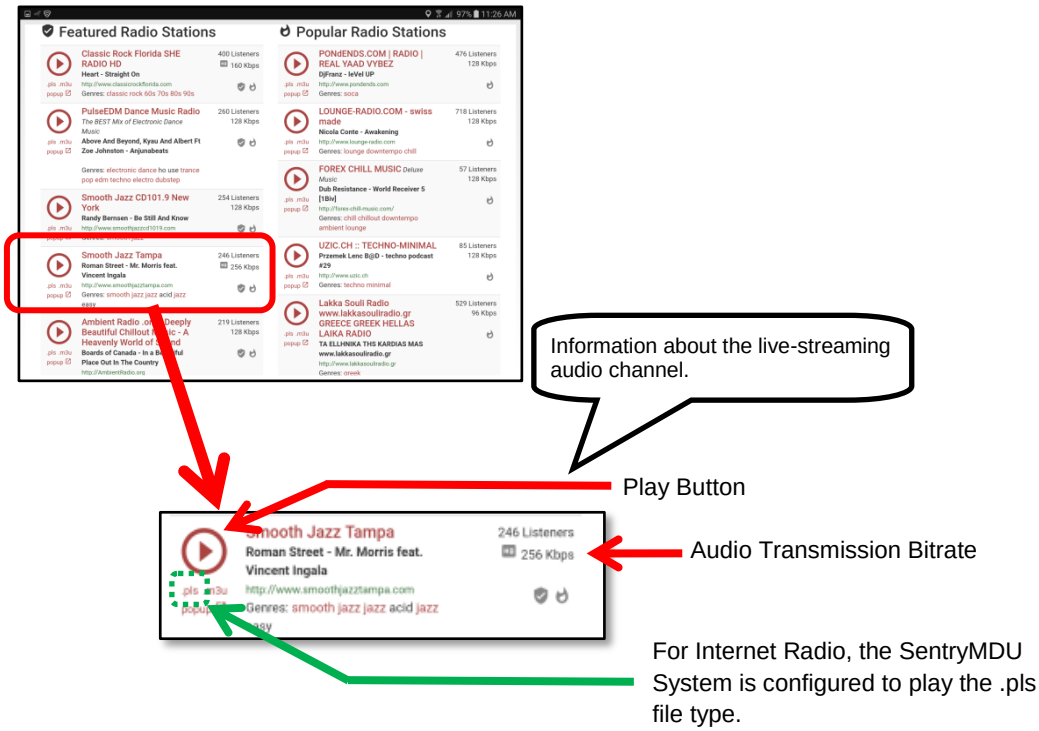
The Internet Radio menu item is a “link” to a website address that includes thousands of radio stations worldwide. These radio stations include mainstream commercial stations as well as individuals that host “Shoutcast” Servers to stream live music.



Scroll down the website screen to select a genre that you would like to listen to. For this example, we will select a smooth jazz genre.

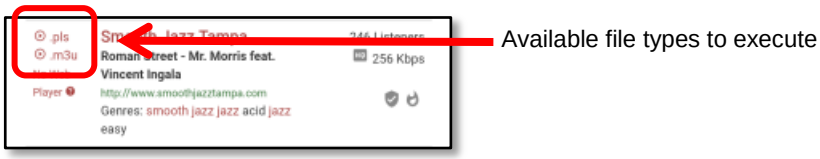


3. ***Select the desired music station and live-stream webcast.***
In this example, we will select one of the “Featured” Stations.



The SentryMDU System is able to play the internet radio by “intercepting” the event when a user clicks on the “play” button. On a computer, a media player would be launched when the play button is clicked. Since we are using a Floating Window (instead of a Media Player) on a Mobile Device, we capture the event, but do not launch a media player.

To access the internet radio content, we will need to click on the “.pls” file type. Clicking on the “Play” Button reveals two types of available file formats.



.pls -- **This is the file type we want**

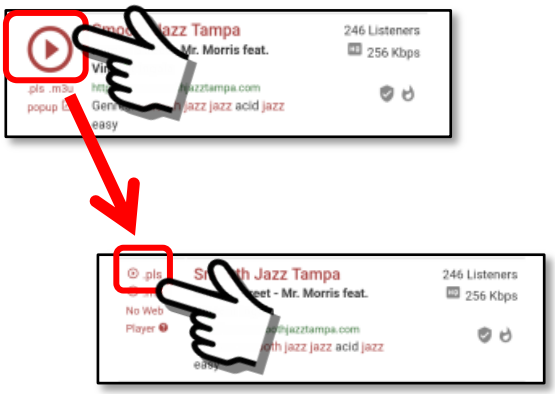
.m3u – We will NOT use this one.

4. ***Launch the Floating Window music panel.***
Click on the “Play” Button. This action should expose the “ .pls” file type.

Note: It has been observed that Tablets and Smartphones function differently with this website. The ***Internet Radio*** website apparently detects (attempts to detect) the type of device that is accessing the website. The HTML code sent to the device will appear somewhat different depending on the screen size/resolution of the display device.

<u>On the Tablet</u>, in most cases, the desired “.pls” file button is directly available to be clicked.

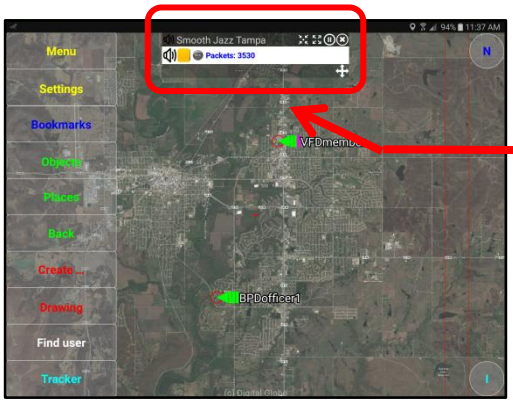
<u>On the Phone</u>, since the display is smaller, often the .pls file link is NOT shown and the “Play “ Button must be clicked first. At that point the “.pls” file type will be exposed.



When the “.pls” file extention link is clicked, a floating window is opened on the mobile device. In this example, we have the “Smooth Jazz Tampa” now playing via a floating window panel.

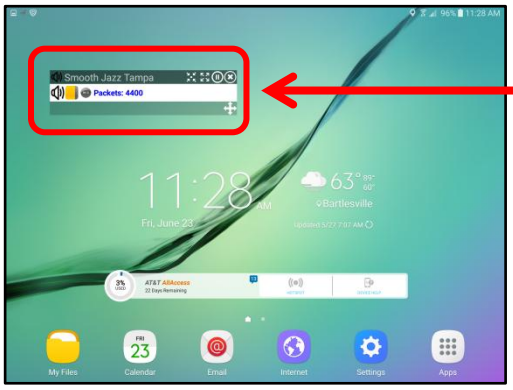
Once the Floating Window panel is active, it is possible to SAVE the radio station URL to put on a Bookmark. To save the URL onto the “clipboard” (.TEMP), click on the icon in the upper left corner of the floating window panel as shown below.

You may now navigate to other screens. As shown below, the floating window will remain on top of other windows.



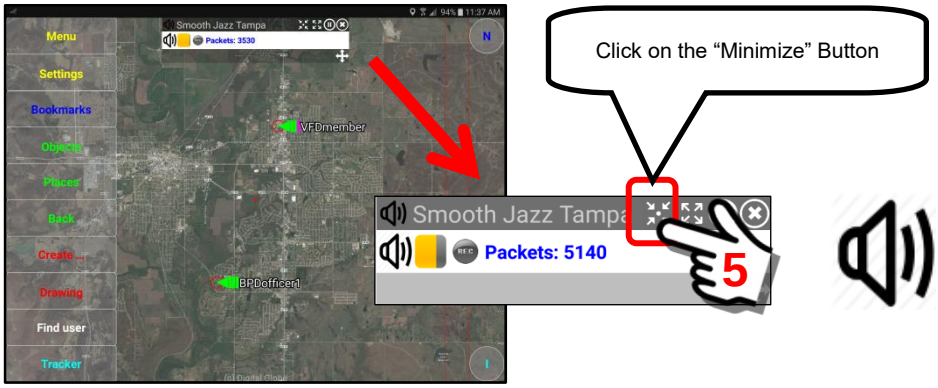
The Internet Radio floating window panel shown on top of the Main Map Screen.

Another example of the Internet Radio floating window panel shown on top of the mobile device Home Screen.



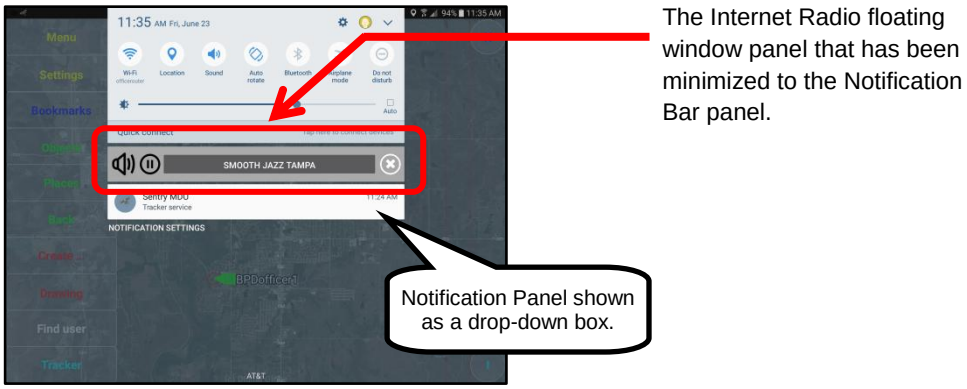
The Internet Radio floating window panel shown on top of the Main Map Screen.

5. ***Minimize the floating window to the Notification Bar and mute sound.***
To keep an active panel, but temporarily remove it from the screen, it is possible to minimize the Internet Radio floating window panel to the Notification Bar of the mobile device. The music will continue to play.

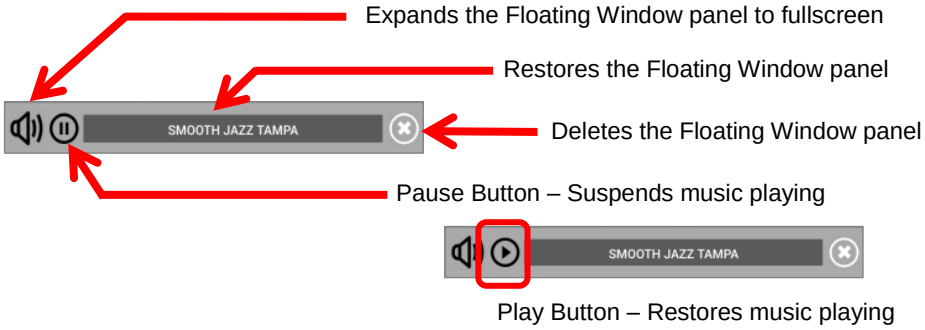


Click on the Minimize Button on the floating window panel.
The floating window panel is minimized to the Notification Bar, the music continues to play.

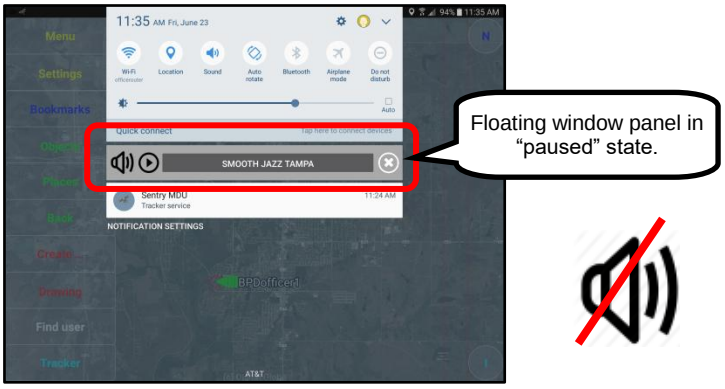
Notice that as the floating panel is minimized to the Notification Bar, the option exists to "pause" the playing of the music. To pause, click on the Pause Button. To resume playing, click on the Play Button.



Parts of the minimized ***Internet Radio*** floating window panel. These are options available to the User.

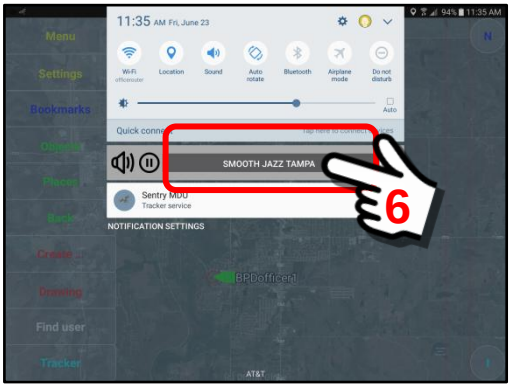


In this example, the ***Internet Radio*** floating window panel is minimized and is in a “paused” state.

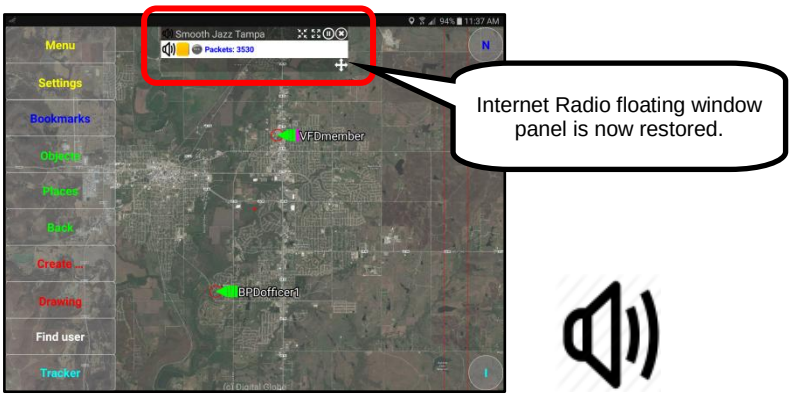


6. ***Retrieve the floating window music panel from the Notification Bar.***
To retrieve/restore the Internet radio floating window panel, click on the Heading Button. In this example, it is “Smooth Jazz Tampa”.

A click on the title will restore the floating window panel to the mobile device display screen.



The floating window is now RESTORED to the mobile display.



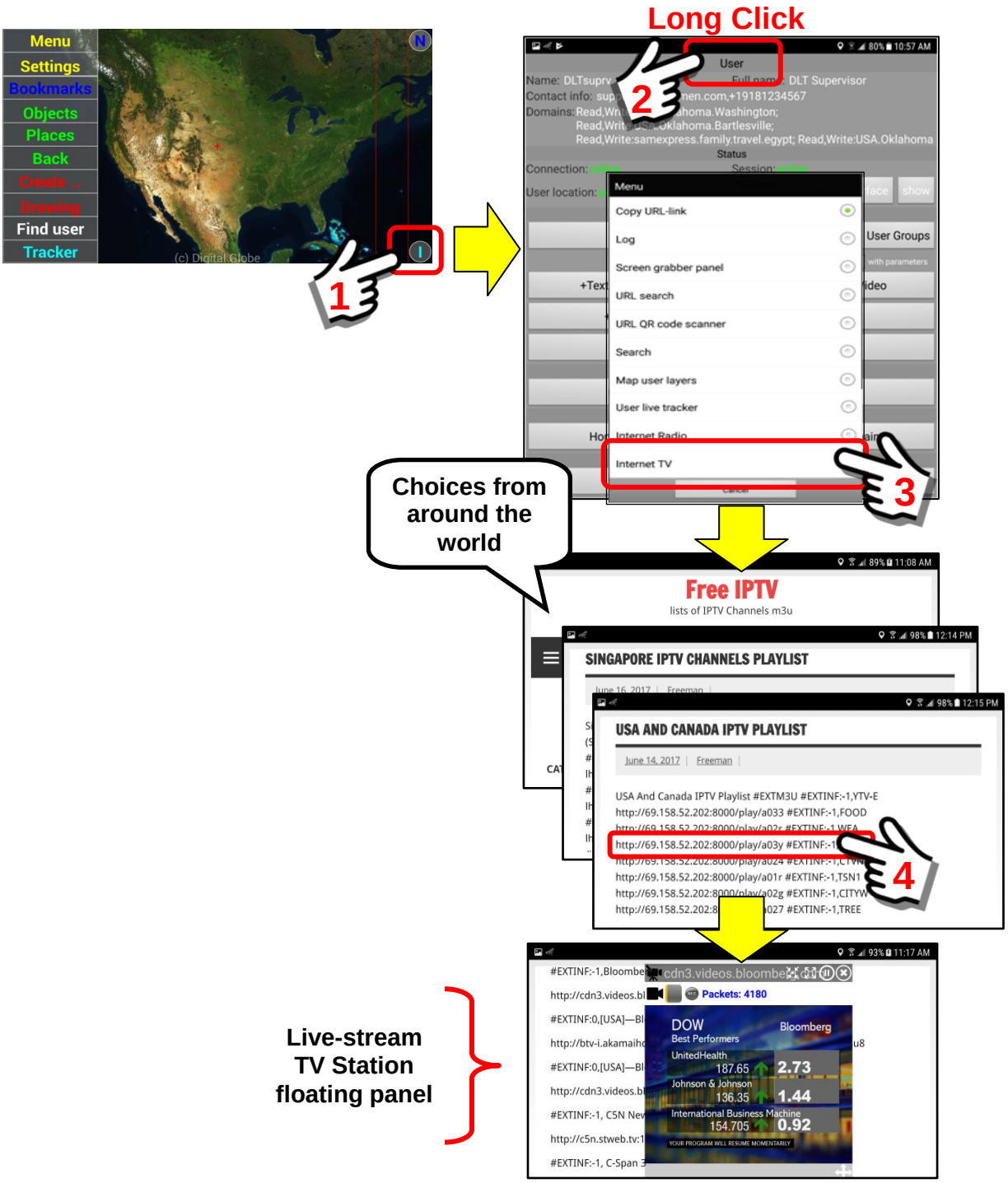
16.5. Example – Configure the "Internet TV" option

Overview:

The "Internet TV" option will allow a user to access and create floating panels that will live-stream audio-video TV feeds (Television Broadcasts) from thousands of TV stations worldwide. Although most are "free", some may require subscription services. This feature will accept any "free" live-streaming content in the .m3u8 file format.

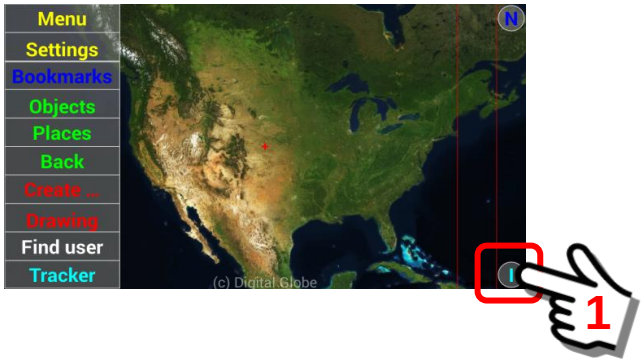
Accessing the Internet TV feature set:

Shown below is the navigation process to access the "Internet TV" feature set.

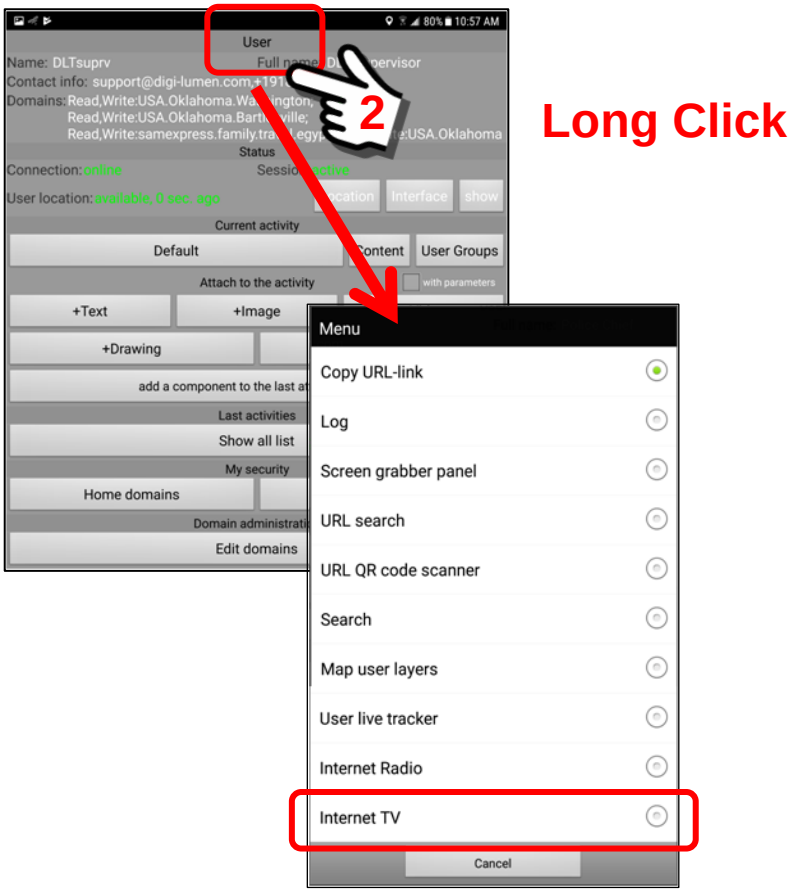


Steps to create an “Internet TV” floating panel:

1. ***Navigate to the “Internet TV” menu item.***
   At the Main Map Screen, click on the User Information Button.

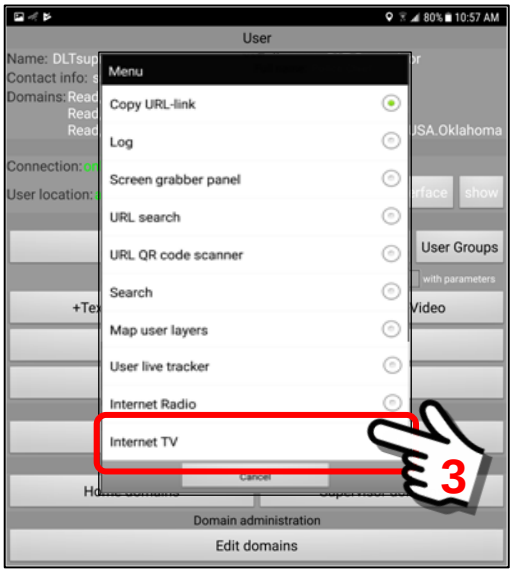


Perform a “Long click” on the “User” text heading located at the top of the User Information Panel.



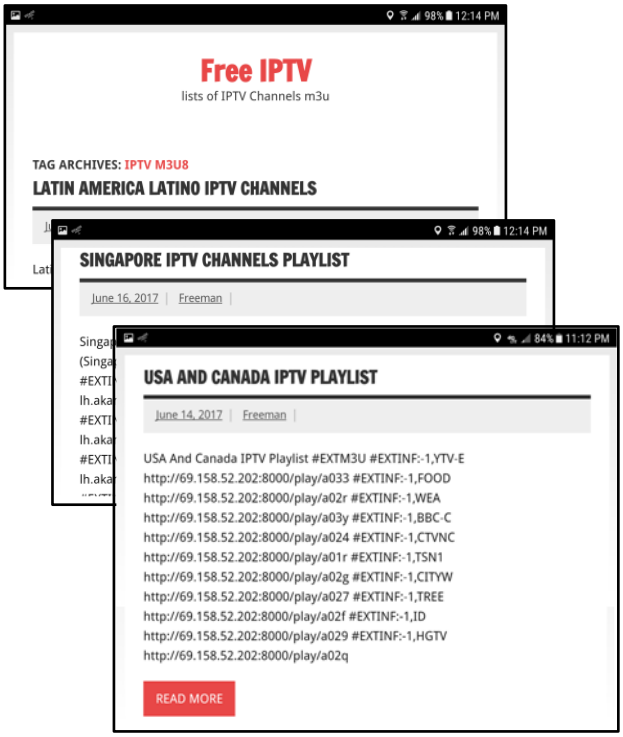
A pop-up menu will open with 10 options.
We are interested in Option #10 – Internet TV.

2. ***Access the Internet TV website and select desired genres.***
Click on the “Internet TV” menu item.



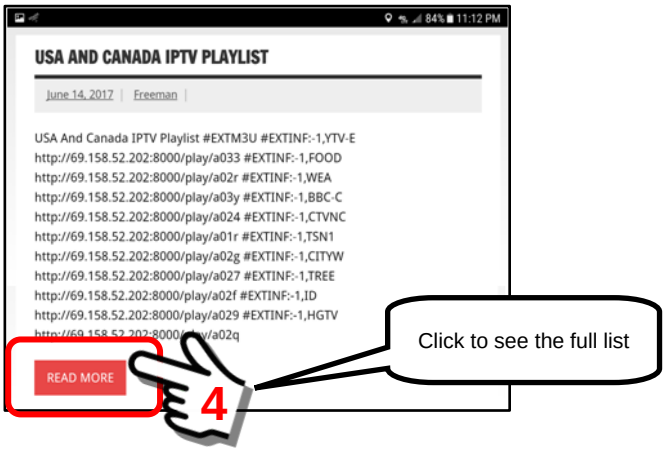
The Internet TV menu item is a “link” to a website address that includes thousands of TV stations worldwide. These TV stations include mainstream commercial stations as well as smaller stations that stream live TV content.

Important Note: Most of the Internet TV Stations broadcast their content via IP port numbers 8000 – 9000 (ie 69.158.52.202:8000). If you are having trouble connecting, make sure that your Router or Security Firewall does not block/filter these port numbers. Content must be in the .m3u8 file format.

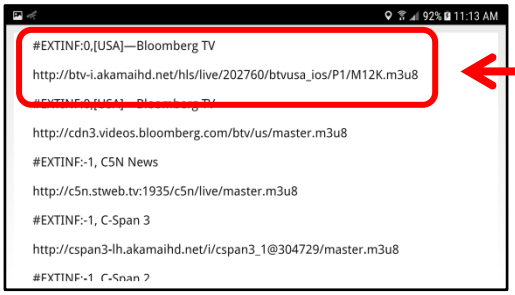


Scroll down the website screen to select a topic/genre that you would like to watch. For this example, we will select “Bloomberg TV” which is a financial news broadcast.

Once in the desired CATEGORY, click on the READ MORE button to see the full list of available Internet TV stations.



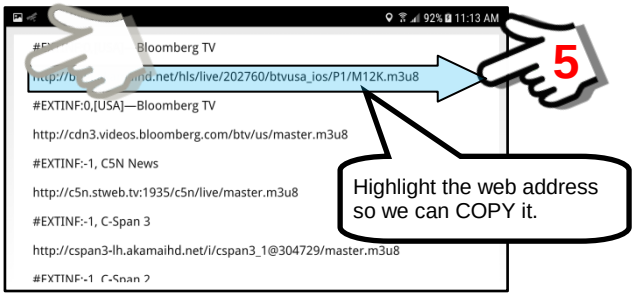
3. ***Select the desired TV station and live-stream broadcast.***
In this example, we will select the Bloomberg TV Station. Notice that each station entry has a web address from which the live-streaming originates. The SentryMDU System will use this internet address to create a floating window that shows the streaming content.



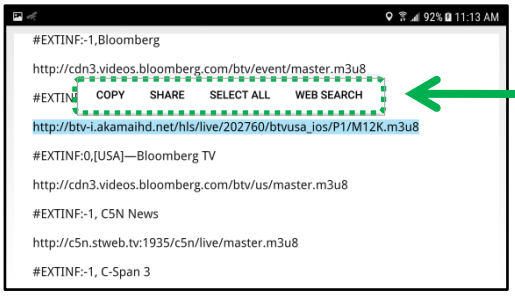
We will select the Bloomberg TV broadcast for our example.

The objective is to “highlight” the web link and COPY this website address into the SentryMDU processing engine. That action will create a floating window of live-streaming audio and video.

Perform a click at the starting point of the web “link” and drag your finger to highlight the web address.

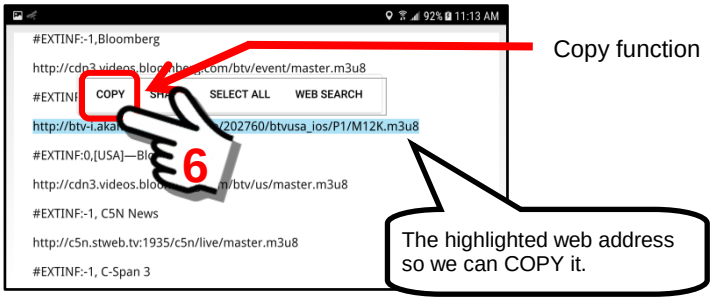


When finished with highlighting the web address, a pop-up box with 4 menu options will appear (Copy – Share – Select all – Web Search). Depending on the manufacturer of your mobile device, your menu may have different (more/less) options. However, it should have a “Copy” function.



A pop-up menu will appear that will enable “copying” the web address of the live-streaming broadcast for Internet TV.

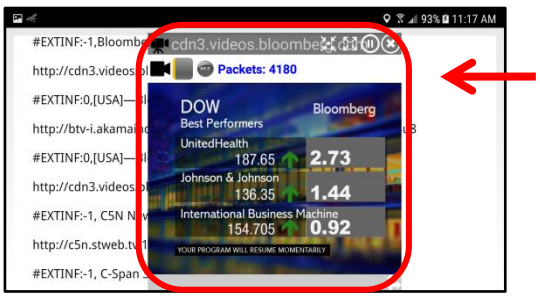
Click on the “Copy” menu item.



4. ***Launch the Floating Window TV panel.***

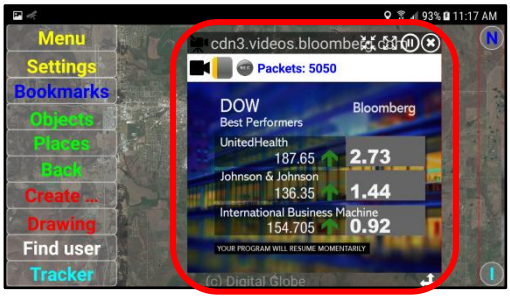
Click on the “Copy” Button. This action will copy the web address link (with the .m3u8 file type) into the SentryMDU processing engine. A floating window that live-streams audio and video will be created.

It may take a few seconds for the system to contact the remote “Internet TV” broadcast website, stabilize the data transfer, and begin to display video. The type of connection (WiFi or Cellular) and the available bandwidth will affect the stability of the video display. In this example, we have selected “Bloomberg TV” which is now playing via a floating window panel.



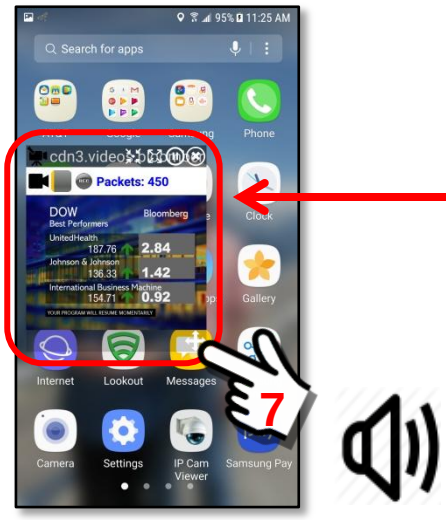
The Bloomberg TV broadcast will be displayed

You may now navigate to other screens. As shown below, the floating window will remain on top of other windows.



The ***Internet TV*** floating window panel shown on top of the Main Map Screen.

Another example of the ***Internet TV*** floating window panel shown on top of the mobile device Home Screen.

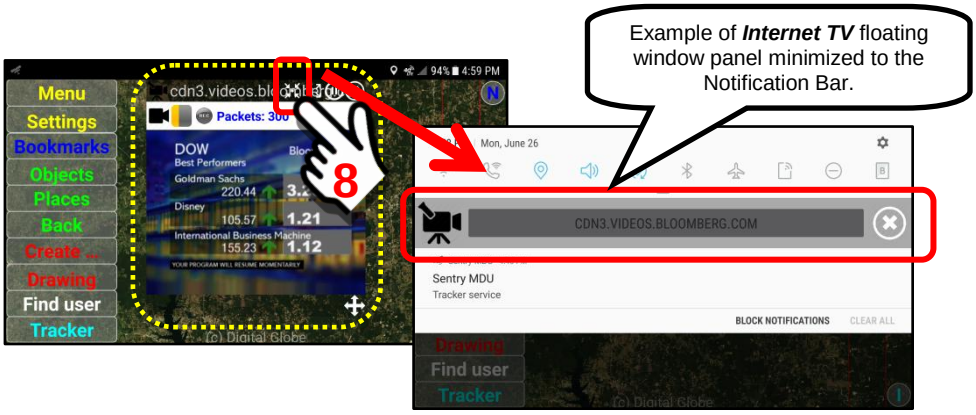


The ***Internet TV*** floating window panel shown on top of the device Home Screen.

Note that the panel has also been "resized" to be smaller.

All standard floating window tools are available (record, pause, minimize, fullscreen, etc.)

5. ***Minimize the floating window to the Notification Bar and mute sound.***
To keep an active panel, but temporarily remove it from the screen, it is possible to minimize the ***Internet TV*** floating window panel to the Notification Bar of the mobile device. See the previous section (**Section 16.4**) with details on how to minimize and restore floating window panels to the Notification Bar.



16.6. Description of buttons and features

16.6.1. Contact Information (Username, Security Domain)

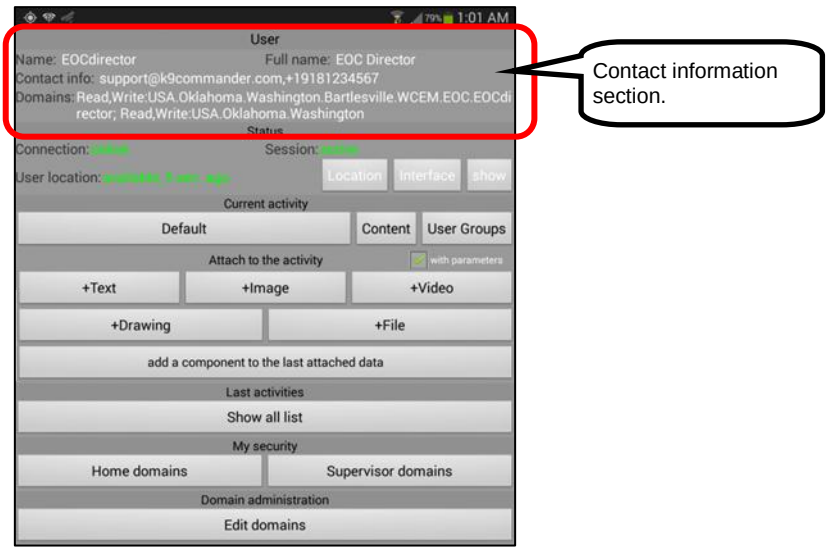
Overview:

The User Panel (via the "I" icon) is only available to the registered user of the mobile device. However, another similar User Panel is available to remote users via the Mobile Object panel (assuming security credentials allow). Both show the same contact information.

Important Note: The contact information displayed on the User Panel was entered during device registration. See Section 3 for details.

Contact data on the User Panel:

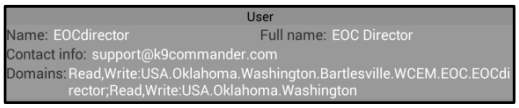
The contact information is located on the top of the User Information Panel..



Description of the Contact Information data:

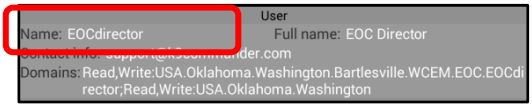
1. ***User Panel contact information***

   This section will describe the contact information that is available on the User Panel. None of this data may be edited from the User Panel.



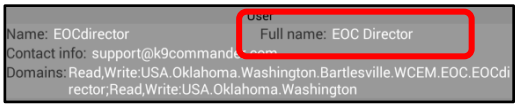
   <u>Name</u>

   This is the "Username" that was selected by the user that registered the mobile device.



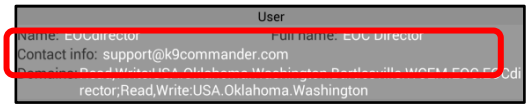
Full name

This is the full name of the person. It can be a “position” name such as EOC Director or a “work” name such as Officer Smith or a personal name such as Victoria Reyes.



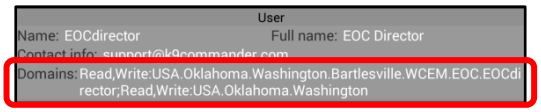
Contact Info

This is a location for an email address and phone number. The phone number is “optional”, but if entered, additional buttons will appear within the Sentry MDU App that will enable phone calls to be made from within the application.



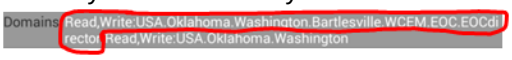
Domains

The “Domains” field shows the security domain of the user. The security domains are what determine the remote access capability of a remote device.

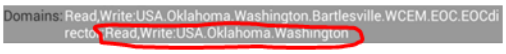


Two components of the security access provisions:

1. ***The type of security access assigned to YOUR UserID.***
   The first component establishes Read/Write provisions of your account. This allows who can see your location (ie GPS), monitor the sensors on your mobile device and remotely access/control your mobile device.

2. ***What access you have to view/change OTHER USER mobile devices.***
   The second component establishes the access and control YOU have over other user devices. This determines whether or not you can view/monitor/control another user’s mobile device.

16.6.2. Connection Status (Server and GPS status)

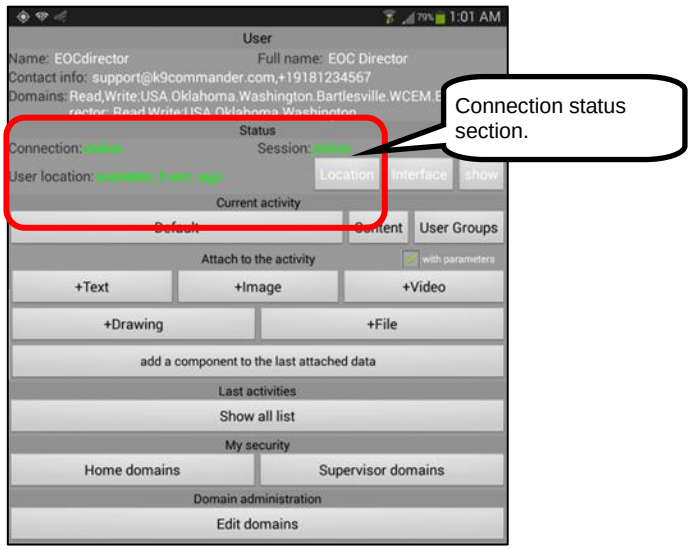
Overview:

The User Panel provides a summary status of the Sentry MDU device. This panel allows a user to see if the connection to the Sentry MDU Data Server has been lost and the timeframe of the last GPS location update.

This section will describe the “Status” part of the User Panel.

Connection status as shown on the User Panel:

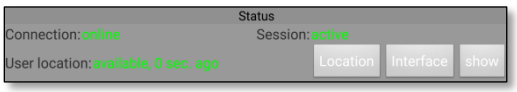
The Status is located on the upper mid-point of the User Information Panel..



Description of the Status Information data:

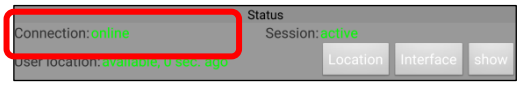
1. ***Status summary information***

   This section will describe the status information that is available on the User Panel. None of this data may be edited from the User Panel.



   <u>Connection</u>

   This is an indication is the mobile device is “online” with the Sentry MDU Data Server. Green if online, red when offline.

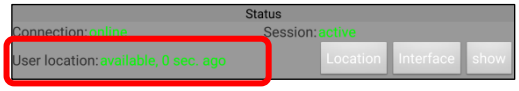


Session

This is an indicator that the current Server Session is “active”. In all cases when the Connection is “online”, the Session should be “active”. If not, there is a problem with the Sentry MDU Data Server configuration or network system firewall.

User Location

This is an indication if the User location (GPS coordinates) is available and the last time it was updated. The periodic update timeframe should correspond to the time interval set in the configuration settings.



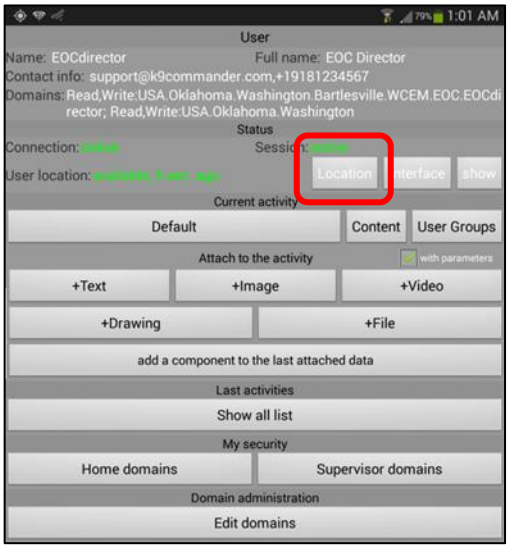
16.6.3. The “Location” button

Overview:

The “Location” Button on the User Panel will show the current GPS location of the mobile device. This feature is useful if a user wants to know their current location. When the “Location” Button is clicked, the display will jump to the Main Map screen with the screen centred over the current GPS location of the mobile device. This section will illustrate this functionality.

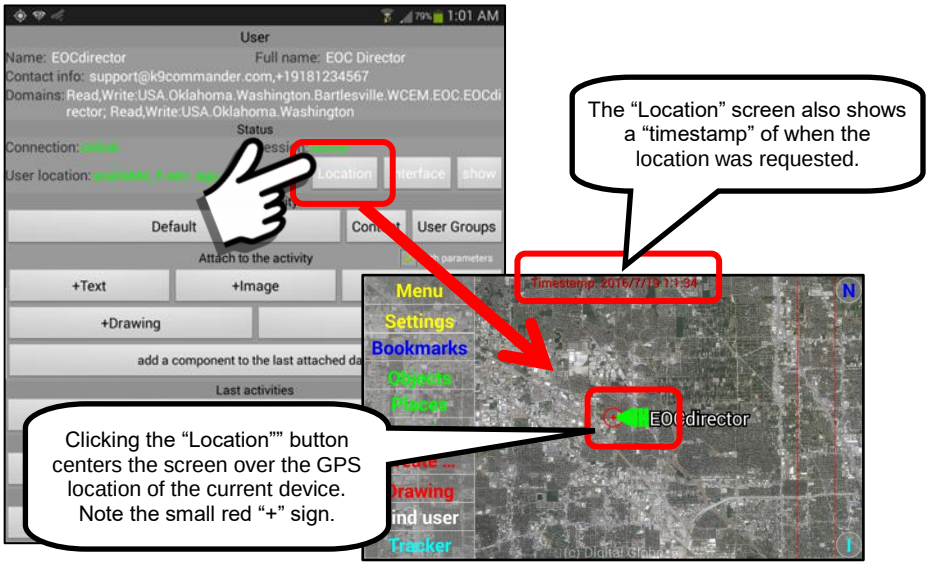
User Panel – “Location” Button:

The “Location” Button is located on the upper, right hand side of the User Panel screen. Note that the “Location” Button is white text on a gray background. This format is used because the button is generally not used very often, but is available.



Description of the “Location” feature:

To locate our current location, click on the “Location” Button. The screen will jump to the current GPS location of our mobile device.



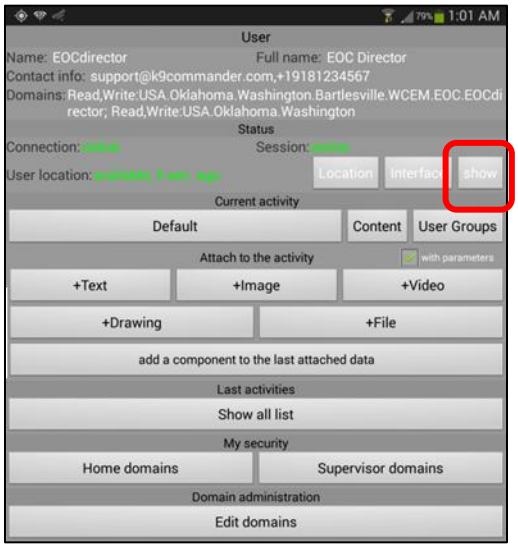
16.6.4. The “Show” button

Overview:

The “Show” Button on the User Panel will open the Tracker Panel on the mobile device. This feature allows a user to make a “one click” jump to the Tracker Panel.

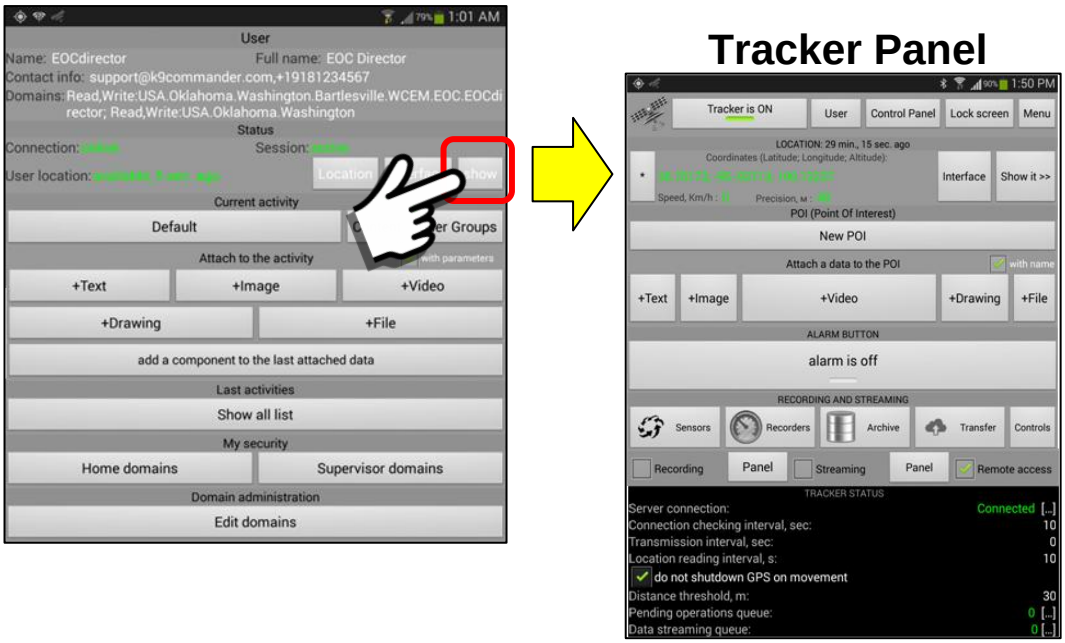
User Panel – “Show” Button:

The “Show” Button is located on the upper, right hand side of the User Panel screen. Note that the “Show” Button is white text on a gray background. This format is used because the button is generally not used very often, but is available.



Description of the “Show” feature:

To jump to the Tracker Panel from the User Panel, click on the “Show” Button. The screen will jump to the Tracker Panel of our mobile device.



16.6.5. The “Current Activity” designation button

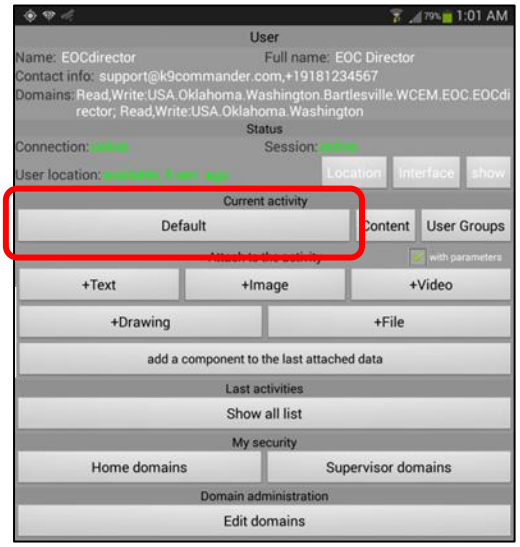
Overview:

The content stored on the Sentry MDU System is arranged by categories specified by the User. As initially configured, the system uses a default category called “Default”. Users may create additional categories as needed.

