Tactical Assault Kit for Android (ATAK)

Version 4.0

Change Log

25 March 2020

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1 INTRODUCTION

This document represents the changes that have occurred in the Tactical Assault Kit for Android (ATAK) from version 3.13 to 4.0. 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 a framework on which user 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 4.0 advances SA capabilities by enhancing existing toolsets and introducing new features.

1.2   Added Features

The following subsections provide a brief overview of features that are new or have been enhanced in ATAK 4.0

1.2.1   Optimized Data Sync Storage

ATAK Data Sync feeds are now persisted locally in JSON format, with columns for server, name, description, creator UID, creation time, tool, password protection flag, visibility and contents.

1.2.2   Incorporate a Native Session Initiation Protocol (SIP) Voice over Internet Protocol (VOIP) ATAK Client Plug-in

ATAK 4.0 now provides a native SIP (VOIP) client via the SIP Plug-in. The user enters the SIP server credentials, and the name of the SIP server via Settings > Tool Preferences > SIP (VoIP) Preferences (Figure 1).
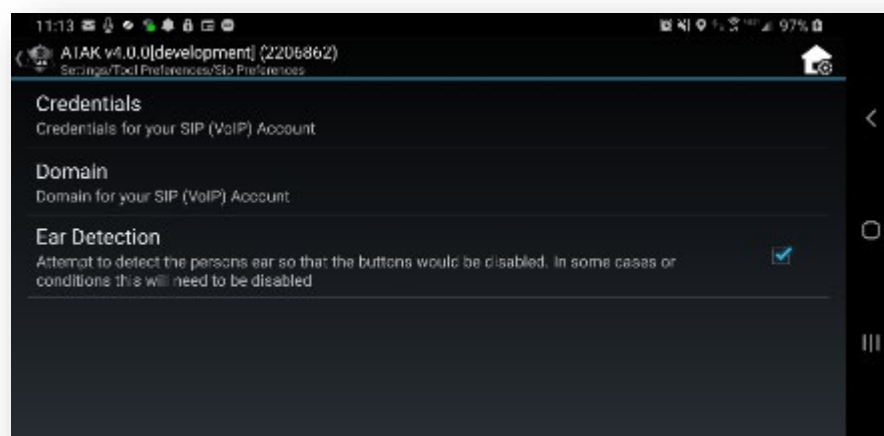

Figure 1 – SIP Settings

Alternatively, the user can create and import a preference file (.pref) containing the account setup and credentials (Figure 2).


```
<?xml version='1.0' standalone='yes'?>
<preferences>
<preference version="1" name="com.atakmap.app_preferences">
<entry key="sipService.username" class="class java.lang.String">username</entry>
<entry key="sipService.password" class="class java.lang.String">password</entry>
<entry key="sipService.domain" class="class java.lang.String">server_address</entry>
</preference>
</preferences>
```

Figure 2 – SIP Preference File

A user's SIP contact information is broadcast as part of the user's SA message. SIP calls are initiated by selecting the user's marker, then the contact card radial option and then selecting the microphone icon from the sub-radial (Figure 3).

Figure 3 – Place SIP Call

The user receiving the call, has a widget displayed that allows them to accept or reject the call. If the user accepts the call, a floating widget is displayed with the available call options: Push to Talk, Speaker Phone, Mute the call or Hang-up. Additionally, the user is able to quick hide the floating widget by selecting the bumper (3 vertical black lines) on the right (Figure 4). By default, the SIP VoIP plug-in capability is set to lock the ATAK end-user device's (EUD) screen when detecting the EUD being placed near the user's ear.
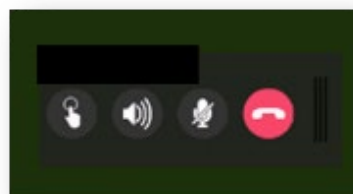

Figure 4 – SIP Call Options

1.2.3   Integrate FTP/S Cloud Capability (Mirrors OwnCloud Integration)

ATAK 4.0 extends the existing OwnCloud capability by incorporating support for the FTP/S protocol into the Cloud plug-in.

The Cloud plug-in provides a common workflow that allows the user to upload, download, or download and import files from an OwnCloud or Microsoft FTP/S server using a common workflow. This workflow is integrated with the Import Manager, Overlay Manager and Data Package features in ATAK core. The Plug-in also integrates a file browser so that the user can also select files from an external SD card that have not been imported into ATAK.

