

Tactical Assault Kit for Android (ATAK)

Version 4.10

Change Log

26 July 2023

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1 INTRODUCTION

This document represents the changes that have occurred in the Tactical Assault Kit for Android (ATAK) from version 4.9 to 4.10. For information on specific core functionality, please refer to the ATAK Software User's Guide or plug-in specific documentation.

1.1 Version Description

ATAK provides tactical maps and situational awareness (SA) on Android mobile devices. ATAK also provides an extensible framework on which user-specific tools are built to provide additional functionality. Plug-ins are available based on the needs of the user and are released incrementally with the ATAK baseline. ATAK 4.10 advances SA capabilities by enhancing existing toolsets and introducing new features.

ATAK 4.10 represents a technological leap forward in how our users interact with the world. This latest version of ATAK is designed for scale, and delivers a whole new level of insight, allowing for the best decisions with the most information possible. Where before, a single shipping lane and its ships could be shown, now every shipping lane can be shown, with hundreds of thousands of ships, routes, ports, all able to be displayed at once in real-time.

Our biggest goal with this modern technology is to give users the ability to see a world of information immediately, not just a focused region, and to empower users to make decisions at a global level.

To achieve this new level of scale, the entire rendering pipeline for ATAK has been redesigned from the ground up to support the future of tactical work for end users, and these changes will echo across the entire TAK ecosystem. This release marks the integration of the same underlying rendering engine in both the ATAK and WinTAK clients.

A supplemental change log is maintained to highlight bug fixes made to the baseline post release. It can be found at: <https://wiki.tak.gov/display/DEV/Supplemental+Change+Log+for+ATAK>.

1.2 Added Features

The following subsections provide a brief overview of features that are new or have been enhanced in ATAK 4.10. Since the focus for the development was to improve stability and reliability and less on the introduction of new core features, there are fewer forward-facing changes.

1.2.1 *Performance and Stability Improvements*

ATAK 4.10 incorporates major updates to the TAK Kernel and makes use of the new graphics engine. These improvements support the goal of moving to a common TAK engine across all products in the TAK suite.

1.2.2 *Performance Increases*

A significant amount of non-visual work was done in ATAK 4.10 to support the ability to visualize and interact with an order of magnitude higher objects on the screen. This work touched many areas of ATAK and required parallelization of the CoT Processing Pipeline, spinning off slow running aspects of the code into threads, and the swap over to the TAK Engine which was introduced as part of WinTAK 4.9. Benchmarks were continually performed over areas as improvements were made. The culmination of these improvements allowed for stress tests of up to 50k map items on the screen with only a small impact on performance. Comparisons between 4.9 and 4.10 show a 5x improvement. Other map items showed significantly higher gains.

In many cases, users will benefit from these improvements by seeing better battery life and greater initial cold start times.

1.2.3 *Support for MIL-STD 6090*

As part of MIL-STD-6090, which was introduced as the new CoT standard, ATAK needed to comply with the now mandatory access field. Additionally, we added support to allow the setting of “access,” “caveat” and “releasable to” headings. This change was also reflected as part of the TAK Proto specification.

1.2.4 *GoTo Tool*

ATAK 4.10 adds the ability to place a Red X when specifying a coordinate, as shown below in Figure 1.

