Wisenet WAVE
Mobile Client User Manual

Version 26.1

1 Introduction 3
1.1 Requirements 4
2 Connecting to Sites 5
2.1 Log In to Cloud 6
2.2 Two Factor Authentication 7
2.3 Tabs & Breadcrumbs 8
2.4 Change Sites or Disconnect 9
3 User Interface 10
3.1 Device List 11
3.2 Resources 12
3.3 Layouts 13
3.4 Object Search 14
3.5 Bookmark Search 16
3.6 Sharing Video 17
3.7 Motion Search 18
3.8 Timeline View 20
3.9 Pan Tilt Zoom 22
3.10 Calendar Widget 23
3.11 Image Dewarping 24
3.12 Soft Triggers 25
3.13 2-Way Audio 26
3.14 Export Video (beta) 27
3.15 Camera Options 28
3.16 Notifications 29
3.17 App Settings 30

1 Introduction

The Wisenet WAVE mobile client is a native application that is installed on devices running supported Apple iOS and Google Android operating systems that enables authorized users to connect to Wisenet WAVE Sites on a local network or to WAVE Sync connected Sites over any active internet connection the mobile client supports.

Key features of the Wisenet WAVE mobile client:

- Connect to local or WAVE Sync connected Sites.
- Automatic discovery of servers located on the local network.
- Browse and search available resources (layouts, cameras, and devices).
- View live and recorded video archives from any accessible camera.
- Support for analytical plug-ins that perform Object Search.
- A user interface designed around common mobile device gestures.
- Intelligent Calendar Widget to quickly navigate the archive.
- Touch control of Pan Tilt and Zoom functions on supported devices.
- Dynamically dewarp and rotate circular and fisheye images.
- Two-way audio communication between the mobile client and supported devices.
- Touch activation of Soft Triggers to initiate predefined actions.
- Smart Motion Search using a user definable region of interest.
- Push Notification counts and dedicated viewing feed with status filter.
- Authorized users can Export Video to the mobile device in .MP4 format.
- Mobile client-control of hardware acceleration, software decoders, and camera resolution.
- Support for Two Factor Authentication (2FA) when required by the site.
- Exclusive features in Wisenet WAVE Enterprise Edition:
  - Navigate Channel Partners and Organizations on the Welcome Screen.
  - Share links to archived bookmarks and analytical objects.
  - Cross-Site layouts can be opened and viewed in the mobile client.

Note: The Wisenet WAVE mobile client does not provide access to Site administration tools.

1.1 Requirements

The Wisenet WAVE mobile client must be installed on a compatible device. Version 25.2 of the mobile client will connect to Wisenet WAVE servers running version 5.1 or later.

Mobile Device Requirements:

- An Apple iOS or Android device containing hardware that is compatible with the supported operating systems.
- Enabled connectivity services that link the mobile device to sites, servers, or the cloud with sufficient bandwidth.
- The mobile client must be granted permission to access network, storage, and other required services.
- Site settings may require a supported Two Factor Authentication application to authenticate the user.

Supported Operating Systems:

- Google Android versions 9 through 16.
- Apple iOS & iPadOS versions 16, 17, 18, and 26.

Server Requirements:

- Sites and Servers must be running at least version 5.1 of the Server component.
- Sites and Servers must be reachable by the mobile client across available networks.
- Established user accounts for the connection method to be used:
  - A local user connecting over the Local Area Network (LAN).
  - A local user connecting over a Wide Area Network (WAN) using properly configured firewall and port forwarding settings.
  - A cloud user with permission to cloud connected sites.
  - User permissions may be required to access specific devices or resources.

Note: Keep all software components up to date to prevent connection or performance issues.