This section will describe how to add additional activity categories to an existing content database. In this example, we will add a new category called “Summer” to the list of available categories.

User Panel – “Current Activity” Button:

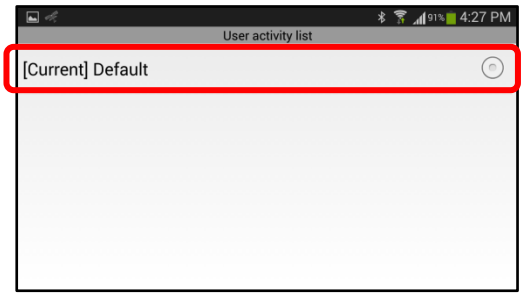
This button is located in the center of the User Panel screen.



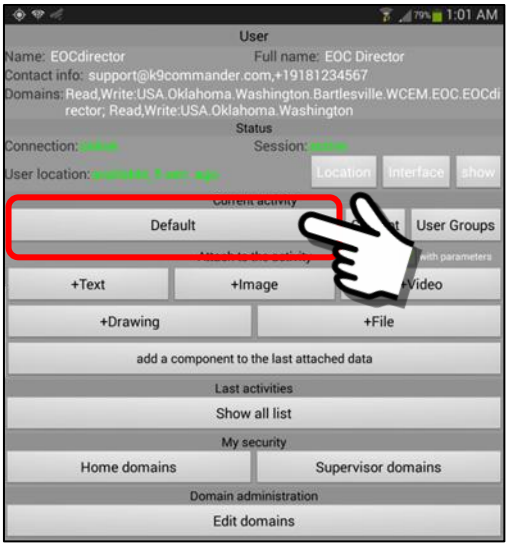
Description of the “Current activity” feature:

1. ***When to use the “Current Activity” Button.***
   This Button is used when a user would like to add additional Activity Categories to Content storage. There is no limit to the number of categories.

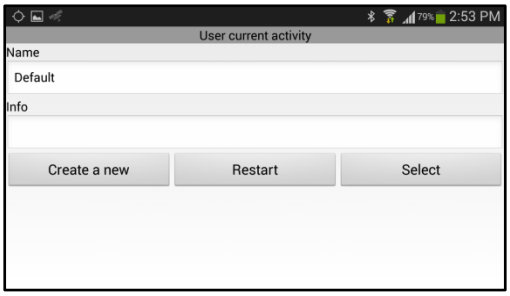
   In this example, if we look at the “Show all list” Button, at the bottom of the Panel, we will see that we currently have only the one “Default” category.



To add another category, click on the Current Activity Button. It presently shows “Default” as the heading.

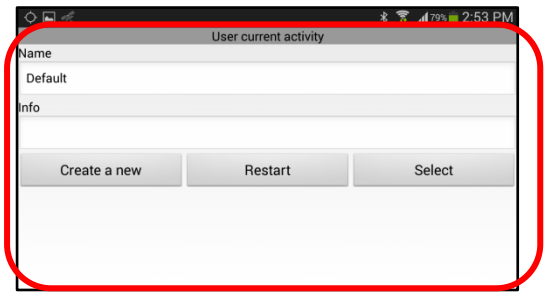


A User Current Activity Panel will open. This is the Panel we will use to create new entries.



2. ***Description of the User Activity Panel.***

The parts of the User Activity Panel are described below.



<u>Description of the User Activity Panel</u>

<u>Name</u>

This is the name of the Activity Category that you are creating. It must be at least 2 characters (max 255), alphanumeric.

Info

This is an optional text field for additional descriptive information about the Activity entry. It may be a maximum of 255 characters, alphanumeric.

"Create a new" Button

This button will create the new category entry once the Name and Information have been entered.

"Restart" Button

This button will open a listing of available activity categories. When a new category is selected, the current content database will be reloaded (restarted) with the new content data.

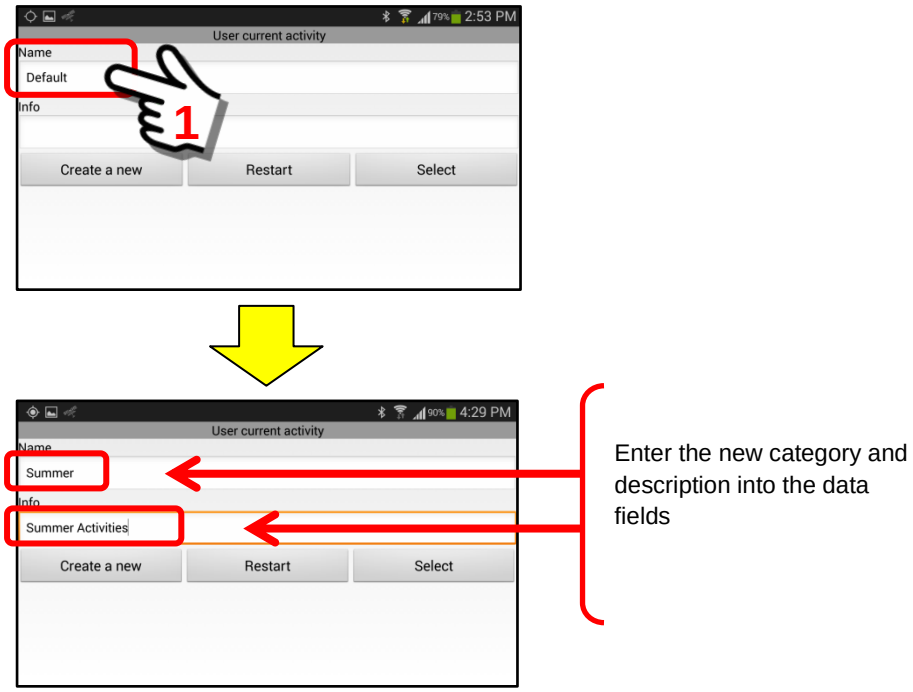
"Select" Button

This button will create a duplicate of an existing current activity category. The duplicate category will be "empty" of content.

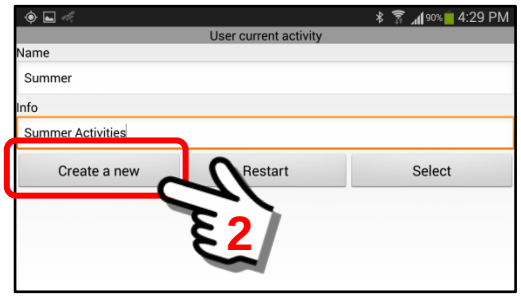
3. ***Creating a new Current Activity category.***

To create a new entry, open the "User Current Activity" Panel as shown in the previous section.

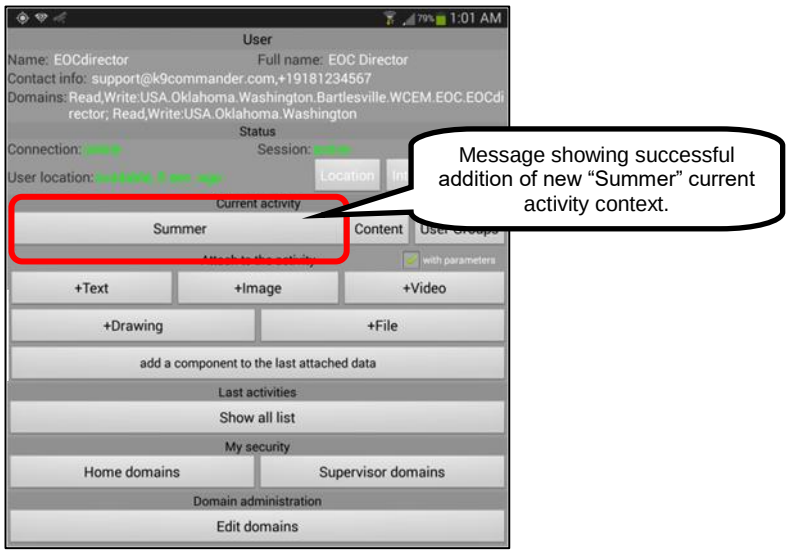
Click in the Name text field. An on-screen keyboard will open. Type in the name of the desired "new" activity category. In this example, we are creating a "Summer" category.



To create the “new” Current Activity category, click on the “Create a new” Button.

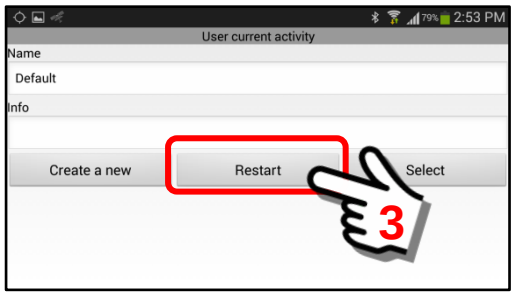


Once the new Current Activity category has been added, the system will return to the User menu for additional entries of content, if desired. Notice we now have “Summer” as the new current context.

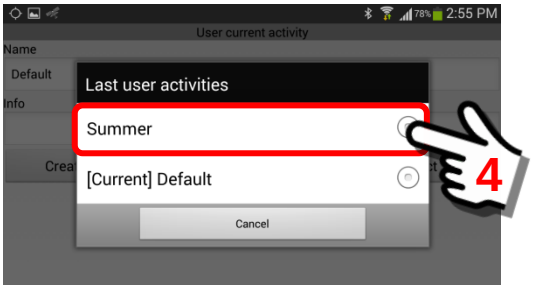


4. ***Changing to a different Current Activity category.***
To change from one activity category to another activity category, open the “User Current Activity” Panel as shown in previous sections.

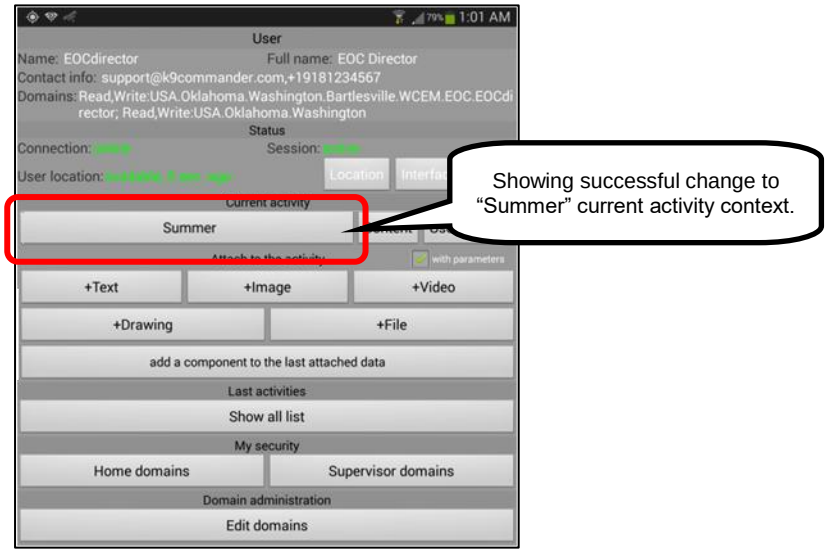
The “Name” field will contain the current activity that you are presently using. Click on the “Restart” Button.



A pop-up box will be displayed showing the “current” active category and a list of available categories. In previous sections we had created the Summer Category. Click on Summer to make it the active current category.



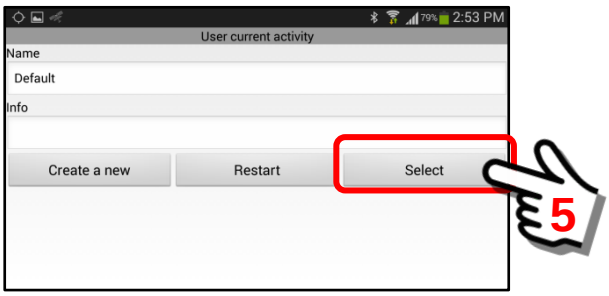
Once the Current Activity category has been selected, the system will return to the User menu. Notice we now have “Summer” as the new current context.



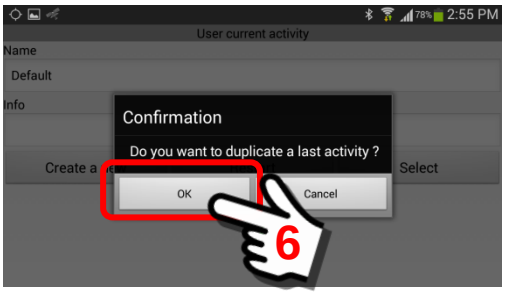
5. ***Duplicating an existing Current Activity category.***

In some situations it may be desirable to have several folders of activity content all with the same name (ie Summer). This section will describe how to create a duplicate name for a current activity.

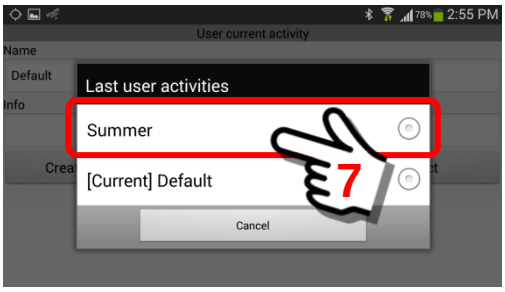
To duplicate an entry, begin by opening the “User Current Activity” Panel as shown in previous sections. Click the “Select” Button.



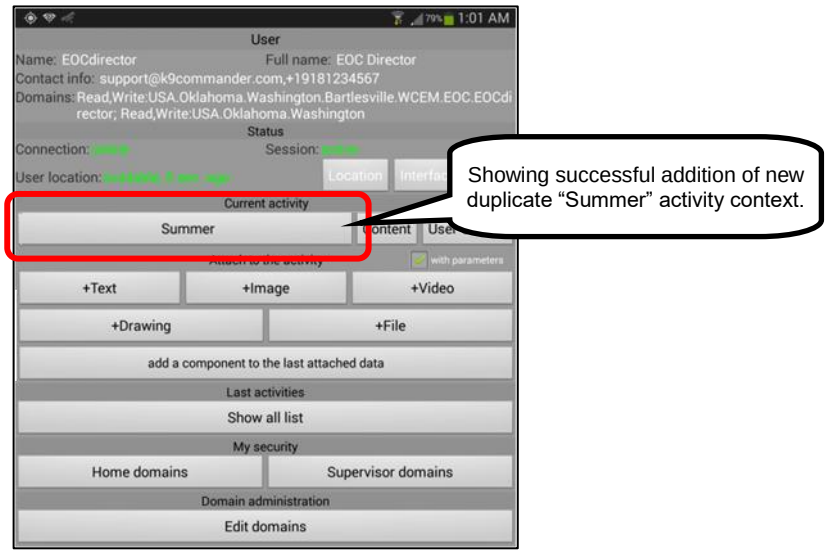
A confirmation box will be displayed asking if you want to duplicate one of your current activity categories. Click on the “OK” Button.



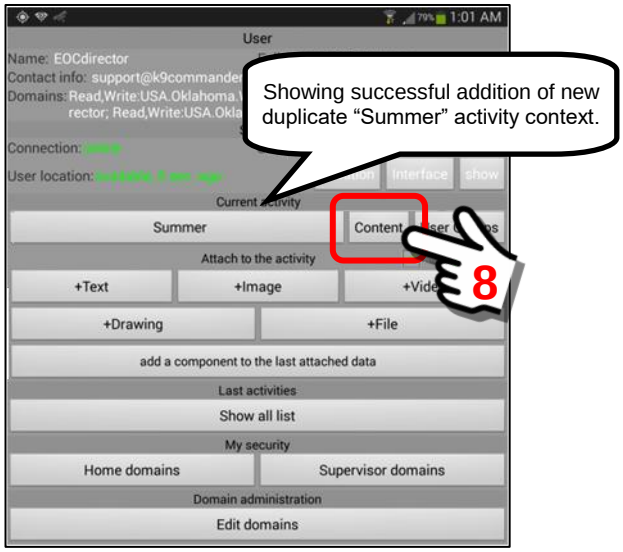
The system will now display a list of Current Activity categories. In this example, we will duplicate the “Summer” category. Select the “Summer” name from the list.



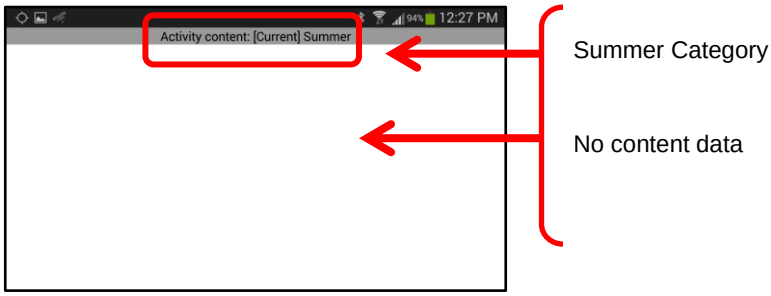
The “Summer” Activity category has now been duplicated and will be displayed as the “current” active category.



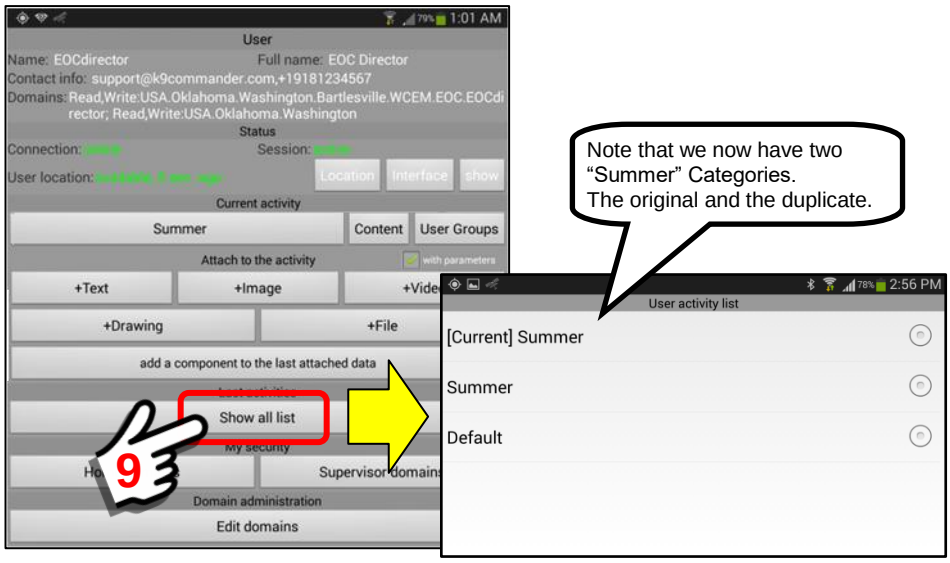
Note that the “new” duplicate Summer Category has no content data that has been installed.



Click on the “Content” Button for the newly duplicated Summer Category. Notice the folder is empty.



To review the Activity Categories currently in the list, click on the “Show all list” Button at the bottom of the User Panel.

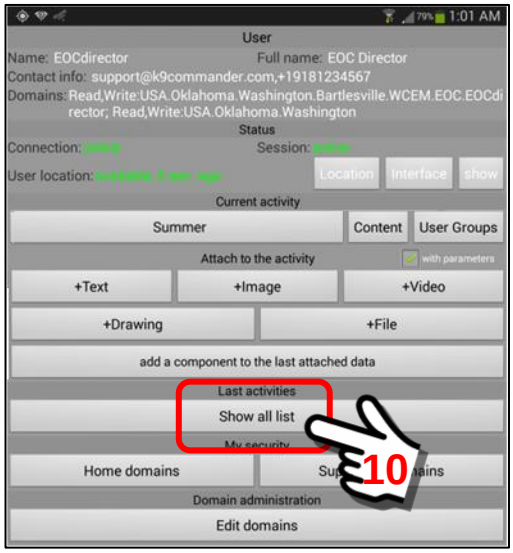


6. ***Removing a Current Activity category that is no longer needed.*** The system provides the ability for a User to remove (delete) content categories when they are no longer needed.

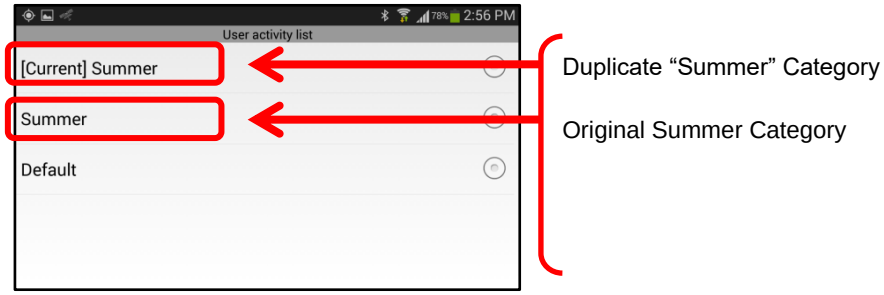
Important Note: Content categories may only be removed if they are EMPTY (all content deleted).

The first step to removing a content category is to remove all content from within the category. See **Section 16.6.6** for details on removing content.

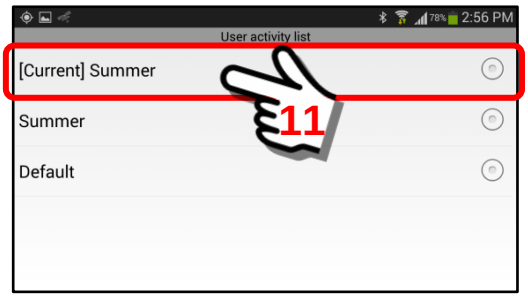
In this example, we will remove the duplicate "Summer" category that we created in previous sections. Make sure the category is empty of all content. Click on the "Show all list" Button at the bottom of the User Panel.



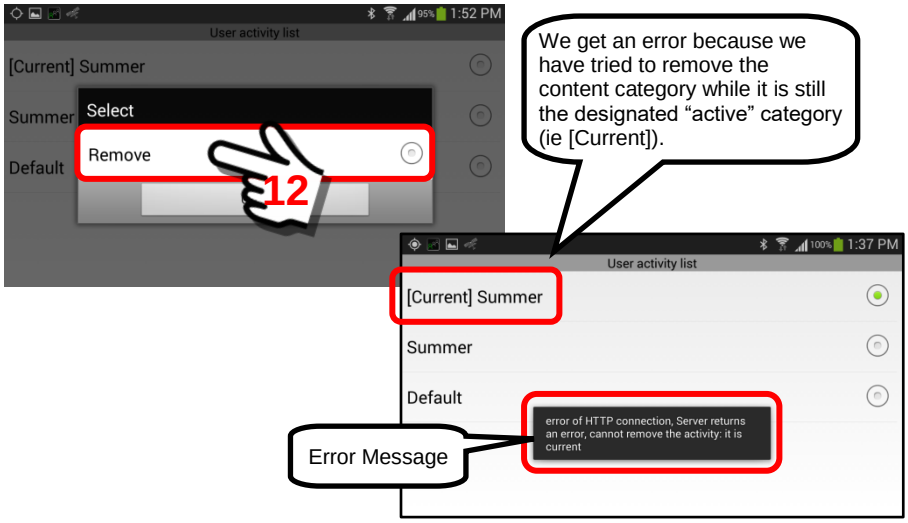
In this example, we have two categories called "Summer". One is the original (that has data in it) and the other is the "duplicate" that is empty.



To remove an Activity Category, perform a “Long click” on the category name. In this first example, we will try to remove the duplicate “Summer” category that is designated as our “current” content source.



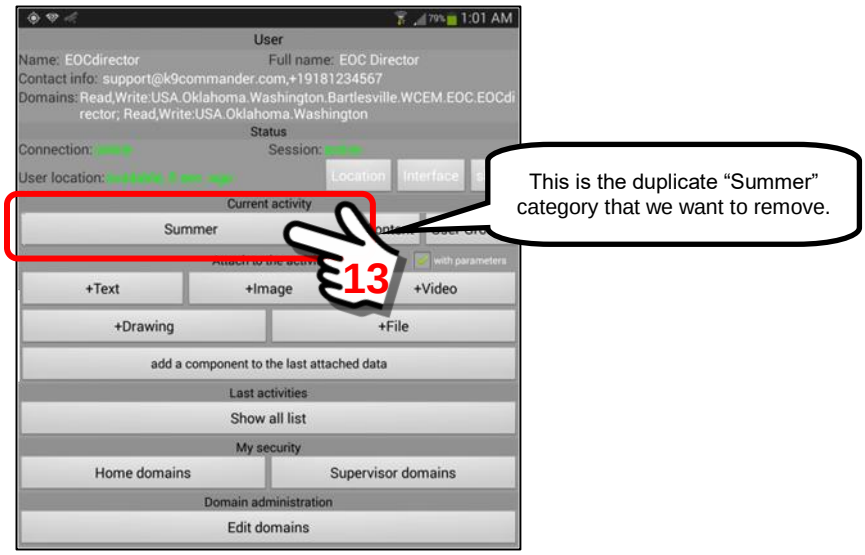
Performing a “Long click” on the category name, we see a “Select” panel with an option to “Remove” the item. Note that if we try to remove a [Current] active category, we will receive an error.



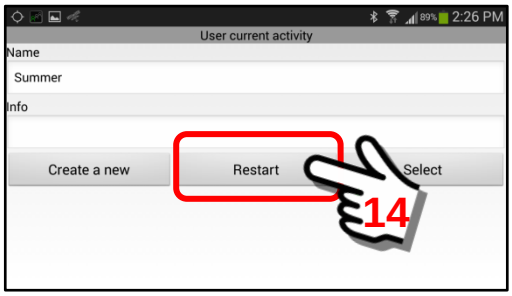
To remove this duplicate category, we must do two things:

1. Make sure the content is empty (we have done that)
2. Make sure the category is not the “Current” Active category (we will do this next).

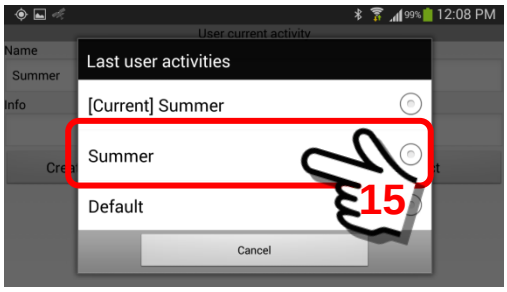
To change the duplicate “Summer” Category (the one we want to remove) from active to not active, we must change its status. We do this by the “Restart” Button on the User Activity Panel.



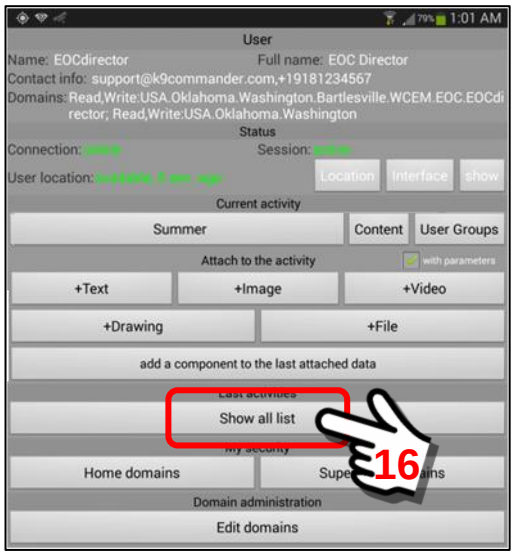
We must change the Current Activity so that this duplicate “Summer” category is not active. Click on the “Restart” Button.



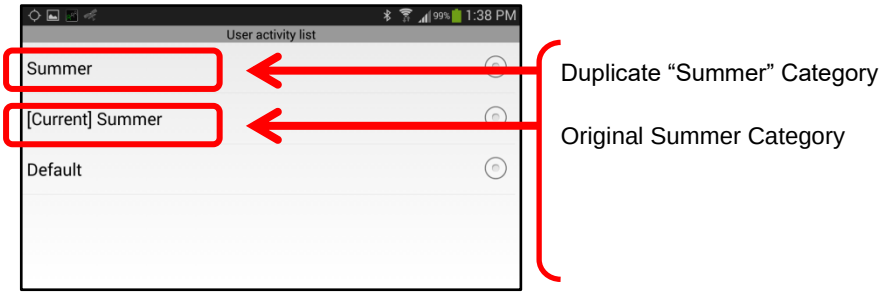
We now have a panel that shows the available categories. The [Current] Summer category is active and the one we want to remove. Select the “other” Summer category to make it the Current active category.



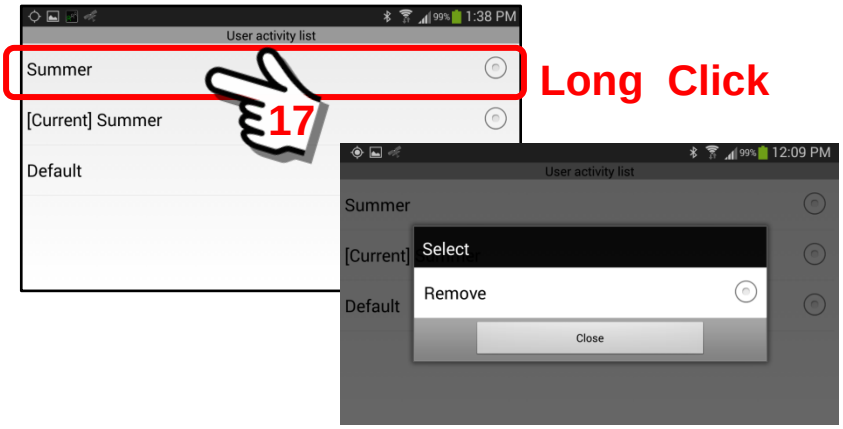
We have now activated the original “Summer” Category. This removes the “delete” restriction on the duplicate “Summer” Activity category. Click on the “Show all list” Button at the bottom of the panel.



As illustrated below, the duplicate Summer Category is no longer “[Current]” and may be removed.

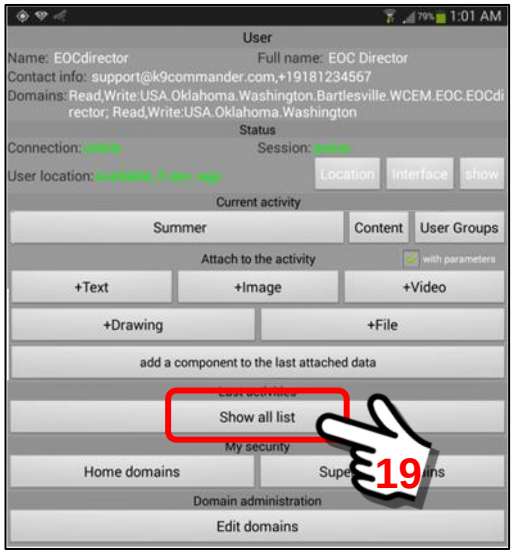


Perform a “Long click” on the “Summer” category to get the “Remove” panel.

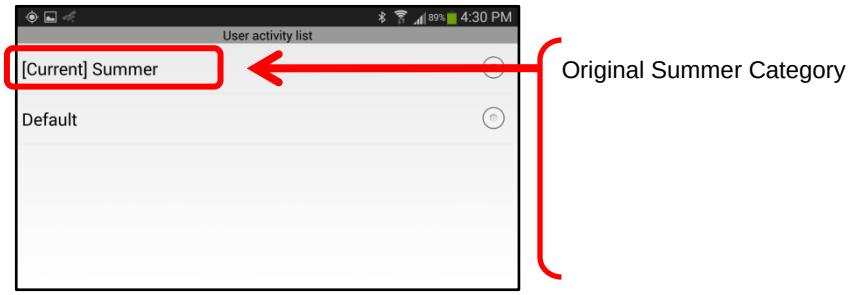


Click on the “Remove” Button to delete the duplicate Summer category.

The Summer Category has now been removed. To review remaining Activity Categories, click the “Show all list” Button at the bottom of the panel.



As you can see, we have the remaining two categories.



16.6.6. The “Content” button

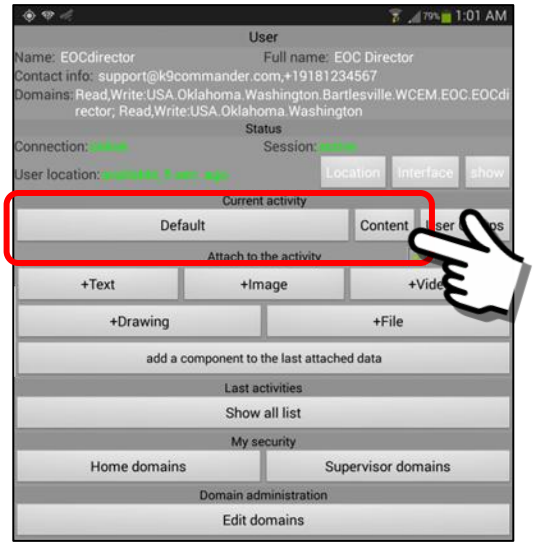
Overview:

The “Content” Button provides a User access to the data that has been created and stored on the local device. This data may include text, images, video, drawings, places and files.

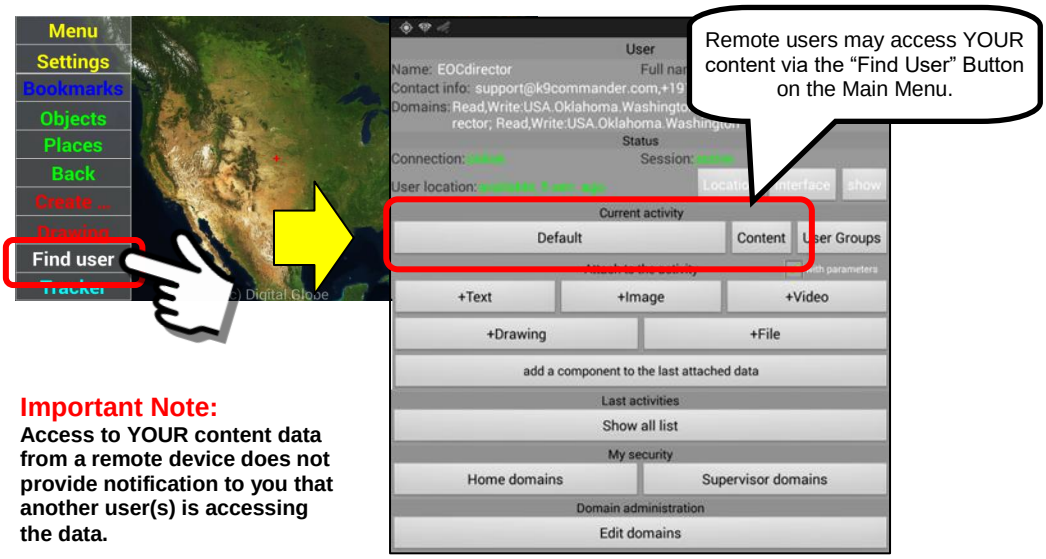
This section will describe the features of the Content button.

User Panel – Content Button:

The “Content” Button is located on the right-side middle section of the User Panel. This button will allow user access to the data that has been created and stored on the local device. This “Content” Button is the primary method for a User to access stored data on their mobile device.



It should be noted that this same content may be accessed by remote users via the “Find User” Button from their Main Menu (assuming adequate security credentials).

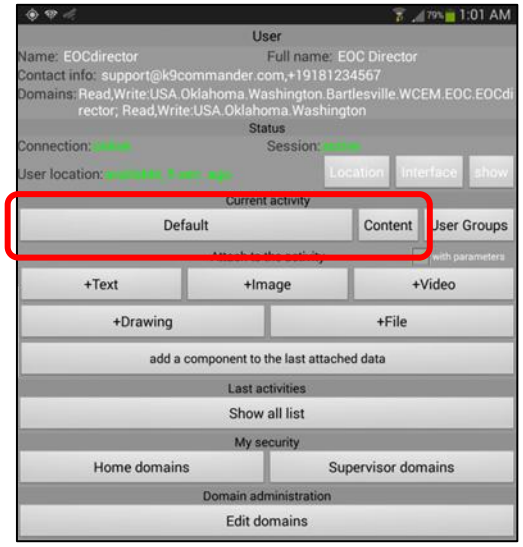


Important Note:
Access to YOUR content data from a remote device does not provide notification to you that another user(s) is accessing the data.

Description of the “Content” function and features:

1. *Current Activity*

The current activity category, marked “Default” in the example below, is where current “content” is stored. This section will review how to gain access to the content on a mobile device.

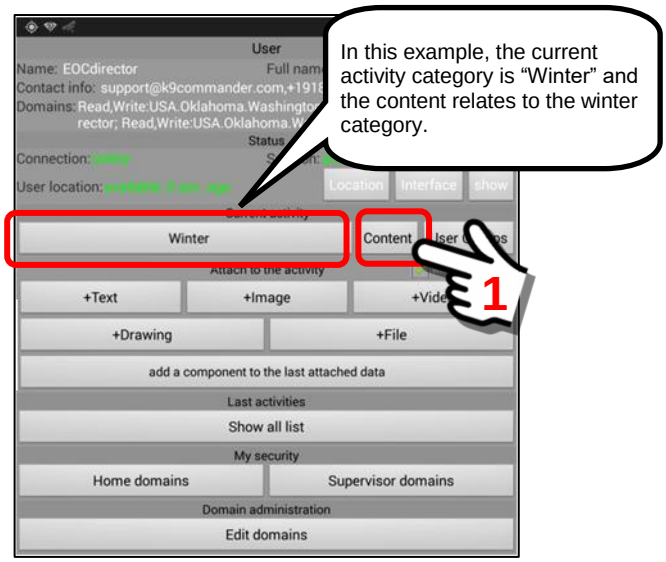


Content may include the following data types:

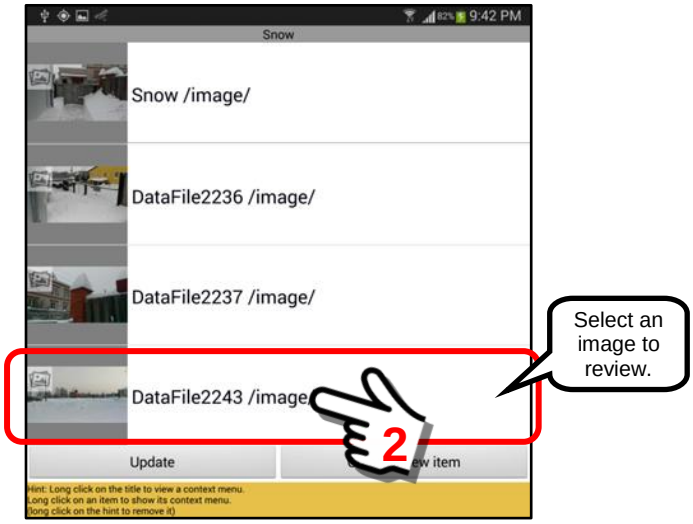
1. Pictures
2. Videos
3. Telemetry (GPS) data
4. Points-of-Interest
5. Audio Files
6. Places
7. Imported Data Files

In the example above, content that is created by the User will be stored in the current activity (shown as Default). To access the content, click on the “Content” button which allows access to data within the current activity.

Users have the ability to create a variety of “Activity Categories”. In the following example, notice that the “Current activity” is shown as “Winter”. In this example, the stored content all relates to the “Winter” category.

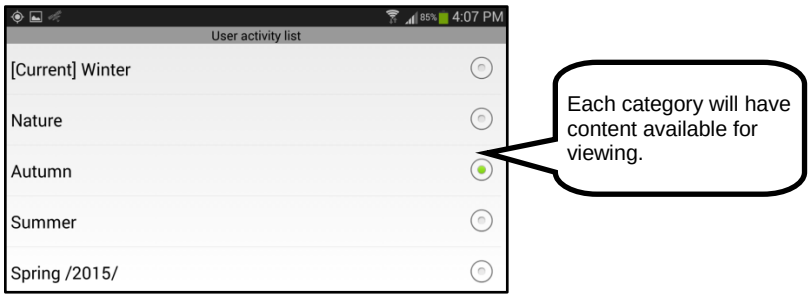


Clicking on the Content Button opens a number of data entries that are stored under the current “Winter” category. We select one of the entries titled “Snow” … and it has 4 entries as shown below.



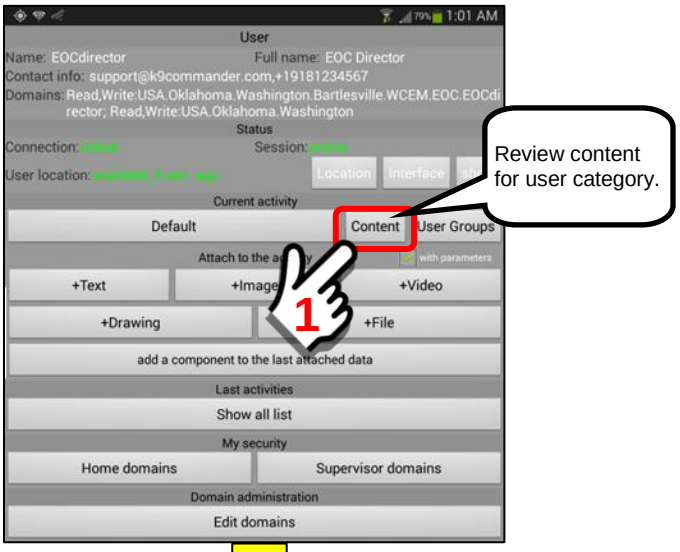
Once the image is loaded, it may be manipulated as desired.

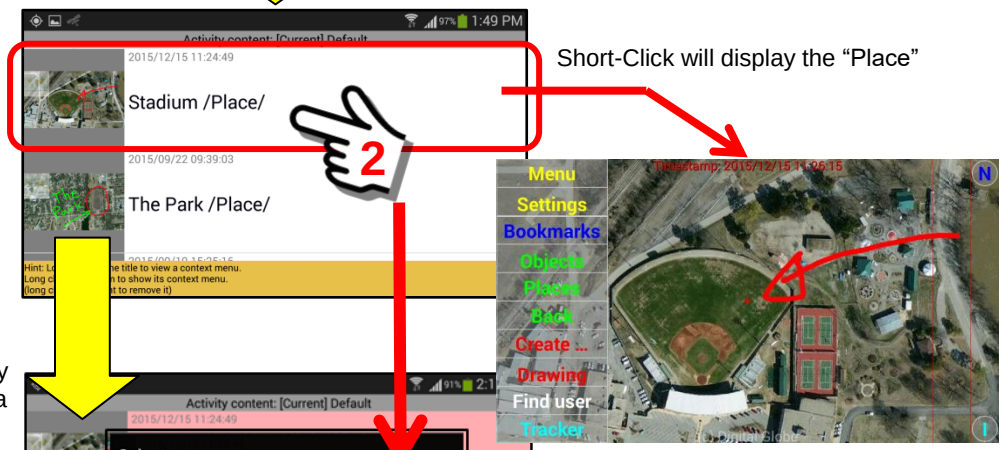
Content may be stored under a variety of categories. The list below shows one possible configuration where the data is stored by season of the year.



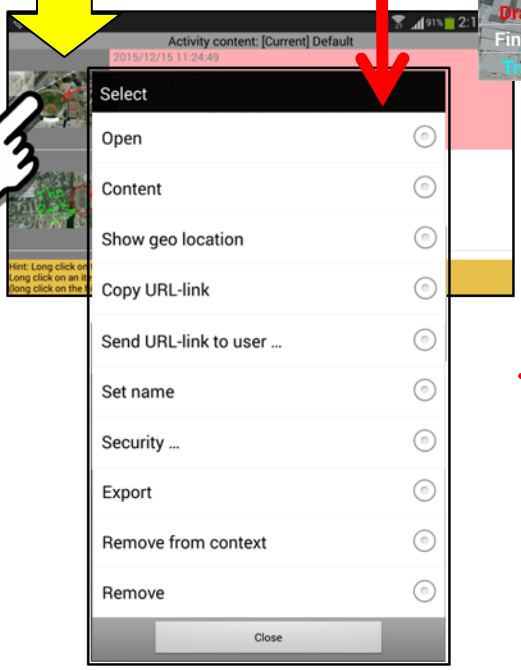
2. *Reviewing User Content*

The “Content” Button allows a user to review a variety of data stored on the mobile device (and associated Data Server). This section will outline the features and options available.





Long-Click will display an options menu for a “Place” Item



Long Click

The drop-down menus will be the same for all data types.

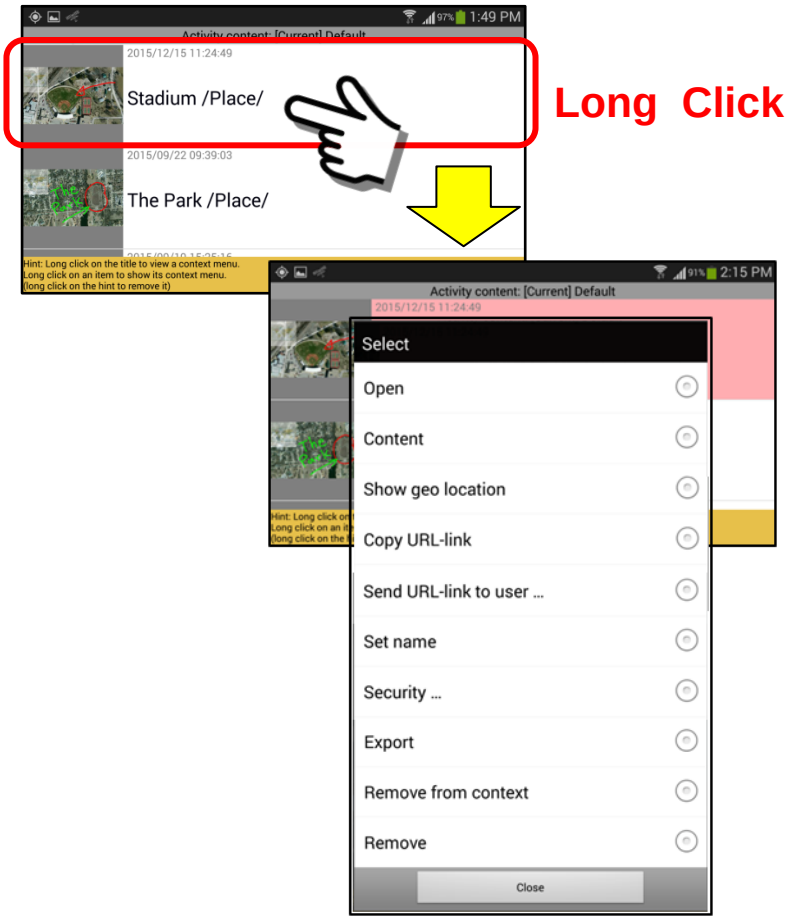
This example will show that ten (10) menu options are available to the User.

These menu options will be explained in more detail in the following sections.

3. *User Content Menu Options – Map Item*

When a “Long-Click” is performed on User Panel content data a series of menu options are available.

The menu listing below will illustrate using a “Place” data item.