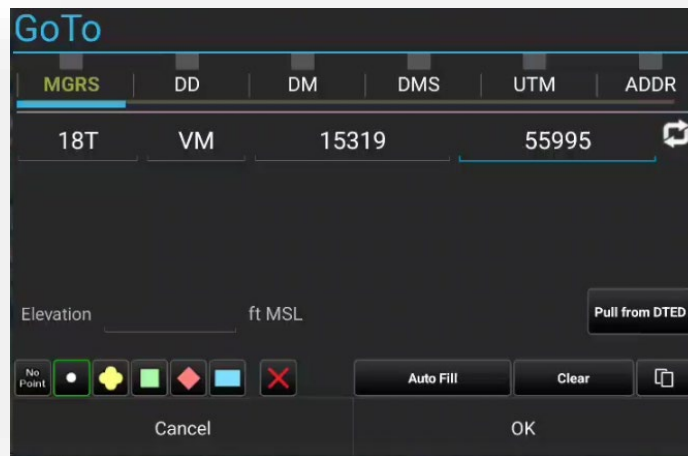
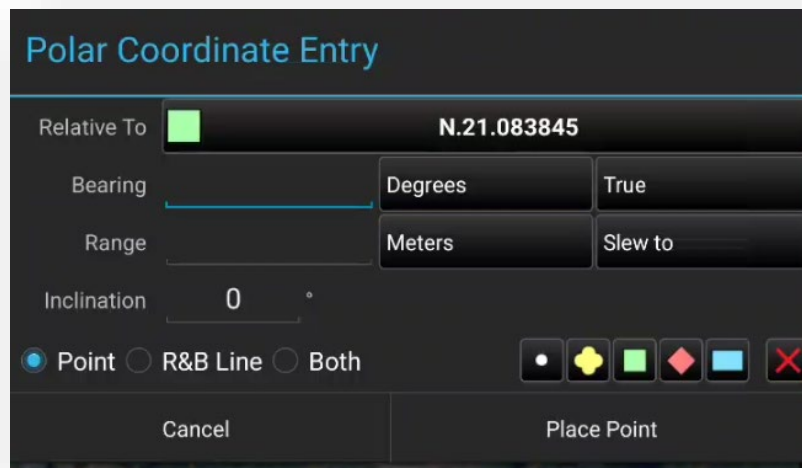


Figure 1 – GoTo – Red X

1.2.5 *Polar Coordinate Entry*

ATAK 4.10 now provides options to place a Range and Bearing Line or a Red X when using the Polar Coordinate Entry option from a marker radial; see Figure 2 below.



The screenshot shows the 'Polar Coordinate Entry' dialog box. It has a title bar 'Polar Coordinate Entry'. Below the title bar, there are several input fields and buttons. The 'Relative To' field is set to a green square icon and the value 'N.21.083845'. The 'Bearing' field has a slider and is set to 'Degrees' and 'True'. The 'Range' field has a slider and is set to 'Meters' and 'Slew to'. The 'Inclination' field is set to '0' degrees. There are three radio buttons: 'Point' (selected), 'R&B Line', and 'Both'. To the right of the radio buttons are six icons: a black dot, a yellow cross, a green square, a red diamond, a blue rectangle, and a red X. At the bottom, there are two buttons: 'Cancel' and 'Place Point'.

Figure 2 – Polar Coordinate Entry

ATAK 4.10 also supports the Polar Coordinate Entry option relative to the Red X. This option is located on the Red X radial, depicted in Figure 3.



Figure 3 – Red X - Polar Coordinate Entry

1.2.6 *Automatic scanning of Download folder*

ATAK 4.10 now scans the Download folder automatically for .ZIP files when starting up. This provides an additional way for Mobile Device Management tools to load configuration files when access is restricted by Android security policies to the ATAK folders.

1.2.7 *New User Preference*

ATAK 4.10 now provides an option to disable the Pan to self-marker behavior when the user taps the backspace key. This feature is enabled/disabled under Settings > Control Preferences > User Touch Preferences > Disable Back Button Center on Self, as shown in Figure 4.