1.2.3.1   Download/Import Data

When importing data, the user has the ability to import data from an OwnCloud or FTP/S Server. The user can access an OwnCloud or FTP/S server by either selecting the Cloud/FTP plug-in option from the additional features dropdown and then selecting Download or by selecting Import Manger > Cloud/FTP (Figure 5).
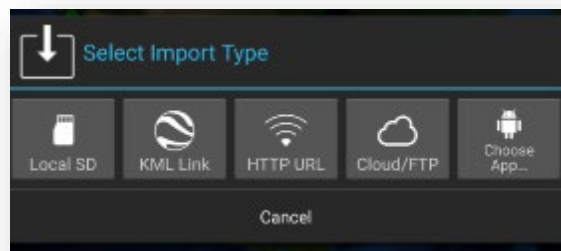
Figure 5 – Select Import Source

The user will be presented with a list of servers that have been previously defined, as shown in Figure 6.
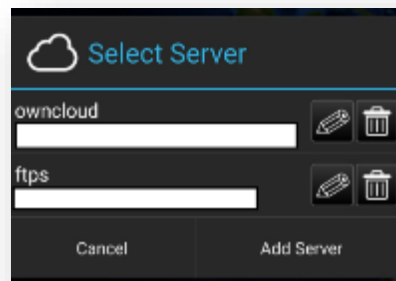
Figure 6 – Select Server

If there are no servers defined, the user can add a server as shown in Figure 7.

Figure 7 – Add Server

Users can also create and share server definitions via a preference (.pref) file, as depicted in Figure 8.

Figure 8 – Sample .pref file

Once the server(s) are defined, the user selects the server and is presented with the standard ATAK file browser window to select the file(s) to be imported as shown in Figure 9.
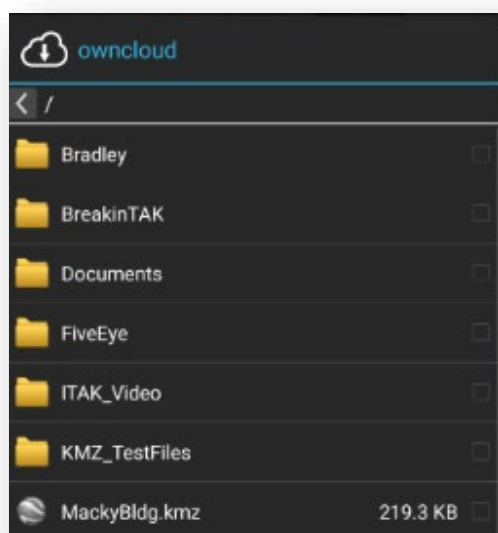
Figure 9 – File Browser

1.2.3.2   Uploading Data

The user now has multiple ways to select data to upload to an external OwnCloud or FTP/S server. Using the Cloud/FTP plug-in option from the additional features dropdown and then selecting Upload. The user can select Local SD, Overlays or Map Select (Figure 10). The user can also access the upload capability from within Overlay Manager or Data Packages using the Multi-Select Action button (Figure 10).
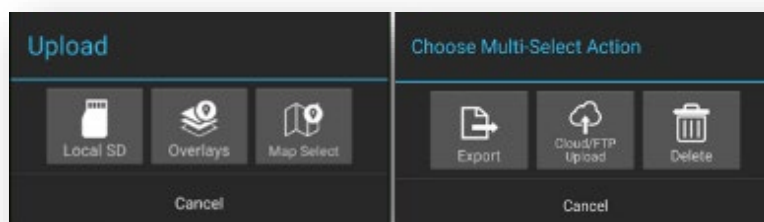
Figure 10 – Upload Option

If the user selects Local SD, the file explorer interface is displayed. The User can select entire directories, individual files or multiple files to upload (shown in Figure 11). When finished with the selections the user chooses the Upload button.
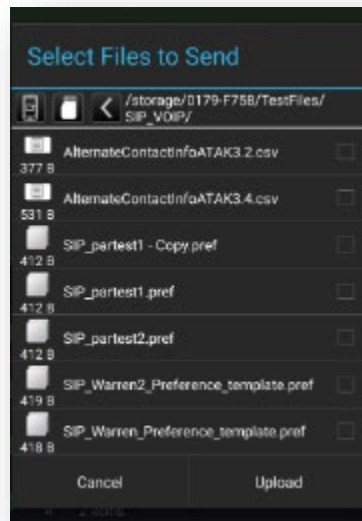
Figure 11 – Select Files to Upload