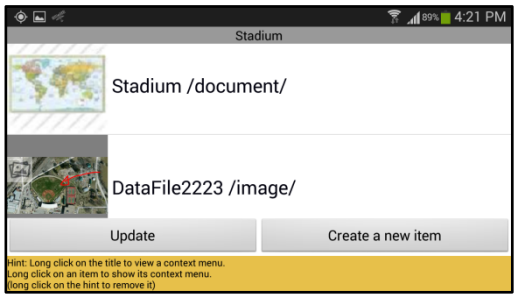
<u>The 10 menu items are explained in detail below.</u>

<u>Open</u>

The “Open” menu option will open the file and display the contents, In the case of our example, it will display the satellite image view of the “Place” which is a Stadium.

Content

The “Content” menu option will display the components of the data that make up the item. In the example of the Stadium, “Place” content, the Place item has two components … a document item and an image item. They are shown below.

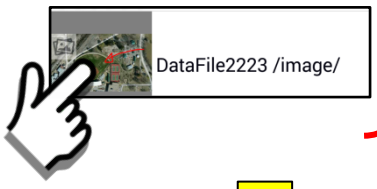


Map image of “Place” data

Clicking on the Stadium /document/ data will give us the “map” image of the Place item.

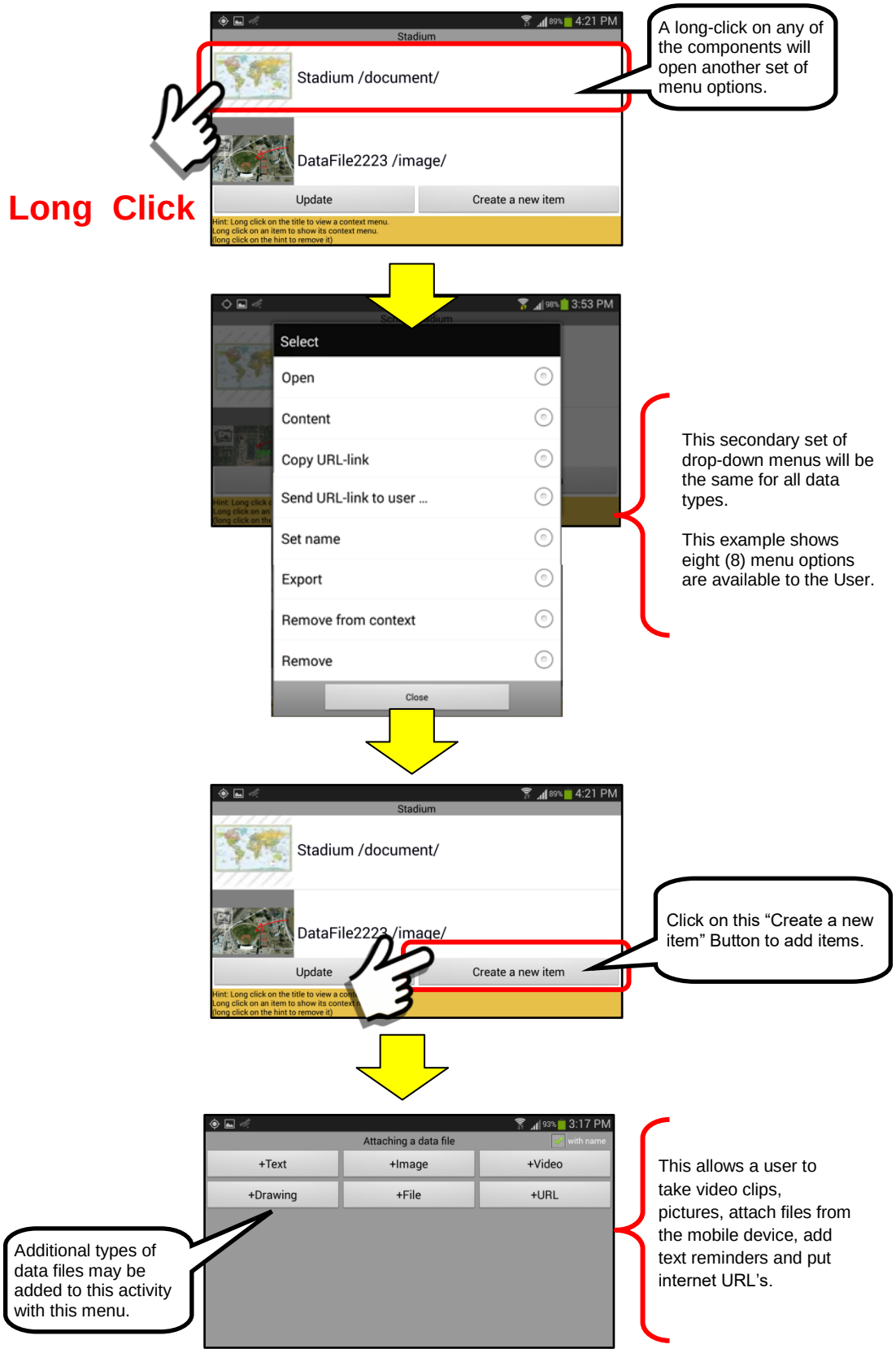
Raw picture image of “Place” location

Clicking on the DataFile2223 /image/ data will give us the raw picture/image of the Place item on the satellite image.



The Content menu item also allows a user to perform additional operations on the data elements. The

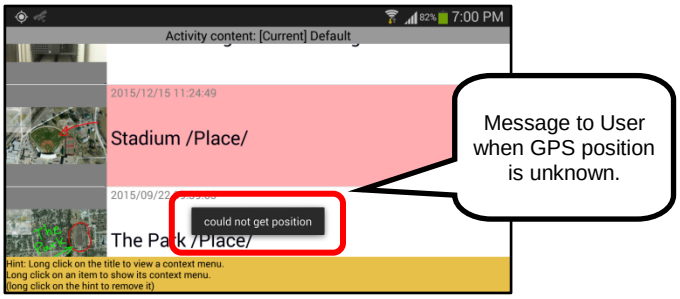
following section will show how additional data files may be added to the existing group.



Show geo location

The “Show geo location” menu option will display a map view (Satellite image) of the location of where the data was gathered. The GPS location will be derived from a geo-tagged picture or video. If the GPS data is not available a message will be provided indicating that no position is known.

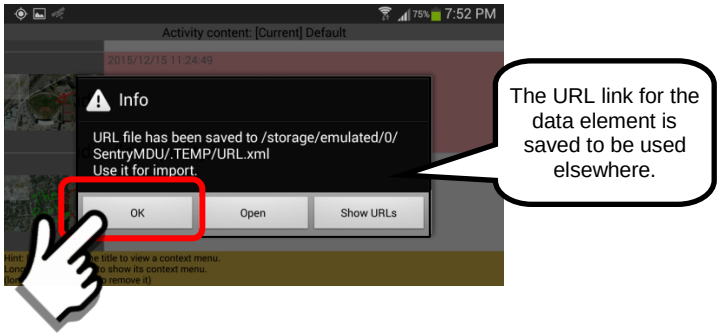
If a GPS location is NOT available for the data item, a message will say “could not get position”.



Copy URL – link

The “Copy URL – link” menu option is provided to allow the user to “bookmark” data from their own content or other user content.

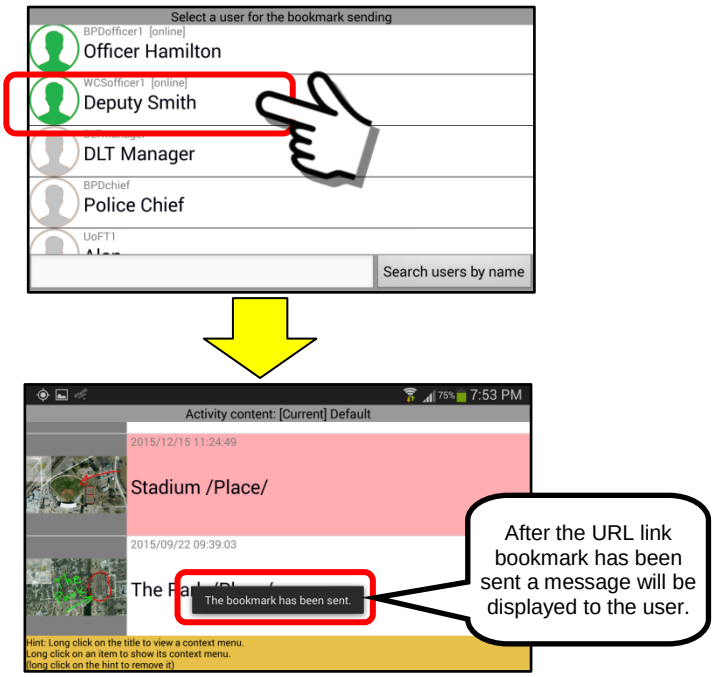
Once the URL link is copied into the TEMP file system on the local device, it may be imported and saved.



Send URL – link to user …

The “Send URL – link to user” menu option is provided to allow a user to send another user a bookmark link to this specific data.

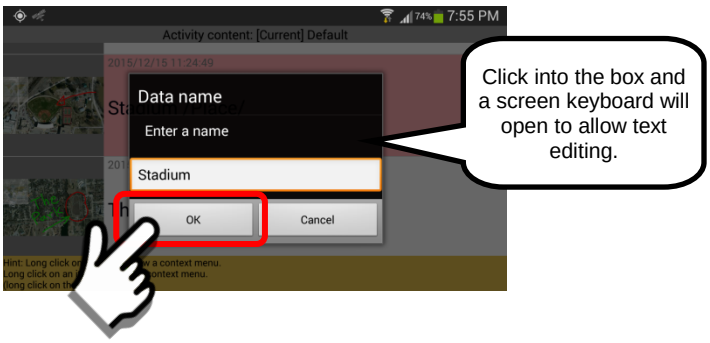
Select a User to send the information to.



Set name

The “Set name” menu option allows a user to change the name that is attached to a particular data element. When we click on the “Set name” menu option, we are presented with a data entry box to edit/change the name.

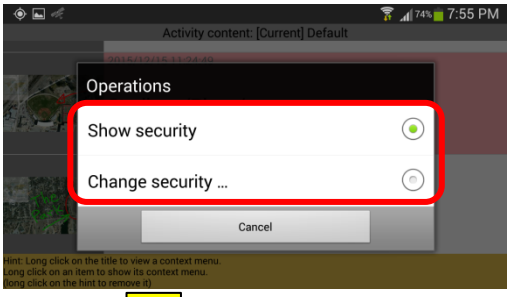
When the changes are complete, click “OK” to finish the operation.



Security …

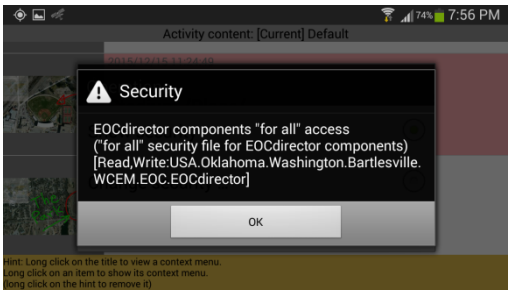
The “Security …” menu option allows a user to view and change the security settings and access for the information stored on the mobile devices.

On clicking the “Security” menu option, another set of menus provide options to show or change the security settings.



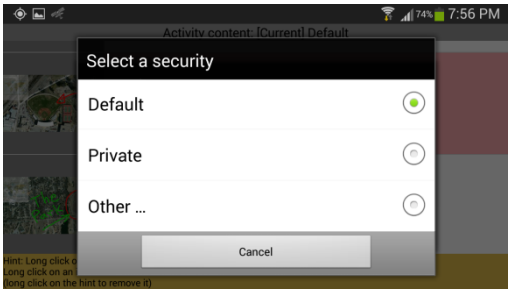
Clicking on the “Show security” option of the Operations menu gives us the security settings of the data element under review.

Show security



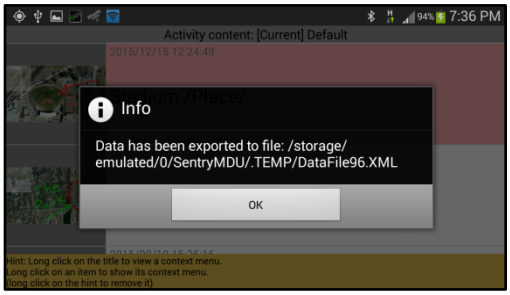
To change the security settings from default (everyone) to private, click on the menu options provided here.

Change security ...



Export

This option will export the data to an XML data file. The file will be stored in a temporary folder (.TEMP) on the mobile device which can then be transferred/copied to other computer systems for offline storage.

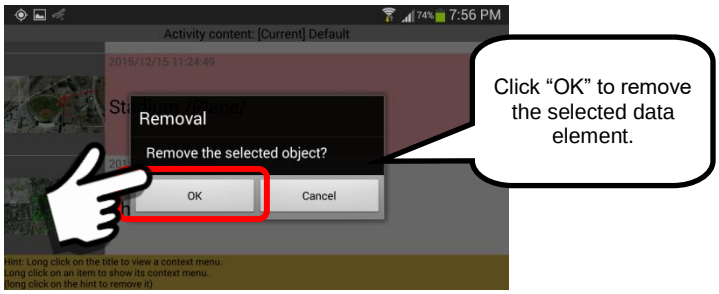


Remove from context

This menu option removes content from the .CONTEXT folder on the local device. This situation will occur if a user downloads a long video and plays it. This video would be stored in a memory “cache” on the local device. If some time later, the user wanted to view the video again, it would not be downloaded again because it is already resident on the device. It would be played immediately because it is stored locally. This option allows a user to “remove” the video from the local device memory if they do not want to view it any more.

Remove

The “Remove” menu option allows a user the ability to permanently remove data elements no longer needed.



Important Note: The removal of content data from the mobile device may or may not remove the same data from the Sentry MDU Data Server if it is also stored there. This will depend on the specific configuration settings of your organization. See your System Administrator for your company policies.

16.6.7. The "User Groups" Button

Overview:

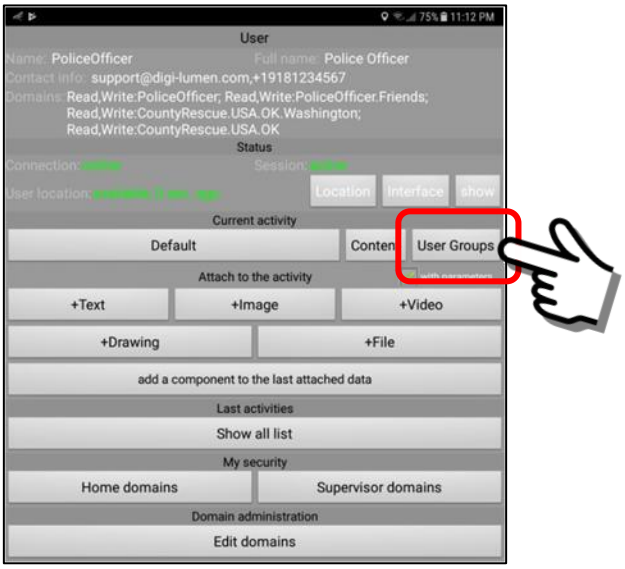
The "User Groups" Button allows a User to pre-define "groups" of other users that can then be used in Group Messaging (think of it as an Email distribution list, but for Messaging). Members must be "invited" to join the group (by the person creating the group) and members can leave the group at any time.

> **Important Note: For you to create groups of other users, they must be in your same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to communicate with their device.**

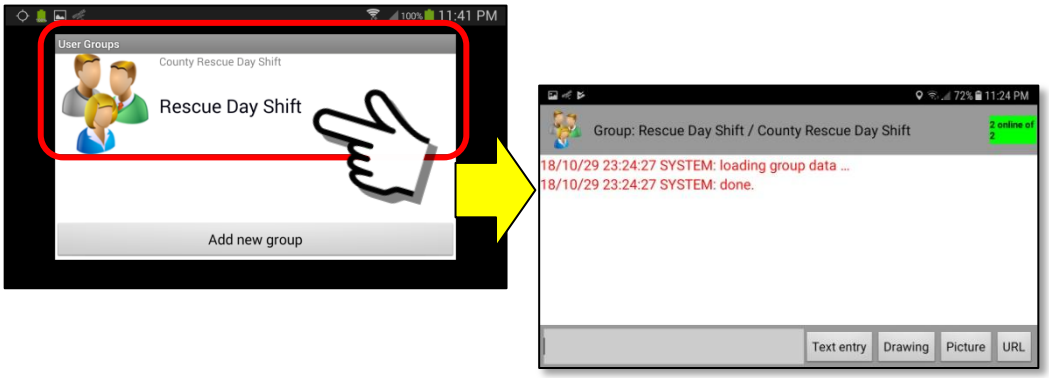
This section will describe the features of the User Groups button.

User Panel – User Groups Button:

The "User Groups" Button is located on the right-side middle section of the User Panel. This button will allow a user to pre-define messaging "User Groups" and store them on the local device.



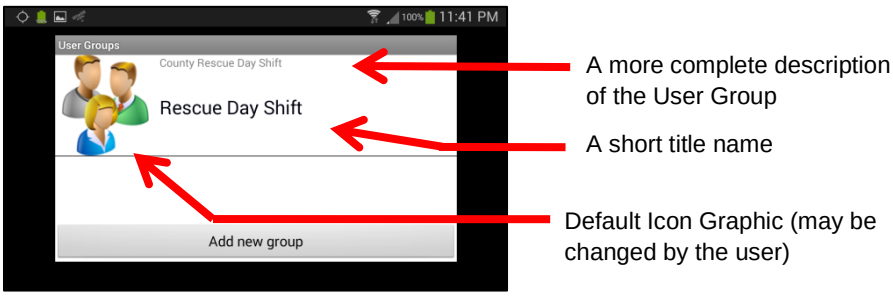
This feature provides a messaging platform for "groups" of people. When one person sends a message, it will go to all members of the pre-defined group.



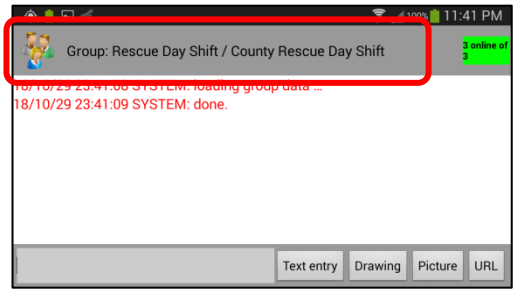
Description of the "User Groups" function and features:

1. ***Picking a name for your user group.***
   The name you select should be descriptive of the Group. In this example, we have a County Rescue Crew that has members that work on the "day shift". We will title our group … "Rescue Day Shift".

   The User Groups panel will look as follows:



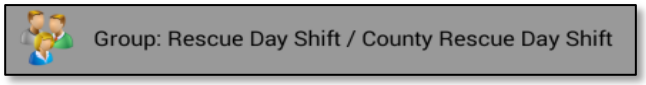
   When the Messaging Panel is displayed, the title and description are shown below.



   <u>Messaging Panel Format</u>

   Group: <Group Title Name> / <Description>

   <u>Using the above example, we have:</u>



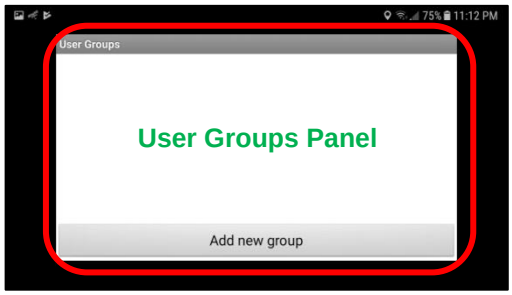
   In the following sections, we will create a new User Group and invite several members to join the group. The following limitations apply:

   Number of User Groups a user may create: 100
   Maximum number of members in a User Group: 20
   Number of User Groups a user may participate in: unlimited

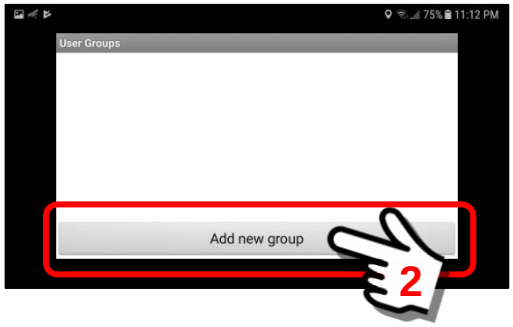
2. ***Adding a "new" User Group to the panel.***
Each user may create up to 100 User Groups. This section will describe the process of creating a "new" User Group.

At the **User Information Panel**, click on the "User Groups" Button.

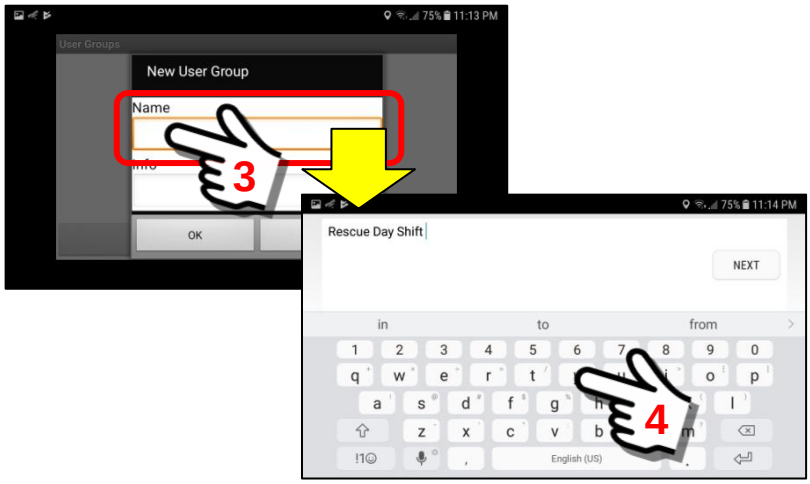
The first time you open the User Groups Panel, it will be empty.



Click on the "Add new group" Button at the bottom of the panel.

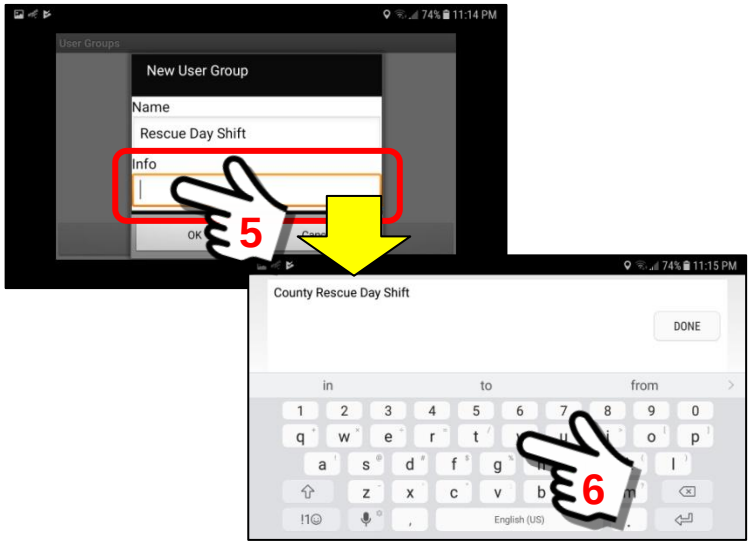


A **New User Group** pop-up panel will appear. Click inside the “Name” box. The device on-screen keyboard will be displayed. Enter a name for this group.

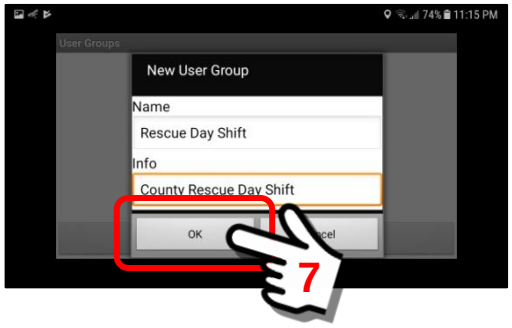


When finished, click the “Next” button, or the phone “Back” button to return to the pop-up **New User Group** panel.

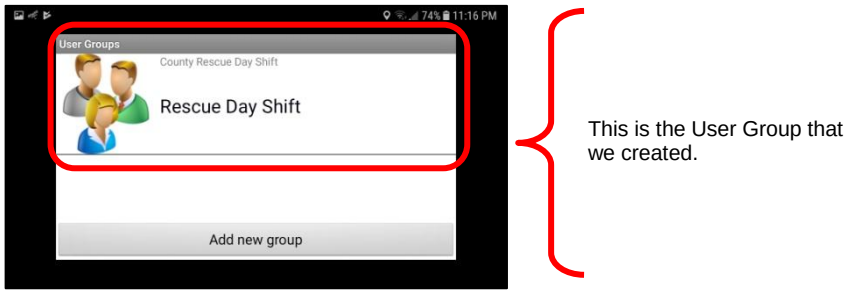
Enter a “description” in the Info Box.



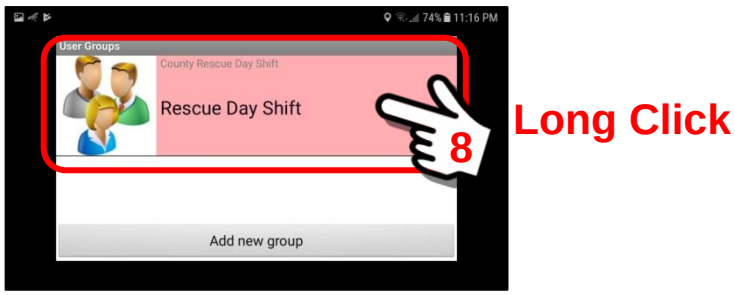
When you are satisfied with the Name and Description (Info) entries, click the “OK” Button to continue.



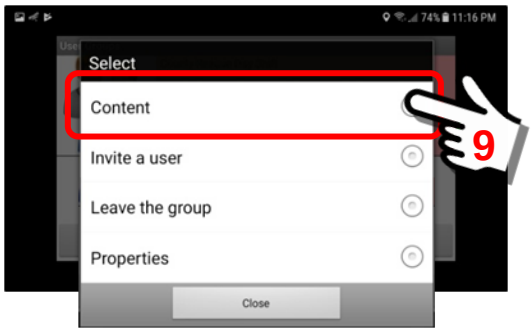
When you click the “OK” Button, the screen will now display the “new” User Group you have created. In our example, we have created the “Rescue Day Shift” user group.



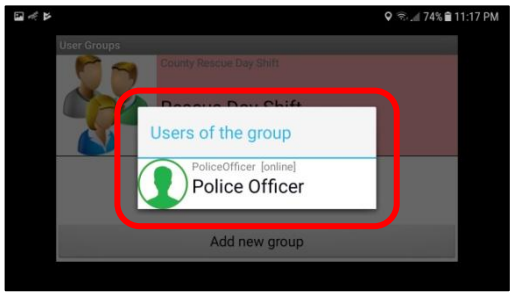
Since we have just created a “new” User Group, the group currently has only ONE member … that is us (Username = PoliceOfficer). To view the current member listing, “long click” on the user group name.



Select the “Content” Option from the menu. We want to look at the content of the User Group.



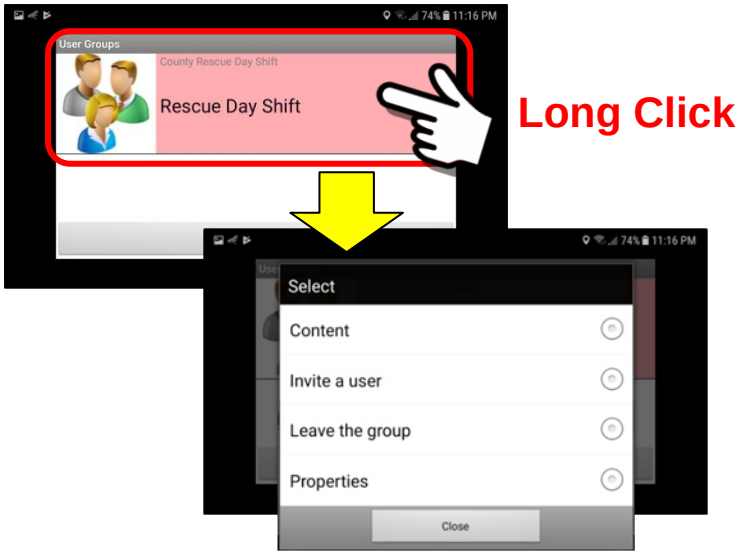
A small pop-up panel will appear in the center of the screen. It will show that one user (PoliceOfficer) is the only current member. When finished, click the “Back” button on the phone to exit the panel.



3. ***Explaining the "User Groups" options menu.***

The "User Groups" feature has a "Select" Menu with 4 options. This section will cover those 4 options.

Perform a "Long click" to access the menu options.



<u>The 4 menu items are explained in detail below.</u>

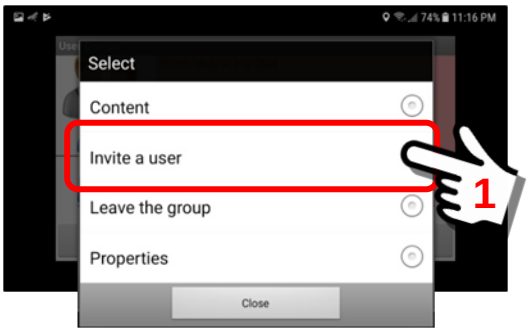
<u>Content</u>

The "Content" menu option will display the Users that have been pre-defined for this Group.
In this example, four (4) users are shown below.

Invite a user

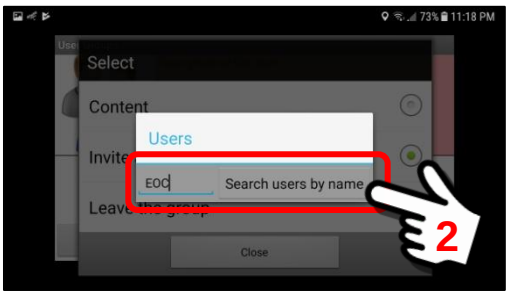
The “Invite a user” menu option will open a panel that will display current users in the group and provide a method to “search” for other users to add to the listing.

Click on the “Invite a user” Button.

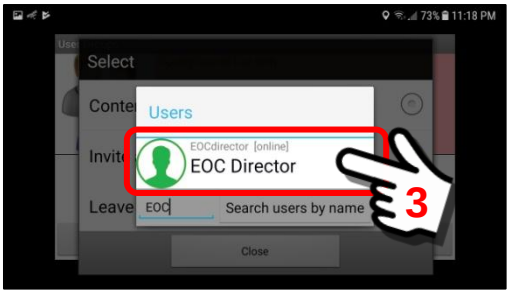


Enter a “username” or any part of a Username (at least 2 characters) in the search box and click the “Search user by name” Button.

In this example, we entered “EOC” for the user EOCdirector, and click the search button.

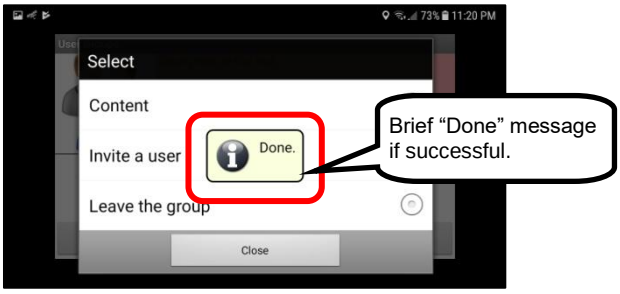


The system will return a match for all users in the Security Domain that meet the criteria.

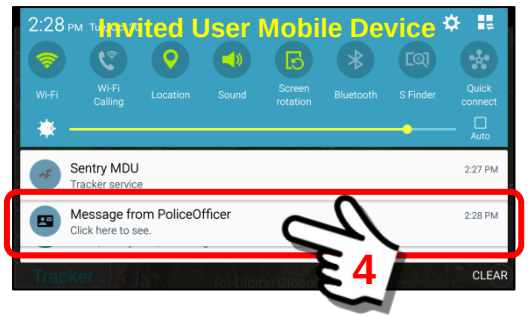


To send an “Invite” message to the designated user, click on the Username.

If the “invite” operation is successful, you will receive a pop-up “Done” message that will flash briefly for 3 seconds.

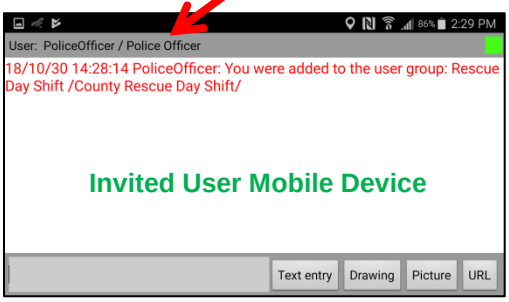


When you click on the Username, a text message will be sent to the other user. They will receive a message similar to the following:

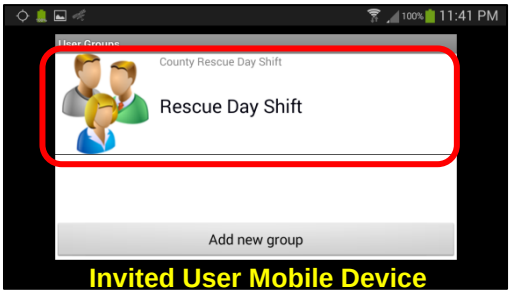


The User will receive a text message that they were “added to the group”.

User that extended the invitation to join the Group.



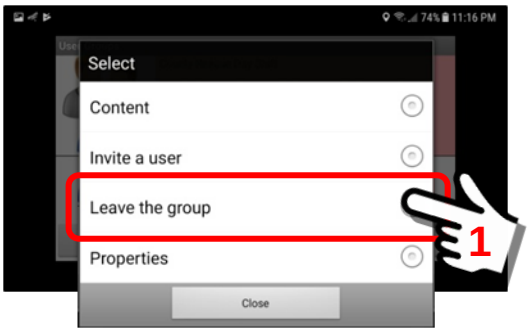
The mobile device of the invited user will now receive the User Group listing. Example shown below.



Leave the group

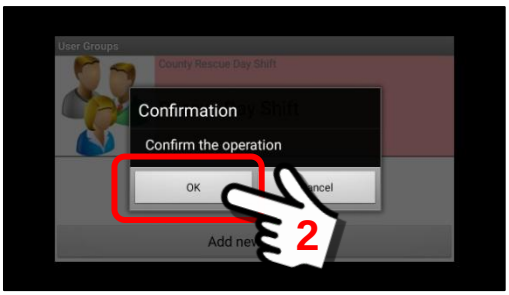
The “Leave the group” menu option provides all group members the ability to leave the group whenever they want.

To leave, click the “Leave the group” Menu option.



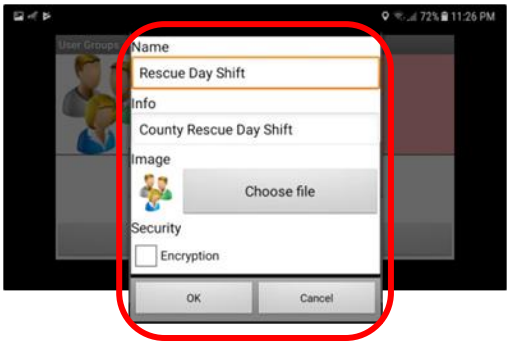
The system will ask for confirmation before removing you from the group. This will only remove YOU from the group.

Click the “OK” Button to continue.



Properties

The “Properties” menu option will provide a summary of the current settings of the User Group as displayed on the device. From this panel a user may change the name, description, displayed icon and turn data encryption on-off.

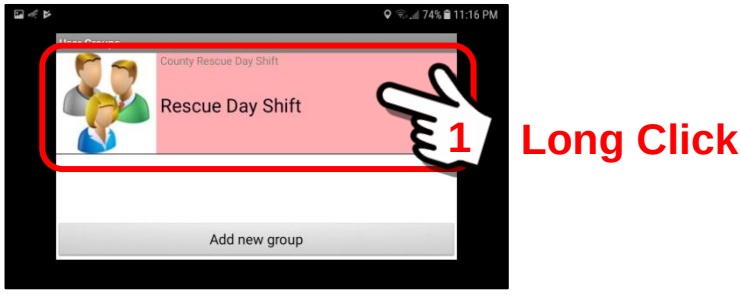


4. ***Inviting a User to join the group.***

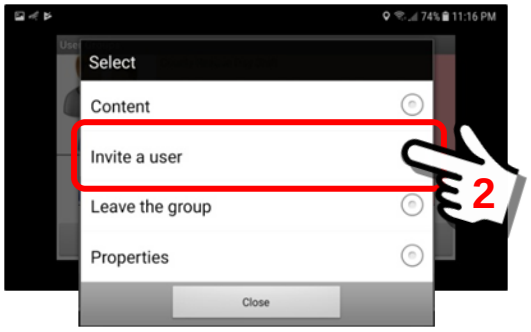
The next step, after creating a “new” User Group, is to invite other users within our Security Domain to join this User Group. At the present time, **WE** are the only User (PoliceOfficer).

> **Important Note: For you to create groups of other users, they must be in your same Security Domain (and the same or lower hierarchical level) and located on the same SentryMDU Data Server. In addition, YOU must have security credentials that allow you to communicate with their device.**

Begin by performing a “Long click” on the User Group Name.

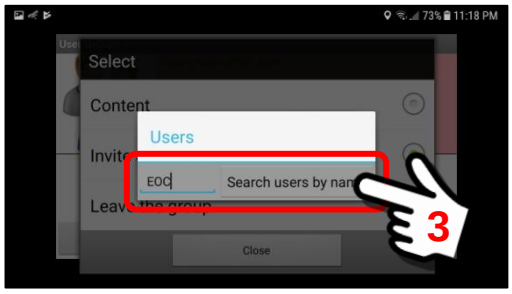


Click on the “Invite a user” Button.

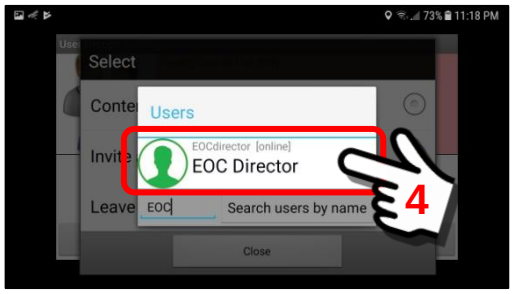


Enter a “username” or any part of a Username (at least 2 characters) in the search box and click the “search by name” Button.

In this example, we entered “EOC” for the user EOCdirector, and click the search button.

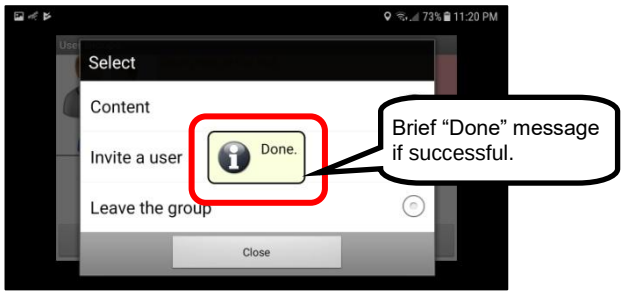


The system will return a match for all users in the Security Domain that meet the criteria.

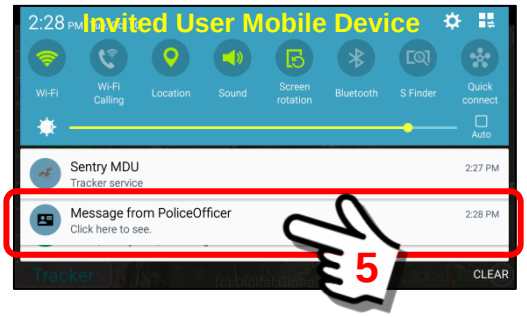


To send an “Invite” message to the designated user, click on the Username.

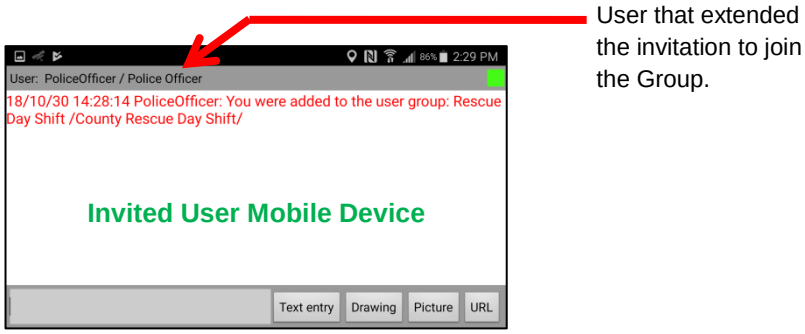
If the “invite” operation is successful, you will receive a pop-up “Done” message that will flash briefly for 3 seconds.



When you click on the Username, a text message will be sent to the other user. They will receive a message similar to the following:



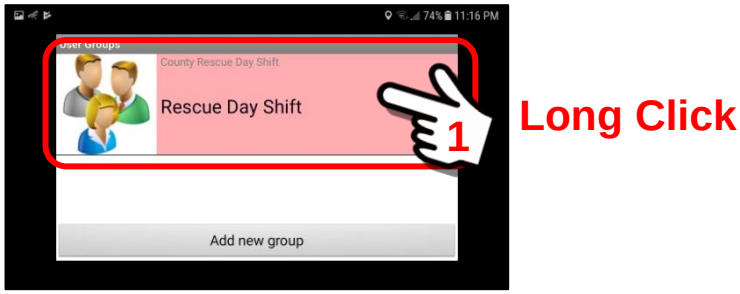
The User will receive a text message that they were “added to the group”.



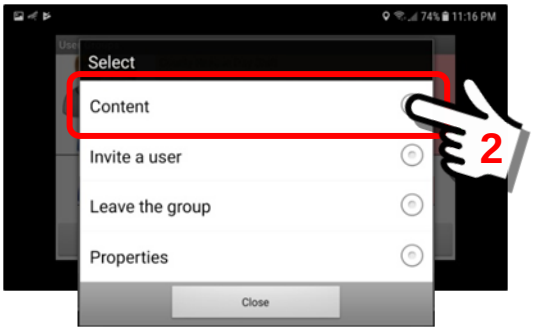
5. ***Creating a "group" of other Users.***

In this example, we have now created a User Group and have added one additional user (in addition to ourselves). We can now add more Users to the User Group.

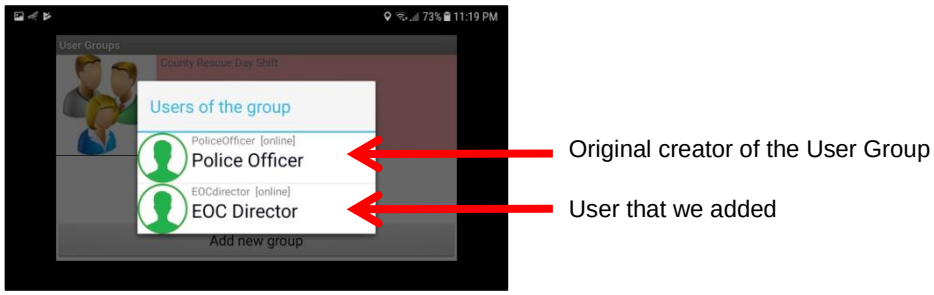
To review what we have so far, perform a "long click" on the User Group name.



We want to review the Content of our User Group so we click on the "Content" Button on the pop-up Select Panel of menu options.

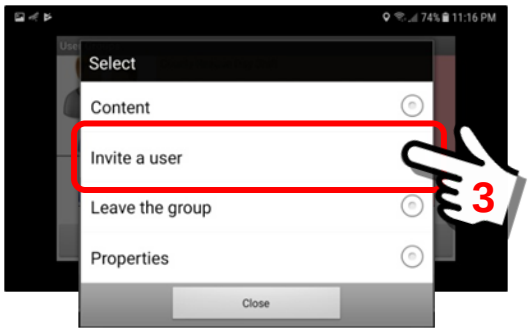


A pop-up panel will appear showing the current users of the group.



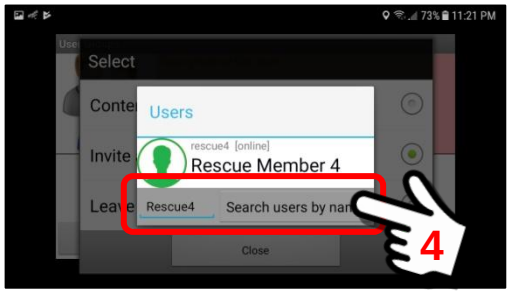
We will now follow the process outlined in **Item #4** above to add more users to the User Group.

Click on the “Invite a user” Button.

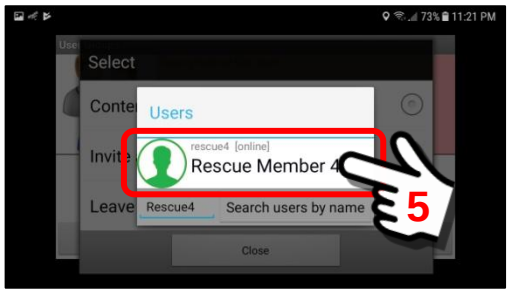


Enter a “username” or any part of a Username (at least 2 characters) in the search box and click the “Search users by name” Button.

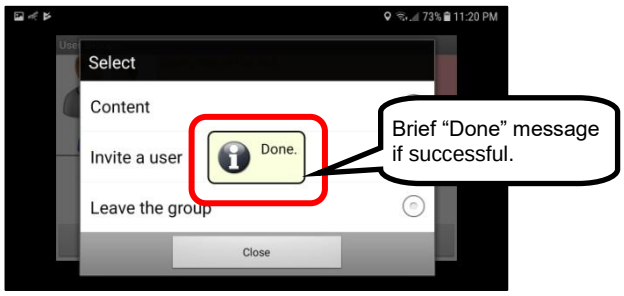
In this example, we will enter “Rescue4” for the user Rescue4, and click the search button.



The system will return a match for all users in the Security Domain that meet the criteria. We see it found a match.

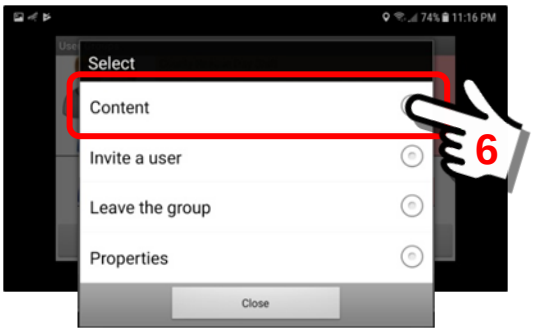


To send an “Invite” message to the designated user, click on the Username. If the “invite” operation is successful, you will receive a pop-up “Done” message that will flash briefly for 3 seconds.

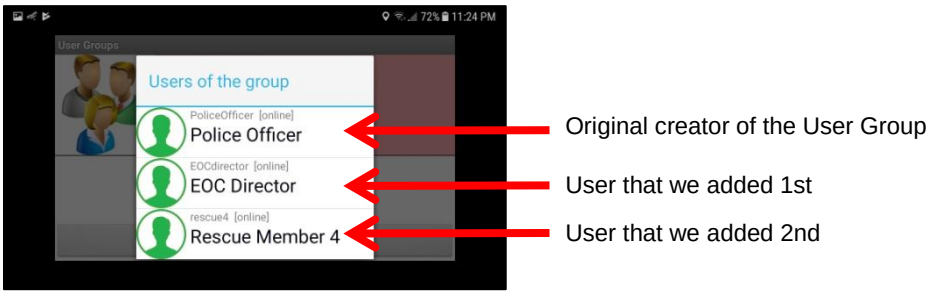


Once again, we will check our User Group listing to see the new addition to our User Group “Rescue Day Shift”.

Click on the “Content” Button on the pop-up Select Panel of menu options.



A pop-up panel will appear showing the current users of the group.