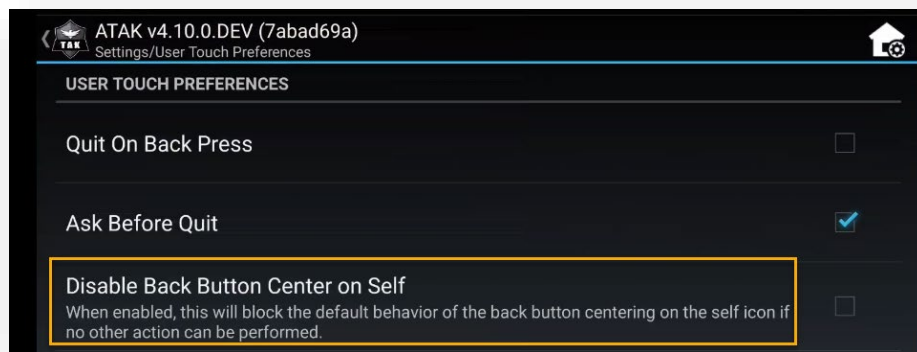


Figure 4 – Preference - Disable Pan to Self

1.2.8 *Simplified Contour Lines User Interface*

ATAK 4.10 simplifies the User Interface for defining contour lines to be displayed, as depicted in Figure 5.

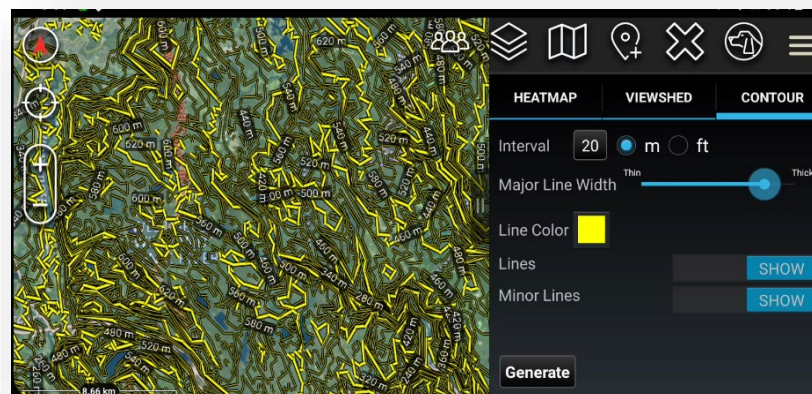


Figure 5 – Elevation Tools – Simplified Contour Lines UI

1.2.9 Updated Viewshed Option

ATAK 4.10 now provides the ability to Pan To any of the viewsheds defined when multiple viewsheds have been placed on the map, as seen in Figure 6 below.

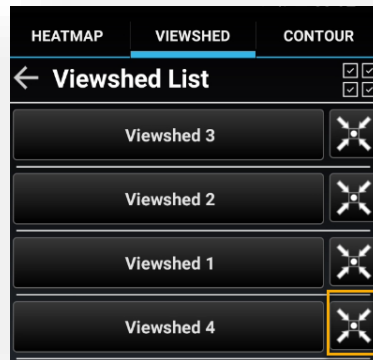


Figure 6 – Viewshed – Pan To

1.2.10 Data Sync

ATAK 4.10 relocates the export feed option to a more prominent location on the Feed Overview page to improve the user experience, as seen below in Figure 7.

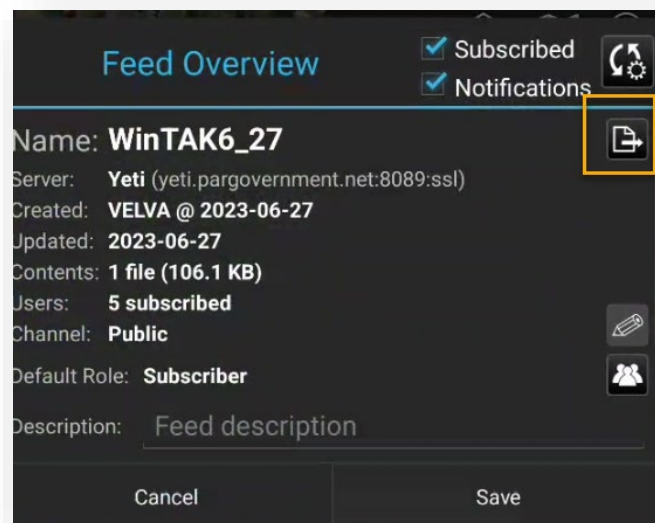


Figure 7 – Data Sync – Export Feed

1.2.11 *Slicer - CoT Display Control*

ATAK 4.10 now provides the Slicer Tool to control how CoT markers are displayed on the map. The default setting is to display CoT markers as normal. They can also be displayed as points or be turned off completely.