If the user selects Overlays, Figure 12 shows Overlay Manager displayed within the Cloud/FTP mode dialog. The user selects the Overlays to send, they are packaged as a Data Package and the user is then prompted to select the server for uploading the selected items.
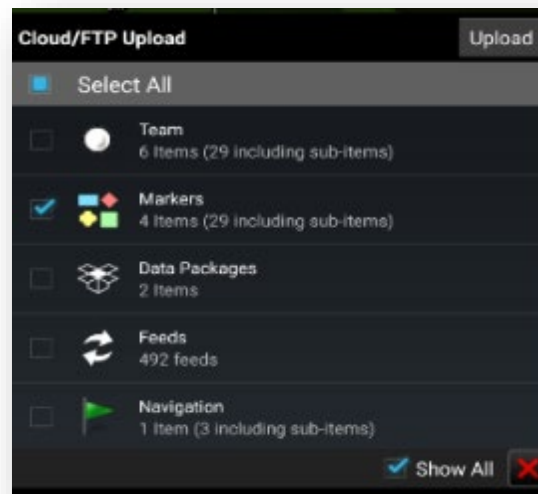
Figure 12 – Overlay Manager Select

If the user chooses the Map Select option, the user is placed into a Data Package to select items from map. The user follows the same process for selecting Map Items as when creating a Data Package. When selection of map items is completed, a prompt appears to enter a name for the Data Package and then an option to select the server for uploading.
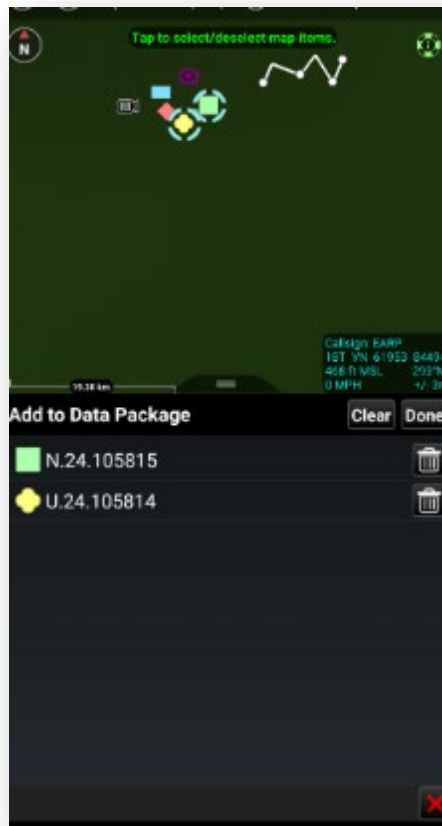
Figure 13 – Map Select

1.2.4   *DACO UI/Ux Improvements*

ATAK 4.0 provides a Beta release of the revised and refactored Departure Airfield Control Officer (DACO) plug-in. This release provides a preview of the redesigned User Interface (UI) and User Experience (Ux).

When the user launches DACO, the list of current DACO plans is presented on the ATAK EUD. The user can edit existing plans or create a new plan by selecting the [+] icon.

Figure 14 – DACO Plans

Selecting a DACO Plan allows the user to create/edit information on the manifests, people/persons/occupants (PAX) and platforms associated with the DACO plan. Selecting the down arrow next to a given DACO Plan provides an expanded view of existing manifests, platforms, and PAX as shown in Figure 15. The green highlights signify a ready/good to go status for a given platform and/or manifest, indicating that all PAX are accounted for and ready aboard the platform.

Figure 15 – DACO Plan Quick View

Figure 16 shows a DACO plan that has an Infil and Exfil manifest with 10 total PAX in the whole DACO plan. For example, the same 10 PAX that could consist of operators who will need infiltration and exfiltration within a given mission, and therefore would need to be accounted for in both manifests accordingly.

Figure 16 – DACO infil/exfil

Figure 17 shows the given PAX within a DACO Plan.