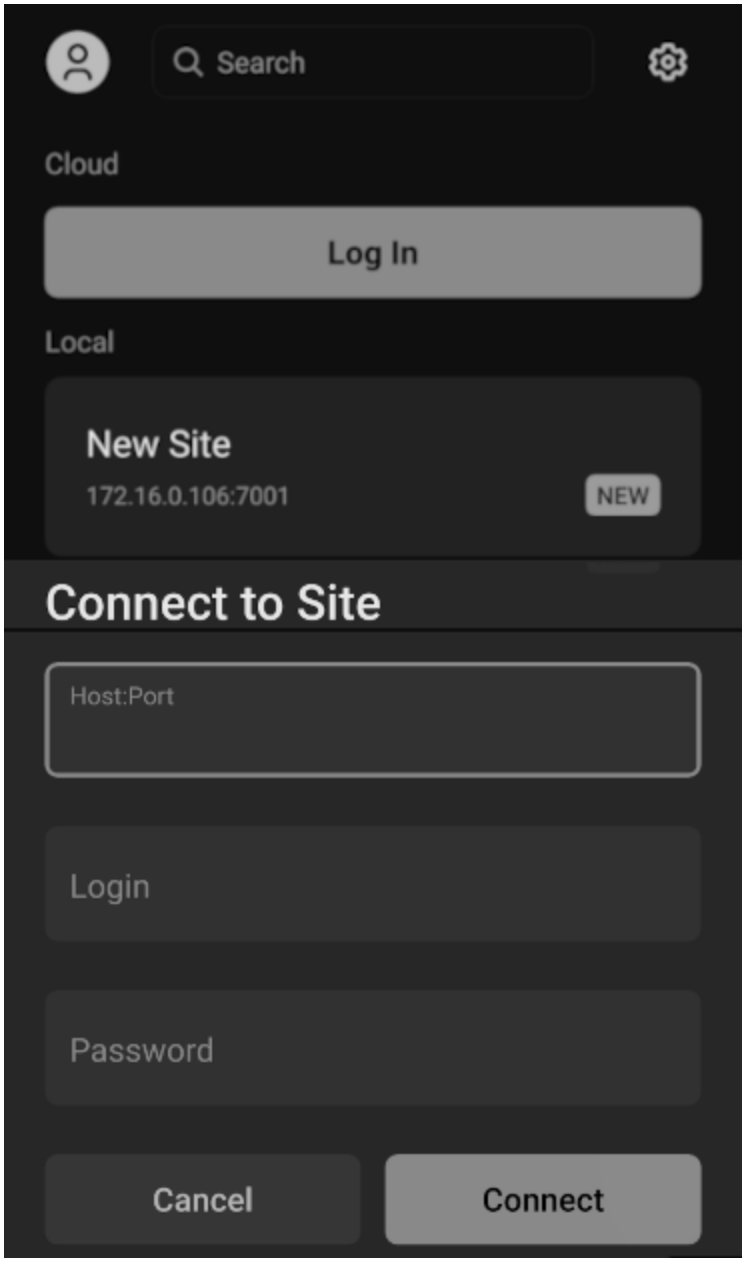
2 Connecting to Sites

The Wisenet WAVE mobile client can connect to local Sites on the same network as the mobile device or to WAVE Sync connected Sites that are accessible over a the internet. The mobile client will try to reconnect to the last successfully connected Site when launched, unless no Site was connected when the mobile client was closed.

The Connection Screen

The Welcome Screen is the displayed when the user opens the mobile client or after a user disconnects from a Site. The following elements and controls may be found on the Welcome Screen, depending on your account settings.

- The top bar of the Welcome Screen contains:
  - Tap the avatar icon to view cloud account.
  - Search box will refine the list of Sites.
  - The gear icon opens the Client Settings.
- The Cloud section displays a Log In button when the client is not actively connected to a Cloud account.
- Tiles for known and discovered Sites are grouped under Cloud and Local headings in the center section.
- Tap the tile to open a Site; or navigate Partners, Organizations, and folders until a specific Site is located.
- Press [+] to manually connect to a local Site.
- Navigation tools will vary by user and Site.
- Site status, IP address, and other information will be displayed when available to the client.
- Review Server Certificates for new Sites.

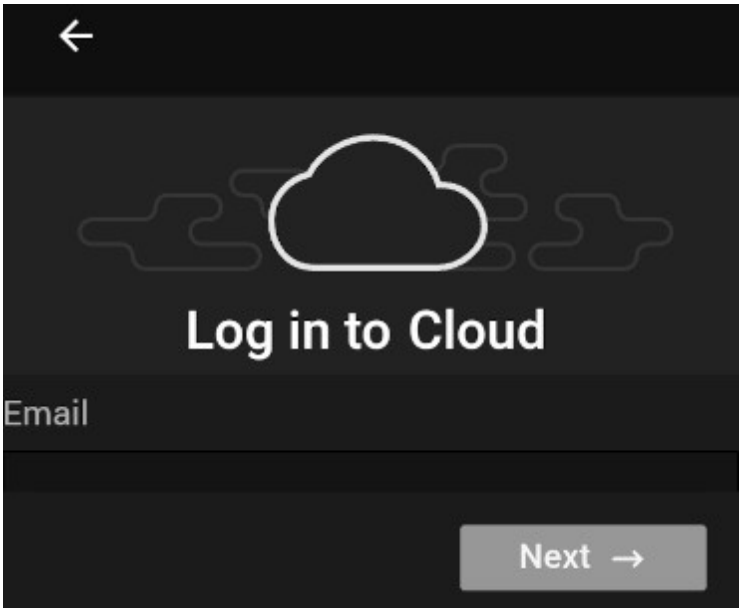


2.1 Log In to Cloud

The Log in to Cloud button is only displayed when the mobile client is not connected to an account. Once connected, available account information can be displayed by tapping the avatar icon in the top bar.