CoT display options are accessed from Overlay Manager > Markers, as shown in Figure 8.



Figure 8 – Overlay Manager – CoT Display Options

Selecting the icon presents the user with a window where they can control the display. The display can be controlled either by the type of marker; Friendly, Neutral, Hostile, Unknown (F,N,H,U), category of marker; Space, Air, Ground, Sea, Subsurface (P,A,G,S,U), or apply changes to all the markers. The first selection changes the marker display from the standard CoT display to points, as depicted in Figure 9.



Figure 9 – Overlay Manager – CoT Display Options – Point

The second selection turns the selected CoT marker display to OFF on the map, shown in Figure 10.

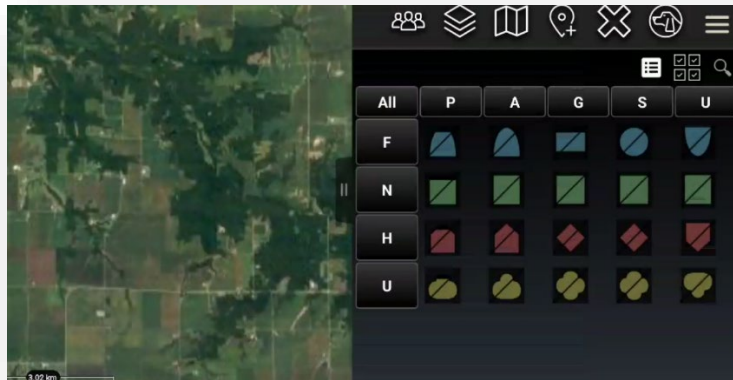


Figure 10 – Overlay Manager – CoT Display Options – Off

Selecting the icon a 3rd time returns the marker display to normal on the map, as depicted below in Figure 11.

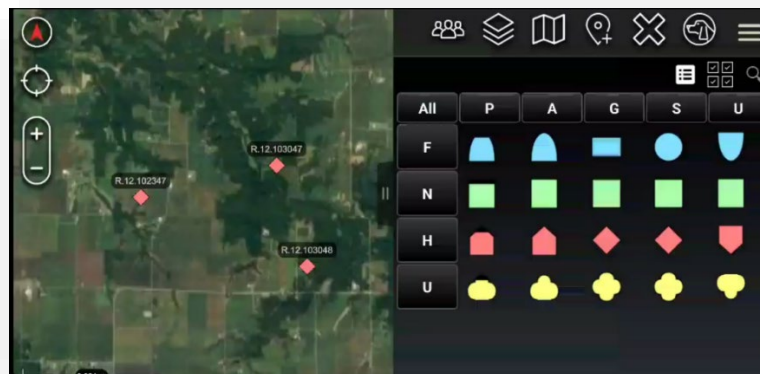


Figure 11 – Overlay Manager – CoT Display Options – On

1.2.12 Point Dropper Recently Dropped

Previously when dropping points using the Point Dropper, subtype selection was always done on a point-by-point basis or selectable from a set of hard coded subtypes. This has been augmented to allow users to add favorite subtypes for faster creation of content. See Figure 12 below.

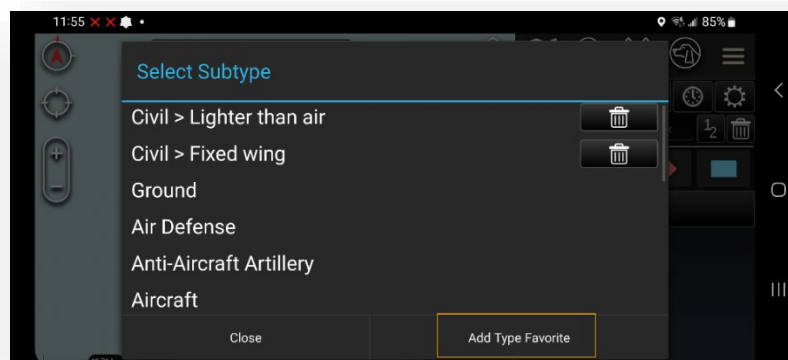


Figure 12 – Point Dropper – Add Favorite

As part of this work, the point type selector was updated to better follow the guidelines of a higher contrast look and feel. See Figures 13 and 14 below.