Figure 17 – DACO Plan PAX

Figure 18 demonstrates adding PAX to a given platform within a manifest.
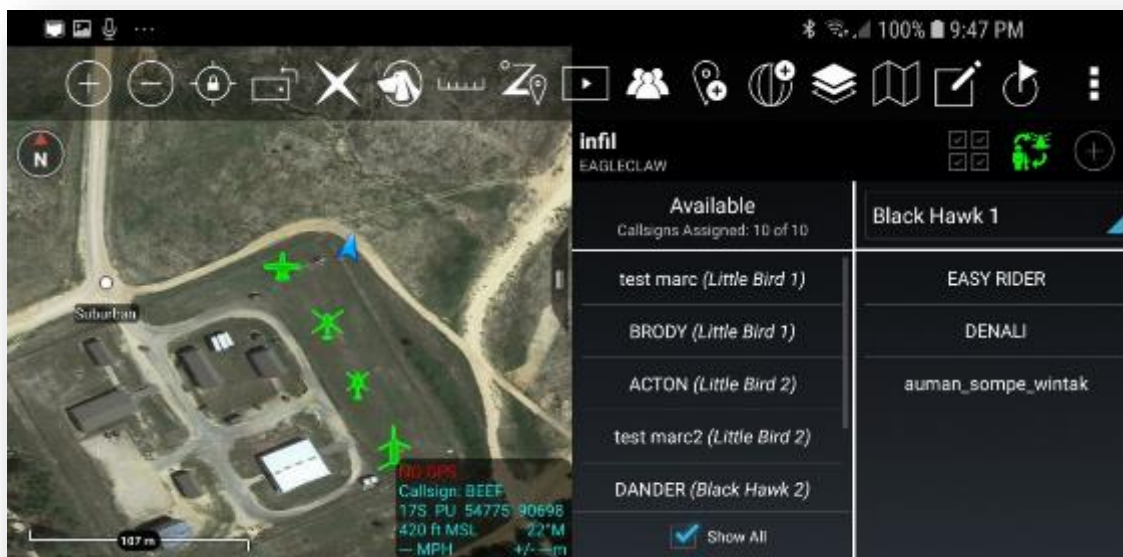
Figure 18 - DACO Plan PAX Assignment to Platform

Figure 19 depicts platform status within a given manifest.

Figure 19 - DACO Platforms within a DACO Plan's infil Manifest

1.2.5 MPU5 Web View Plug-in

ATAK 4.0 provides an updated web view interface for the WaveRelay plug-in, specifically targeting integration and functionality for the Man Portable Unit 5 (MPU5) running the Wave Relay Mobile Mesh Ad-Hoc Networking capability. To configure/operate the MPU5 radios, the radio interface/network definition is supplied to the Network Monitor tool that comes with an install of ATAK.

The user then selects the Radio Controls > Wave Relay Option. If the radio is connected, the display is shown in Figure 20.
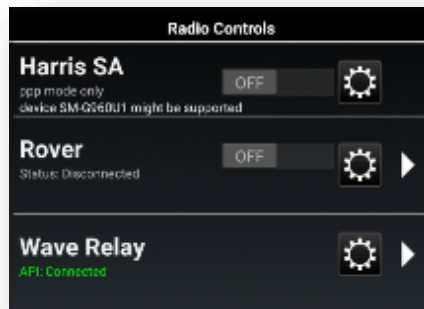
Figure 20 - Wave Radio Connected in ATAK's Core Radio Controls

Selecting the settings option will bring up the web-based management view in a window within ATAK. Figure 21 depicts the web view of the Wave Relay Management Interface next to the ATAK moving map.
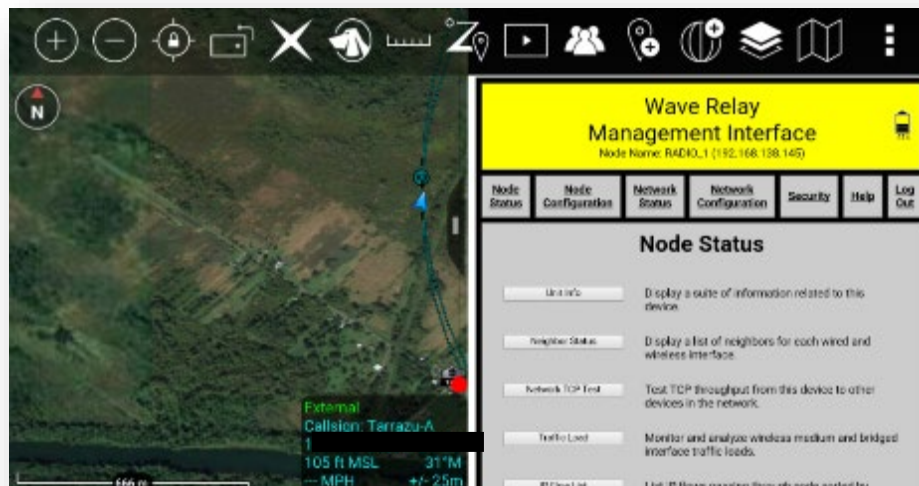
Figure 21 - ATAK - Web Based Management View within the ATAK Wave Relay Plug-in

1.2.6   ATAK Core Overlay Manager Support for # Hashtags

ATAK 4.0 now supports the use of Hashtags (#) to metadata tag, categorize and search items. To create a hashtag for an item, the user enters the desired hashtag in the REMARKS field on the details screen of a map item (Figure 22).