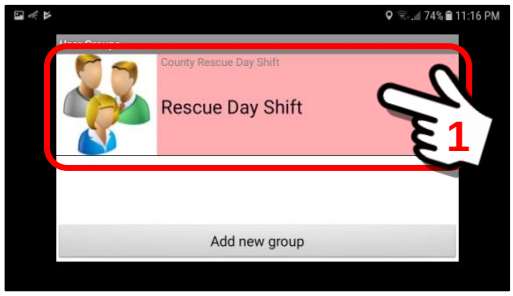


At this stage of the exercise we will leave it up to the reader to add any additional users they may want (up to the maximum of 20).

6. ***Review of the Messaging Panel.***

The “User Group” Messaging panel operates like other messaging panels on the SentryMDU System. See **Section 14.3.2** if you need a refresher on Messaging.

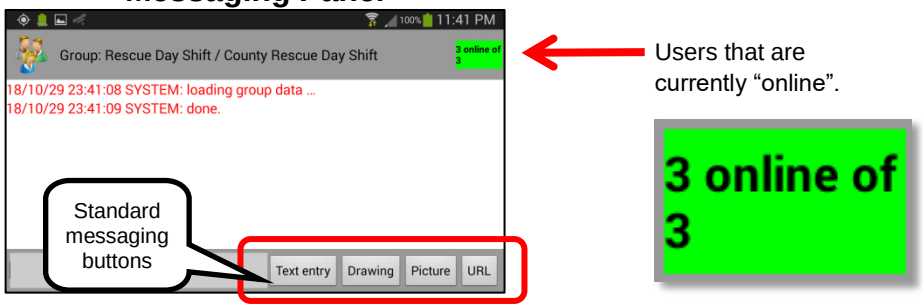
Click on the **User Group Name** to open the messaging panel.



The messaging panel will take a few seconds to open and establish a communications channel (encrypted if you have that as a setting). You may then begin sending and receiving messages, pictures, embedded videos, etc.

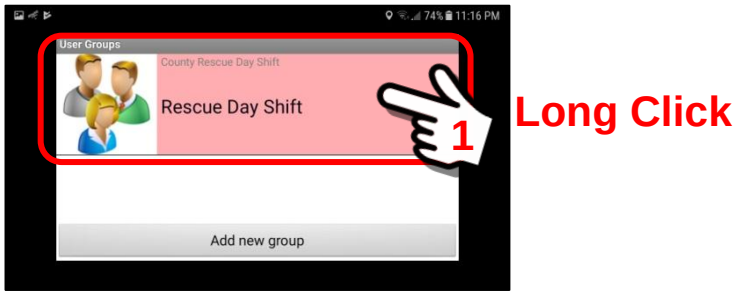
The one difference you may notice is the “green” box in the upper right corner … it tells you how many of your user group are online at the time you are sending a message.

Messaging Panel

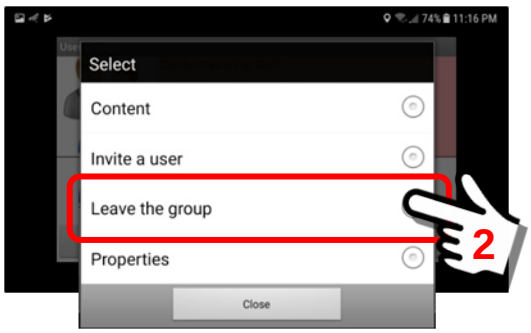


7. ***Leaving the “group” (removing yourself from the group).***
To remove yourself from a User Group, take the following steps.

Perform a “Long click” on the User Group name.

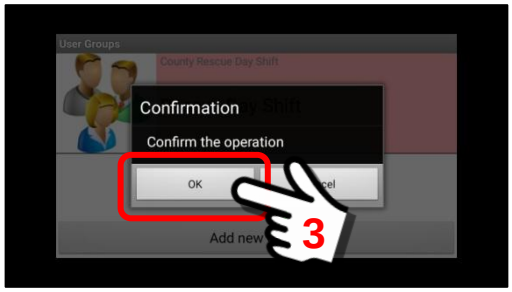


This will open the pop-up “Select” options panel.
To leave, click the “Leave the group” Menu option.

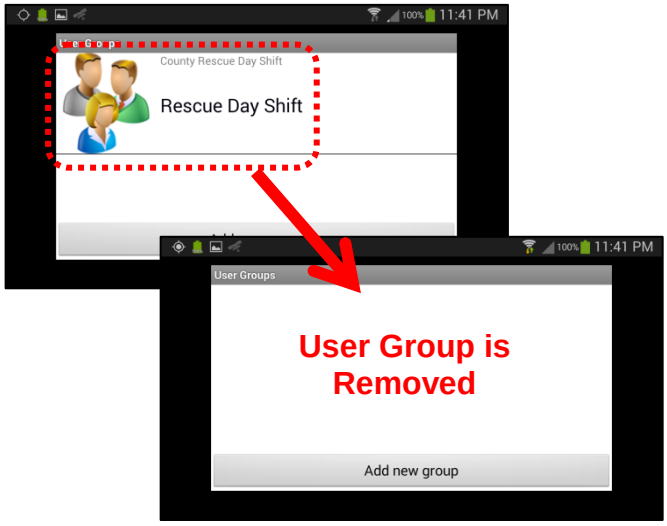


The system will ask for confirmation before removing you from the group. This will remove YOU from the group and remove the group from your device.

Click the “OK” Button to continue.

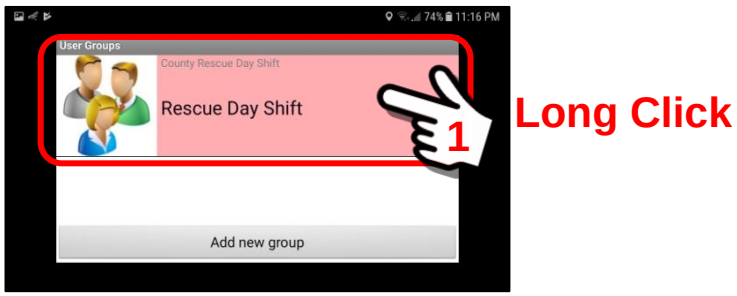


When you are “removed” from the User Group, the User Group Panel will be removed from the mobile device as shown below.

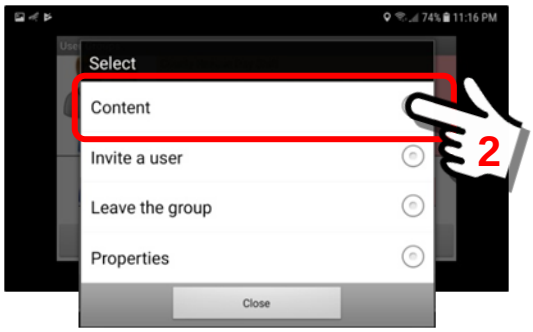


8. ***Removing “other” users from the User Group.***
The “User Groups” feature allows ANY USER (with the appropriate security credentials) to REMOVE another user from a User Group. This section will cover that feature.

Perform a “Long click” on the User Group name.

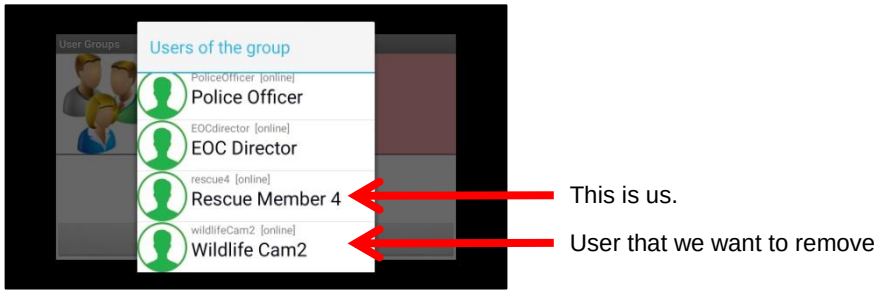


This will open the pop-up “Select” options panel.
Click the “Content” Menu option.



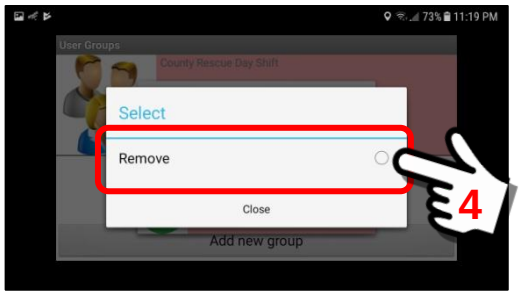
In this exercise, we will be removing “another” User from the User Group but leaving ourselves **IN** the group.

We will assume we are User = “Rescue Member 4” and that we want to remove User = “Wildlife Cam2” from the User Group.

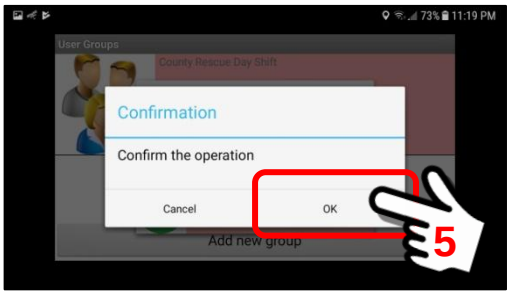


Perform a “Long click” on the “Wildlife Cam2” username.

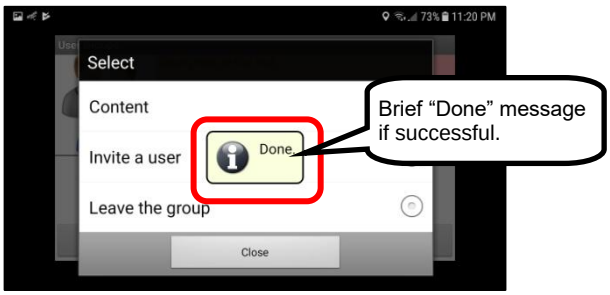
A pop-up “Select” Box will appear. Click on the Remove Button.



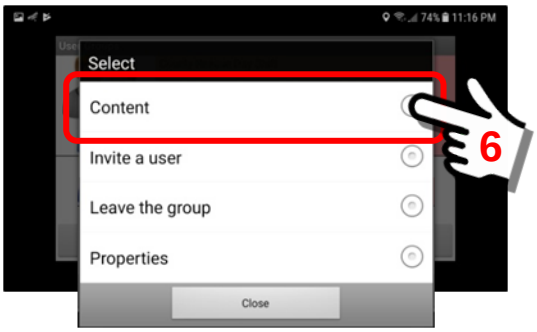
When you click the **Remove Option**, the system will prompt you for a **Confirmation**. Click the “OK” Button.



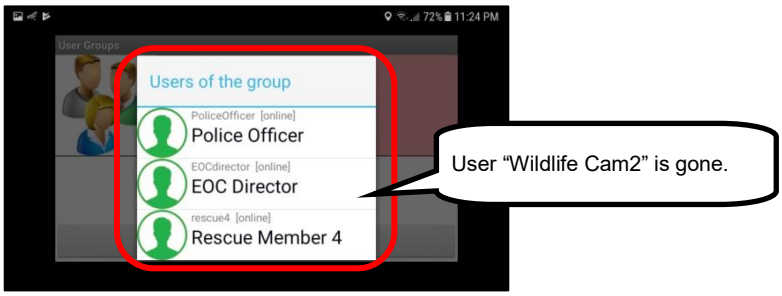
Once confirmation is provided, the system will attempt to remove the User from the User Group. If the operation is a success, the system will provide a “Done” message that flashes briefly on the screen.



A review of the User Group “Content” option now shows that the user “Wildlife Cam2” has been removed from the User Group.



The User = “Wildlife Cam2” is no longer displayed.



16.6.8. The “+Text” button

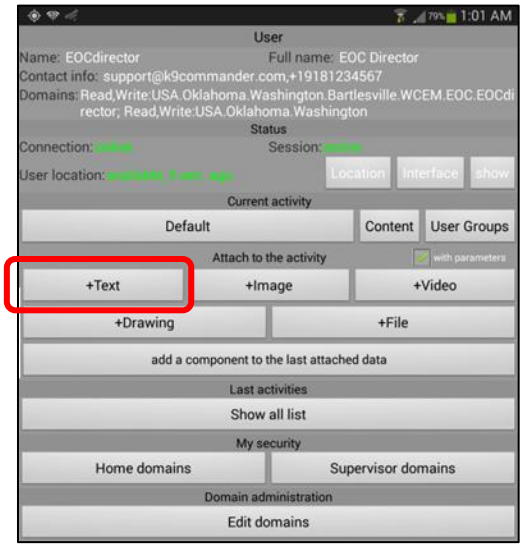
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may “attach” text, pictures, videos, drawings and files to the user’s mobile device.

This section will describe how to add TEXT content to a device.

User Panel – “+Text” Button:

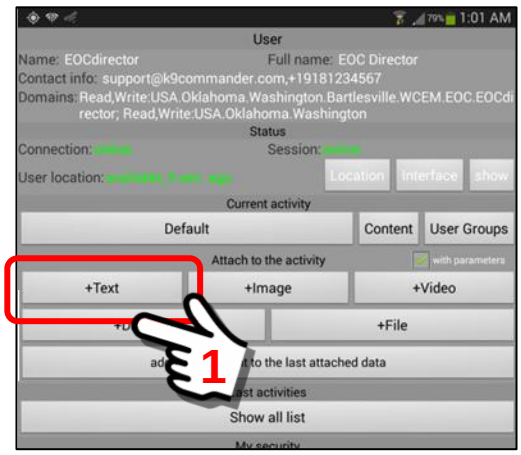
The “+Text” Button is located in the center, left side of the User Panel screen.



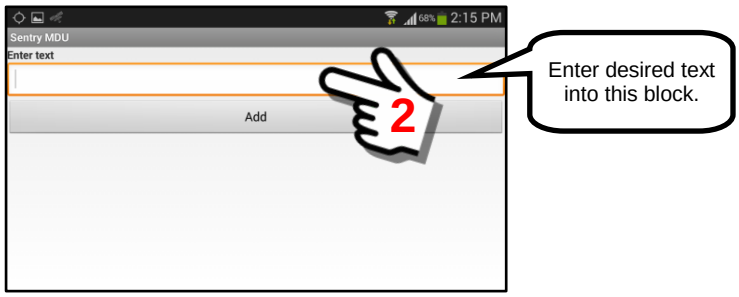
Description of the “+Text” feature:

1. ***When to use the “+Text” Button.***
   The “+Text” Button is used when a user would like to add “text” notes to the Sentry MDU system and store them for future reference.

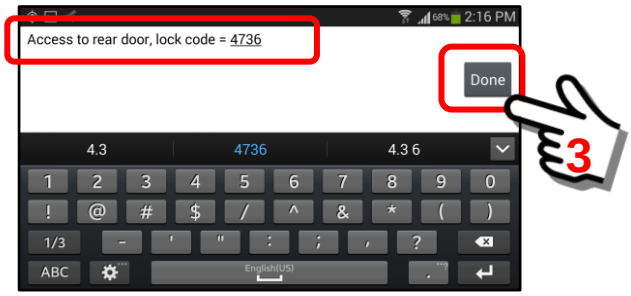
2. ***Using the “+Text” feature.***
   Click on the “+Text” button. The system will provide an on-screen keyboard for the entry of text.



A text entry panel will open. Click in the orange box area and the on-screen keyboard will be displayed to enter the text.



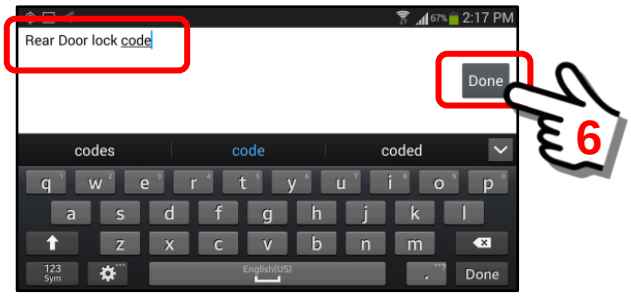
Enter the text. In this example, we are entering text to show the Access Code for the lock on the rear door of a building. When finished, click “Done”.



When finished typing, the text is shown in the data entry box of the text entry panel. Click the “Add” Button.

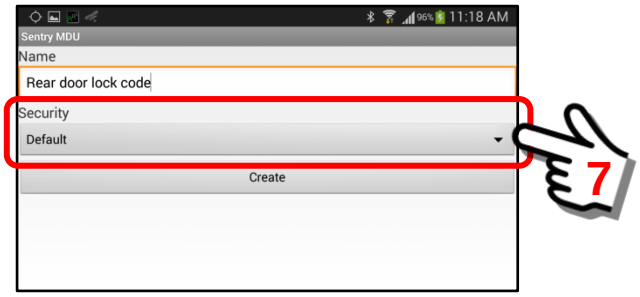
Once you “add” the text, the system will prompt for a name for this text entry. Click on the box and enter a name.

In the example, we will call this text entry “Rear Door lock code”. Click “Done” when finished.

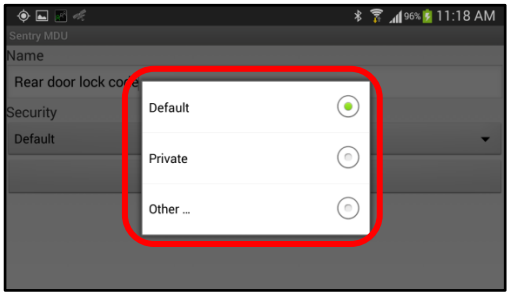


We now have a “name” under which we will store the text entry.

The next step is to select a “Security” setting for this text entry. The default security setting will allow all users that have access to YOUR content to view this text entry. You do have the option to make it private. Click on the drop down box of the Security Section.



A pop-up menu will be displayed that will allow the following three (3) options.



The three options are described as follows:

<u>Default</u>

Allows all users that have access (via security credentials) to YOUR device to view the text entry.

<u>Private</u>

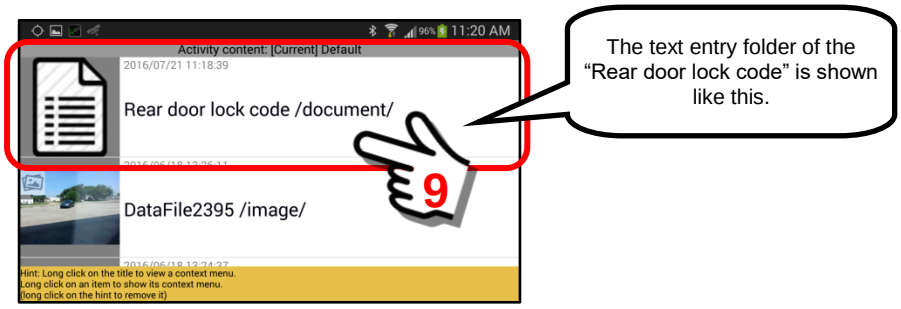
Does NOT allow other users access to the text entry. It is only available to the local mobile device user.

<u>Other …</u>

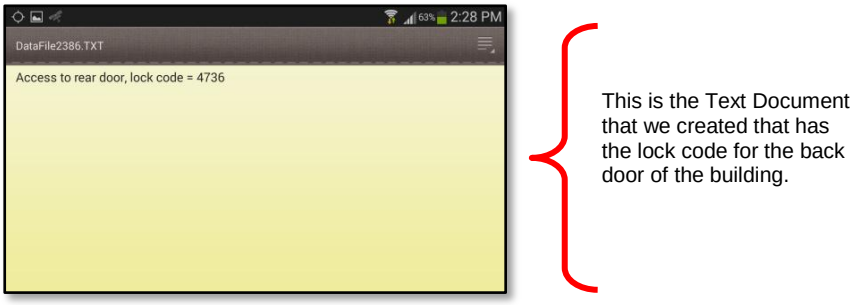
This allows changing the security access settings from one user to another. Although this “Other” option is available, we suggest only advanced users or IT Administrators make changes here.

For illustration purposes, we will leave the “Default” security setting. Click on the “Create” Button to create the new text entry.

To view the “text” attachment we have just created, select the “Rear door lock code” document. Click on it.



The document will be displayed.



16.6.9. The “+Image” button

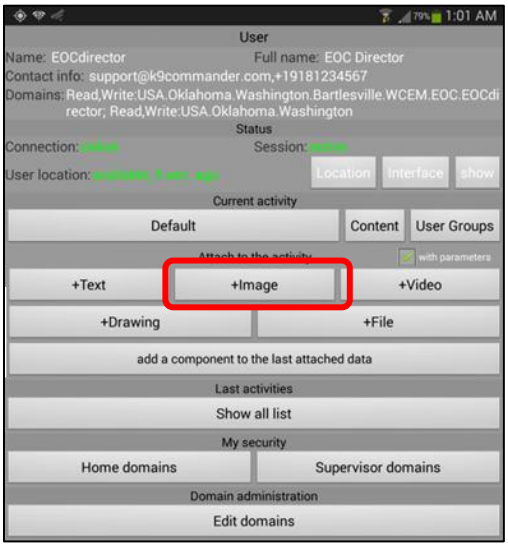
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may “attach” text, pictures, videos, drawings and files to the user’s mobile device.

This section will describe how to add “image” content to a device.

User Panel – “+Image” Button:

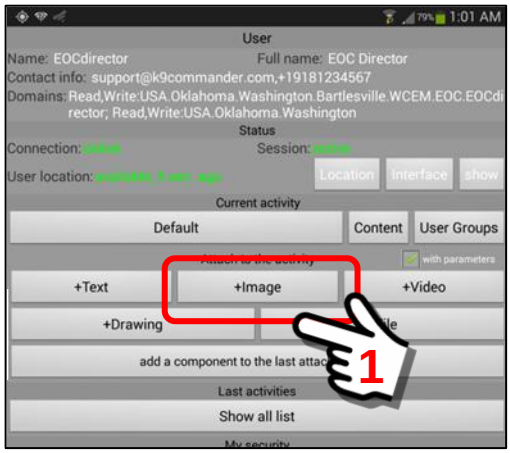
The “+Image” Button is located in the center of the User Panel screen.



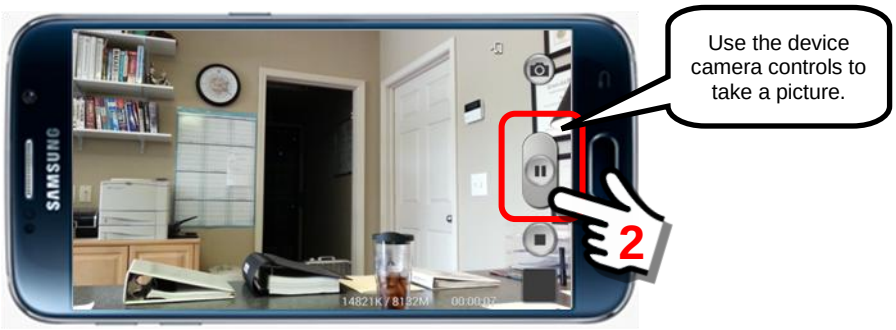
Description of the “+Image” feature:

1. ***When to use the “+Image” Button.***
   The “+Image” Button is used when a user would like to add “pictures” to the Sentry MDU system and store them for future reference.

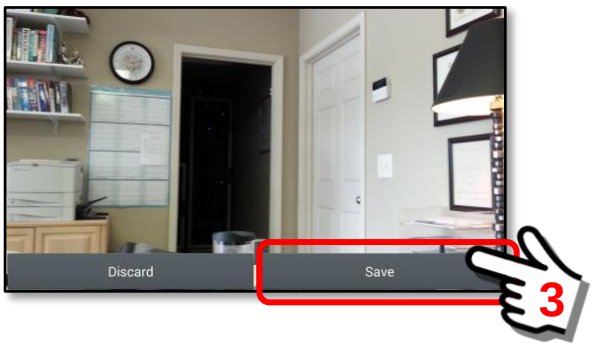
2. ***Using the “+Image” feature.***
   Click on the “+Image” button. The system will use the camera feature of the mobile device to take pictures.



The camera feature on the device will open. Take a picture as you would normally.



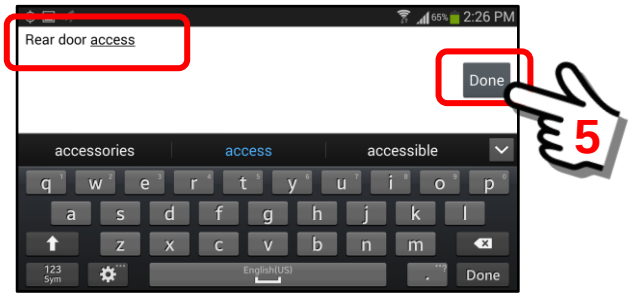
Take the picture. In this example, we are taking a picture to show the rear door of the office. When finished, click “Save”.



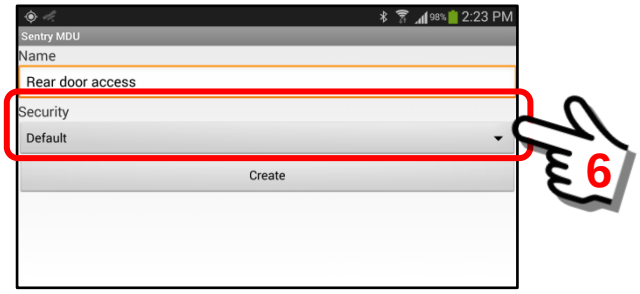
When the picture is “saved” the system will prompt for a name to store the image as.

Click on the box and enter a name.

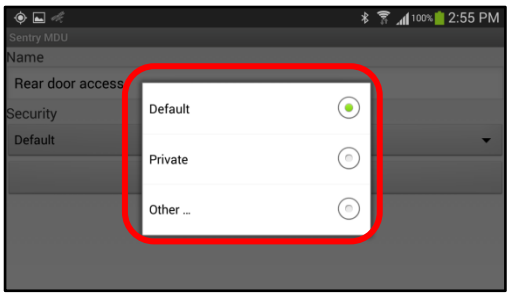
In the example, we will call this picture file “Rear door access”. Click “Done” when finished.



The next step is to select a “Security” setting for this image entry. The default security setting will allow all users that have access to YOUR content to view this image. You do have the option to make it private. Click on the drop down box of the Security Section.



A pop-up menu will be displayed that will allow the following three (3) options.



The three options are described as follows:

<u>Default</u>

Allows all users that have access (via security credentials) to YOUR device to view the image.

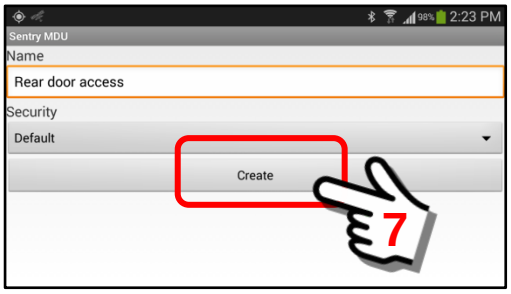
<u>Private</u>

Does NOT allow other users access to the image. It is only available to the local mobile device user.

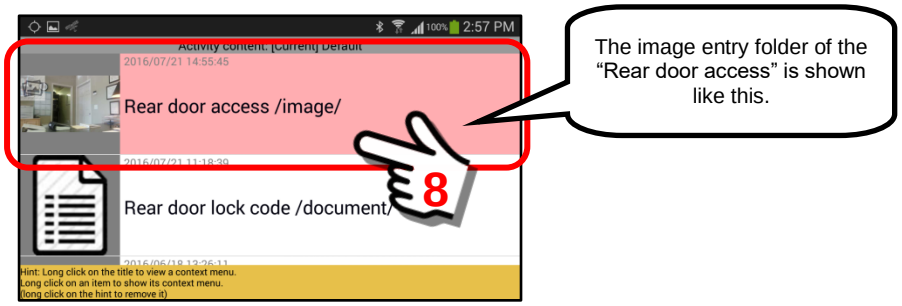
<u>Other …</u>

This allows changing the security access settings from one user to another. Although this “Other” option is available, we suggest only advanced users or IT Administrators make changes here.

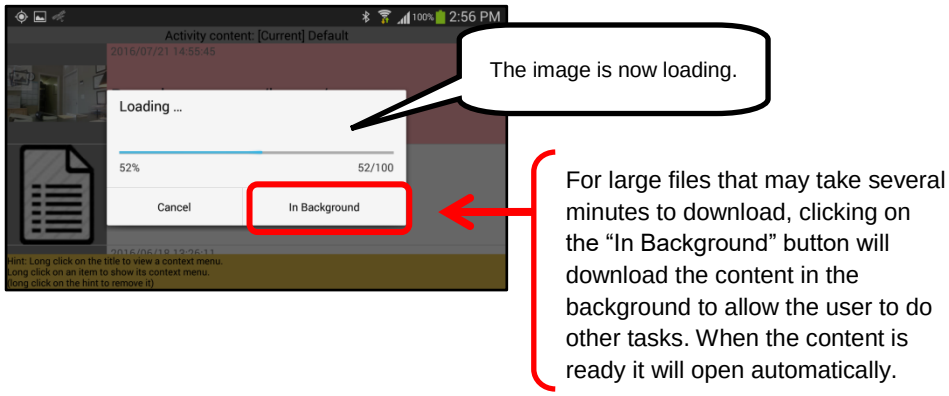
For illustration purposes, we will leave the “Default” security setting. Click on the “Create” Button to create the new image entry.



To view the “image” attachment we have just created, select the “Rear door access” image. Click on it.



The image will be loaded into the viewer.



The image is now displayed for viewing.

16.6.10. The “+Video” button

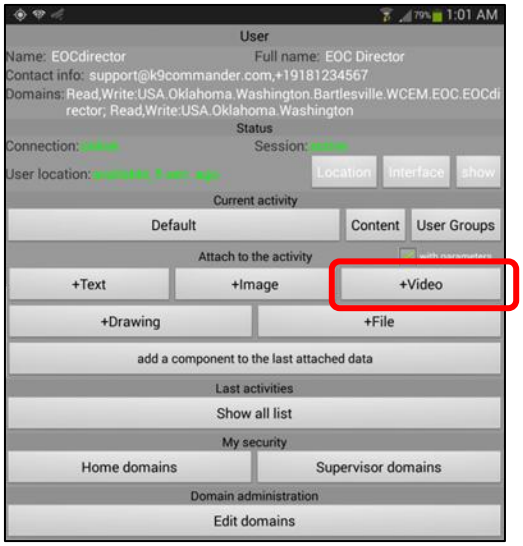
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may “attach” text, pictures, videos, drawings and files to the user’s mobile device.

This section will describe how to add “video” content to a device.

User Panel – “+Video” Button:

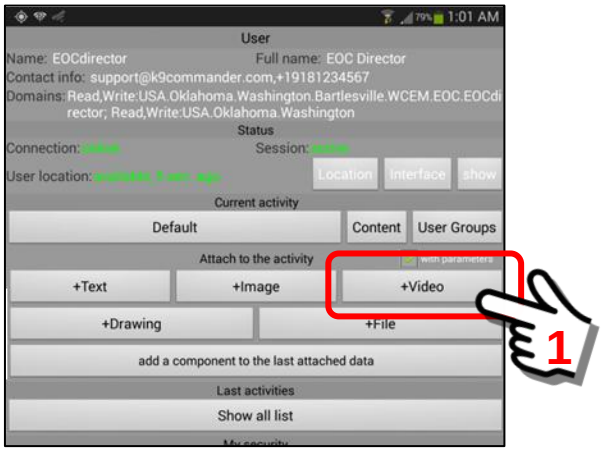
The “+Video” Button is located in the center right side of the User Panel screen.



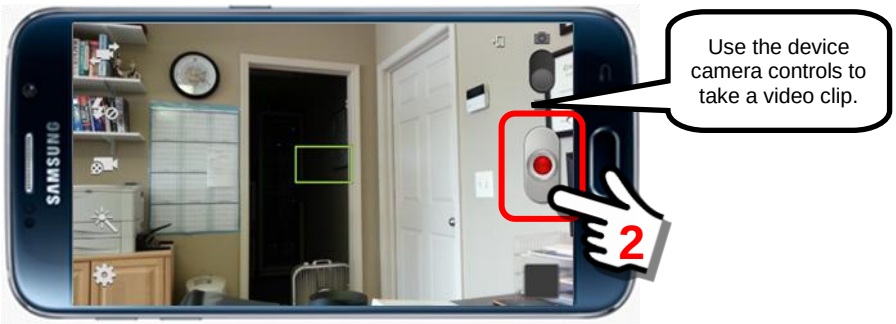
Description of the “+Video” feature:

1. ***When to use the “+Video” Button.***
   The “+Video” Button is used when a user would like to add “video” to the Sentry MDU system and store it for future reference.

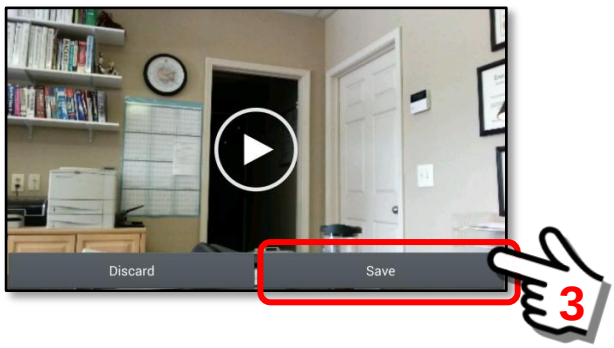
2. ***Using the “+Video” feature.***
   Click on the “+Video” button. The system will use the camera sensor of the mobile device to take a video clip.



The camera feature on the device will open. Take a video clip as you would normally.



Take the video. In this example, we are taking a video clip to show the rear door of the office. When finished, click “Save”.

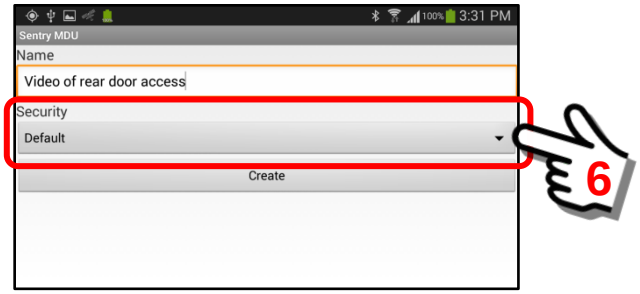


When the video clip is “saved” the system will prompt for a name to store the video as.

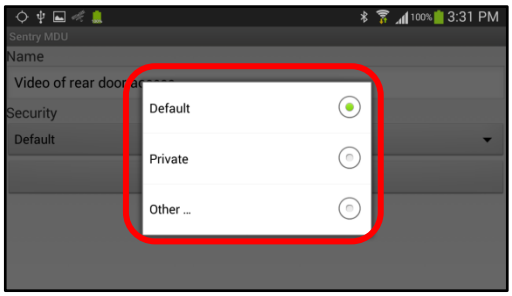
Click on the box and enter a name.

In the example, we will call this video file “Video of rear door access”. Click “Done” when finished.

The next step is to select a “Security” setting for this video entry. The default security setting will allow all users that have access to YOUR content to view this video clip. You do have the option to make it private. Click on the drop down box of the Security Section.



A pop-up menu will be displayed that will allow the following three (3) options.



The three options are described as follows:

<u>Default</u>

Allows all users that have access (via security credentials) to YOUR device to view the video clip.

<u>Private</u>

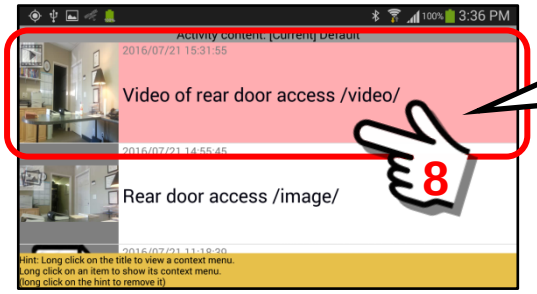
Does NOT allow other users access to the video clip. It is only available to the local mobile device user.

<u>Other …</u>

This allows changing the security access settings from one user to another. Although this “Other” option is available, we suggest only advanced users or IT Administrators make changes here.

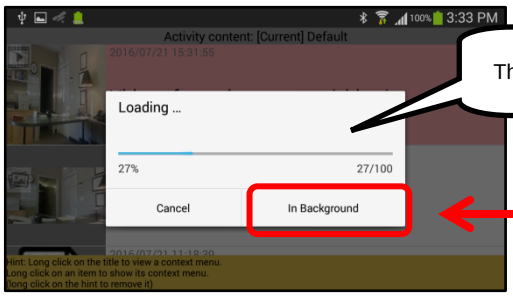
For illustration purposes, we will leave the “Default” security setting. Click on the “Create” Button to create the new video entry.

To view the “video” attachment we have just created, select the “Video of rear door access” video. Click on it.



The video entry folder of the “Video of rear door access” is shown like this.

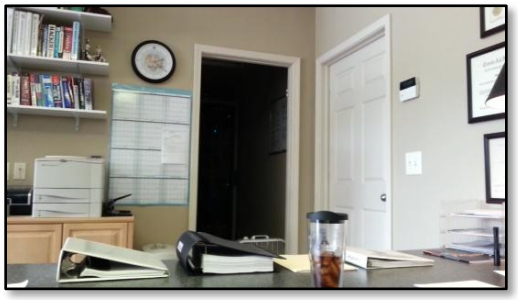
The video clip will be loaded into the viewer.



The video is now loading.

For large files that may take several minutes to download, clicking on the “In Background” button will download the content in the background to allow the user to do other tasks. When the content is ready it will open automatically.

The video clip is now displayed for viewing.



This is the video clip that we took of the “Video of rear door access”.

16.6.11. The "+Drawing" button

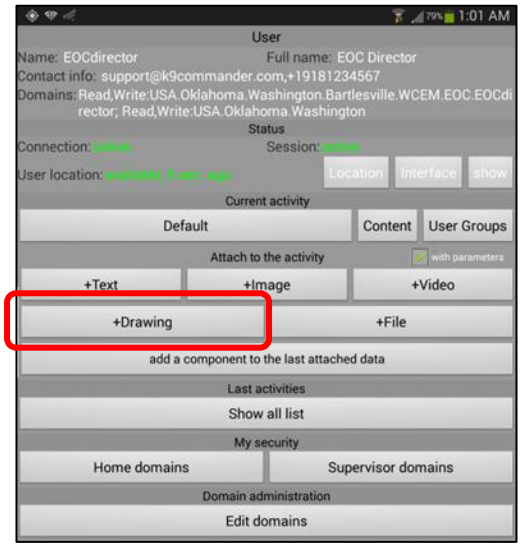
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may "attach" text, pictures, videos, drawings and files to the user's mobile device.

This section will describe how to add "drawing" content to a device.

User Panel – "+Drawing" Button:

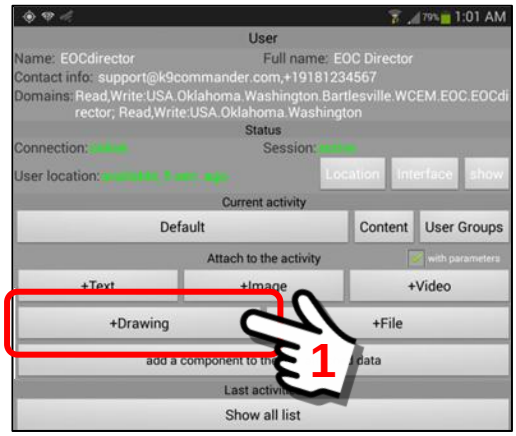
The "+Drawing" Button is located in the center left side of the User Panel screen.



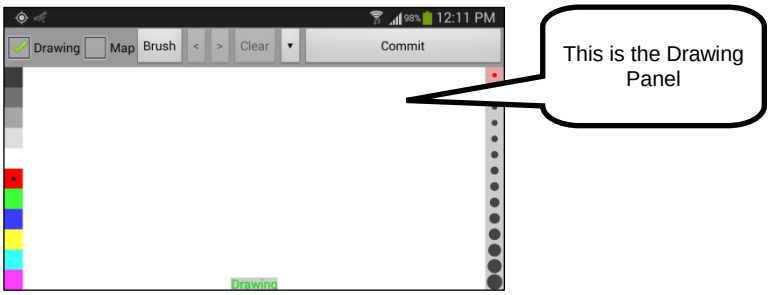
Description of the "+Drawing" feature:

1. ***When to use the "+Drawing" Button.***
   The "+Drawing" Button is used when a user would like to add a user created "drawing" to the Sentry MDU system and store it for future reference.

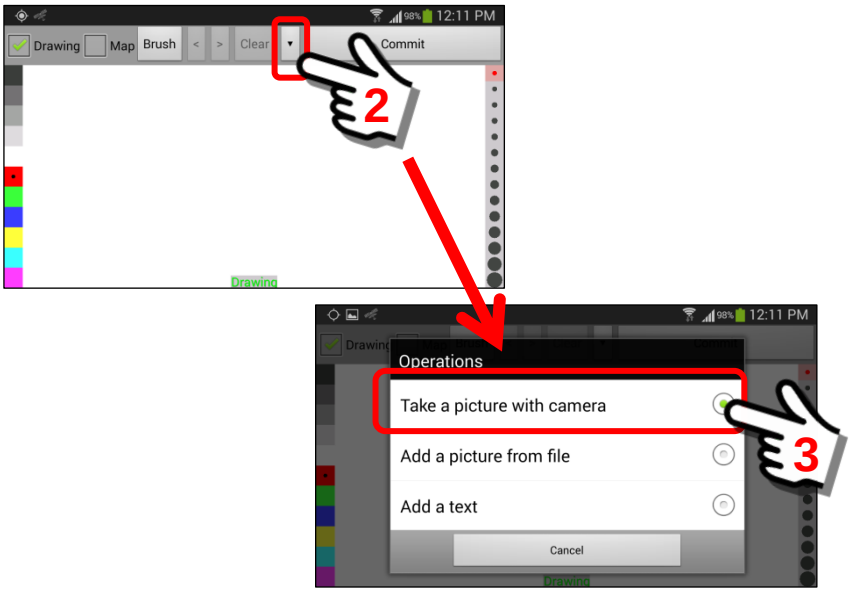
2. ***Using the "+Drawing" feature.***
   Click on the "+Drawing" button. The system will use the drawing tools of the mobile device to create a drawing.



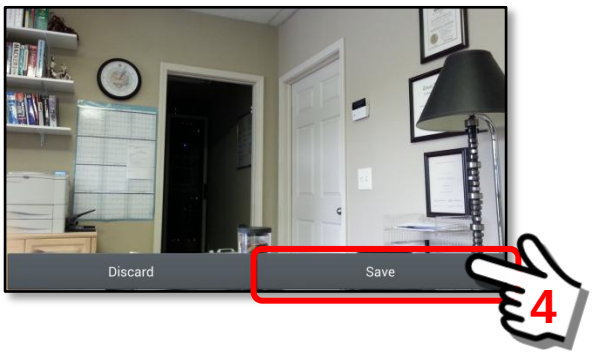
The drawing feature of the SentryMDU App will open. For our example, we will take a picture and then “draw” on the picture using the drawing tools..



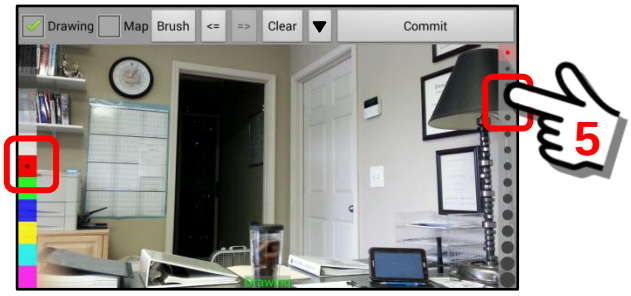
Click on the Operations Button (▼) and select the option “Take a picture with camera”.



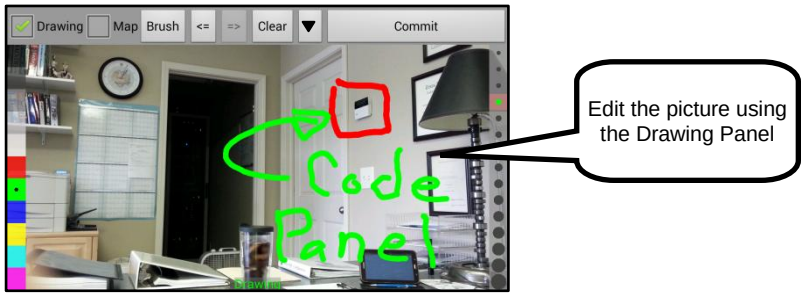
When the picture is “saved” the system will place the picture on the Drawing Canvas for editing.



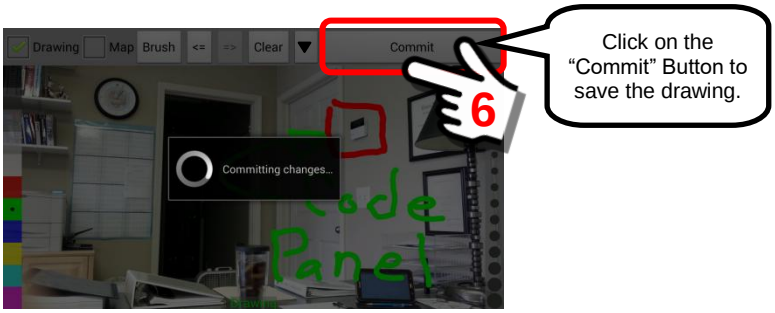
In the example, we will draw on this picture. See other sections of this guide on setting colors line thickness.



As shown below, edit the picture and make notes about the location of the access code panel.



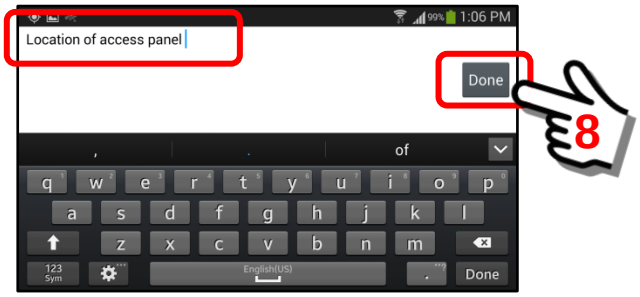
When finished, click on the “Commit” Button to save the changes.



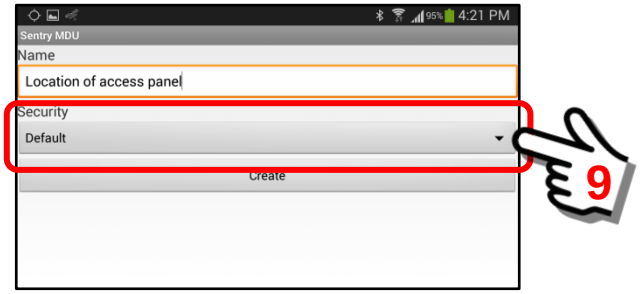
When the drawing is “saved” the system will prompt for a name to store the drawing as.

Click on the box and enter a name.

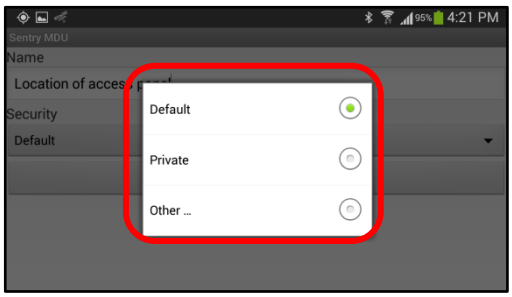
In the example, we will call this drawing file “Location of access panel”. Click “Done” when finished.



The next step is to select a “Security” setting for this drawing entry. The default security setting will allow all users that have access to YOUR content to view this drawing. You do have the option to make it private. Click on the drop down box of the Security Section.