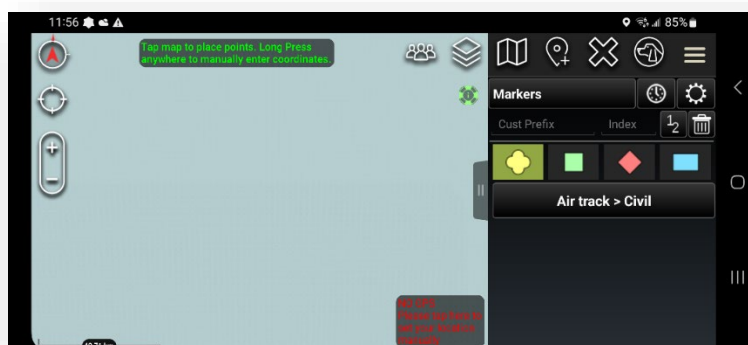


Figure 13 – Point Dropper – Higher Contrast Look and Feel_1

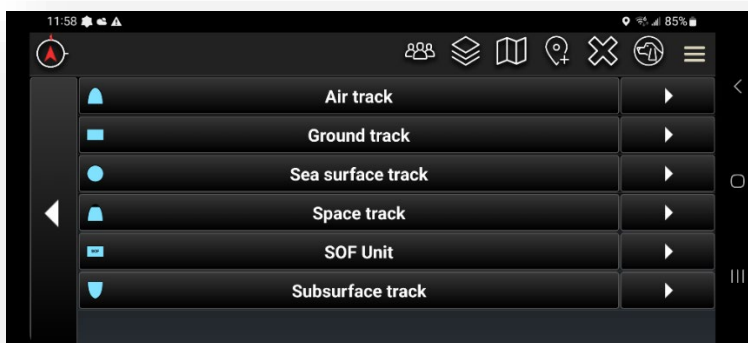


Figure 14 – Point Dropper – Higher Contrast Look and Feel_2

1.2.13 3D Shape Handling

ATAK 4.10 now renders 3D shapes with objects embedded in the shape maintaining their visibility even when the shape has a transparency value set. Figure 15 shows shapes at an altitude of 3000 to 5000 feet and the markers visible.



Figure 15 – 3D Shapes

1.2.14 Drawing Tools

ATAK 4.10 now provides the option to disable the display of the center point on a Drawing Tool object. Center points can be enabled, as shown in Figure 16, or disabled, as shown in Figure 17, on individual objects via the Details window. This setting is remembered when creating shapes (i.e., if turned OFF, it will remain off until the user turns it back on.)