Figure 22 – Hashtags Remarks Field of TGT

The user can sort/search/display items based on their hashtag using Overlay Manager. Items with hashtags are listed under the Overlay Manager > Hashtags category (Figure 23).
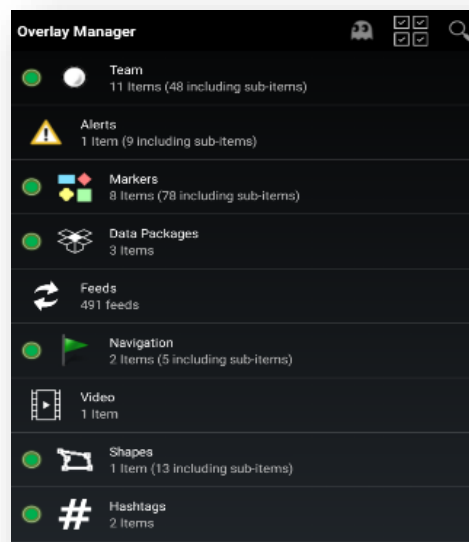
Figure 23 – Overlay Manager Hashtags

Selecting the Hashtag Category displays all the existing Hashtags in use (Figure 24). From here the user can create a new hashtag, create a sticky tag or select the item and pan to its position on the map.
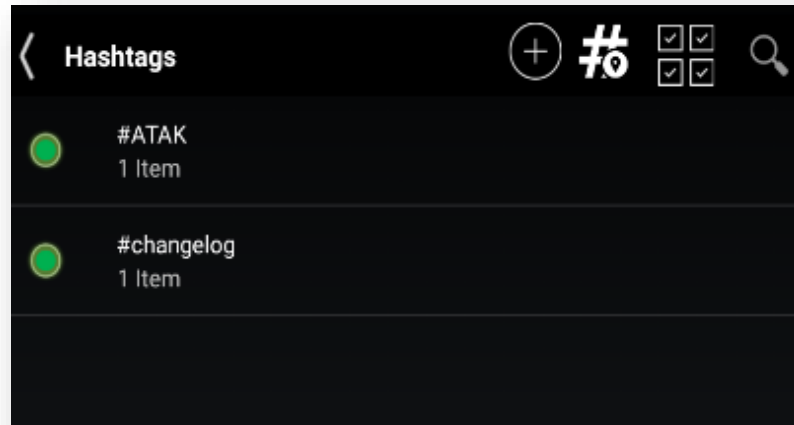
Figure 24 – Hashtag Categorizations

Selecting the [#] icon to the right of the **[+]** will open the Sticky Tags dialog. Entering a name and selecting [+] will add that sticky tag to all subsequent placed map items. More than one sticky tag may be added (Figure 25). To discontinue a Sticky Tag, select the Trashcan associated with the Sticky Tag.
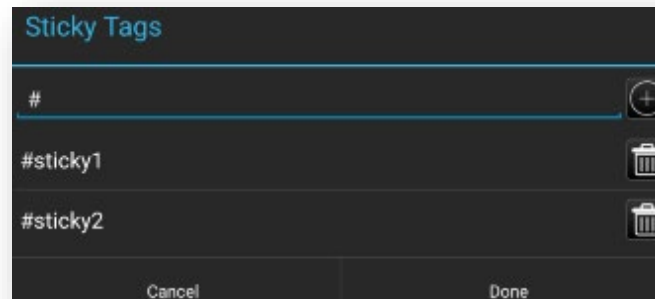
Figure 25 – Hashtag Categorizations

1.2.7   TAK ICU App

The TAK ICU app for ATAK 4.0 added support for the Wowza Video Management System (VMS). Wowza support allows broadcasting video in conjunction with a TAK Server for a Beyond Line of Sight (BLOS) network configuration.

The Wowza Server needs to be created and configured separately from the TAK Server. SSL is a selectable option to enable encryption of a given video stream.