A pop-up menu will be displayed that will allow the following three (3) options.



The three options are described as follows:

<u>Default</u>

Allows all users that have access (via security credentials) to YOUR device to view the drawing.

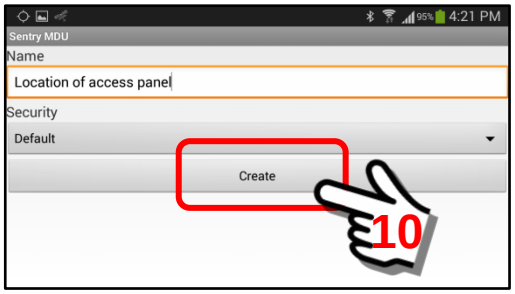
<u>Private</u>

Does NOT allow other users access to the drawing. It is only available to the local mobile device user.

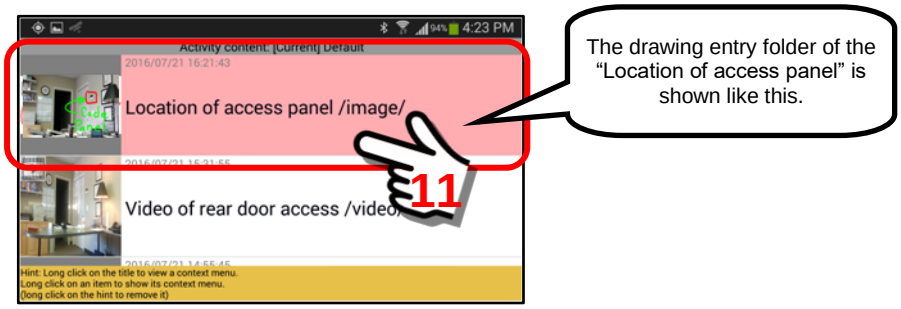
Other …

This allows changing the security access settings from one user to another. Although this “Other” option is available, we suggest only advanced users or IT Administrators make changes here.

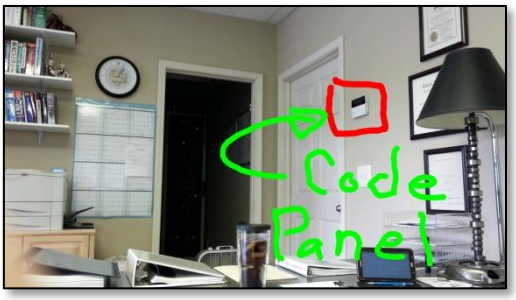
For illustration purposes, we will leave the “Default” security setting. Click on the “Create” Button to create the new drawing entry.



To view the “drawing” attachment we have just created, select the “Location of access panel” drawing file image. Click on it.



In this example, the drawing attachment with the colored text illustrates the “+Drawing” feature.



16.6.12. The “+File” button

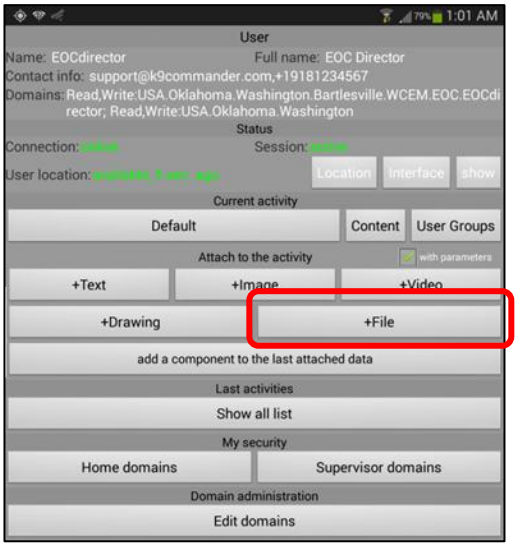
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may “attach” text, pictures, videos, drawings and files to the user’s mobile device.

This section will describe how to add “file” content to a device.

User Panel – “+File” Button:

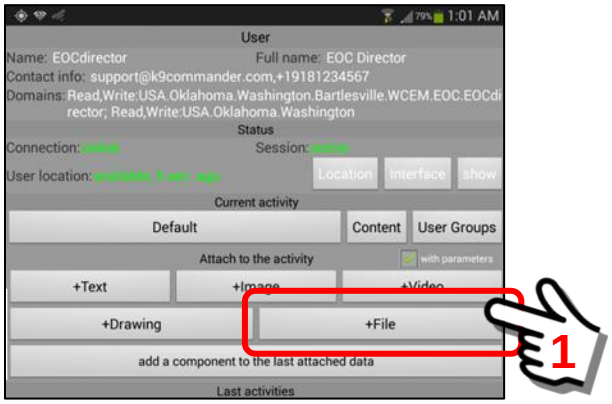
The “+File” Button is located in the center right side of the User Panel screen.



Description of the “+File” feature:

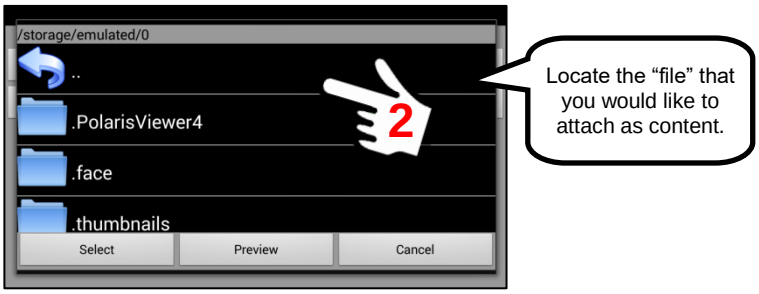
1. ***When to use the “+File” Button.***
   The “+File” Button is used when a user would like to add “data files” to the Sentry MDU system and store them for future reference. A user can add files of all types, including PDF, word documents, pictures and more. Any file type that the device has a “reader” for.

2. ***Using the “+File” feature.***
   Click on the “+File” button. The system will use the native directory structure on the mobile device to locate the desired “file”.

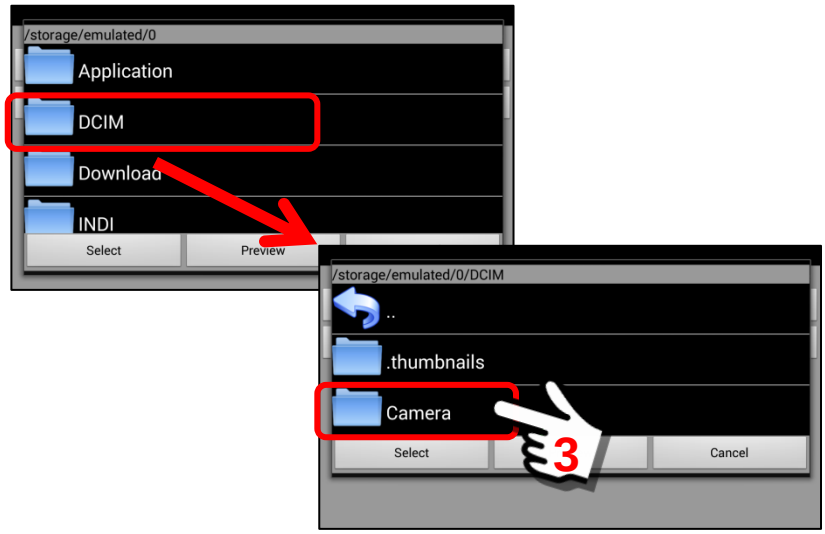


Click on the “+File” Button.

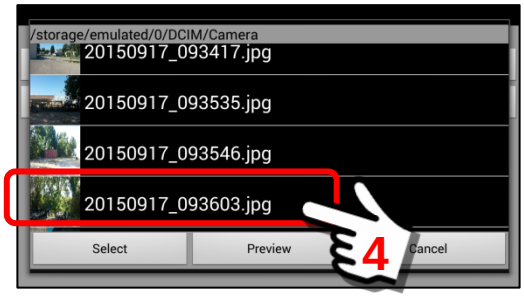
A file manager panel will open. A list of folders on the mobile device will be displayed. Navigate the folders until the desired file is located.



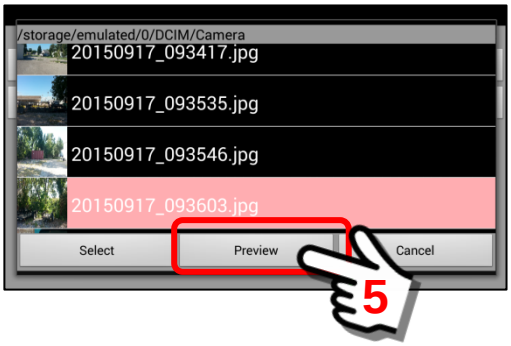
In this example, we are going to select a picture that was taken previously with the camera. We navigate to the DCIM/Camera folder.



Locate the picture that we want to attach. In this example we will attach the following image.

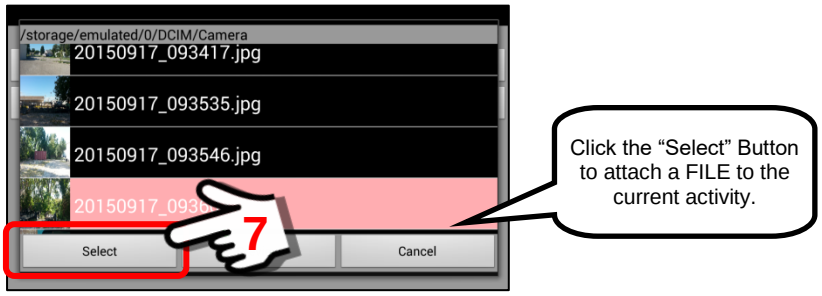


Before we attach the image, we will “preview” the picture to make sure it is the image we want. Select the image and then click on the “Preview” Button.



In the example, we see the picture that was in the DCIM/Camera folder on the mobile device. When finished reviewing, click the “back” button on the device to return to the selection screen.

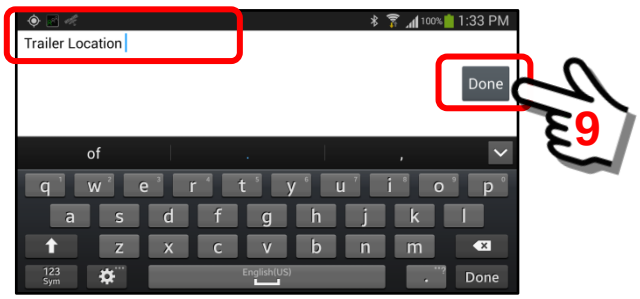
To select the picture, click on the “Select” Button with the desired file highlighted as shown below.



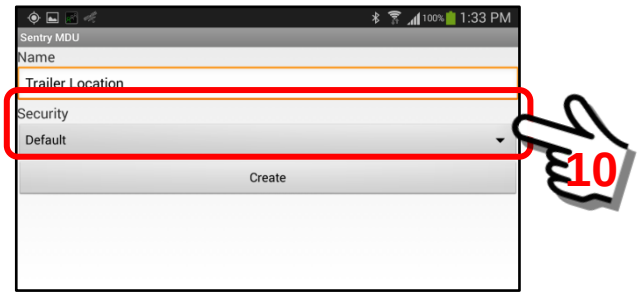
When the file is “selected” the system will prompt for a name to store the file under in the Content Folder.

Click on the box and enter a name.

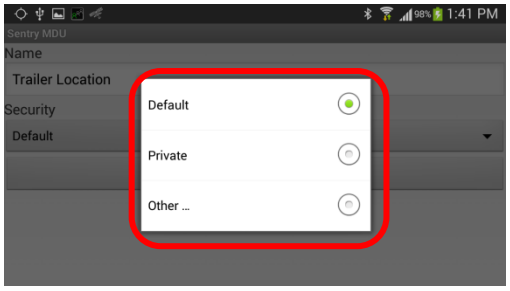
In the example, we will call this file “Trailer Location”.
Click “Done” when finished.



The next step is to select a “Security” setting for this file entry. The default security setting will allow all users that have access to YOUR content to view this file. You do have the option to make it private. Click on the drop down box of the Security Section.



A pop-up menu will be displayed that will allow the following three (3) options.



The three options are described as follows:

<u>Default</u>

Allows all users that have access (via security credentials) to YOUR device to view the file.

<u>Private</u>

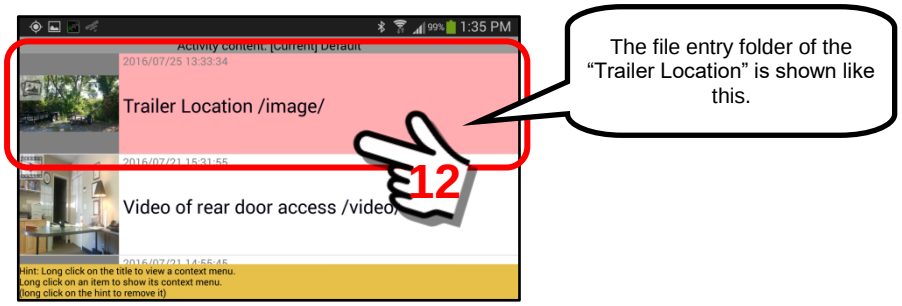
Does NOT allow other users access to the file. It is only available to the local mobile device user.

<u>Other …</u>

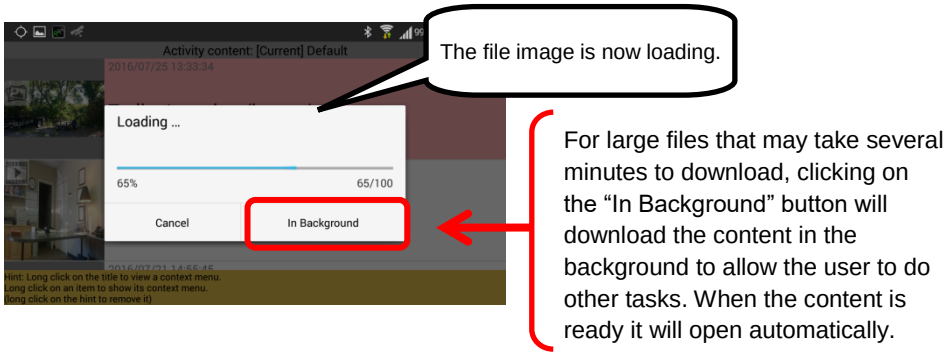
This allows changing the security access settings from one user to another. Although this "Other" option is available, we suggest only advanced users or IT Administrators make changes here.

For illustration purposes, we will leave the "Default" security setting. Click on the "Create" Button to create the new file entry.

To view the "file" attachment we have just created, select the "Trailer Location" file image. Click on it.



The file image will be loaded into the viewer.



The file image is now displayed for viewing.

This is the file image that we loaded for the “Trailer Location”.

16.6.13. The “add a component to last attached data” button

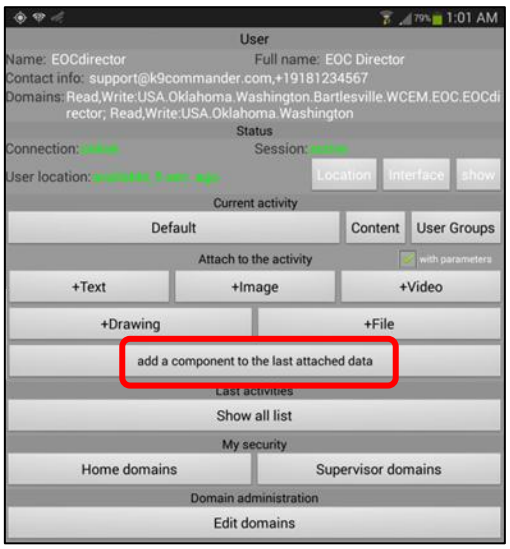
Overview:

The Sentry MDU System has the ability to store and display content that a User would like to capture. Users may “attach” text, pictures, videos, drawings and files to the user’s mobile device.

This section will describe how to add “additional data components” to an existing current activity entry. This would be a situation where you want to add multiple data elements to an existing context. For example, you want to add text, then a picture, then a short video and finally a reference file. This section enables a user to add additional items to a recently created entry.

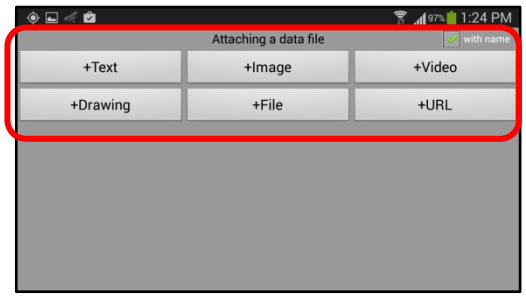
User Panel – “Add a component” Button:

The “Add a component to the last attached data” Button is located in the lower center of the User Panel screen.



Description of the “Add data to an activity” feature:

1. ***When to use the “Add a component to the data” Button.***
   This Button is used when a user would like to add “additional data” to an existing content activity. A user can add files of all types, including PDF, word documents, pictures and website references (URLs).

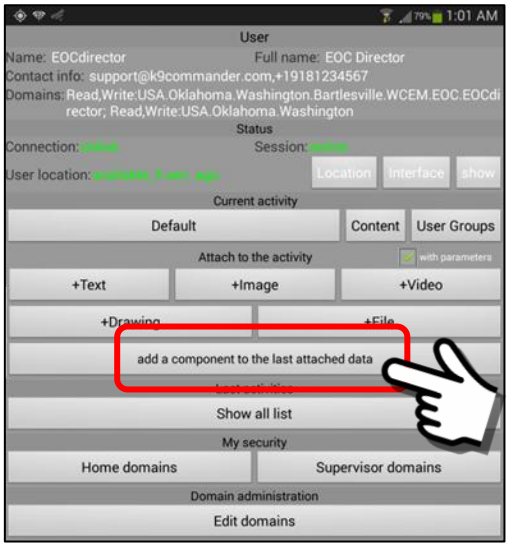


A variety of data types may be added.

1. Text
2. Image / pictures
3. Videos
4. Drawings
5. Files
6. Website URL references

2. ***Using the "add a data component" feature.***

Click on the "add a component to the last attached data" button. The system will provide a selection panel that will include 6 types of data to attach.



Select the type of data to add.

Follow the same procedure illustrated in other sections of this manual.

Once the data has been added, the system will provide a message showing the data has been installed. The screen will return to this menu for additional entries if desired.

16.6.14. The Last Activities section, “Show all list” button

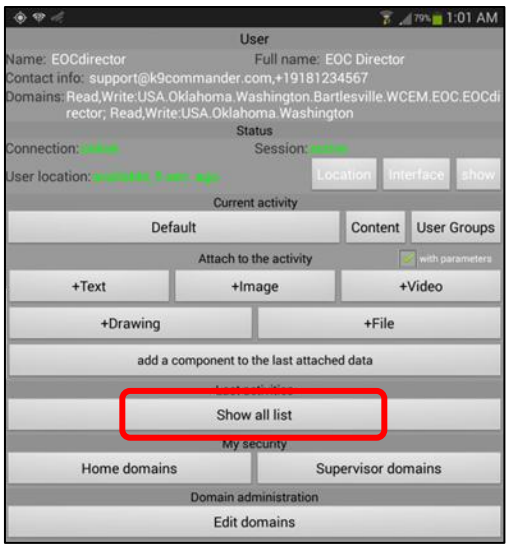
Overview:

The Sentry MDU System will store user content under the Current Activity category (ie Default). Users may create different activity categories in order to segregate data into logical blocks. These could be seasons of the year (ie Summer, Winter) to by “topic” (ie Nature).

This section will describe how to review the Content Categories on a device.

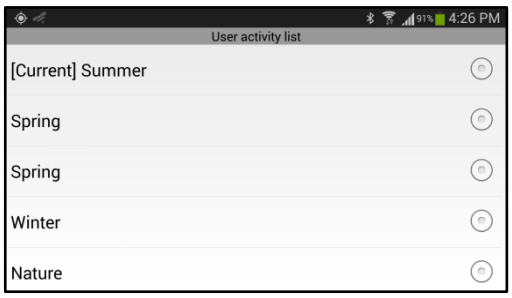
User Panel – “Show all list” Button:

The “Show all list” Button is located in the bottom, center of the User Panel screen.



Description of the “Show all list” feature:

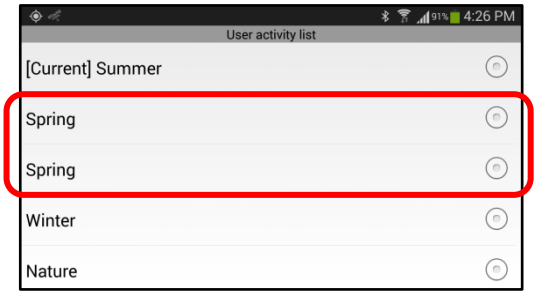
1. ***When to use the “Show all list” Button.***
   This button may be used to display the existing activity categories that a User has created.



Example of several different activity categories.

Note that the “Summer” category is the current selected option. To change, simply click on another option. All content that was stored under that category is now made available via the “Content” Button.

2. ***Duplicate entries in the User Activity List.***
In the list below, note that there are 2 entries for “Spring”. The system will allow duplicate entries by a User. Each entry may have its own separate content.

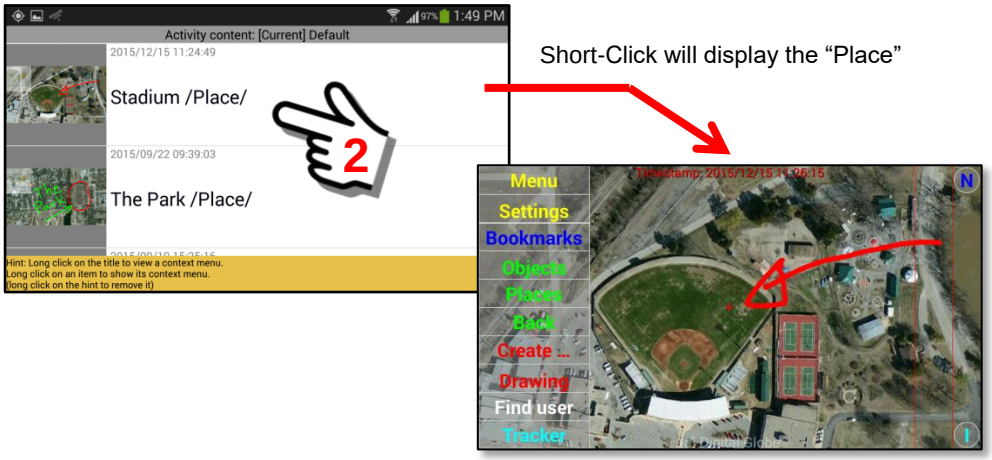


Note that the “Summer” category is the current selected option. To change, simply click on another option. All content that was stored under that category is now made available via the “Content” Button.

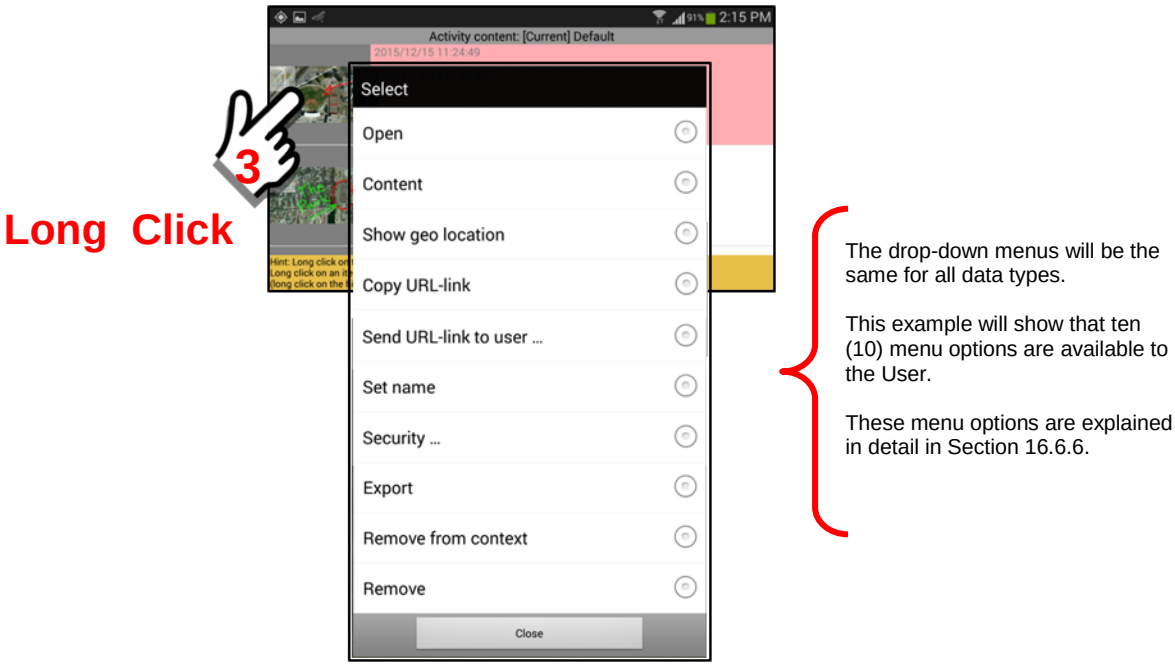
3. ***Reviewing user content in the User Activity List.***
The User Activity List allows a user to review the data stored on the mobile device as with the Content Button.

Click on the desired category to review.

Select the desired content item from the list. You have the option of performing either a “Long click” or “Short click”.



Performing a “Long click” will open a menu of options. These options are covered in detail in **Section 16.6.6**.



The 10 menu items are explained in detail below.

Open

The “Open” menu option will open the file and display the contents, In the case of our example, it will display the satellite image view of the “Place” which is a Stadium.

Content

The “Content” menu option will display the components of the data that make up the item. In the example of the Stadium, “Place” content, the Place item has two components … a document item and an image item. The Content menu item also allows a user to perform additional operations on the data elements.

Show geo location

The “Show geo location” menu option will display a map view (Satellite image) of the location of where the data was gathered. The GPS location will be derived from a geo-tagged picture or video. If the GPS data is not available a message will be provided indicating that no position is known.

Copy URL – link

The “Copy URL – link” menu option is provided to allow the user to “bookmark” data from their own content or other user content. Once the URL link is copied into the TEMP file system on the local device, it may be imported and saved.

Send URL – link to user …

The “Send URL – link to user” menu option is provided to allow a user to send another user a bookmark link to this specific data.

Set name

The “Set name” menu option allows a user to change the name that is attached to a particular data element. When we click on the “Set name” menu option, we are presented with a data entry box to edit/change the name.

Security …

The “Security …” menu option allows a user to view and change the security settings and access for the information stored on the mobile devices.

Export

This option will export the data to an XML data file. The file will be stored in a temporary folder (.TEMP) on the mobile device which can then be transferred/copied to other computer systems for offline storage.

Remove from context

This menu option removes content from the .CONTEXT folder on the local device. This situation will occur if a user downloads a long video and plays it. This video would be stored in a memory “cache” on the local device. If some time later, the user wanted to view the video again, it would not be downloaded again because it is already resident on the device. It would be played immediately because it is stored locally. This option allows a user to “remove” the video from the local device memory if they do not want to view it any more.

Remove

The “Remove” menu option allows a user the ability to permanently remove data elements no longer needed.

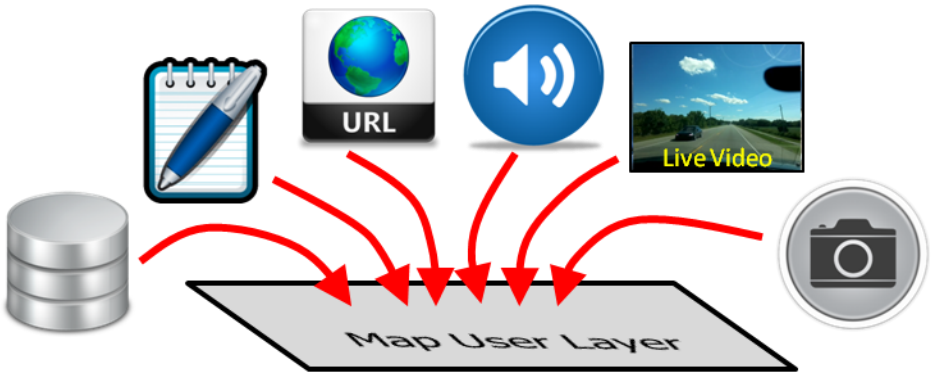
16.7. Example – Create custom map with 3 embedded features

Overview:

This example demonstrates how to create custom Map Layers of specific regions of a satellite (Map) view and include icons and data references in this custom view. These "layers" will be available to all users on the system (assuming security credentials allow) and may be used standalone or as Foreground and Central layers in association with the Main Map Screen. Each "map user layer" has the following 3 elements:

(1) A layer that objects will attach to (usually a map layer)
(2) Icons and/or user drawings that are attached to the layer
(3) Content data that is attached to the icons (available when clicked)

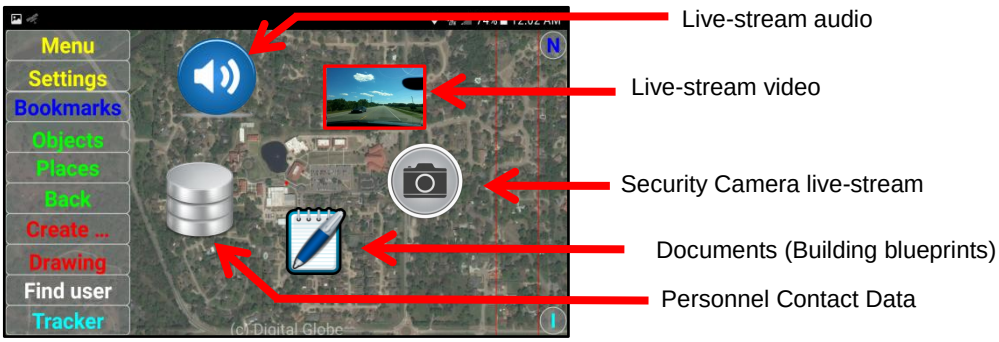
When a "layer" is first created, it is empty (has no map or objects attached). The user will decide what map screens, objects, video, text and reference data to associate with this custom map view. This view may then be stored as a bookmark or Foreground/Central Layer to use with the Main Map Screen.



This section will illustrate the setup and use of the "Map user layers" feature.

Example screen created with the "Map user layers" feature:

Shown below is an example of a screen created using the "Map user layers" feature set.



How the “Map user layers” are used:

A map user layer can be opened in a map screen or added to the Main Map Screen as a custom layer (Foreground Layer or Central Layer). Map user layers created by one user can be used by other users on the SentryMDU System.

There are two primary methods by which a “Map user layer” is used:

1. Each user can create their own “Map user layer” (ie their own custom map).
2. Each “Map user layer” can be viewed via its URL by saving it as a bookmark or Foreground/Central Layer.

This section will describe these two uses.

Preparations to embed the objects into a Map Layer:

In this example, we will embed 3 objects of different types into the Custom Map Layer. In preparation for this you must create 3 bookmarks that can then be transferred onto the new custom map layer. If you have not already done this … STOP … and go create the 3 bookmarks now.

The following major sections will be covered in this example

A. Creating a “new” User Defined Map User Layer

B. Embed an icon that opens a stationary surveillance camera

C. Embed a live streaming video feed from a “Covert Cam”

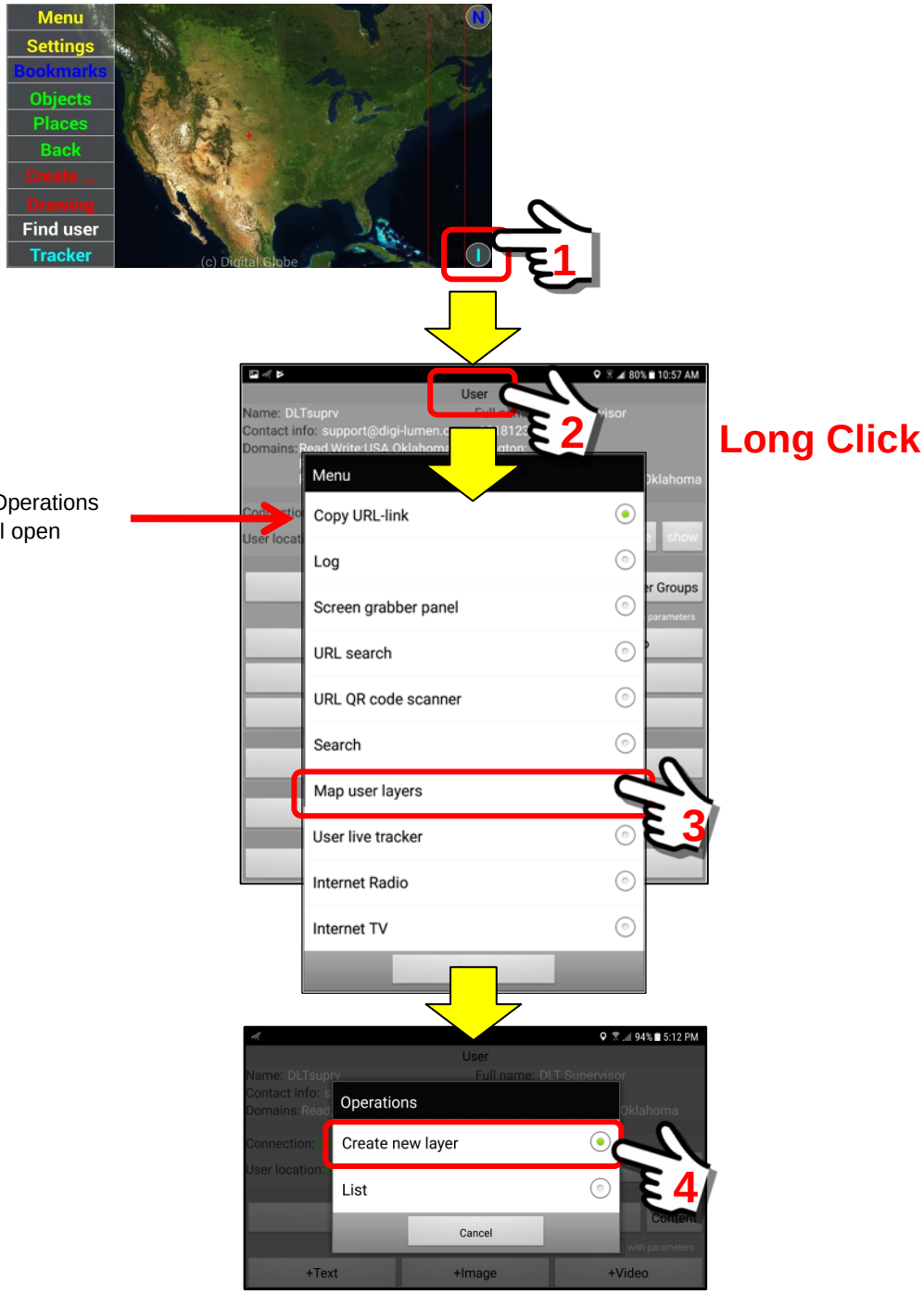
D. Embed an icon that displays a set of blueprints for a building

A. Creating a “new” User Defined Map user layer.

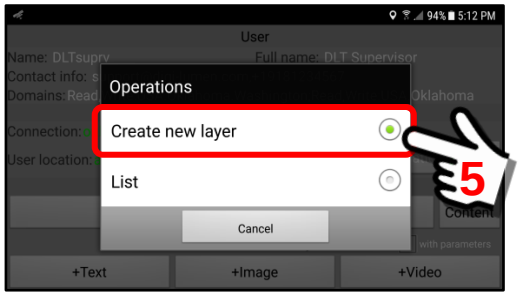
1. *Create a Map User Layer*

This section will describe the steps necessary to create a “new” Custom Map Layer. When a “new” **User Defined** custom map layer is first created, it is an “empty” canvas. The Custom Map Layer will have a name and format (ie Map.Layer.Active.Live … ???) but that is all. The next step is to assign a map “view” and embed objects (audio, video, etc.) into the map layer.

Click the “I” Button to open the User Information Panel. This is located on the lower, right hand corner of the Main Map Screen.



Select the “Create new layer” menu option



Create a “name” for the User Defined Custom Map Layer.
<u>In this example, we are building a custom layer for the following scenario</u>.

> We will construct a Custom Map with markers showing the GPS location of a High School in the city of Bartlesville, Oklahoma, USA. Embedded into the map will be icons representing building blueprints and campus layouts for the school. When the custom layer is active, a police officer can access the map, locate the school, click on the blueprint icon and view a screen layout of the school campus. In addition, two surveillance cameras have been installed, one inside and one outside. They will stream live video to 911 Dispatch and responding officers if required.

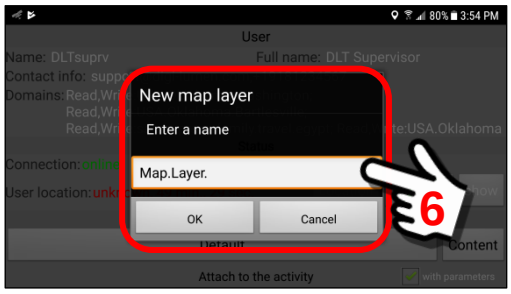
With this scenario, we will have BOTH active and live content in our custom map layer. We have selected the following NAME for our custom map layer.

Map.Layer.Active.Live.BPS.Dwg

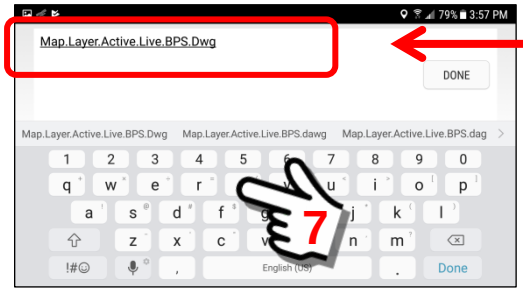
Map.Layer …… default “root” name of Layer (required)
Active …… content (video panels) that move on the screen
Live …… content (live video and audio)
BPS ……... named for Bartlesville Public Schools
Dwg …… indicates reference Drawings are available

Clicking on the “Create new layer” option opens a **New Map Layer** pop-up panel to enter a name. The system defaults to “Map.Layer.” in the text box.

Click in the text box to edit the name.

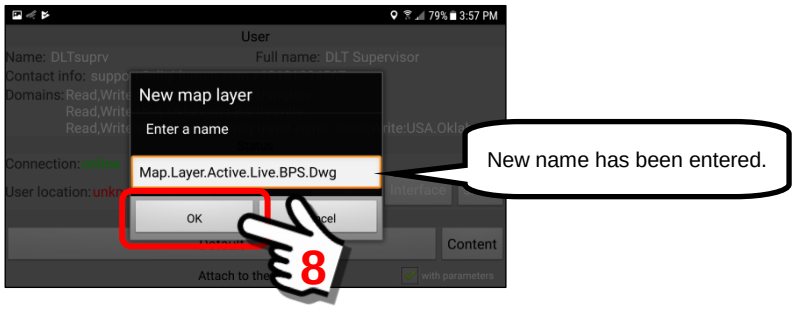


The on-screen keyboard will open and allow editing. Type in the name you have selected. In this example we have **Map.Layer.Active.Live.BPS.Dwg** .

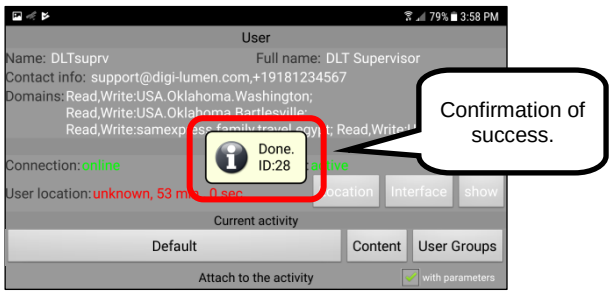


Type in the name for your "new" Custom Map Layer

The "edited" name is now shown in the **New Map Layer** box.
Click the "OK" Button to continue.

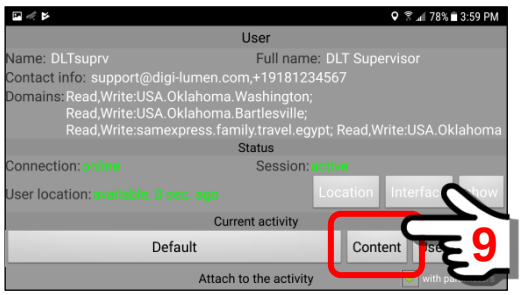


If the Custom Map Layer is successfully created, you will see a confirmation message (Done).

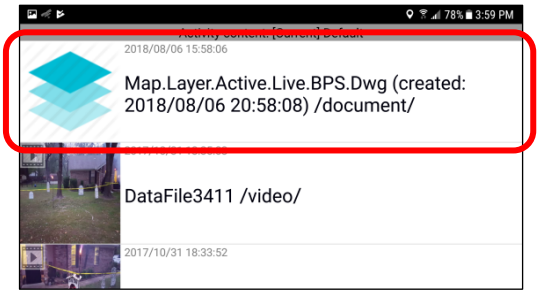


The new "empty" custom map layer has been created. It is stored on the SentryMDU Data Server AND copied into the "Current activity" Content folder on your device.

Click on the Content Button to see the storage location on YOUR device.



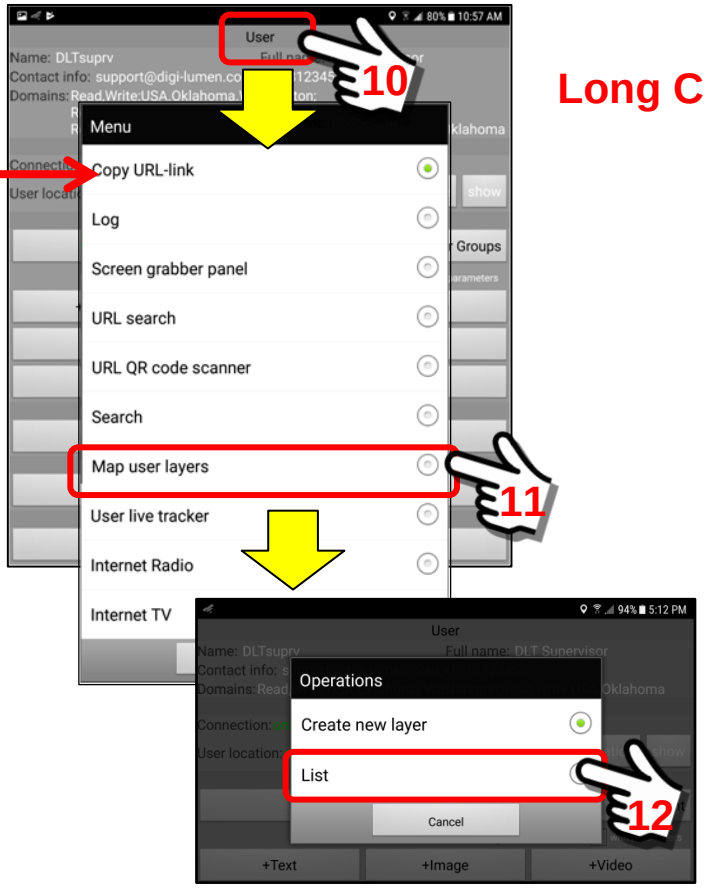
The new entry should be the most recent entry on the list (top of the page).



New Custom Map Layer

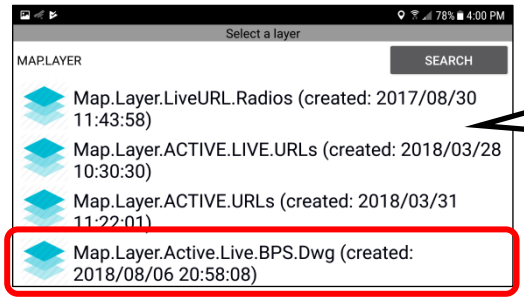
To review the newly created Custom Map Layer on the Data Server, return to the User Information Panel and the “Map user layer” menu option.

Pop-up Operations Menu will open



Long Click

The list will now display the “new” Custom Layer template.



List from Data Server

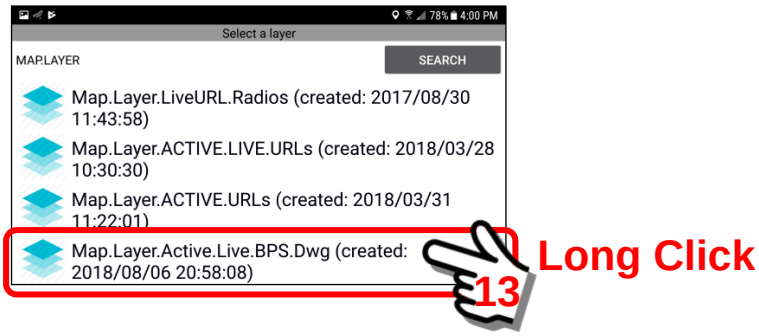
New Custom Map Layer

Now that we have established a new custom map layer we will need to copy it into a Foreground/Central/Background layer before we attach and embed URLs into the layer.

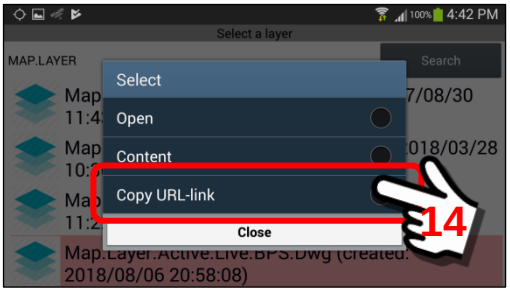
> **Important Note: In order to insert, modify or delete objects from a newly created Custom Map Layer, it must be copied into a Foreground / Central / Background layer.**

The next step in our process is to COPY this custom map layer into our Foreground Layers Folder.

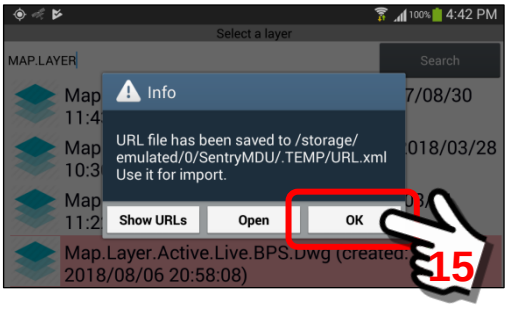
"Long click" on the Custom Map Layer.



Click on the "Copy URL-link" Button to save the URL for this Custom Map.



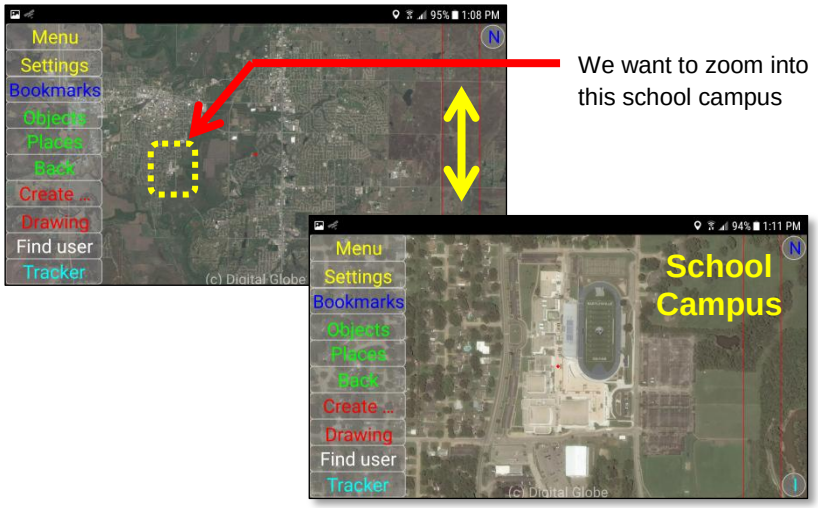
The URL is now stored in a temporary folder (.TEMP) and is ready to be imported into the Foreground or Central Bookmarks folder.
Click the "OK" Button to save the selection.