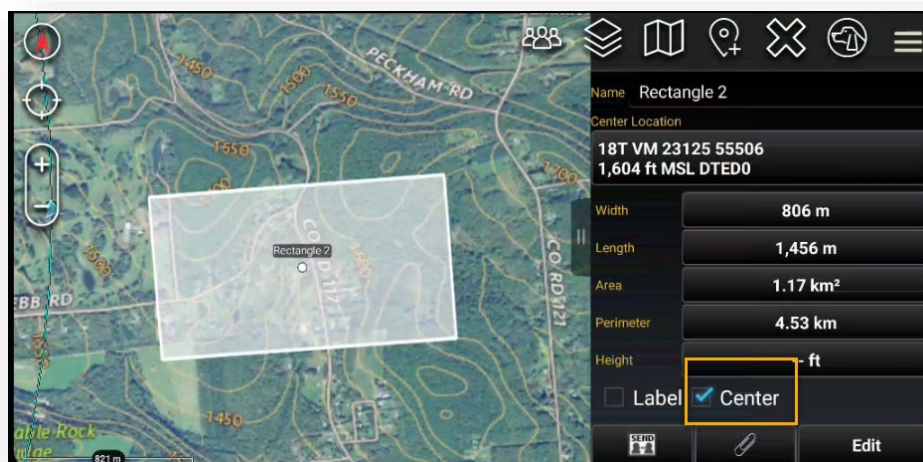


Figure 16 – Drawing Tools – Center Point ON

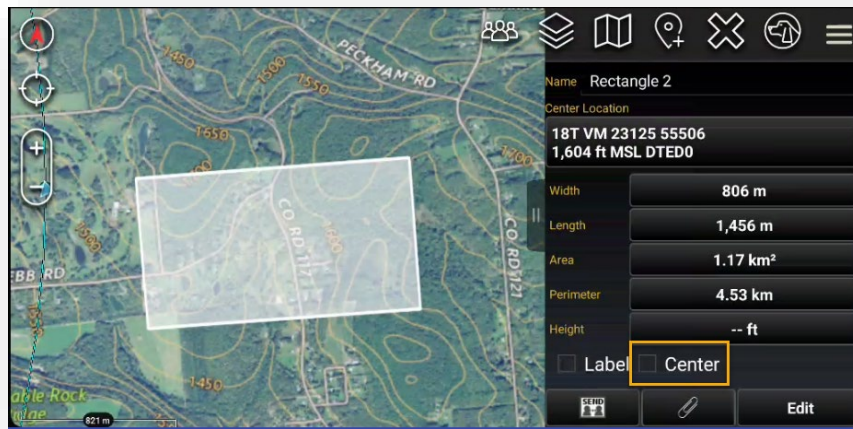


Figure 17 – Drawing Tools – Center Point OFF

1.2.15 *Helmet Camera Application*

ATAK 4.10 includes a Helmet Camera Application that allows the user to connect a USB webcam to ATAK and stream the webcam video.

The HelmCam app can be installed from the Settings > Tool Preferences > Package Management Screen, as shown in Figure 18.

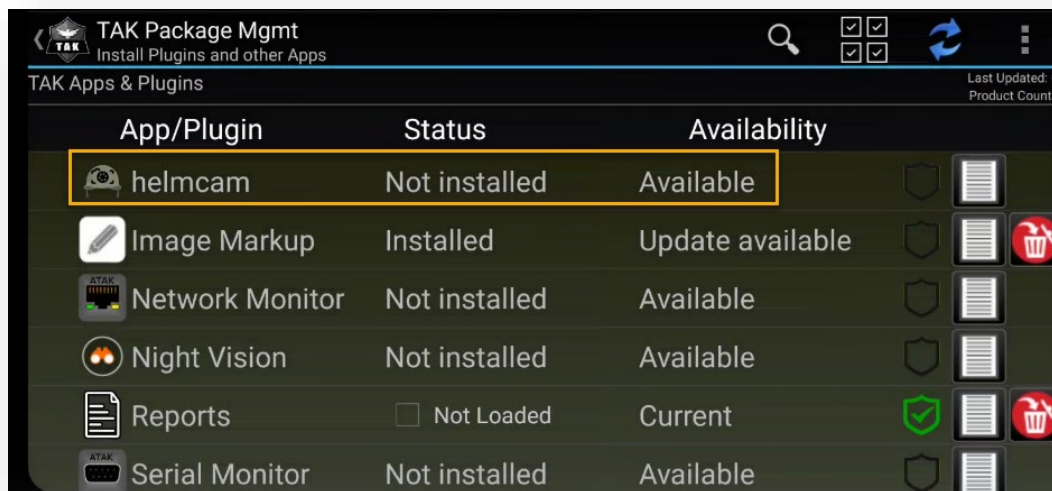


Figure 18 – HelmCam - Install

HelmCam can be configured by launching the application and defining the desired configuration, as depicted in Figure 19 below.