Wowza support is enabled by selecting the Wowza option from the Control > Broadcast Preferences Menu > Destination Type, as shown in Figure 26.
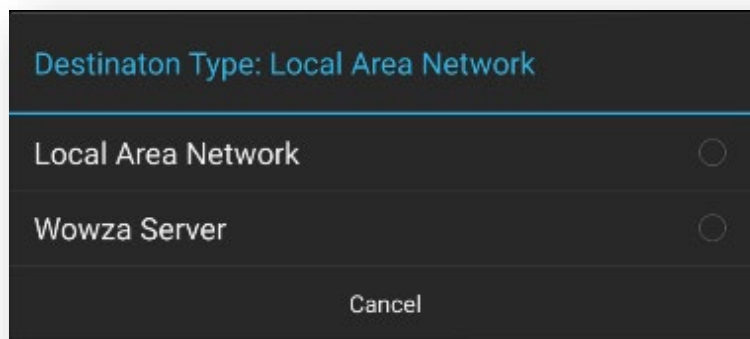
Figure 26 – Destination Type Setting within ICU

After enabling support for Wowza the user then specifies the address, port number and whether to use SSL or not for the connection. This is shown in Figure 27.
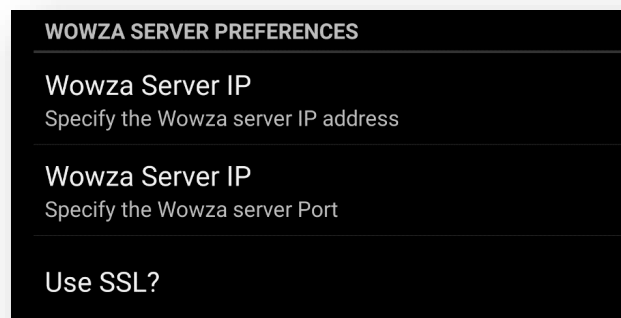
Figure 27 – Wowza Server Settings

1.2.8   *Search Function for Settings*

ATAK 4.0 now features a capability to easily search the settings of ATAK. The search function provides the ability to query all the settings and preferences of ATAK. As depicted in Figure 28, a user can type a high-level item such as "display" and the search will return all the settings that match the search criteria.
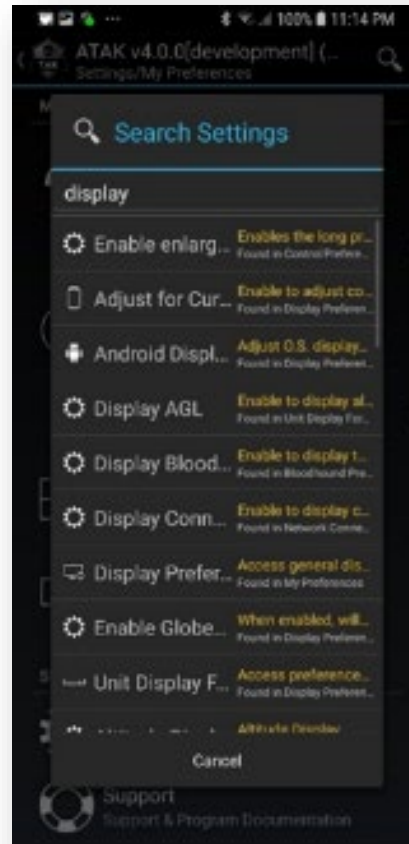
Figure 28 – Search Settings

1.2.9   *Android 10*

As show in Figures 29 and 30, to ensure proper operation while backgrounded, ATAK now checks the Android Location and Power Mode settings. Location permission must be set to "Allow all the time." Android Power Mode setting must be set to Optimized or High Performance.
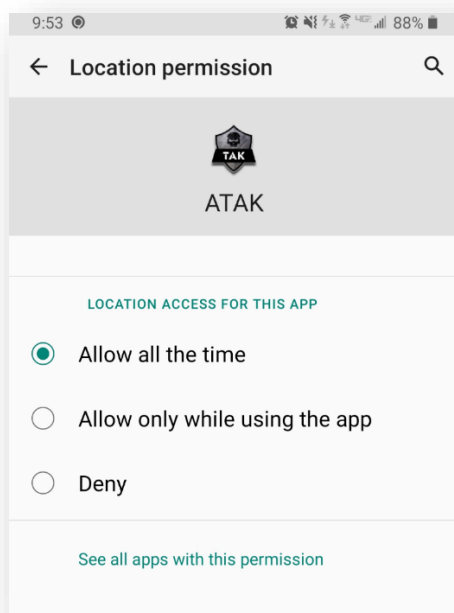
Figure 29 – Location Permission Options
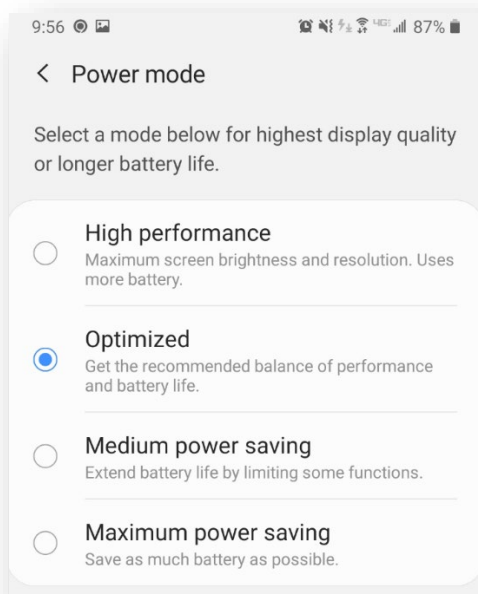
Figure 30 – Power Mode Setting