Return to the Main Map Screen.

The first step to install a custom map layer is to set the zoom level (view area) that you want covered by the Custom Map Layer. We will then install this view level into the custom map layer (which is empty at the moment).

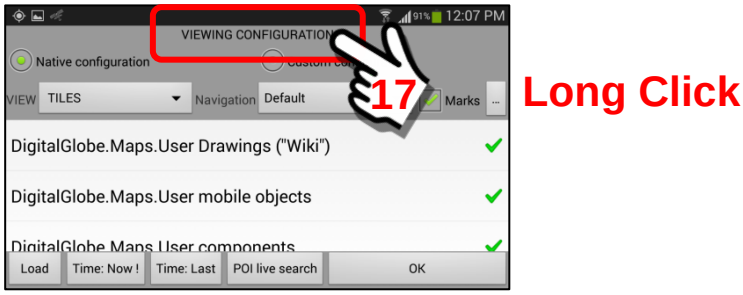
Starting at the Main Map Screen, zoom into the desired view area.



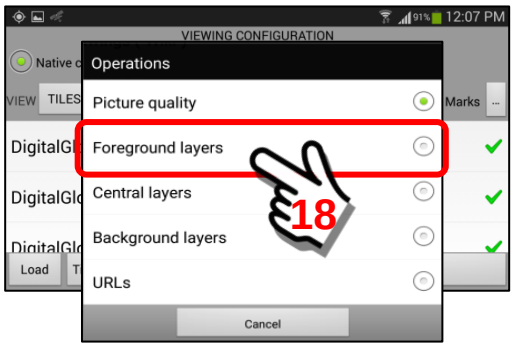
We select the View Area first because the Custom Map will accept the default view area of the Main Map Screen when we create the Foreground Layer.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

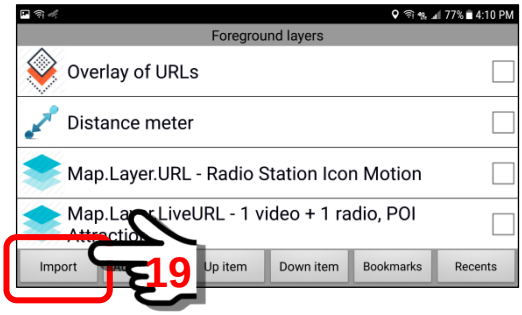


A pop-up Operations Menu will appear. Select the Foreground Layers option.

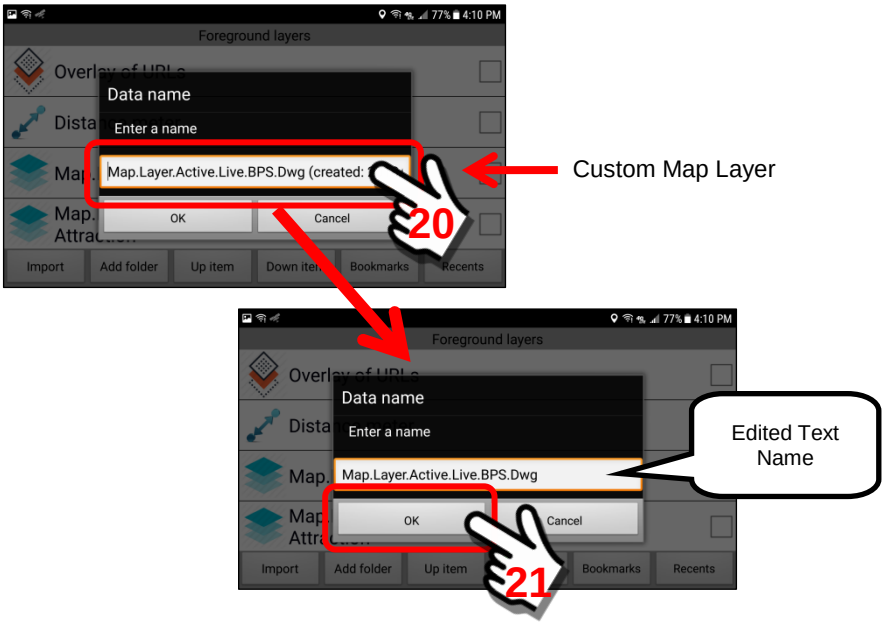


The Foreground Layers menu option will open the Foreground Layers Panel. We will now import the URL we saved in the previous step into the Foreground Folder.

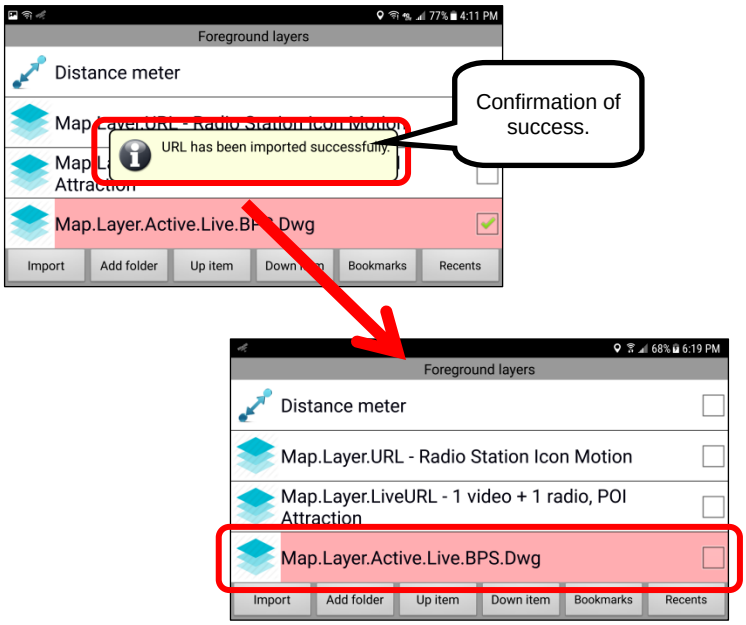
Click the Import Button.



When the **Import Button** is "clicked" a pop-up panel appears with the default NAME of the custom layer that will be installed. In this example, we will edit the name to remove the date/time information.



Click “OK” to accept the name change and install the Foreground Layer.

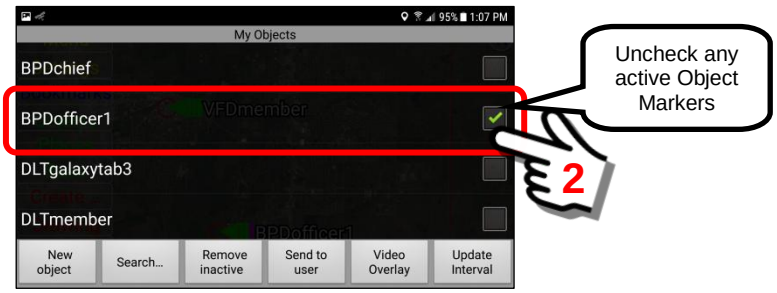


The “new” custom map layer for **Map.Layer.Active.Live.BPS.Dwg** has now been installed. We are ready to embed objects.

2. ***Hide object markers so they don’t show in the Custom Map Layer***

It is a good idea to hide any Object Markers you may have displayed on the screen. You CAN leave them, however, since you are working with map “layers” it sometimes can be confusing when you have the “base” layer, with the object markers showing thru the layer that you are working on. We would recommend hiding the markers, so that is what we will show here.

Uncheck any Object Markers that are enabled.

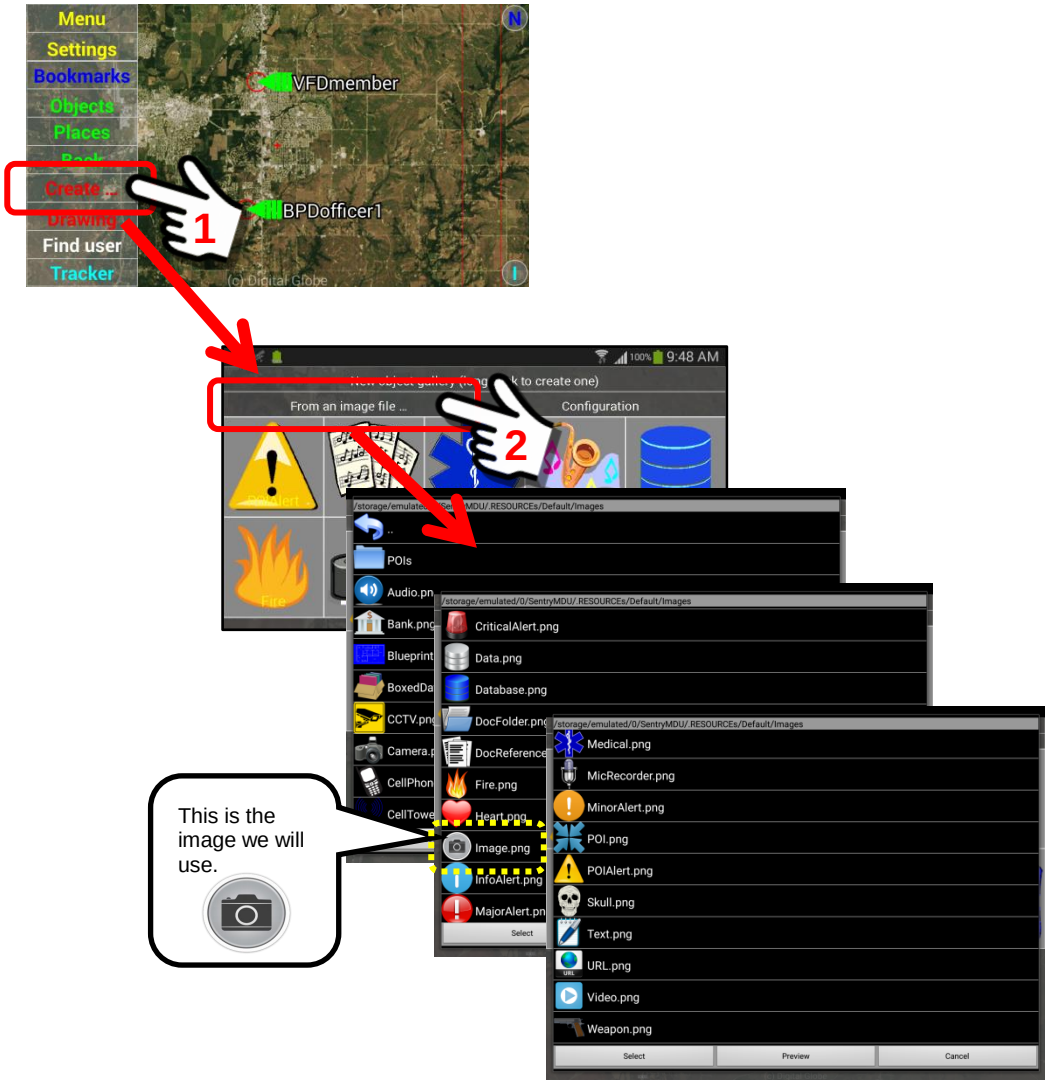


B. Embed an icon that opens a stationary surveillance camera.

1. ***Decide what icon to use as the Surveillance Camera Icon***
   This feature will be a URL link, that when "clicked" will open a video feed from a SentryMDU mobile device that is set up as a stationary surveillance camera.

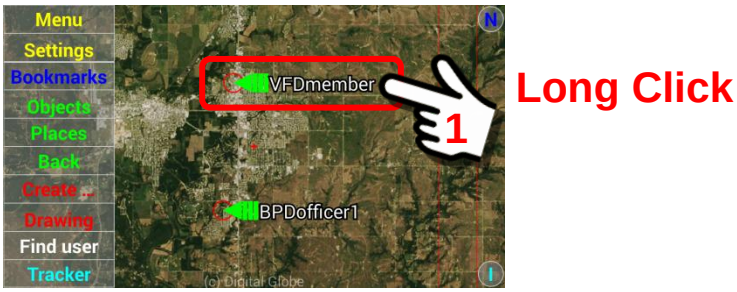
   In this example, we will select the following icon from the Gallery List of available icons.

   We review the images in the Gallery Listing and find the image we are looking for. The "New Object Gallery" Panel is shown below. Click on the "Create …" Button to launch the ***New Object Gallery*** panel.

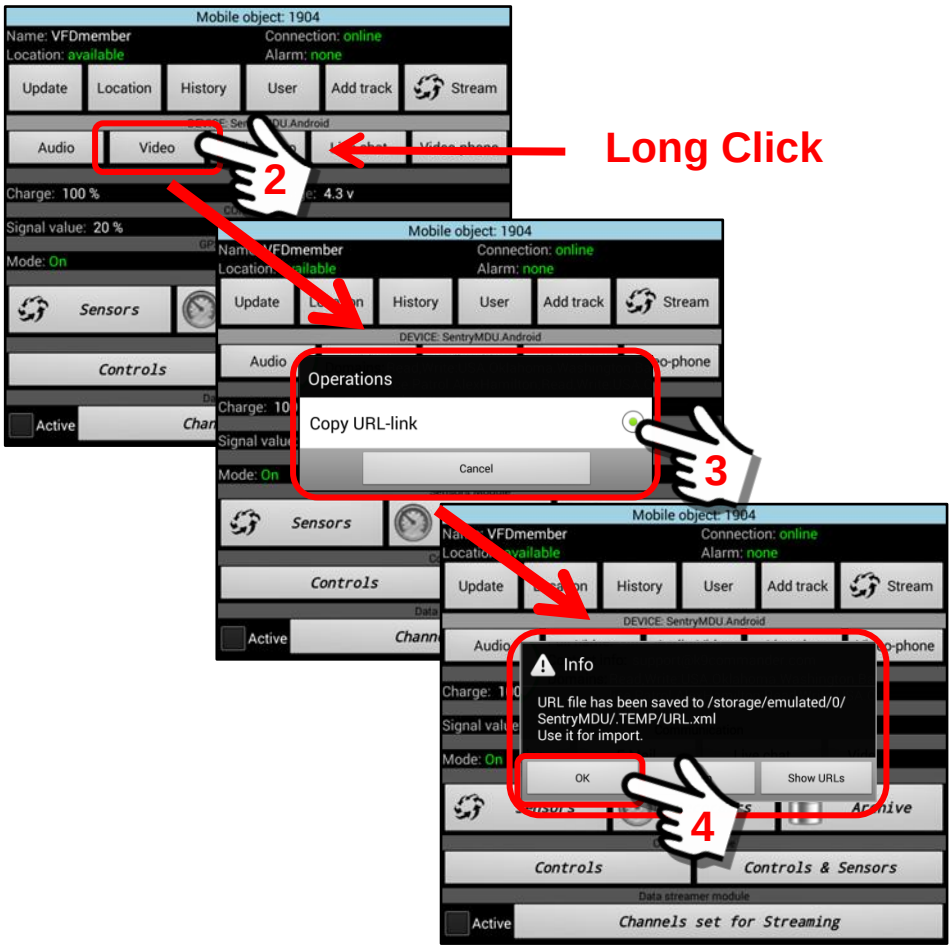


2. ***Select a SentryMDU mobile device to get the video feed from***
We will look at the various mobile devices on our network and select the one that will be acting as the stationary surveillance camera.

For this example, we will select the camera from mobile device VFDmember. Perform a “Long click” on the VFDmember object marker on the Main Map Screen (can also select VFDmember from the Objects Panel).



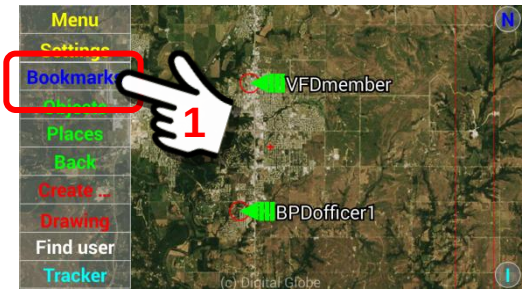
To capture a bookmark URL link for this video feed, we will perform another “Long click” in the Video Button on the Mobile Object Panel for VFDmember.



Click “OK” to save the URL link to a temporary folder. This will be imported into the Bookmarks Folder as a next step.

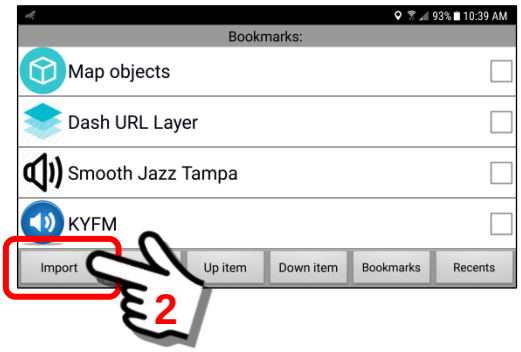
3. ***Import the VFDmember video feed URL into the Bookmark Folder***
We have created a “video” URL link from the VFDmember mobile device. Now we will import this URL and create a bookmark in the Bookmark Folder.

Start at the Main Map Screen panel.
Select the Bookmarks Button on the Main Menu.



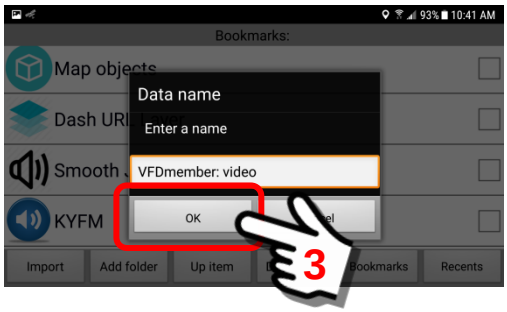
We will now install the VFDmember video URL link from the temporary folder into the Bookmark Folder.

At the Bookmarks Panel, click on the **Import Button**.

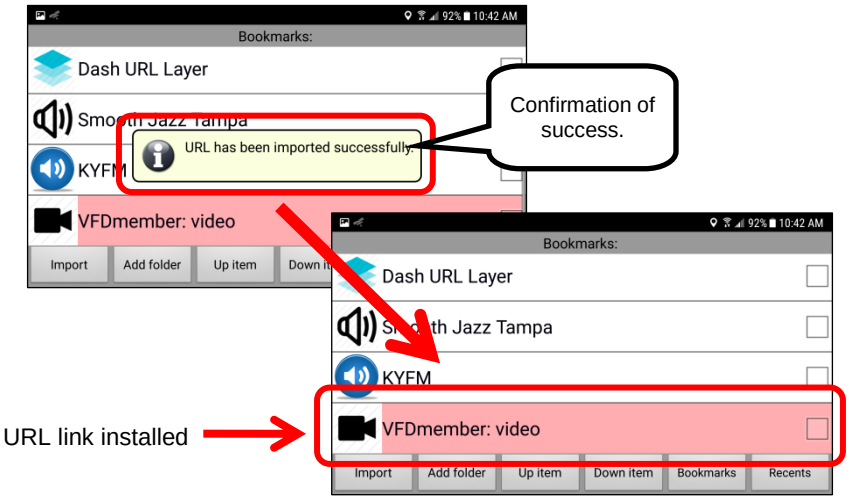


When the **Import Button** is clicked, a pop-up panel will appear showing the “default” name of the VFDmember video URL link that was saved in the temporary folder. You may edit/change this name is desired. In this example, we will keep the default name “**VFDmember: video**”.

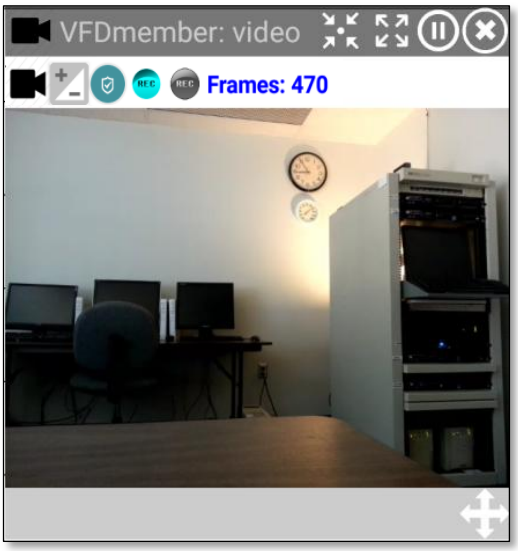
Click the “OK” Buttom when you are ready to import the URL bookmark.



The VFDmember video URL will be installed into the Bookmark Folder. A message will appear on the screen for a few seconds indicating that the operation was successful.



View from stationary Surveillance Camera located inside the school building.

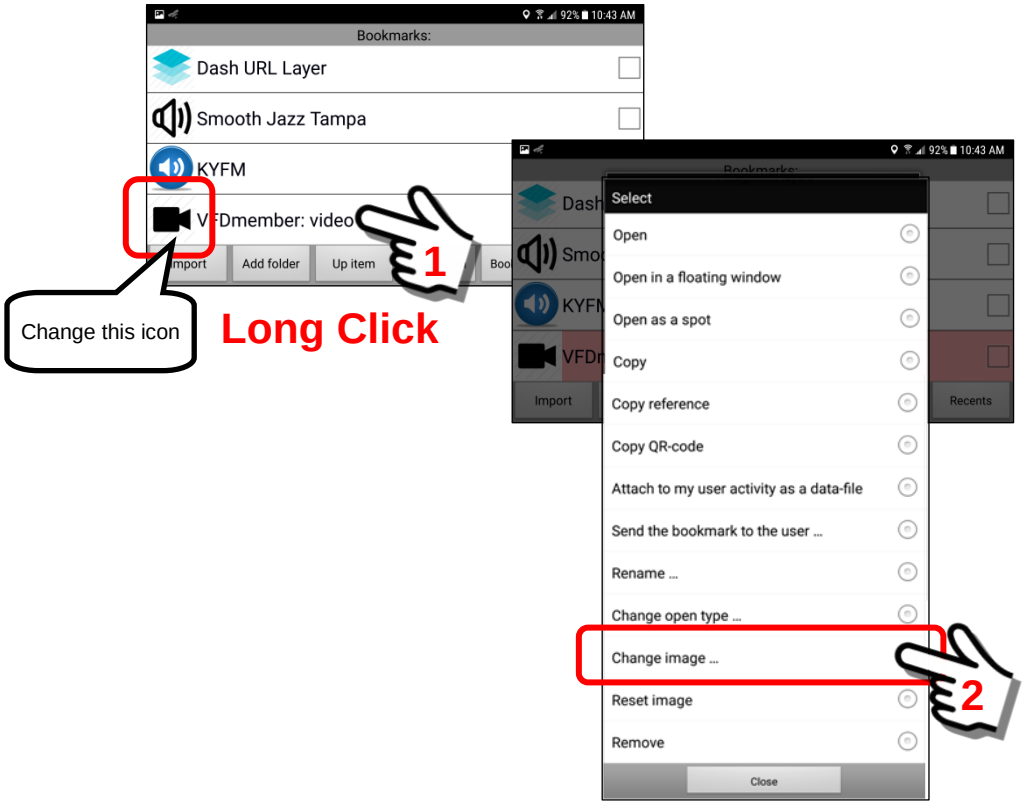


4. *Change the Surveillance Camera Icon*

This step will change the icon used by the VFDmember video feed from the default to the one we selected in Step 1.

We want to change from to

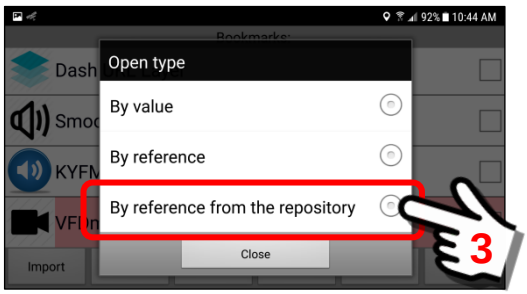
Perform a “Long click” on the bookmark name to open an options panel that will allow us to change the image icon.



Select the “Change image” option button. This will open another pop-up panel that will allow you to select other images for the icon.

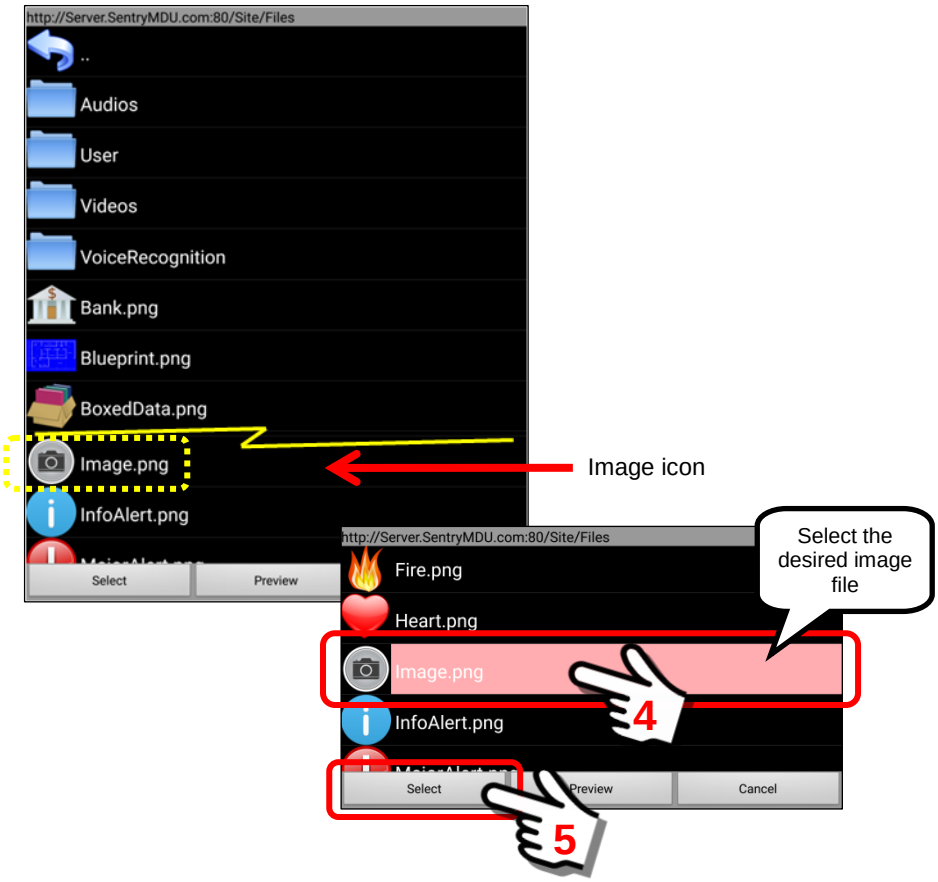
In this example, we will select the “new” image icon from the gallery of images currently installed on the device.

Click on the “**By reference from the repository**” option on the Open Type Panel.

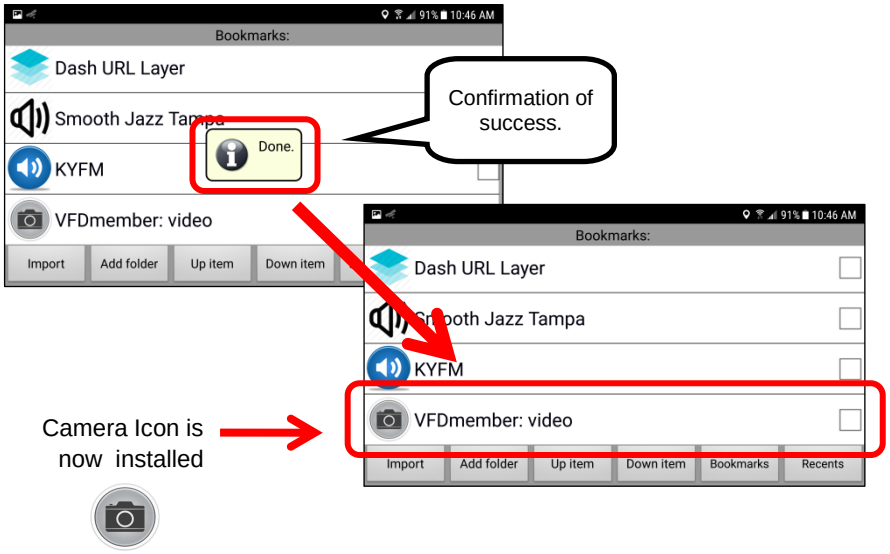


The file system on the device will be displayed with the same gallery of images that were reviewed earlier. Scroll down the list until you find the image of the Camera (image.png).

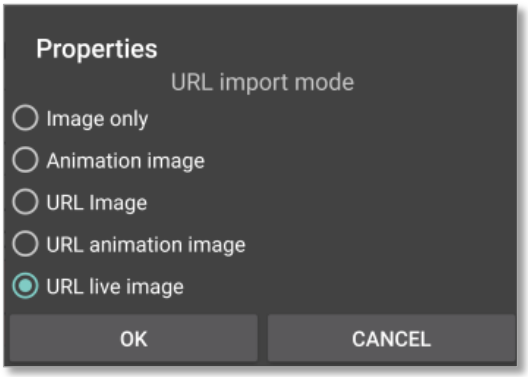
Select the “image.png” icon graphic for our Surveillance camera icon.



When the “new” image is selected, you will be returned to the Bookmarks Panel. The new image is now installed for the **VFDmember: video** URL bookmark.



5. ***Adjust the PROPERTIES of the Custom Map Layer to match the URL.***
The Custom Map Layers feature of the SentryMDU System has the ability to import various combinations of images, URL actions, live streaming data, etc. The configuration panel is shown below:

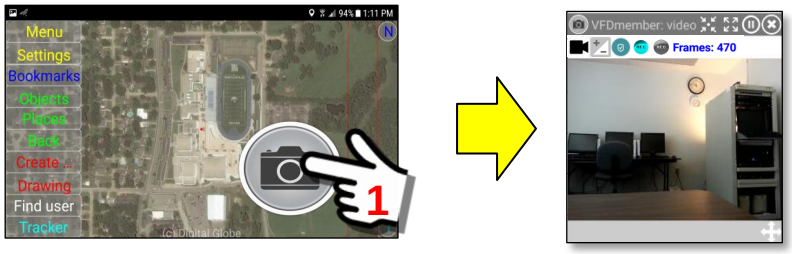


Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

When configuring multiple URL sources attached to a Custom Map Layer you MUST specify the correct **URL Import Mode** for the particular data type. The system will attempt to guess based on the type of custom map layer "name" that you specify, but if you have multiple embedded objects (doing different things), adjustments are usually required.

For example, if you specify a **Map.Layer.Active.Live** custom map layer, the system will assume the "URL live image" type of URL Import Mode. However, if you have multiple URL types on the same Map Layer you will need to adjust the URL Import Mode setting for each different URL type.

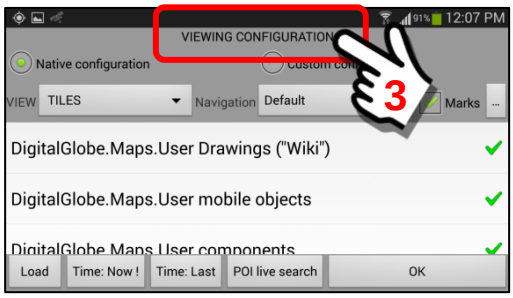
In this exercise, we want the Stationary Surveillance Camera to only begin transmitting video when we "click" on the Camera Icon.



To adjust the URL Import Mode setting for the stationary Surveillance Camera we do the following.

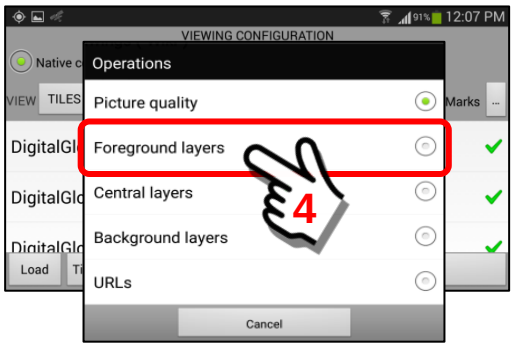
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.



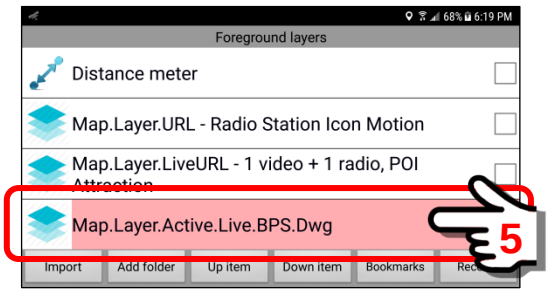
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



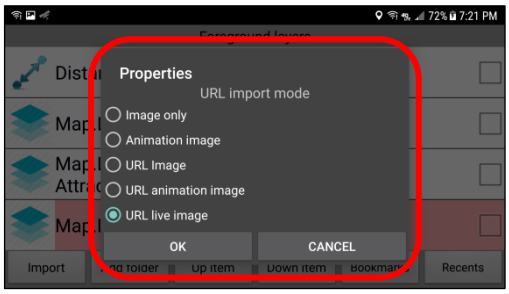
The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the **Map.Layer.Active.Live.BPS.Dwg** Layer.

“Long Click” on the Custom Map Layer item.



Long Click

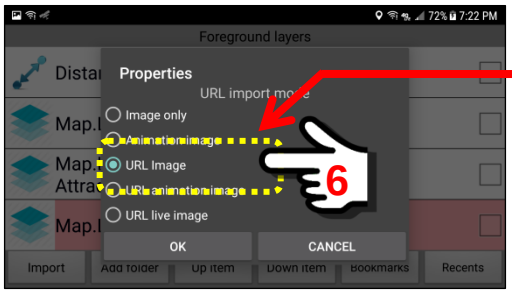
A Custom Map Layer pop-up **Properties Panel** will open.
Inspect the default setting for the URL Import Mode.



Properties Panel

Determines HOW the attached URL will act when embedded into the Custom Map Layer.

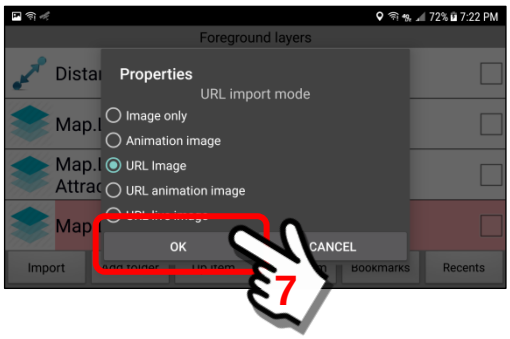
We notice that the URL Import Mode is set to “URL live image”. We want the “URL Image” mode because we don’t want the video until after we click on the icon. Click on the **URL Image** menu option to activate that mode.



We want to click on a “URL image” to open the video panel so we select.

URL Image

When finished, click the “OK” Button to close the panel settings.

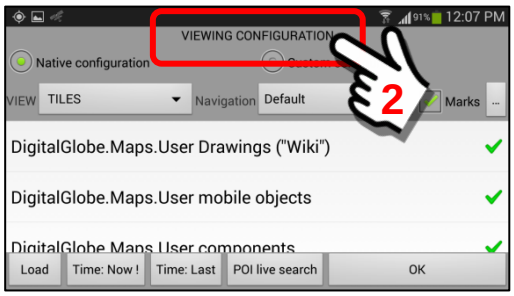


Important Note: You will need to review/adjust these settings for each new type of URL you install on a Custom Map Layer.

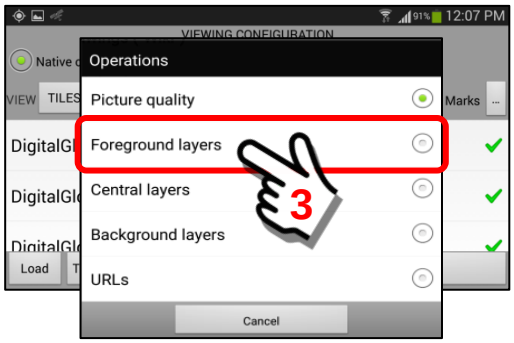
6. ***Verify the zoom level you have set for the Custom Map Layer***
Before we install the Surveillance Camera URL into the custom map layer, we want to verify the zoom level (view area) that will be covered by the Custom Map Layer.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

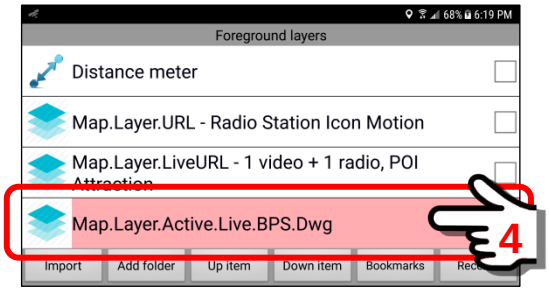


A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.

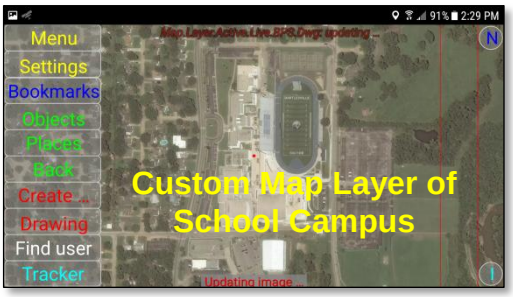


The Custom Map Layer will open and SHOULD display the view area you originally specified. Verify the included area is what you want.

As the Custom Map Layer is opened, notice the text at the top of the screen that identifies the "layer".

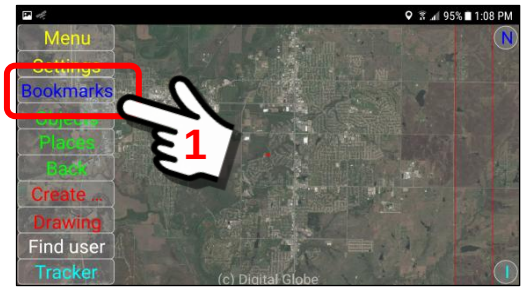
Map.Layer.Active.Live.BPS.Dwg

We are now at the custom map layer of the School Campus. It is ready to load reference data, URLs and video panels.

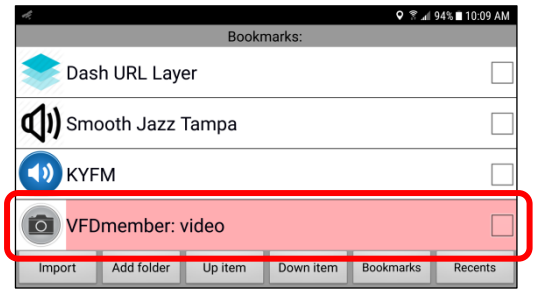


7. ***Open the bookmark as a floating window panel so it can be added to the new "Map user layer".***
In this example, we will select the "**VFDmember: video**" URL from the Bookmarks Section and open it as a floating window. This is our Surveillance Camera device.

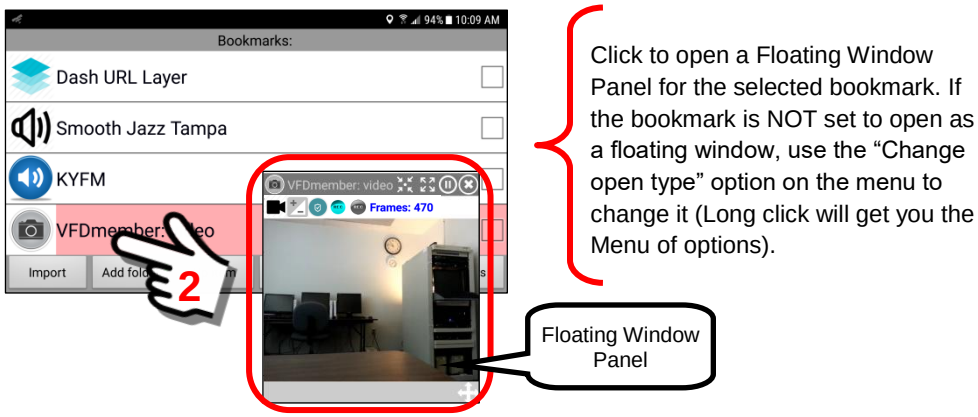
Click on the Bookmark Button at the Main Menu Screen.



At the Bookmarks Panel, we will select the "**VFDmember: video**" bookmark URL to copy onto our "Map user layers" screen.

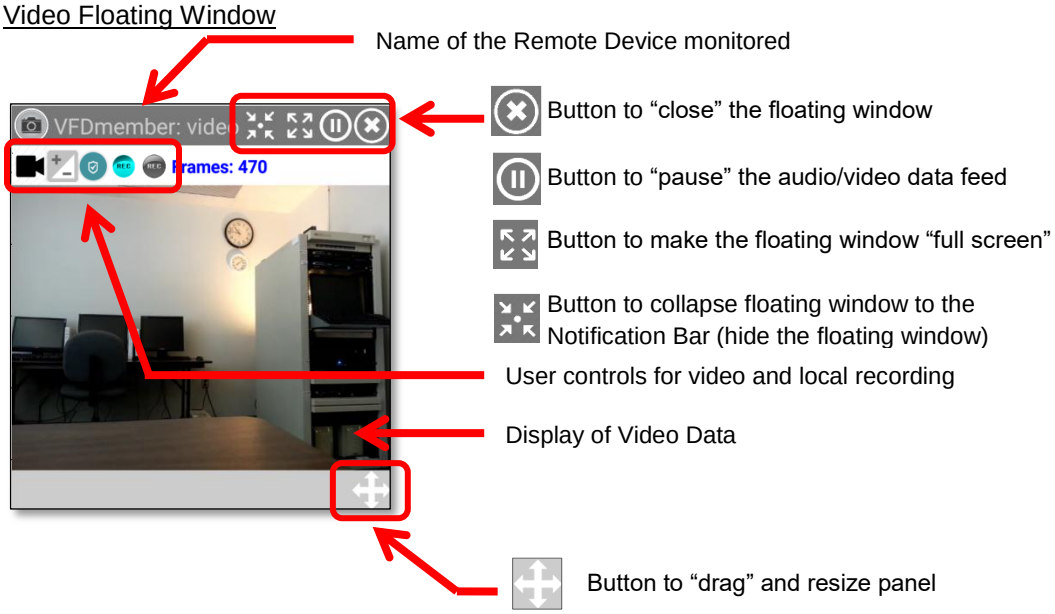


Click on the "**VFDmember: video**" bookmark to open (launch) the floating window for this URL.

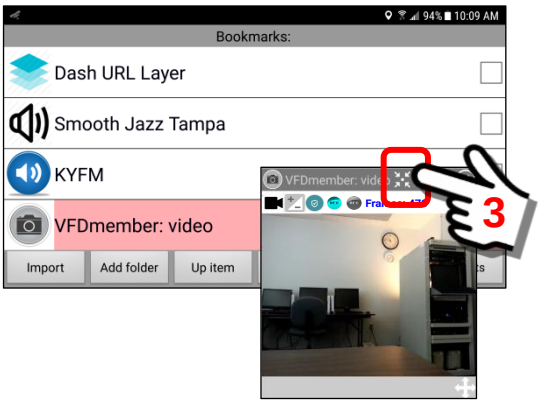


On smaller screens (like a smartphone) it is usually a good idea to minimize the floating window to the Notification Bar so the panel will not be in the way as you do other things. For a refresher, see **Section 9.13** on Floating Windows.

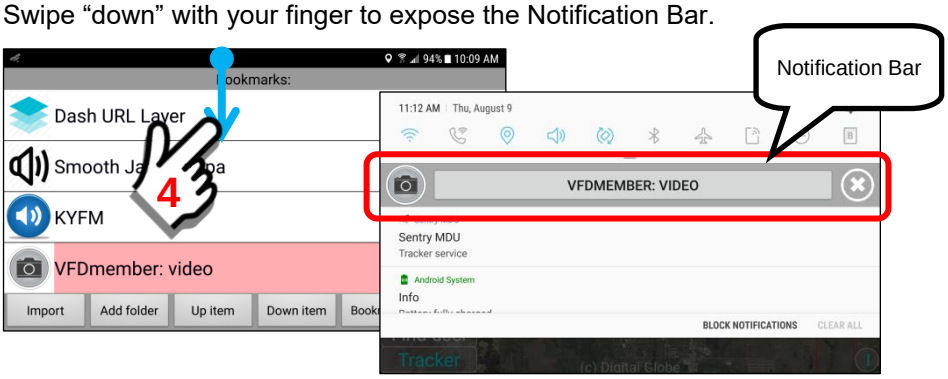
Video Floating Window



To minimize, click on the “minimize” icon ….

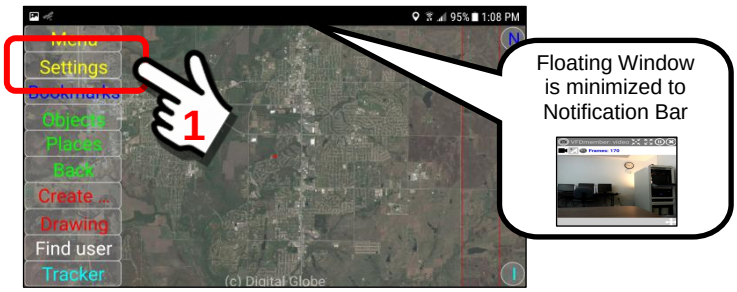


The floating window has now been minimized to the Notification Bar.
Swipe “down” with your finger to expose the Notification Bar.

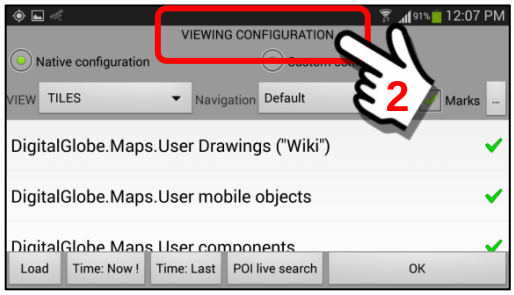


8. ***Add (or attach) the Surveillance Camera object to a "Map user layer".***
In the preceeding section we opened the "**VFDmember: video**" URL link as a floating window so we can add this URL to the "Map user layer". This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

At the Main Map Screen, click on the Settings Button.

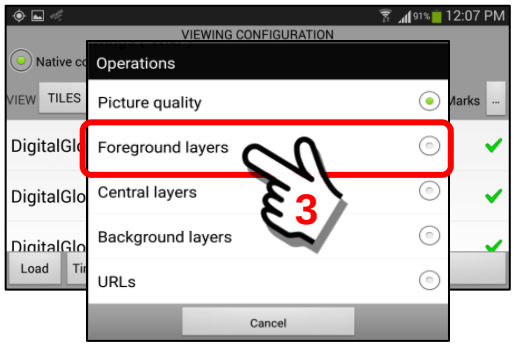


At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



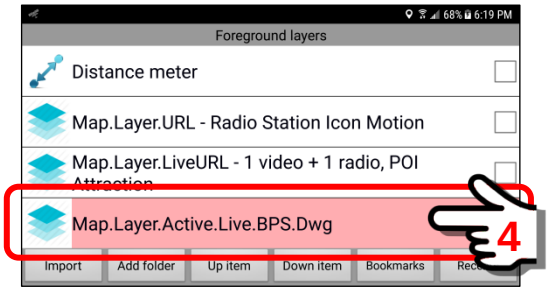
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.



The Custom Map Layer will open and SHOULD display the view area you originally specified.