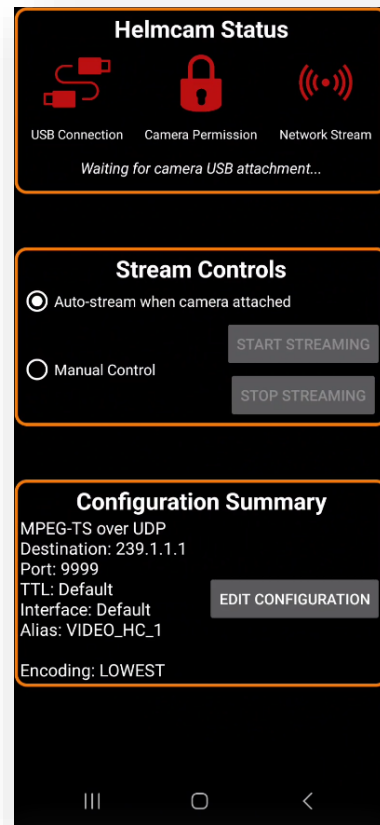


Figure 19 – HelmCam – Settings Screen

Configuration options are accessed via the EDIT CONFIGURATION button, as shown in Figures 20 and 21 below. Configuration options include:

- Streaming Protocol to use
- Address and port to stream from
- Broadcast alias
- Encoding configuration

The screenshot shows the 'Stream Destination:' configuration screen. It has a dark background with orange text and orange borders around the configuration sections. The status bar at the top shows the time 12:46, signal strength, and 68% battery. The 'Stream Destination:' section includes: 'Protocol:' with radio buttons for 'UDP (multicast or unicast)' (selected), 'RTSP', and 'RTSPS'; 'IP or Host:' with the text '239.1.1.1'; 'Port:' with a radio button for '9999' and an option 'Derive from last octet of local IP'; 'Path:(RTSP/RTSPS only)'; 'Broadcast Alias:' with the text 'VIDEO_HC_1'; 'Multicast Interface:' with a checkbox 'Use Network Monitor' and a dropdown menu set to 'System Default'; and 'Multicast TTL:' with radio buttons for 'System Default' (selected) and '3'. Below this is the 'Encoding Configuration:' section with a dropdown menu set to 'Small frame, ultra low bandwidth'. At the bottom are 'SAVE CONFIGURATION' and 'CANCEL' buttons, and an Android navigation bar.

12:46 68%

Stream Destination:

Protocol:
☒ UDP (multicast or unicast) ☐ RTSP ☐ RTSPS

IP or Host: 239.1.1.1

Port: ☒ 9999
☐ Derive from last octet of local IP

Path:(RTSP/RTSPS only)

Broadcast Alias: VIDEO_HC_1

Multicast Interface: ☐ Use Network Monitor
System Default

Multicast TTL: ☒ System Default
☐ 3

Encoding Configuration:
Small frame, ultra low bandwidth

SAVE CONFIGURATION

CANCEL

Figure 20 – HelmCam - Streaming Configuration Options

The screenshot shows the 'Encoding Configuration:' screen. It has a dark background with orange text and an orange border around the title. The status bar at the top shows the time 12:46, signal strength, and 68% battery. The 'Encoding Configuration:' section has a dropdown menu set to 'Small frame, ultra low bandwidth'. Below the dropdown are five options: 'Small frame, ultra low bandwidth', 'Moderate size, low bandwidth', 'Moderate size, medium bandwidth', 'Larger size, moderate bandwidth', and 'Largest size, higher bandwidth'. At the bottom is an Android navigation bar.

12:46 68%

Encoding Configuration:

Small frame, ultra low bandwidth

Moderate size, low bandwidth

Moderate size, medium bandwidth

Larger size, moderate bandwidth

Largest size, higher bandwidth

Figure 21 – HelmCam - Encoding Configuration Options

The broadcast stream is available to other TAK users on the network via the Video Player, shown in Figure 22.