1.2.10   Additional Plug-ins and Features

1.2.10.1   Jump Master

The following updates were made to Jump Master:

- Add the ability for wind data imports to update the Wind Data table, A/C Options and Landing Pattern at the same time.

- Add button to the in jump toolbar to enter full screen mode. Full screen mode has its own buttons that let the user end the jump, change between landscape and portrait, and close full screen mode. Auto-zoom button is hidden during full screen since the map isn't visible.

- Add buttons to change orientation and exit full screen when starting Nav without GPS.

- Add an option for the user to display an overlay showing where jumpers will be at the open point as shown in Figure 31.

Figure 31 – Jump Master – Open Point

- Added logic to handle case where an Empty DIP was created.

1.2.10.2   Drifter

ATAK 4.0 saw additional development work performed on the Drifter plug-in.

The Drifter plug-in now features a play and pause feature that quickly and easily plays and pauses a marker from "drifting" on the moving map. To provide a larger utility to mission planning and execution times, the Drifter plug-in now features a capability to have a map marker follow a given route along the moving map at a specified speed. A relative time estimation of completion of the

route is given to the user, as shown in Figure 32. The play and pause capability can be used in conjunction with a marker even traversing a given route.
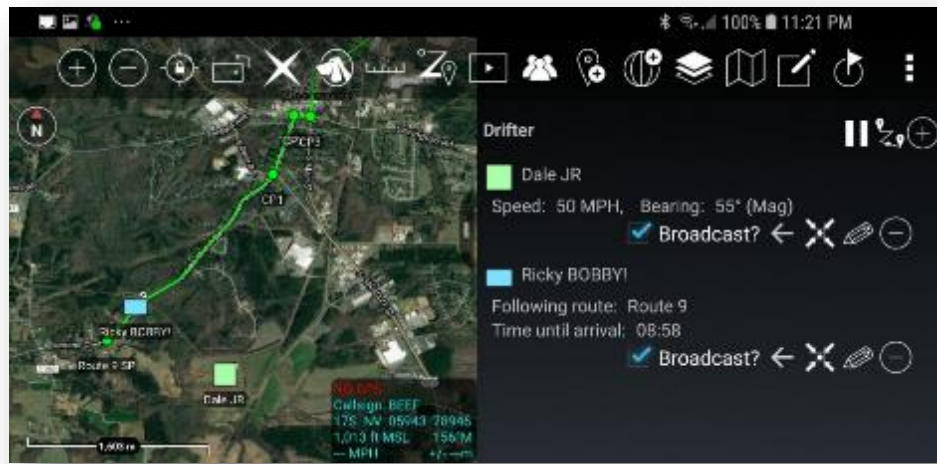
Figure 32 – Drifter Plug-in

1.2.10.3   UAS Tool

ATAK 4.0 includes the following updates to the UAS-Tool plug-in:

- Refactored ATAKGO to remove all interfaces. Fixed issues introduced by running ATAKGO in the background.

- Created an ATAK-Civ variant of UAS Tool and ATAKGO.

- Added a quick fly toolbar that persists in all panes and states of the UAS Tool that includes takeoff/return to home, emergency pause/stop, set altitude, etc. (depends on platform selected).

- Refactored pulse width modulation (PWM) triggers for Matrice platforms.

- Refactored CameraShot to add a high-level internal storage folder on the ATAK EUD for users to easily get their high-resolution DJI camera captures.

- Added EXIF data to the mapshot captures on the moving map.

- The Black Hornet 3 (BH3) can now fly waypoint routes.

- The R80D by FLIR was added to the UAS Tool.

- Extensive updates and improvements were added to the Generic Platform capability to make better use of the parsed MISB KLV data within the FMV.