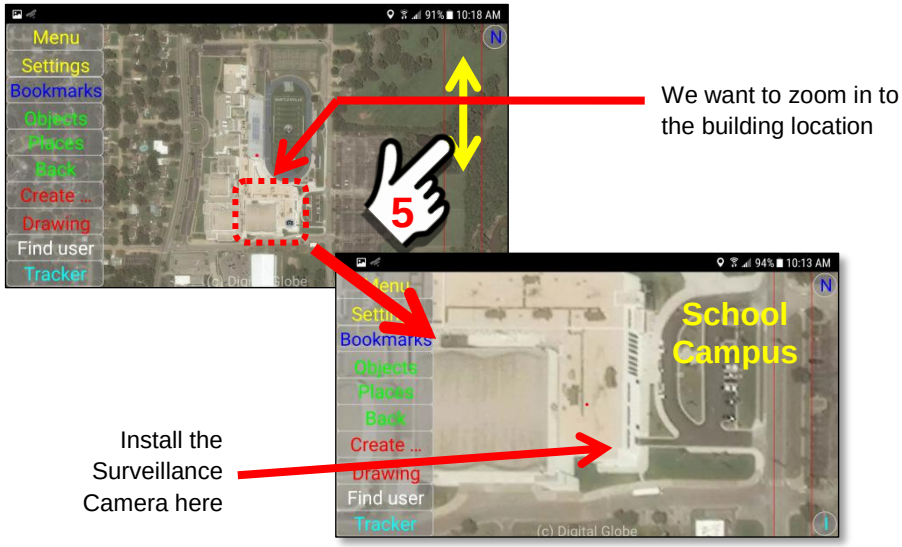
As the Custom Map Layer is opened, notice the text at the top of the screen that identifies the "layer".

Map.Layer.Active.Live.BPS.Dwg

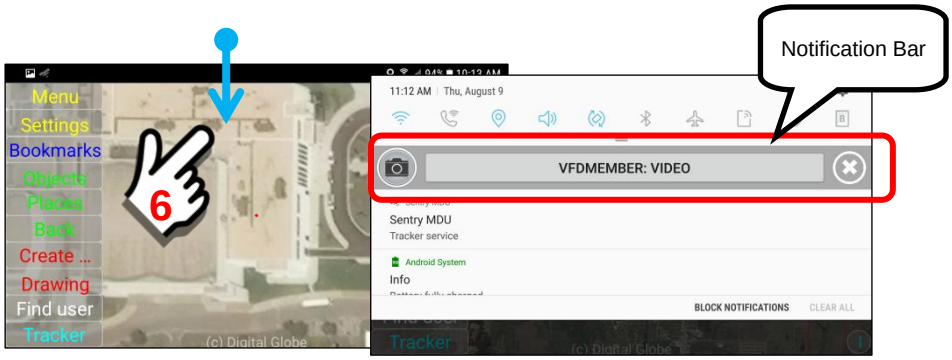
We are now at the custom map layer of the School Campus. It is ready to load reference data, URLs and video panels.

The objective is to locate the Surveillance Camera Icon in a position that reflects the "actual" location of the surveillance camera relative to the School Campus area. For this reason we want to show the icon inside the building and classroom where the camera is actually installed.

To correctly “place” the surveillance camera icon, zoom in to the building location on the map panel.

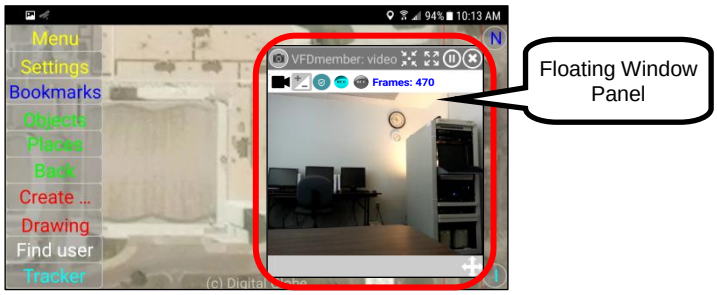


Once you have arrived at the desired “zoom level” and screen position, retrieve “**VFDmember: video”** floating window from the Notification Bar.



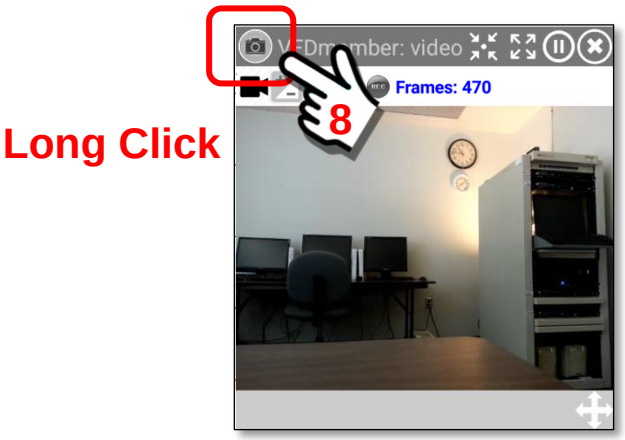
Click on the **“VFDmember: video”** notification block.

The **“VFDmember: video”** floating window will now be installed on the Map Panel.

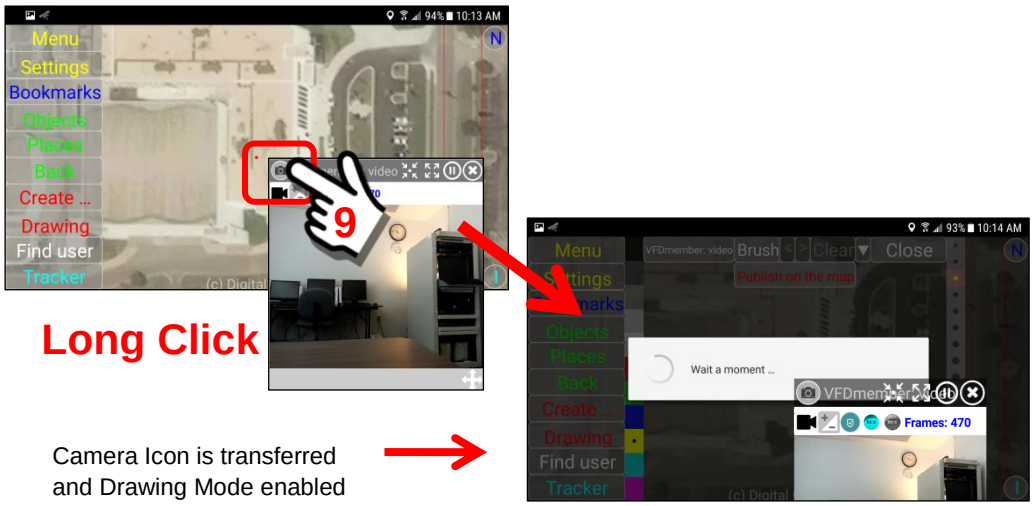


To install the Surveillance Camera “Icon” on the Custom Map Panel, you will perform a “Long click” on the upper left corner of the floating window panel at the Camera Icon.

“Long click” the Camera Icon to transfer the icon to the Map Panel.



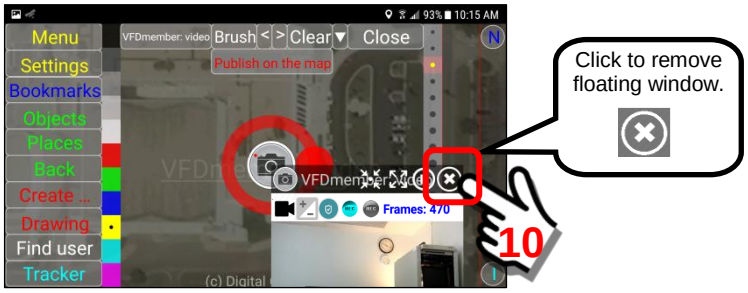
As you peform the “Long click”, you will feel tactile feedback in your finger as the screen transfers to the Drawing Mode and the screen format changes.



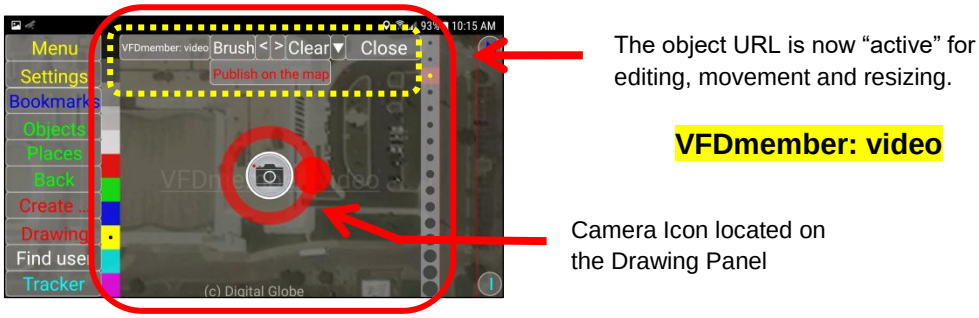
The Camera Icon is now installed at the top left corner of the floating window panel. The Drawing Mode is enabled and “VFDmember: video” is the active object.

Since we have copied the **"VFDmember: video"** Camera Icon and URL to the Custom Map Layer, we may now remove the floating window panel. We are done with it.

To remove the Floating Window Panel, click on the "X" Button in the upper right corner of the floating window.



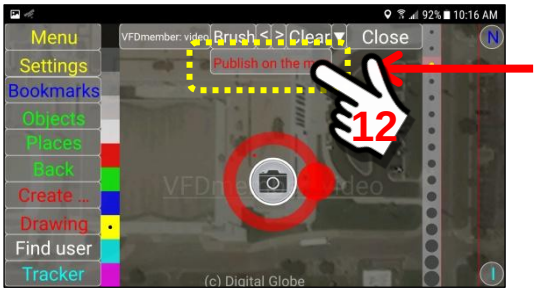
With the Floating Window now removed, the screen looks as shown below.



See the Drawing Tools section (**Section 13**) if you need a refresher on using the tools. In this example, we will resize the Camera Icon (smaller) and we will move it slightly to the corner of the building (where the actual surveillance camera is located).

Since we are in the Drawing Mode, we could "draw" on the screen, make notes, use different colors and so on. For now we are satisfied, done.

When finished, Click the “Publish on the Map” Button.

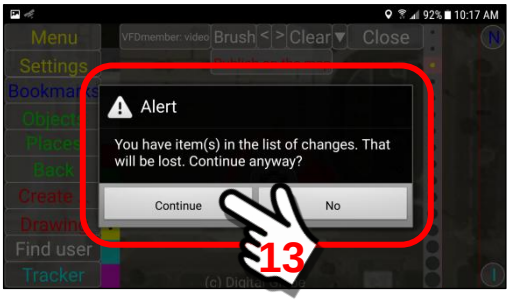


Publish on the Map will save the Camera Icon and URL.

This will finalize any changes and SAVE the **“VFDmember: video”** Camera Icon and URL to the Custom Map Layer.

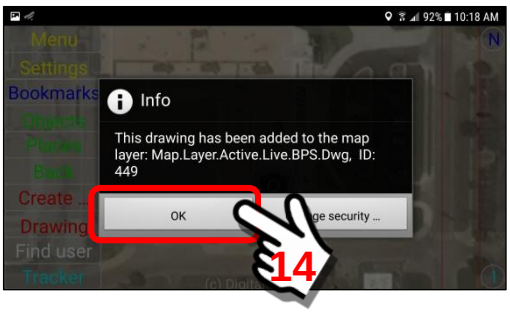
When you click the “Publish on the Map” Button, the system will open a pop-up Alert Box telling you that you may have items(s) in your “changes” list that will be lost if you continue. In the Drawing Mode, the system keeps track of changes you have made to the screen in case you want to “go back” and correct things (or you changed your mind).

Since we are happy with what we have, click the “Continue” Button.



It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing Object has now been added to the custom map layer.

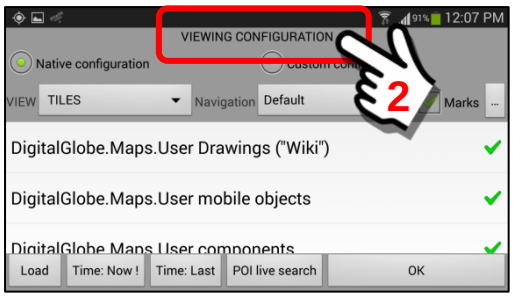
Click “OK” to acknowledge the successful completion.



9. ***Testing the new "Map user layer" (VFDmember: video).***
To verify that the new "Map user layer" (surveillance camera) we have just created is working properly, it is always good to test it. This section will outline the steps necessary to test the object and the URL link to that object.

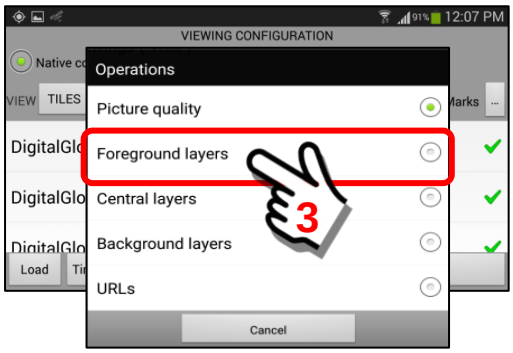
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



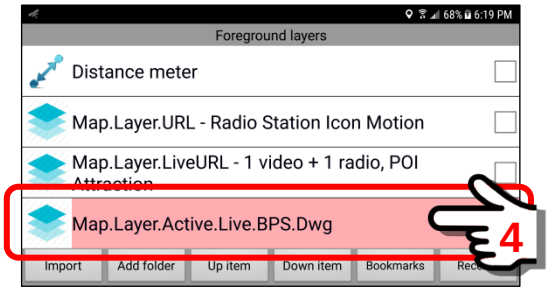
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have installed the **Map.Layer.Active.Live.BPS.Dwg** Custom Map Layer.

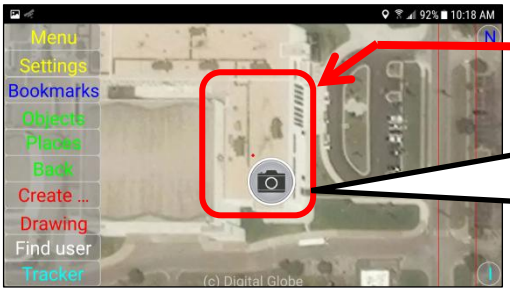
Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.



The Custom Map Layer will open and display the “zoomed in” School Campus area on the screen.

At this zoom level it is hard to see the Camera Icon … but it is there.

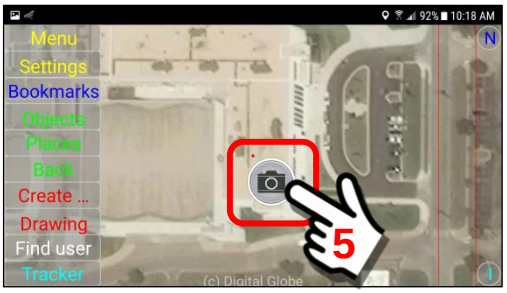
If we zoom in closer, we will see that the Surveillance Camera Icon is shown located at the corner of the building, as we designed it.

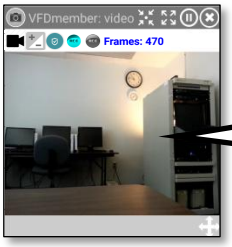


At this zoom level you can see the Camera Icon.

The Camera is located in the corner of this building

Click on the Camera Icon to launch a floating window panel of the surveillance camera video live video feed.



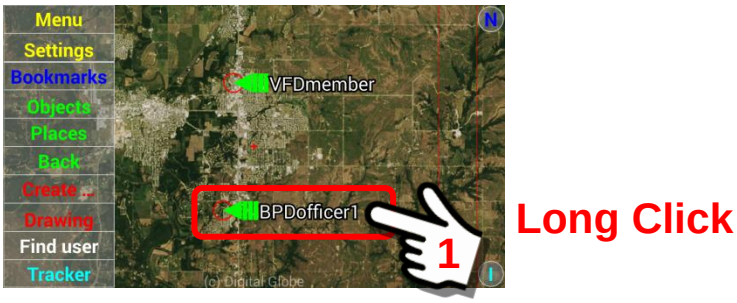


Click panel to go “Full Screen”

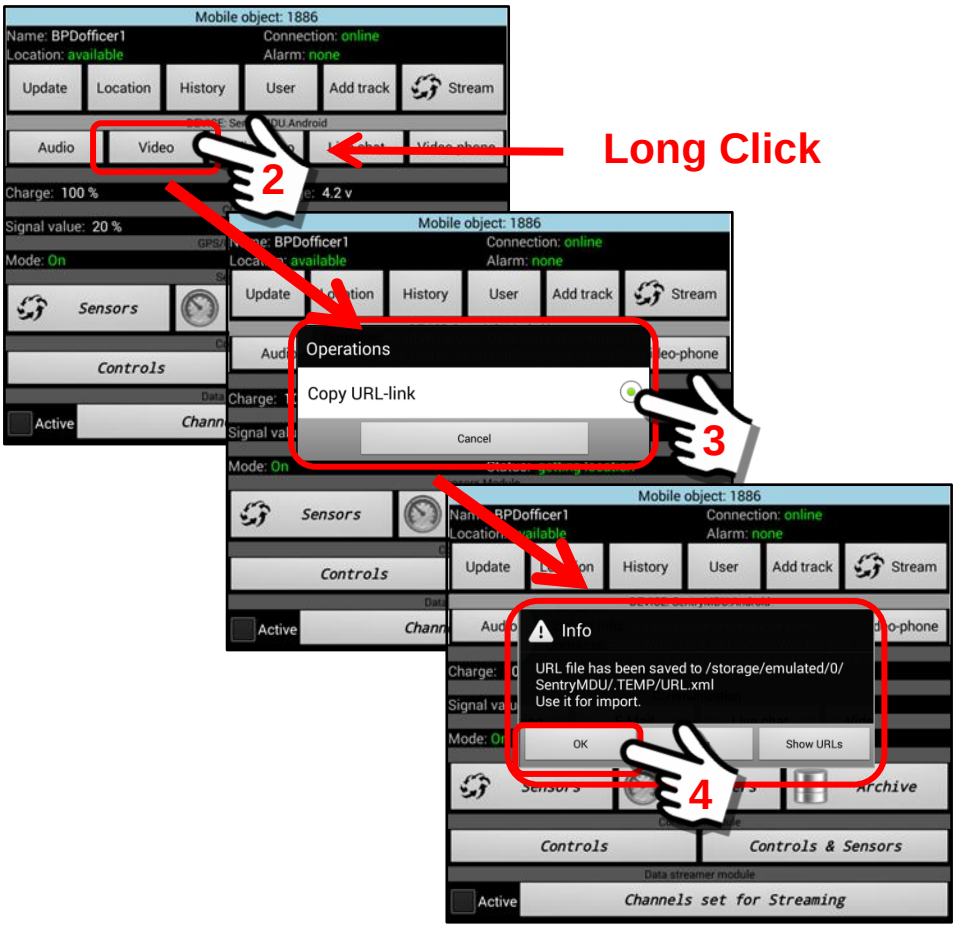
C. Embed a live streaming video feed from a “Covert Cam”.

1. *Select a SentryMDU mobile device to get the video feed from*

For this example, we will select the camera from mobile device BPDofficer1 that will be acting as a live streaming “Covert Cam” set up on the back side of the school. Perform a “Long click” on the BPDofficer1 object marker on the Main Map Screen (can also select BPDofficer1 from the Objects Panel).



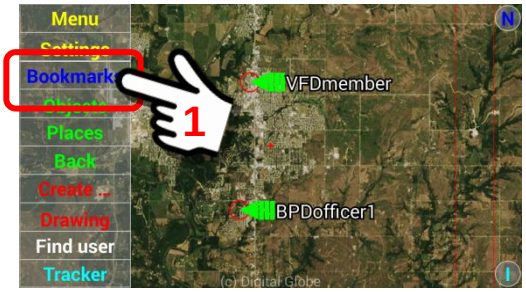
To capture a bookmark URL link for this video feed, we will perform another “Long click” in the Video Button on the Mobile Object Panel for BPDofficer1.



Click “OK” to save the URL link to a temporary folder. This will be imported into the Bookmarks Folder as a next step.

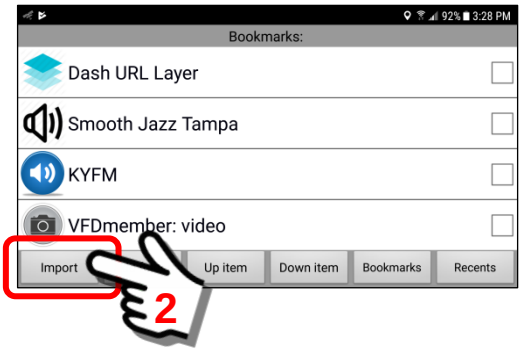
2. ***Import the BPDofficer1 video feed URL into the Bookmark Folder***
We have created a “video” URL link from the BPDofficer1 mobile device. This device is a covert “temporary” video camera (SentryMDU mobile device) set up on the back side of the school buildings to watch some back doors. We will import this URL and create a bookmark in the Bookmark Folder.

Start at the Main Map Screen panel.
Select the Bookmarks Button on the Main Menu.



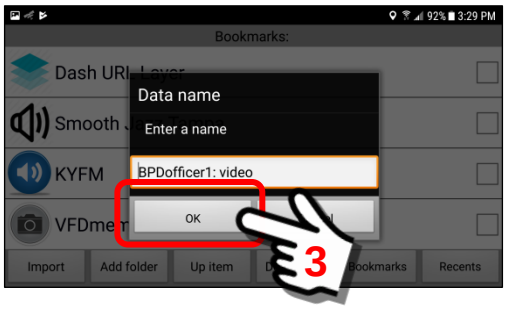
We will now install the BPDofficer1 video URL link from the temporary folder into the Bookmark Folder.

At the Bookmarks Panel, click on the **Import Button**.

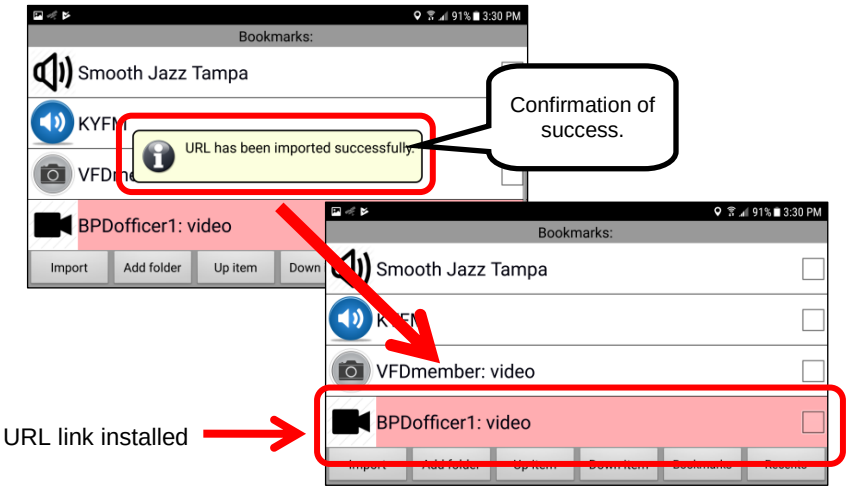


When the **Import Button** is clicked, a pop-up panel will appear showing the “default” name of the BPDofficer1 video URL link that was saved in the temporary folder. You may edit/change this name is desired. In this example, we will keep the default name “**BPDofficer1: video**”.

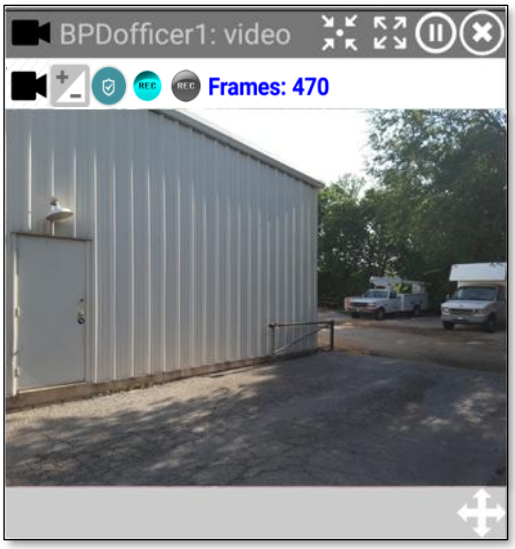
Click the “OK” Buttom when you are ready to import the URL bookmark.



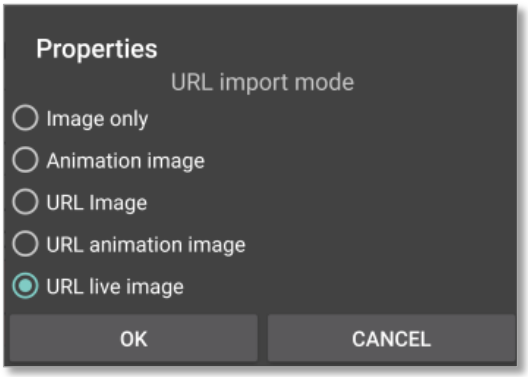
The BPDofficer1 video URL will be installed into the Bookmark Folder. A message will appear on the screen for a few seconds indicating that the operation was successful.



View from covert “temporary” video camera watching the back of the schools buildings.



3. ***Adjust the PROPERTIES of the Custom Map Layer to match the URL.***
The Custom Map Layers feature of the SentryMDU System has the ability to import various combinations of images, URL actions, live streaming data, etc. The configuration panel is shown below:

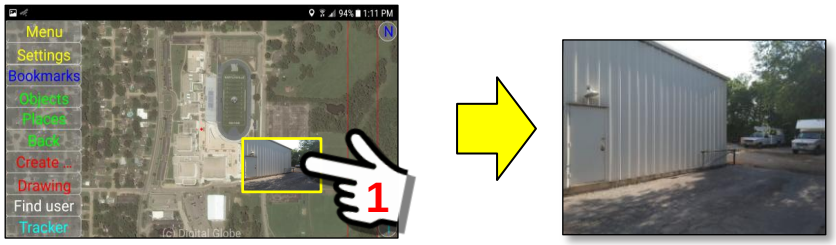


Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

When configuring multiple URL sources attached to a Custom Map Layer you MUST specify the correct **URL Import Mode** for the particular data type. The system will attempt to guess based on the type of custom map layer "name" that you specify, but if you have multiple embedded objects (doing different things), adjustments are usually required.

For example, if you specify a **Map.Layer.Active.Live** custom map layer, the system will assume the "URL live image" type of URL Import Mode. However, if you have multiple URL types on the same Map Layer you will need to adjust the URL Import Mode setting for each different URL type.

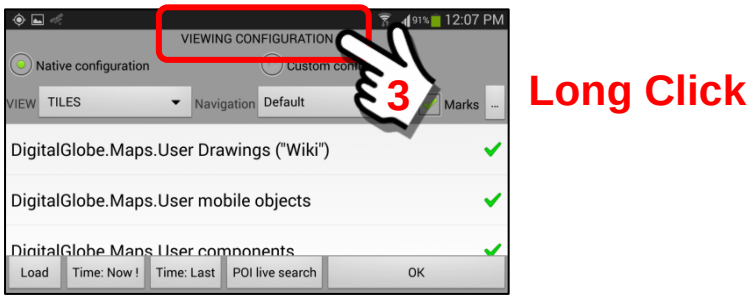
In this exercise, we want the **BPDofficer1** "Covert Cam" to be transmitting whenever we access this Custom Layer.



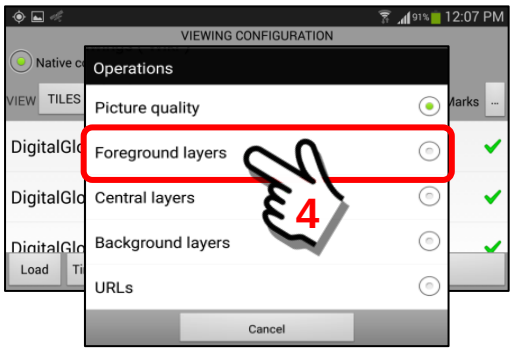
To adjust the URL Import Mode setting for the temporary "Covert Cam" we do the following.

At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.

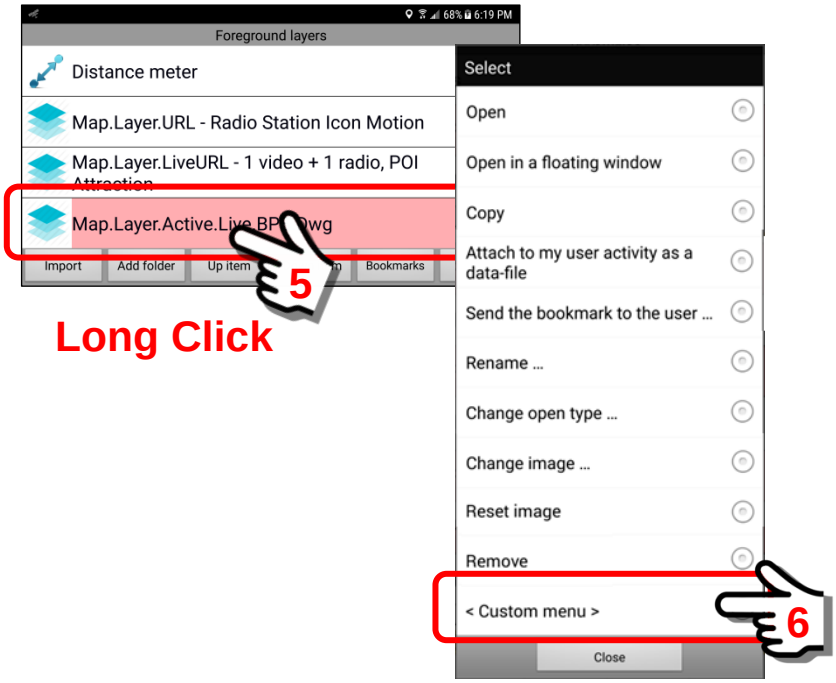


A pop-up Operations Menu will appear. Select the Foreground Layers option.

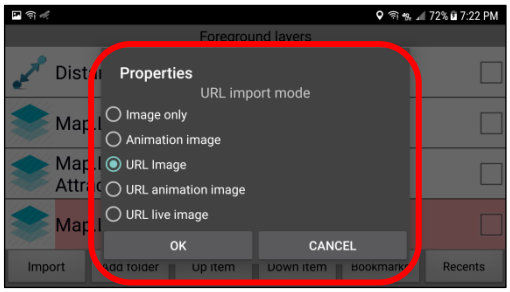


The Foreground Layers menu option will open the Foreground Layers Panel where we have the **Map.Layer.Active.Live.BPS.Dwg** Layer. Since this is now the second OBJECT to be added to the Custom Map Layer, we will go to the “<Custom Menu>” item in the Options Menu

“Long Click” on the Custom Map Layer item.

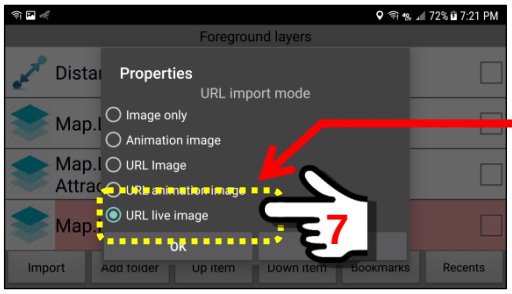


Select the “<Custom menu>” Option from the pop-up menu listing.
A Custom Map Layer pop-up **Properties Panel** will open.
Inspect the default setting for the URL Import Mode.



Properties Panel
Determines HOW the attached URL will act when embedded into the Custom Map Layer.

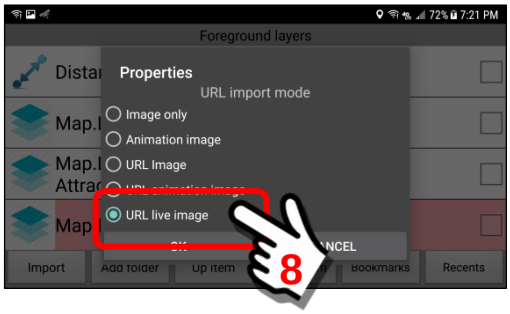
We notice that the URL Import Mode is set to “URL image” because that is how we left it when we set up the Surveillance Camera in the last section. However, we want the “URL live Image” mode because we want the “Covert Cam” video to be running all the time whenever we launch this Custom Map Layer. Click on the **URL live Image** menu option to activate that mode.



We want to click on a “URL live image” to make sure the Covert Cam is always running.

URL live Image

When finished, click the “OK” Button to close the panel settings.

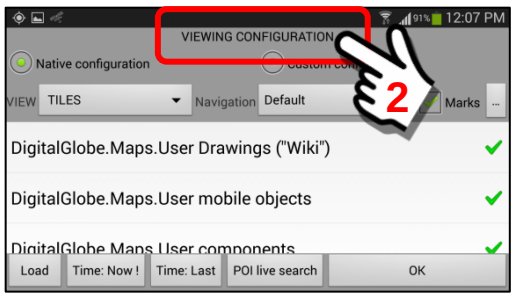


Important Note: You will need to review/adjust these settings for each new type of URL you install on a Custom Map Layer.

4. ***Verify the zoom level you have set for the Custom Map Layer***
Before we install the BPDofficer1 video URL into the custom map layer, we want to verify the zoom level (view area) that will be covered by the Custom Map Layer.

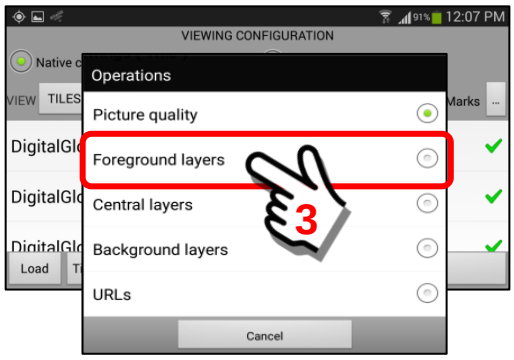
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a “Long click” on the **Viewing Configuration** heading bar.



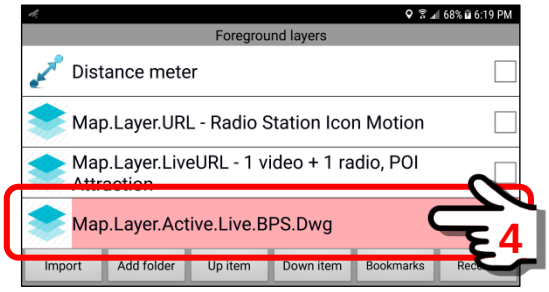
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.

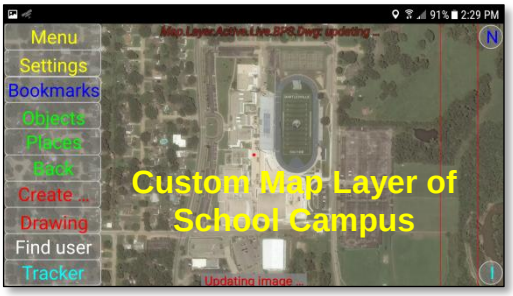


The Custom Map Layer will open and SHOULD display the view area you originally specified. Verify the included area is what you want.

As the Custom Map Layer is opened, notice the text at the top of the screen that identifies the "layer".

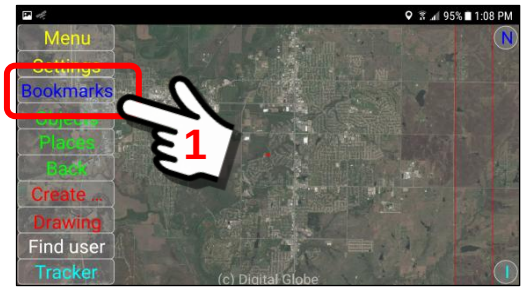
Map.Layer.Active.Live.BPS.Dwg

We are now at the custom map layer of the School Campus. It is ready to load reference data, URLs and video panels.

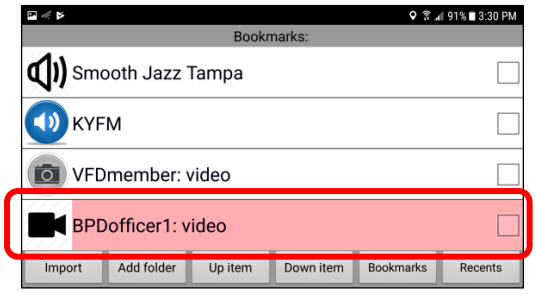


5. ***Open the bookmark as a floating window panel so it can be added to the new "Map user layer".***
In this example, we will select the "**BPDofficer1: video**" URL from the Bookmarks Section and open it as a floating window. This is our "Covert Cam" mobile device.

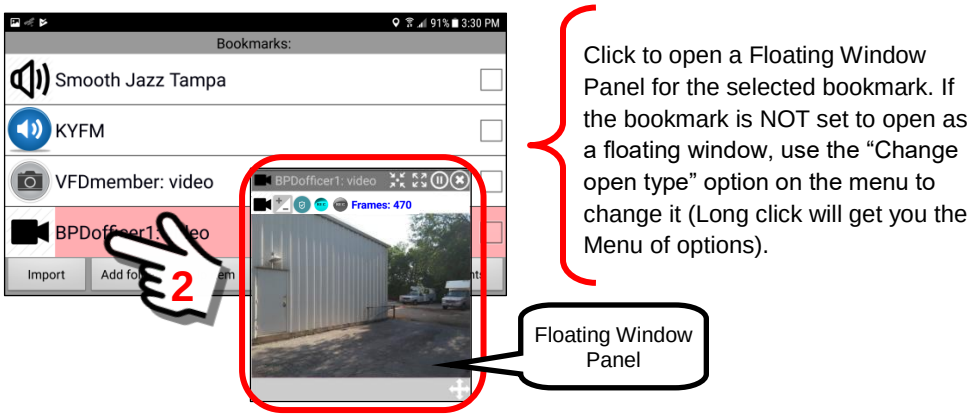
Click on the Bookmark Button at the Main Menu Screen.



At the Bookmarks Panel, we will select the "**BPDofficer1: video**" bookmark URL to copy onto our "Map user layers" screen.

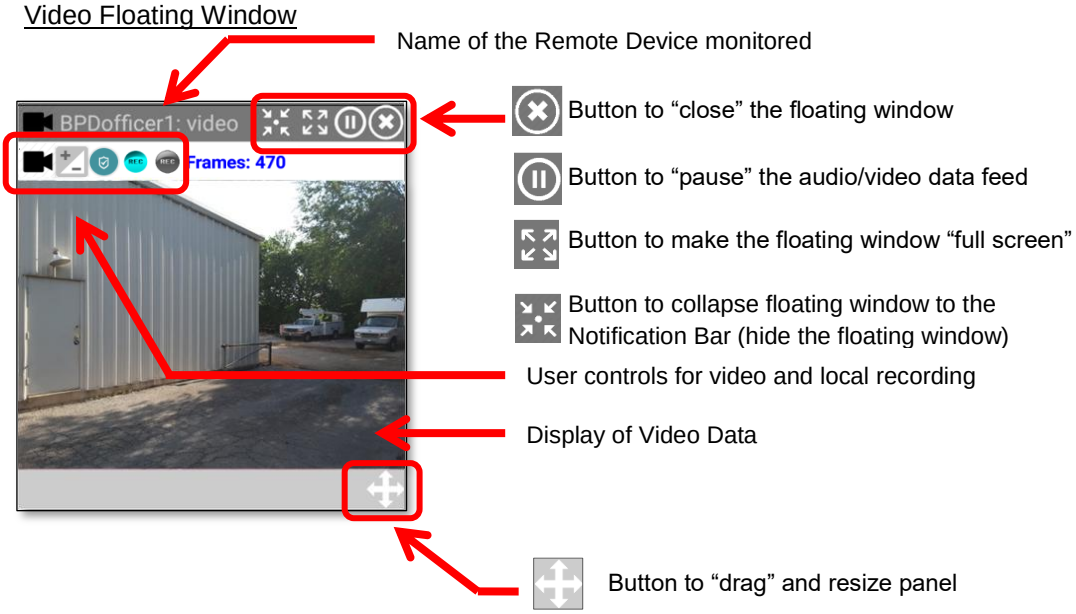


Click on the "**BPDofficer1: video**" bookmark to open (launch) the floating window for this URL.

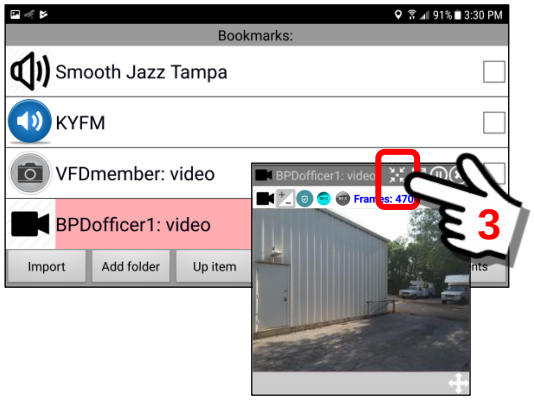


On smaller screens (like a smartphone) it is usually a good idea to minimize the floating window to the Notification Bar so the panel will not be in the way as you do other things. For a refresher, see **Section 9.13** on Floating Windows.

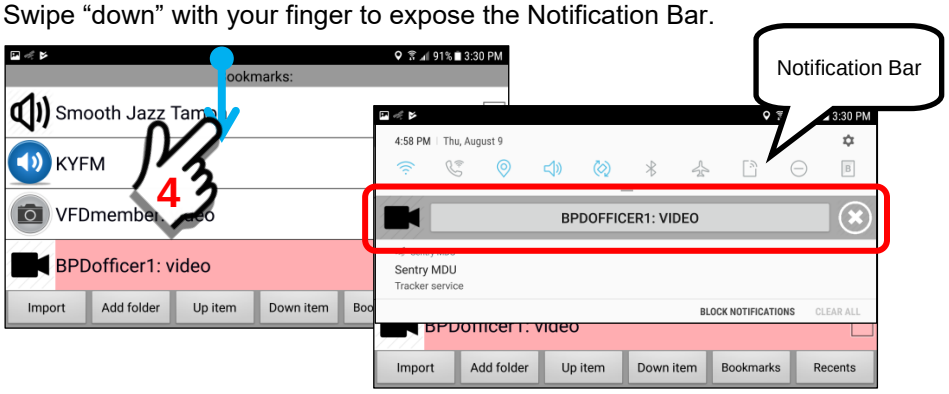
Video Floating Window



To minimize, click on the “minimize” icon ….

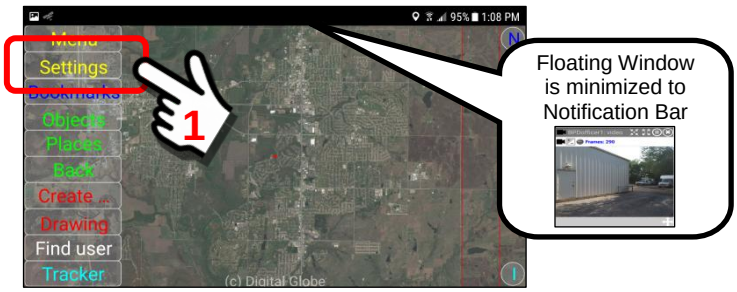


The floating window has now been minimized to the Notification Bar.
Swipe “down” with your finger to expose the Notification Bar.

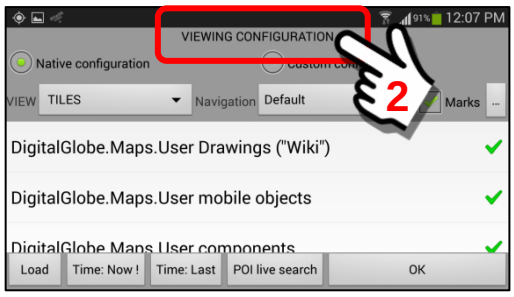


6. ***Add (or attach) the "Covert Cam" video object to a "Map user layer".***
In the preceeding section we opened the "**BPDofficer1: video**" URL link as a floating window so we can add this URL to the "Map user layer". This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

At the Main Map Screen, click on the Settings Button.

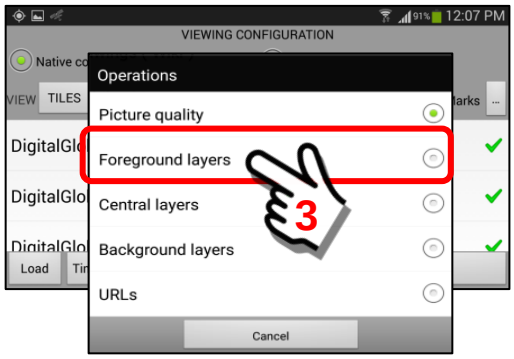


At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



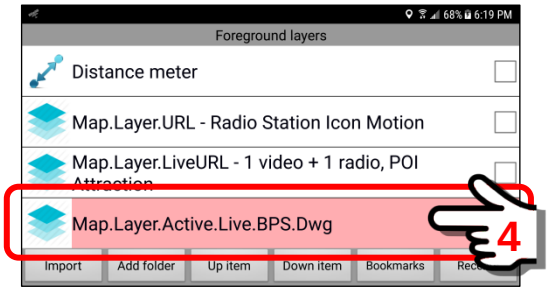
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.

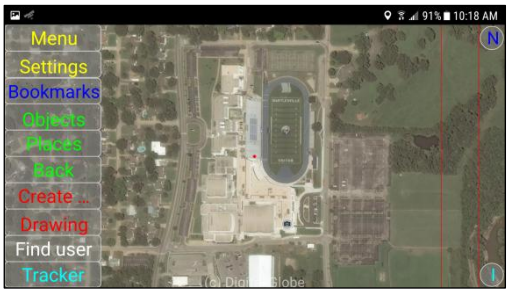


The Custom Map Layer will open and display the view area you originally specified and that was used in the previous section (surveillance camera).

As the Custom Map Layer is opened, notice the Surveillance Camera icon is on the Map Layer.

Map.Layer.Active.Live.BPS.Dwg

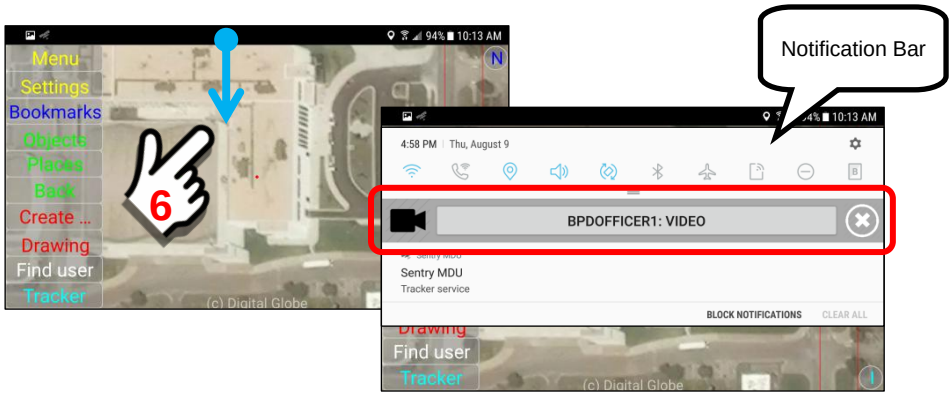
We are now at the custom map layer of the School Campus. It is ready to load reference data, URLs and video panels.



The objective is to locate the "**Covert Cam"** live video panel in a position that reflects the "actual" location of the Covert Cam relative to the School Campus area. For this reason we want to show the video panel just outside of the back building to reflect where the camera is actually installed.