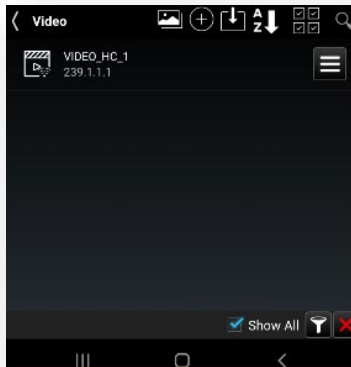


Figure 22 – Video Player – HelmCam Alias

Additional details are provided in the HelmCam Software User Manual.

1.2.16 Additional Feature Changes

ATAK 4.10 also includes the following changes:

- Added support for the Android permission “NEARBY_WIFI” to support PTP Wi-Fi connections.
- Resolved issue with drawing oversized FAH arrow on SPIs, Red X, and 9-Line tools.
- Added WEBP to the list of supported file extensions in the Gallery.
- Jump Master now supports defining a Custom Hold Area to burn off excess altitude.
- Jump Master now shows wind markers between the exit altitude and the high safety altitude.
- The Data Sync Plug-in received several performance-related improvements.
- Route Tool now remembers custom route width, as well as custom color.
- Updated the build environment to make use of Gradle 7.6.x and Android Gradle Plug-in 7.4.2.

1.3 Security Updates

ATAK 4.10 includes corrections to areas flagged by Fortify Scans during development.

1.4 Bug Fixes

ATAK 4.10 resolved the following bugs reported via issues.tak.gov or obtained from the Google Play Store:

- Resolved multiple NPEs reported through Google Play store.
- Resolved JNI error occurring on TAB S4 devices.
- Resolved issue with the Shorten Long Marker Name preference causing erratic label behavior.
- Resolved issue with the Self-Marker getting clipped.
- Resolved issue with ATAK crashing when importing a zipped DTED file.
- Resolved issue with ATAK crashing when moving a marker that was part of a data sync feed.
- Resolved issue where the map would be obscured when playing a video on some devices.
- Issues resolved as part of 4.9.x releases can be found in the supplemental ATAK change Log.

– The supplemental log is available at:

<https://wiki.tak.gov/display/DEV/Supplemental+Change+Log+for+ATAK>

1.5 SDK Improvements

The SDK received updated documentation, a general ATAK Application Programming Interface (API) cleanup and ongoing code cleanup of Fortify identified issues. In addition to this, documentation is continuing to be updated in wiki.tak.gov to assist third party developers.

- Addressed issues related to migrating to Android 33.
- Automated Testing/Unit Testing – Several unit tests/integration tests were implemented for Core API functions in this release cycle. Updates were also implemented to support instrumented testing of plug-ins.
- Continued to mark API deprecations and improve Javadoc. This includes both ATAK core, as well as deprecation removal.

- Documented the required developer level changes required for targeting 4.10 at: <https://wiki.tak.gov/display/DEV/Changes+to+the+build+environment+for+4.10.0+from+4.9.0>
- Migration of the core libraries to the following levels:
 - implementation 'androidx.fragment:fragment:1.5.7'
 - implementation 'androidx.exifinterface:exifinterface:1.3.6'
 - implementation 'androidx.localbroadcastmanager:localbroadcastmanager:1.1.0'
 - implementation 'androidx.lifecycle:lifecycle-process:2.6.1'
 - implementation 'org.greenrobot:eventbus:3.2.0'
- Significant effort was made during this release cycle in the following areas:
 - Further enhancements to 3rd party developer experiences.
 - Continued removal of deprecated features per the deprecation schedule.
 - Highlighted new areas to be deprecated in future releases.
 - Better documentation of the API.

1.6 List of Available Plug-ins and Applications

There is more documentation and information that describes plug-ins available for ATAK on tak.gov or Confluence (<https://wiki.tak.gov/display/TPC/TAK+Plugins+Master+List>) from the TAK Product Center.