- Extensive testing/troubleshooting for specific firmware versions and Trellisware network configurations were worked for the Indago platform.

- Added MAVLink/Pixhawk4 support for routes/tasking. Only supports TCP reliably, pending UDP and serial integrations.

- Added orbit circles to the moving map for routes to showcase the radius distance in a visual form to the user around a targeted area.

- Fixed DJI Mavic 2 Enterprise Dual suspected speaker attachment issues.

- Fixed extensive Android 10 issues to include a required DJI SDK update.

- Improved the Operator experience for loss of video.

- Explored inclusion of Active Track for DJI.

1.3   List of Available Plug-ins and Applications

There is more documentation and information that describes plug-ins available for ATAK on takmaps.com from the TAK Product Center.

1.4   Additional Changes/Discrepancy Resolution

ATAK 4.0 includes the following additional changes:

- ATAK now allows for custom databases/providers, specifically requested for custom encryption.

- ATAK now Explicitly prompts user to grant ATAK access to photos, media, device location, phone calls, SMS messaging, record audio.

- The ATAK and its internal apps (Image Markup, TAK Geo CAM, Night Vision, Network Monitor, Serial Monitor, TAK ICU) were updated to be compatible with Android 10. Android 10 introduced an issue with the Altitude not being set for an ATAK end-user device when using GPS. This issue and others were addressed due to Android 10 upgrades.

- Resolved an issue with external Bluetooth devices not remaining connected. Also added Bluetooth Low Energy API exposed for third party integration/usage.

- Resolved an issue with Mobile map "show all" checkbox missing on start-up.

- Fixed user experience issue with Digital Reference Graphic (DRG) Masking Support that resolves "black holes" showing up on certain tilted imagery products, also known as imagery product "clipping".

- ATAK was previously using the incorrect date (year) for the Geomagnetic Field, which could have resulted in incorrect declinations based on the magnetic/true conversion for bearing.

- Fixed issue with erroneous crash logs being created from ATAK end-user devices. Future crashes produced now include better logging, vice dead ends.

- Resolved an issue with Vehicle Markers not being displayed in Overlay Manager.

- Resolved issue with adding an ExCheck checklist to a DataSync mission.

- Additional strings in TAK CHAT and TAK Geo CAM were translated to ARABIC.

- Network KML links can now be included inside of a Data Package.

- Resolved an issue where updates to CASEVAC marker were not received if the details pane was open.

- Simple lighting added to 3D models.

- For air users, ATAK now allows for a plug-in to force GPS bearing 100% of the time to avoid the ATAK end-user device falling back to using the magnetic sensor. The use case revolves around when an aircraft is not moving.

- ATAK now has support for the PLRF 25C (X2) variant.

- When locked on an icon and if other work is performed, the user is prompted to see if they want to relock back on the original friendly marker.

- ATAK now provides better warnings and awareness of why a plug-in is not loading correctly to include API number and signing checks. Plug-ins signing is now checked prior to loading. If the plug-in is not signed with an allowable key, it will not be loaded.

- ATAK 4.0 modifies the default cypher generation for the encrypted passwords. Once ATAK 4.0 has been run on a device, the only way you can move back to an earlier version is to manually set the password under Settings->My Preferences > Encryption Passphrase.

1.5   SDK Improvements

The SDK received updated documentation, a general ATAK API cleanup and ongoing code cleanup of Coverity and Fortify identified issues:

- ATAK-Civ and its SDK now marked with DISTRIBUTION STATEMENT A – Approved for public release: distribution unlimited.

- ATAK-Mil and its SDK now marked with DISTRIBUTION STATEMENT D – Distribution authorized to the Department of Defense and U.S. DoD contractors only, This software contains technical data whose export is restricted by the Arms Export Control Act

(Title 22, U.S.C., Sec 2751, et seq.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App. 2401 et seq. Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25. Other requests shall be referred to HQ United States Special Operations Command (USSOCOM) SOF AT&L or higher DOD authority.

- Migration to Gradle 6.2.

- Support for variable text size with LabelPointStyle.

- Fix Marquee scrolling for Marker text.

- Updated supplied javadoc and corrections to existing java docs.

- Plug-in developers can now listen into raw KLV data for video metadata callback.

- Added support for 64 bit Android libraries.

- Migrated to Android API 26 while retaining compatibility for API 21.

- ATAK development efforts were migrated to the TAK Product Center during this release cycle (i.e., git.takmaps.con, jira.takmaps.com, etc.).

- Introduced native crash log capture, which allows developers to tell where a crash originates in native code.