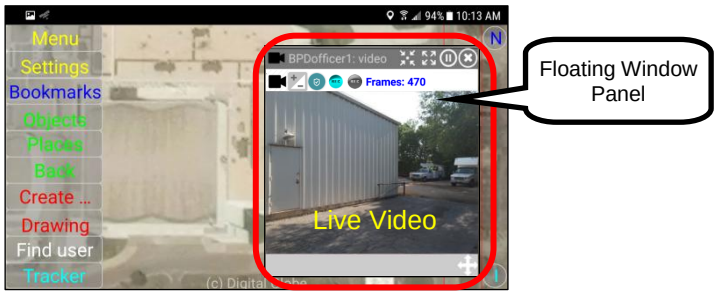
To correctly “place” the **Covert Cam** video panel, zoom in to the building location on the map panel.

Once you have arrived at the desired “zoom level” and screen position, retrieve “**BPDofficer1: video”** floating window from the Notification Bar.



Click on the **“BPDofficer1: video”** notification block.

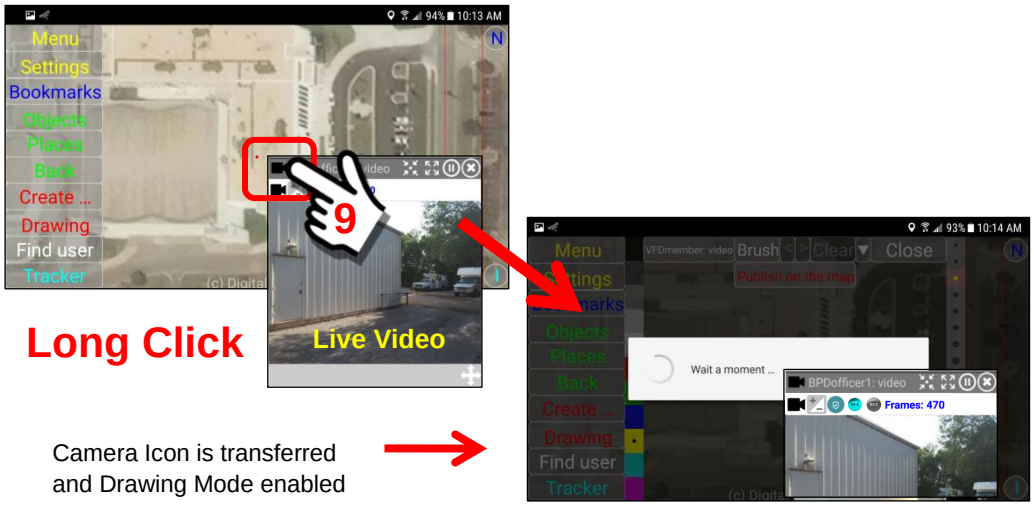
The **“BPDofficer1: video”** floating window will now be installed on the Map Panel.



To install the Covert Cam “live video panel” on the Custom Map Panel, you will perform a “Long click” on the upper left corner of the floating window panel at the Video Icon.

“Long click” the Video Icon to transfer the video panel to the Map Panel.

As you peform the “Long click”, you will feel tactile feedback in your finger as the screen transfers to the Drawing Mode and the screen format changes.

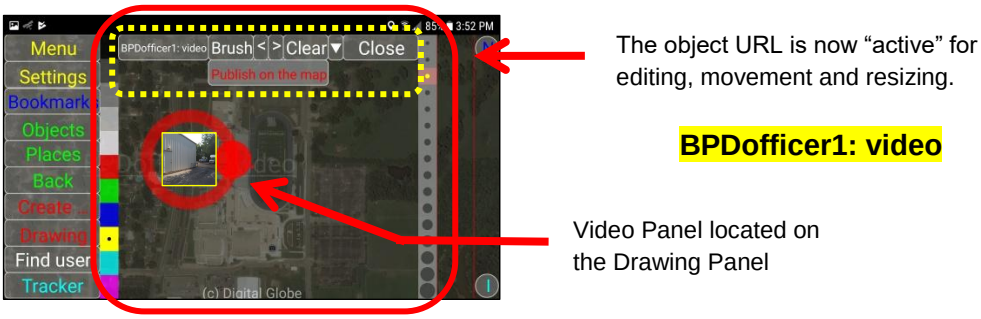


The “Covert Cam” live video panel is now installed at the top left corner of the floating window panel. The Drawing Mode is enabled and “BPDofficer1: video” is the active object.

Since we have copied the **"BPDofficer1: video"** Covert Cam video panel to the Custom Map Layer, we may now remove the floating window panel. We are done with it.

To remove the Floating Window Panel, click on the "X" Button in the upper right corner of the floating window.

With the Floating Window now removed, the screen looks as shown below.



See the Drawing Tools section (**Section 13**) if you need a refresher on using the tools. In this example, we will resize the Video Panel (smaller) and we will move it slightly to the right of the building (where the actual "Covert Cam" is located).

Since we are in the Drawing Mode, we could "draw" on the screen, make notes, use different colors and so on. For now we are satisfied, done.

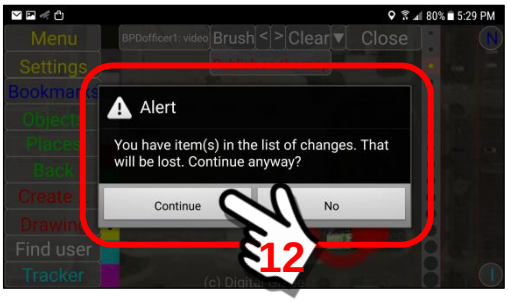
When finished, Click the “Publish on the Map” Button.

Publish on the Map will save the Video Panel and URL.

This will finalize any changes and SAVE the **“BPDofficer1: video”** live streaming “Covert Cam” and URL to the Custom Map Layer.

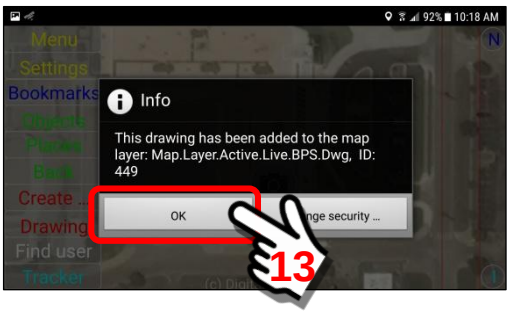
When you click the “**Publish on the Map**” Button, the system will open a pop-up Alert Box telling you that you may have items(s) in your “changes” list that will be lost if you continue. In the Drawing Mode, the system keeps track of changes you have made to the screen in case you want to “go back” and correct things (or you changed your mind).

Since we are happy with what we have, click the “Continue” Button.



It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing Object has now been added to the custom map layer.

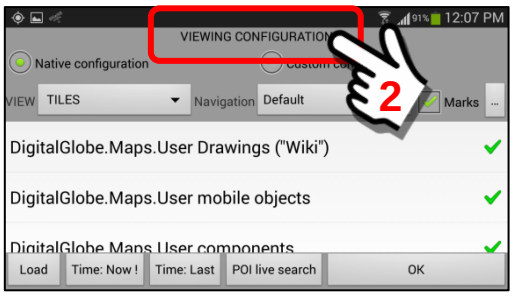
Click “OK” to acknowledge the successful completion.



7. ***Testing the new "Map user layer" (BPDofficer1: video).***
To verify that the new "Map user layer" (Covert Cam) we have just created is working properly, it is always good to test it. This section will outline the steps necessary to test the object and the URL link to that object.

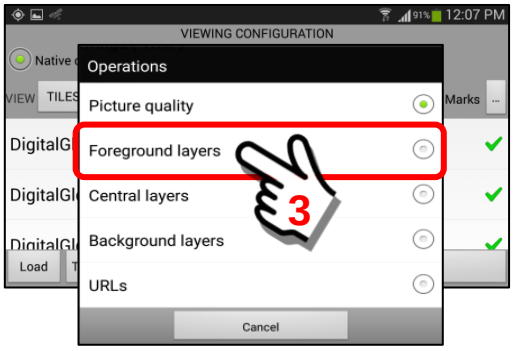
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



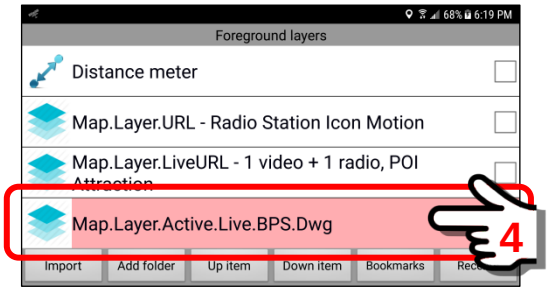
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have installed the **Map.Layer.Active.Live.BPS.Dwg** Custom Map Layer.

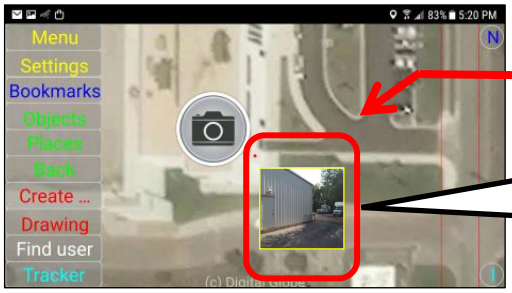
Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.



The Custom Map Layer will open and display the "zoomed in" School Campus area on the screen.

At this zoom level it is hard to see BOTH the Surveillance Camera Icon AND the Covert Cam video panel, but they are there.

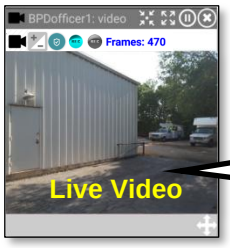
If we zoom in closer, we will see that the Covert Cam video panel is shown located back behind the corner of the building, as we designed it.



At this zoom level you can see the Covert Cam video panel

The Covert Cam is located behind the corner of this building

Click on the "Covert Cam" video panel to launch a floating window panel of the live streaming video feed.

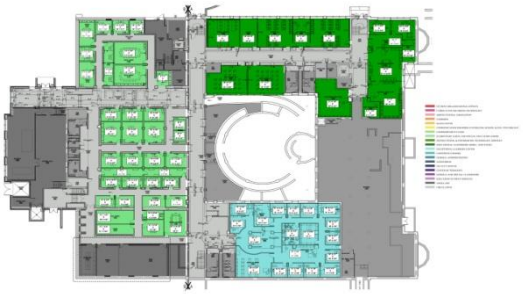


Click panel to go "Full Screen"

D. Embed a Reference Source to access School Blueprints.

1. ***Select an "external" source to retrieve blueprints of the school.***
   This menu item will create a bookmark that will retrieve information from an external internet site. This will allow a "one click" access to often used information.

   In this example, we will create a bookmark to retrieve a set of digitized blueprints for the High School campus buildings. Then we will install a "Blueprints" Icon on the custom map layer for the school campus. When "clicked" the icon will display the blueprints.



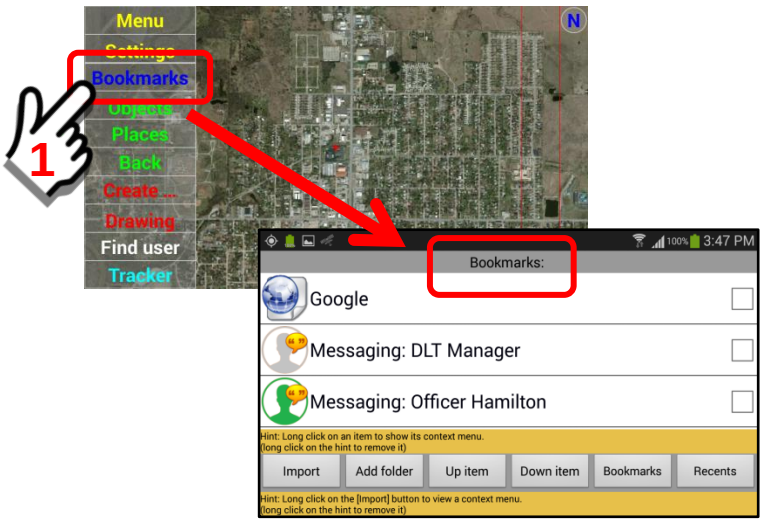
Blueprints for School Buildings

   Since we are looking to retrieve a set of building drawings from the school website, we will use the following address as shown below.

   http://CityHighSchool.com/buildings/highschool.php

   This feature will allow a user to retrieve information from almost any external source in almost any format that the mobile device can process.

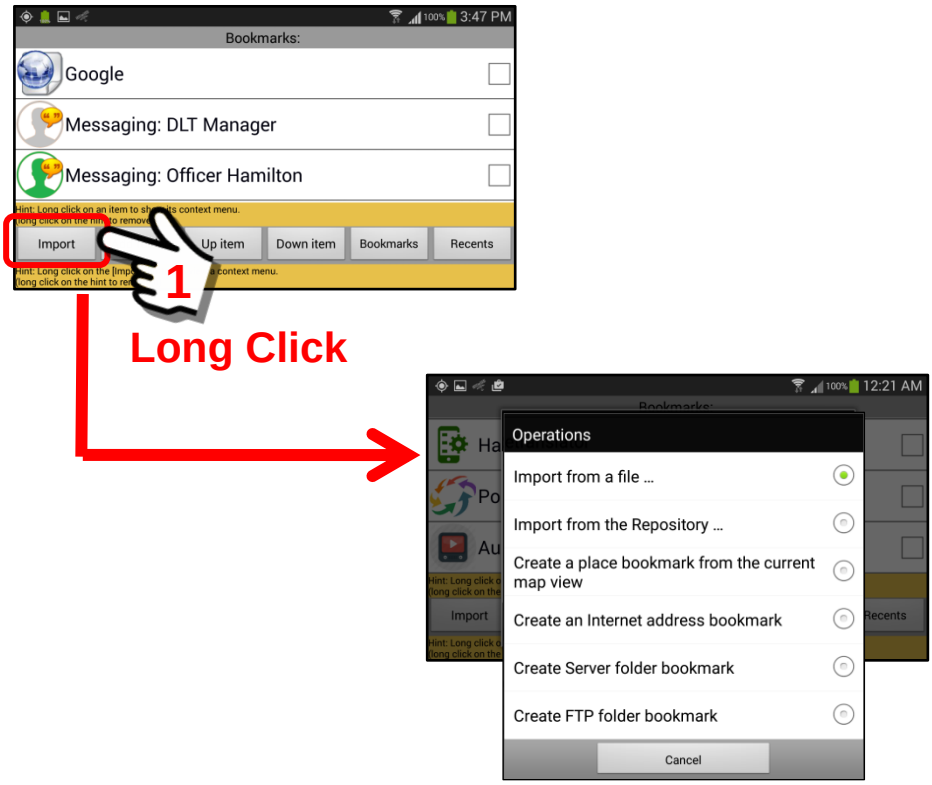
2. ***Navigate to the Bookmarks Panel.***
   Click on the Bookmarks menu item to launch the Bookmarks Panel.



3. *The Import Button.*

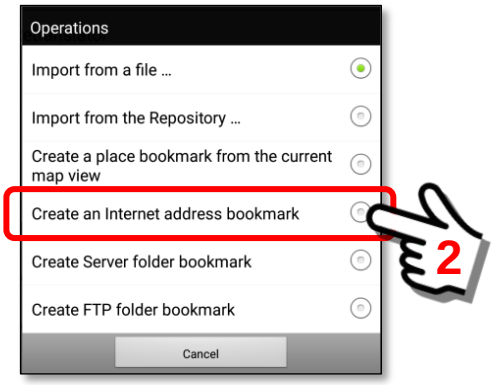
The “Import” Button will import previously saved bookmarks into the application and create “new” bookmarks from maps, files and the internet. In this section we will focus on the “Long click” Menu that will allow us to create bookmarks for Maps, Files and from external sources.

Perform a “Long click” on the Import Button.

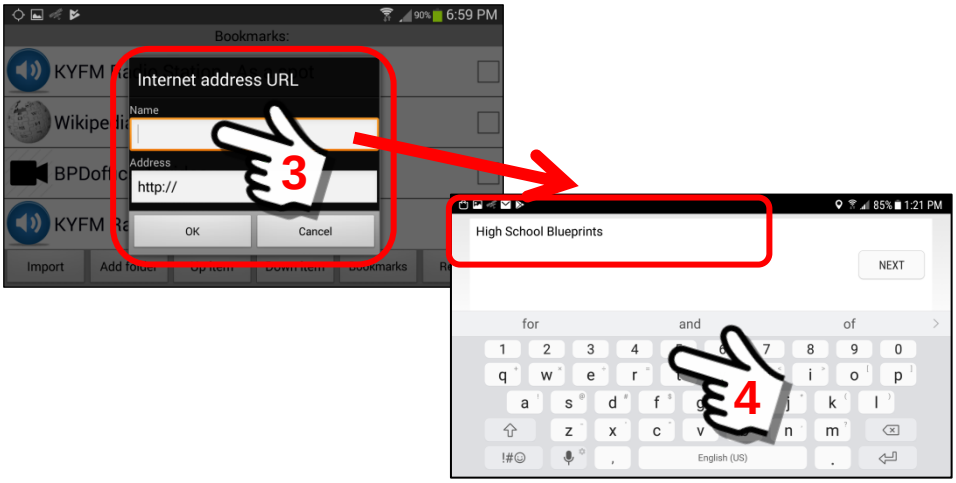


A “Long Click” on the Import Button will open a pop-up Operations Panel with six (6) menu options.

Click on the “Create an internet address bookmark” Button.

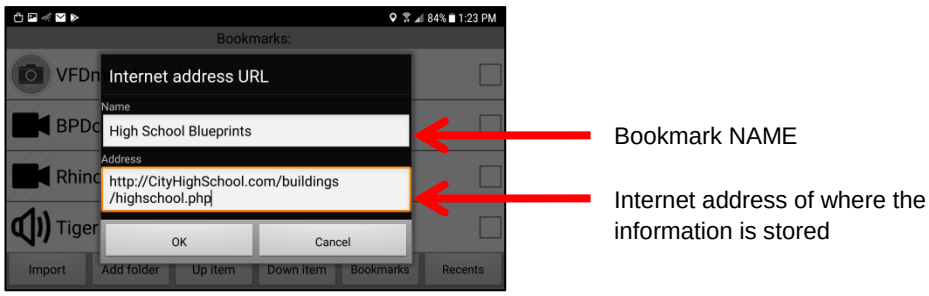


Clicking on the “Create an internet address bookmark” Button will open a pop-up window with fields to enter a Name for the bookmark and the internet address.

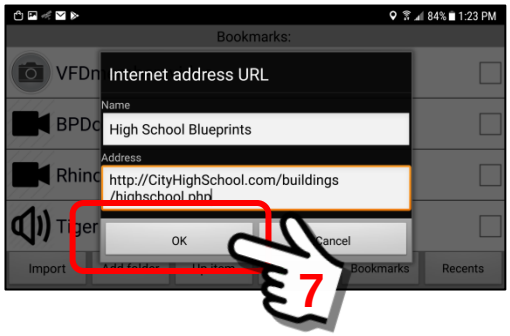


We have entered a NAME for the bookmark.
Now enter the internet address to retrieve the information.

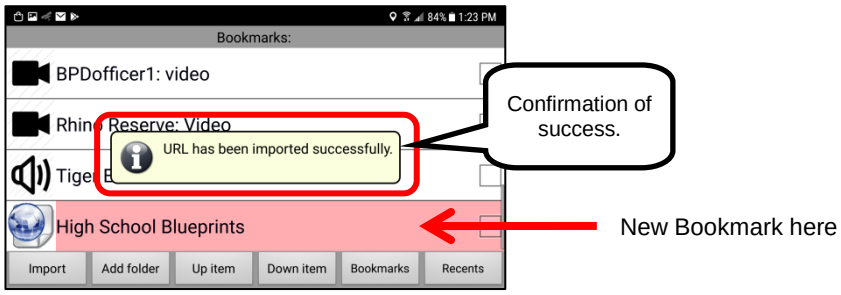
At this point in the example, we have entered both a NAME and ADDRESS for the bookmark information.



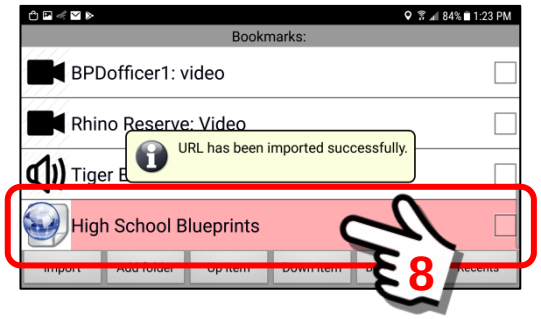
When you are satisfied, click the “OK” Button to save the information and create the bookmark.



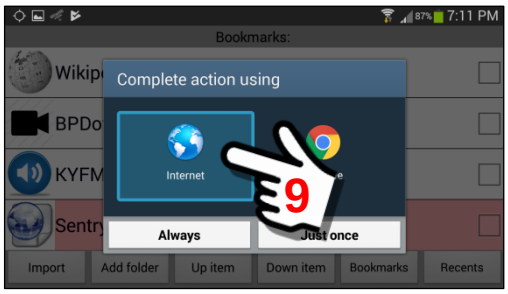
The bookmark is now saved in the Bookmark List as shown below.



To “test” the bookmark, click on the bookmark name.



Depending on the settings of your mobile device, a pop-up box may open for you to select an “App” to open the website folder.



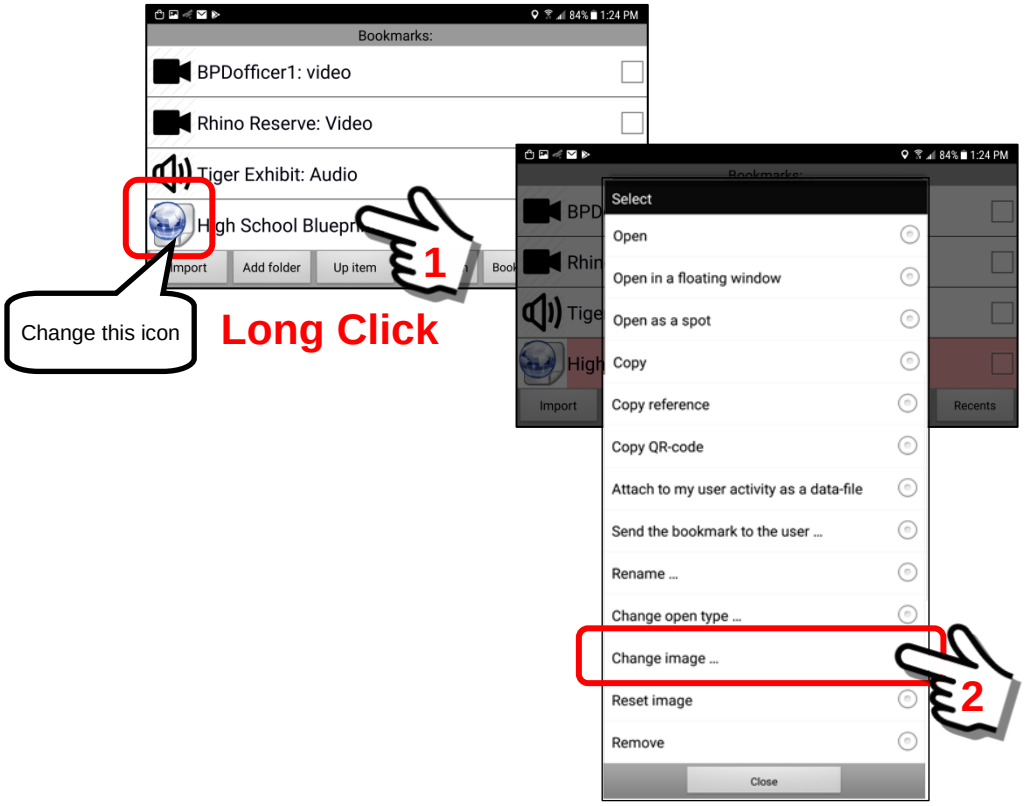
The School Blueprint screen examples will now be displayed on the mobile device.

3. ***Change the blueprints Icon to a different image.***

In this exercise, we will change the "default" icon that gets installed when an internet address URL is created.

We want to change from to

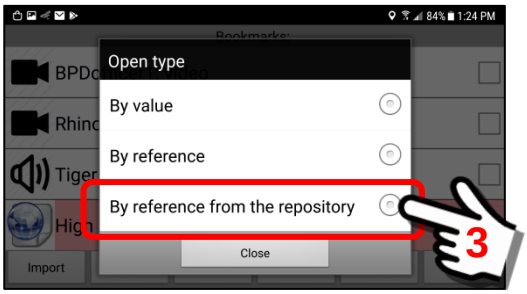
Perform a "Long click" on the bookmark name to open an options panel that will allow us to change the image icon.



Select the "Change image" option button. This will open another pop-up panel that will allow you to select other images for the icon.

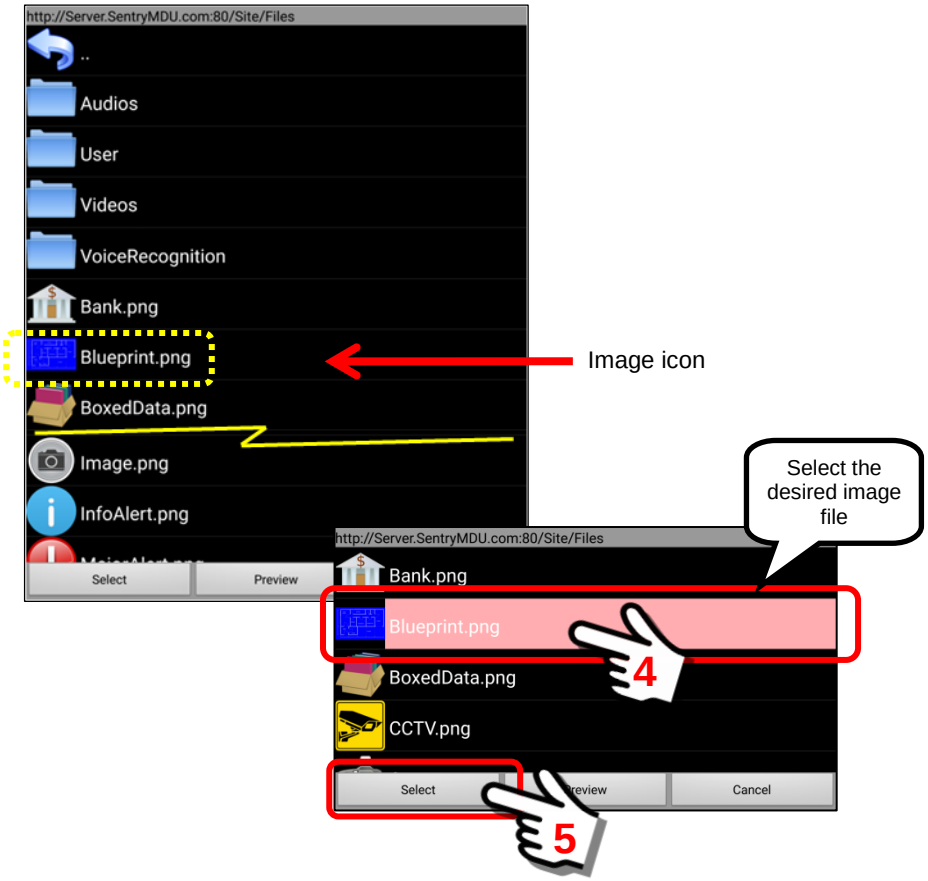
In this example, we will select the “new” image icon from the gallery of images currently installed on the device.

Click on the “**By reference from the repository**” option on the Open Type Panel.

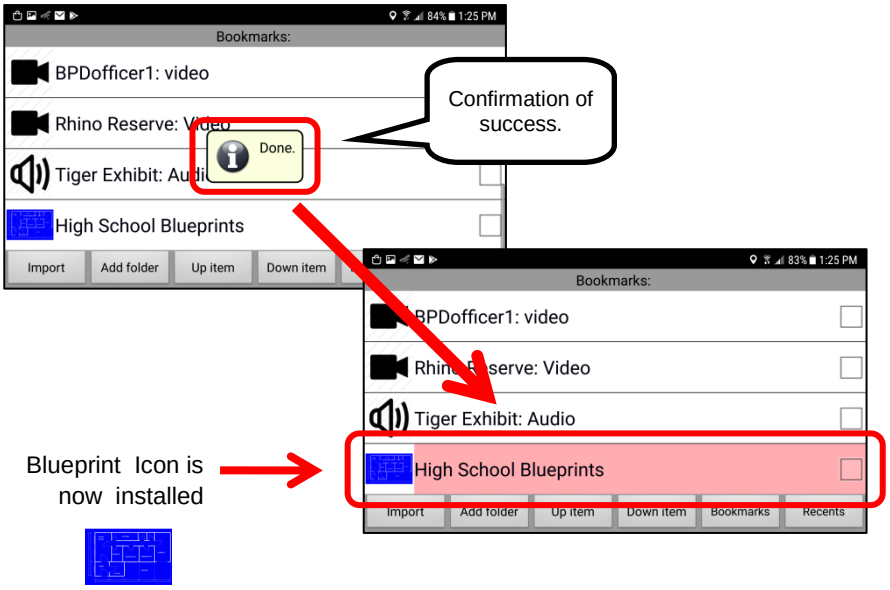


The file system on the device will be displayed with the same gallery of images that were reviewed earlier. Scroll down the list until you find the image of the Blueprint (Blueprint.png).

Select the “Blueprint.png” icon graphic for our high school blueprint icon.

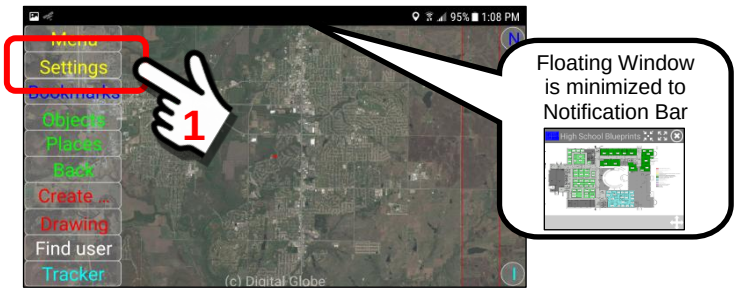


When the “new” image is selected, you will be returned to the Bookmarks Panel. The new image is now installed for the **High School Blueprints** URL bookmark.

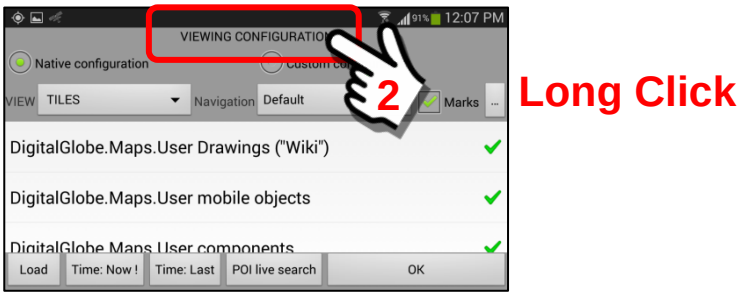


4. ***Add (or attach) the "School Blueprints" object to a "Map user layer".***
In the preceeding section we opened the "**High School Blueprints**" URL link as a floating window so we can add this URL to the "Map user layer". This section will outline the steps necessary to create an object on the map layer and add the URL link to that object.

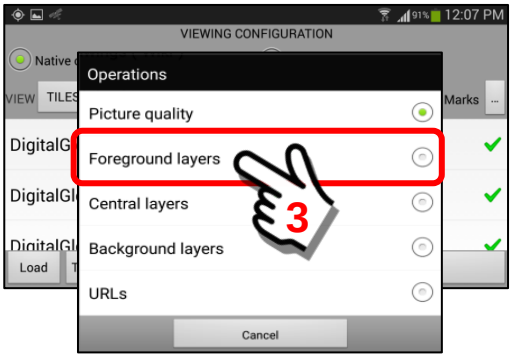
At the Main Map Screen, click on the Settings Button.



At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.

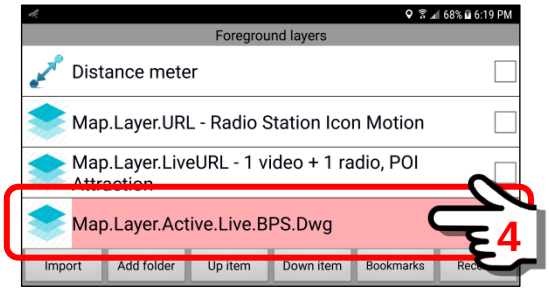


A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have imported the Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.



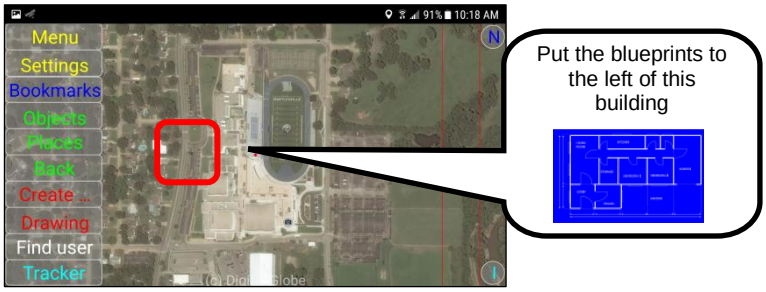
The Custom Map Layer will open and display the view area you originally specified and that was used in the previous section (Covert Cam).

As the Custom Map Layer is opened, notice the Surveillance Camera and Covert Cam in this area.

Map.Layer.Active.Live.BPS.Dwg

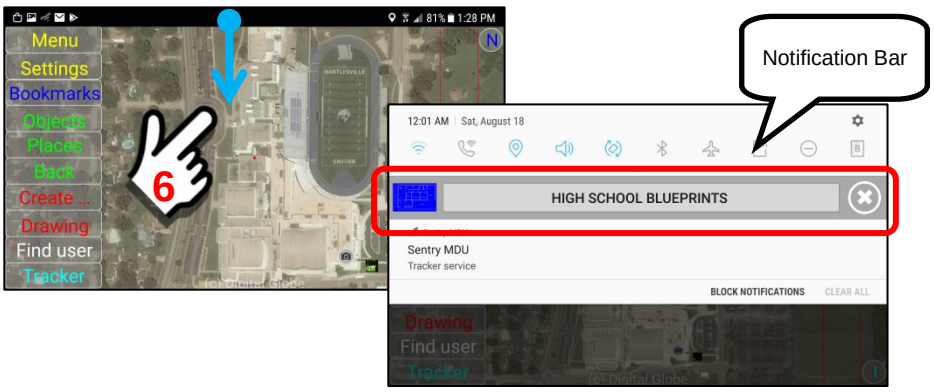
We are now at the custom map layer of the School Campus. It is ready to load reference data, URLs and video panels.

The objective is to locate the "**High School Blueprints"** reference panel in a position that makes it easily accessible to the user. For this reason we want to show the Blueprint Icon to the left of the school buildings.

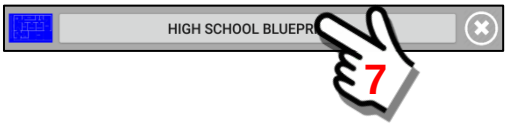


To correctly “place” the **High School Blueprints** reference panel, zoom in to the building location on the map panel.

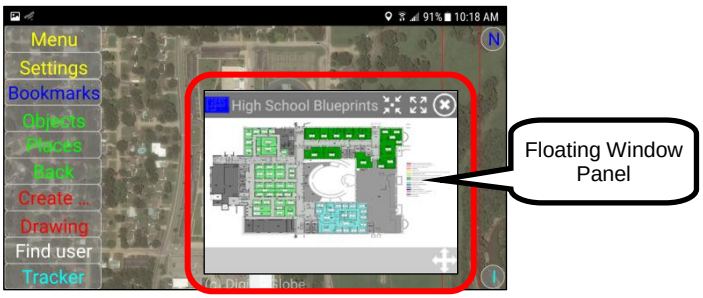
Once you have arrived at the desired “zoom level” and screen position, retrieve “**High School Blueprint”** floating window from the Notification Bar.



Click on the **“High School Blueprint”** notification block.

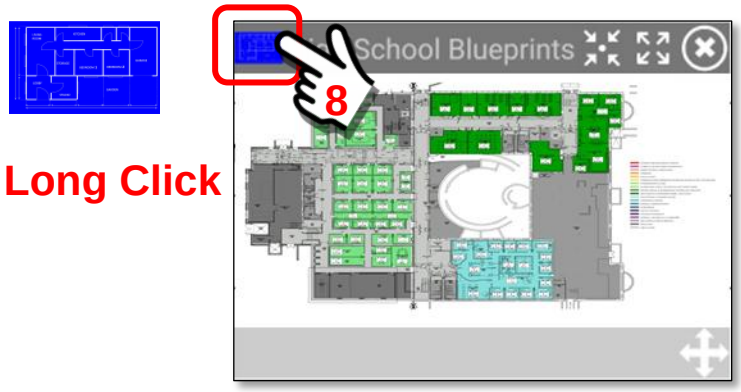


The **“High School Blueprint”** floating window will now be installed on the Map Panel.

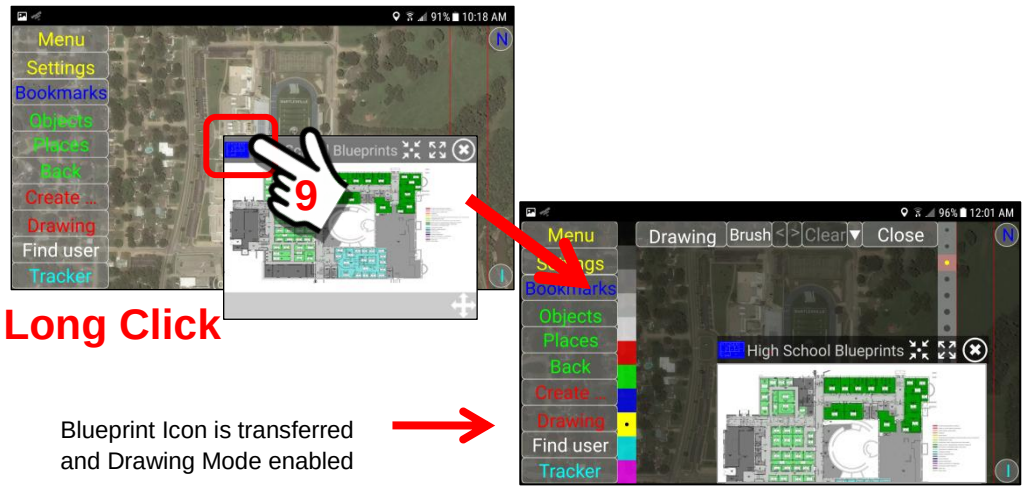


To install the “High School Blueprint” reference panel on the Custom Map Panel, you will perform a “Long click” on the upper left corner of the floating window panel at the Blueprint Icon.

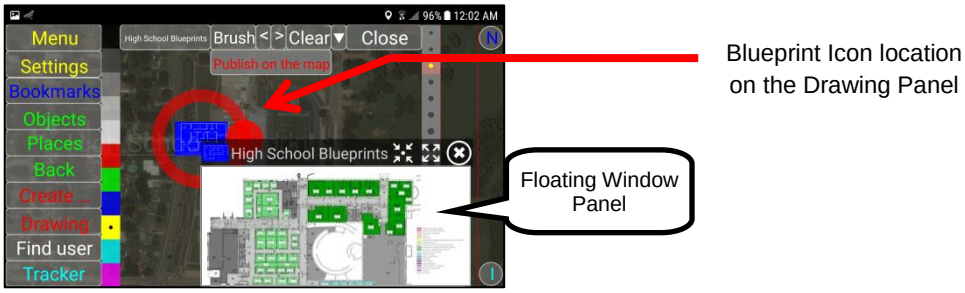
“Long click” the Blueprint Icon to transfer the icon to the Map Panel.



As you peform the “Long click”, you will feel tactile feedback in your finger as the screen transfers to the Drawing Mode and the screen format changes.

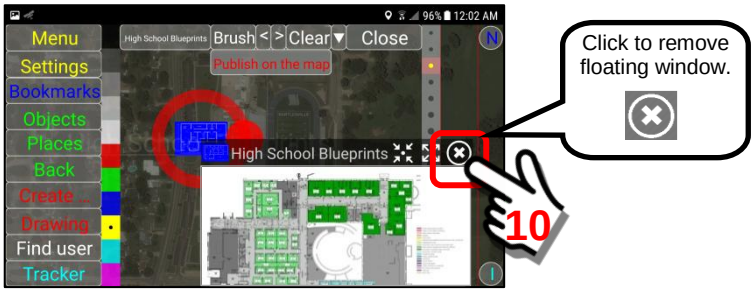


The “High School Blueprint” reference panel icon is now installed at the top left corner of the floating window panel. The Drawing Mode is enabled and “**High School Blueprint**” is the active object.

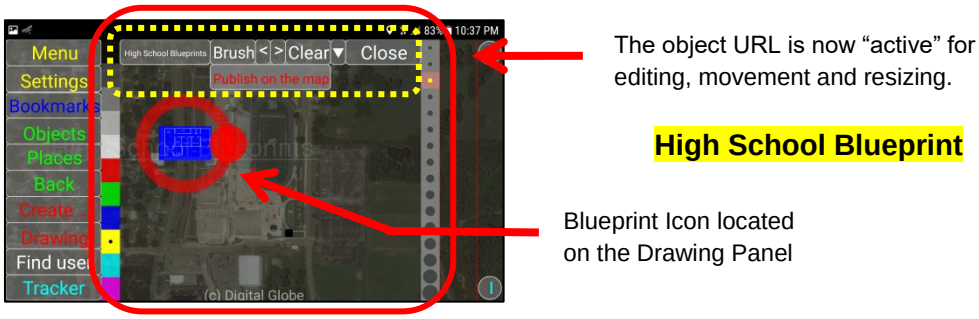


Since we have copied the **"High School Blueprint"** reference panel to the Custom Map Layer, we may now remove the floating window panel. We are done with it.

To remove the Floating Window Panel, click on the "X" Button in the upper right corner of the floating window.



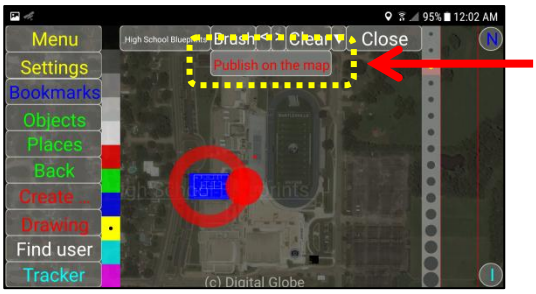
With the Floating Window now removed, the screen looks as shown below.



See the Drawing Tools section (**Section 13**) if you need a refresher on using the tools. In this example, we will resize the Blueprint Icon (smaller) and we will move it slightly lower on the drawing.

Since we are in the Drawing Mode, we could "draw" on the screen, make notes, use different colors and so on. For now we are satisfied, done.

When finished, Click the “**Publish on the Map**” Button.

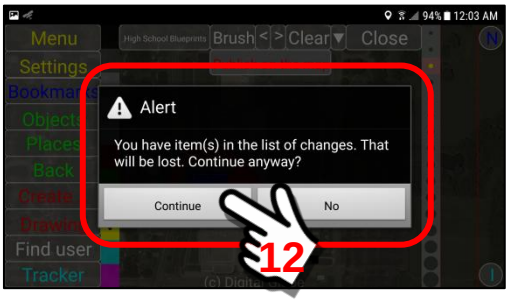


“Publish on the Map” will save the Blueprint Icon and URL.

This will finalize any changes and SAVE the **“High School Blueprint”** icon and URL to the Custom Map Layer.

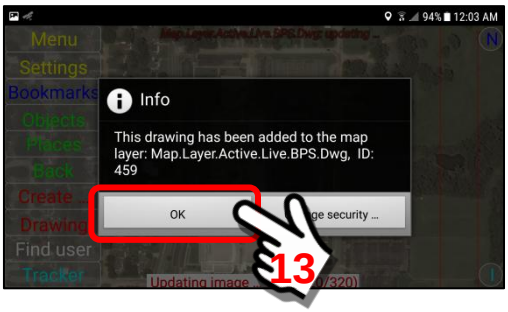
When you click the “**Publish on the Map**” Button, the system will open a pop-up Alert Box telling you that you may have items(s) in your “changes” list that will be lost if you continue. In the Drawing Mode, the system keeps track of changes you have made to the screen in case you want to “go back” and correct things (or you changed your mind).

Since we are happy with what we have, click the “Continue” Button.



It will take a few seconds for the SAVE process to complete. When done you should see a pop-up box indicating that the Drawing Object has now been added to the custom map layer.

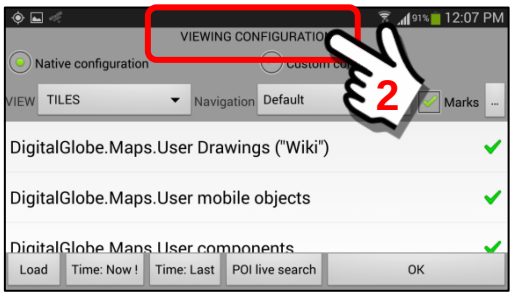
Click “OK” to acknowledge the successful completion.



5. ***Testing the new "Map user layer" (*High School Blueprint*).***
To verify that the new "Map user layer" (High School Blueprint) we have just created is working properly, it is always good to test it. This section will outline the steps necessary to test the object and the URL link to that object.

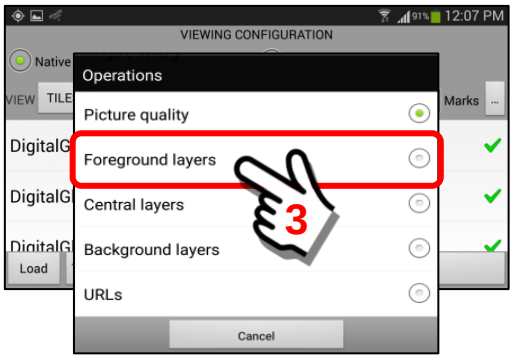
At the Main Map Screen, click on the Settings Button.

At the Settings Panel, perform a "Long click" on the **Viewing Configuration** heading bar.



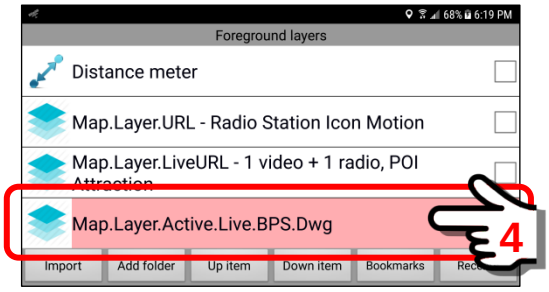
Long Click

A pop-up Operations Menu will appear. Select the Foreground Layers option.



The Foreground Layers menu option will open the Foreground Layers Panel where we have installed the **Map.Layer.Active.Live.BPS.Dwg** Custom Map Layer.

Click on the Custom Map Layer item **Map.Layer.Active.Live.BPS.Dwg**.



The Custom Map Layer will open and display the "zoomed in" School Campus area on the screen (we have now embedded 3 objects).

Blueprints Icon

At this zoom level it is hard to see BOTH the Surveillance Camera Icon AND the Covert Cam video panel, but they are there.

If we zoom in closer, we will see that the High School Blueprint reference panel is shown to the left of the building, as we designed it.

At this zoom level you can see the other 2 embedded objects.

Click on the "**High School Blueprint**" reference panel to launch a floating window panel of the blueprints from an external online internet server.