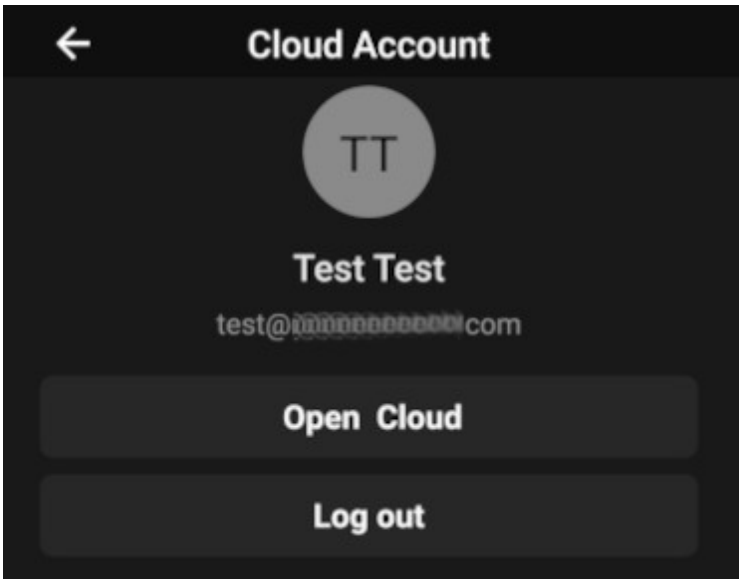
Log in to Cloud

- The Log in to Cloud button is only available when the client is not connected a cloud account.
- Tap the user avatar icon to Log Out of a Cloud Connection or Disconnection the current connection to change Partners, Organizations, or Sites.
- The mobile client will open the Cloud authentication dialog using the default internet browser on the mobile device.
- Enter your Cloud email and password.
- A password reset option is available at the password prompt.
- Provide Two Factor Authentication if required by the Site.



Cloud Account

- Tap the avatar icon to open the Cloud Account information.
- The Open Cloud button redirects your device to the Cloud Portal within the default internet browser on your device.
- Use the Log out button to disconnect client from a users Cloud account.
- Tap the back arrow to return to the previous screen.



2.2 Two Factor Authentication

The two-factor authentication dialog is presented when required by the site.

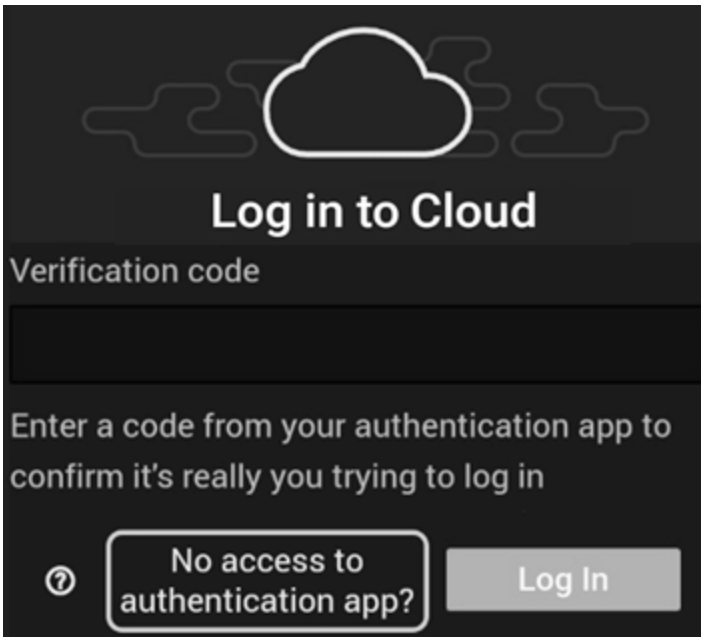
Enter 2FA Verification Code

1. Open the linked authentication application and retrieve the current verification code.
2. Enter the 2FA into the mobile client and tap the **Log In** button

The following authentication methods are supported:

- Google Authenticator
- Microsoft Authenticator
- Duo Mobile

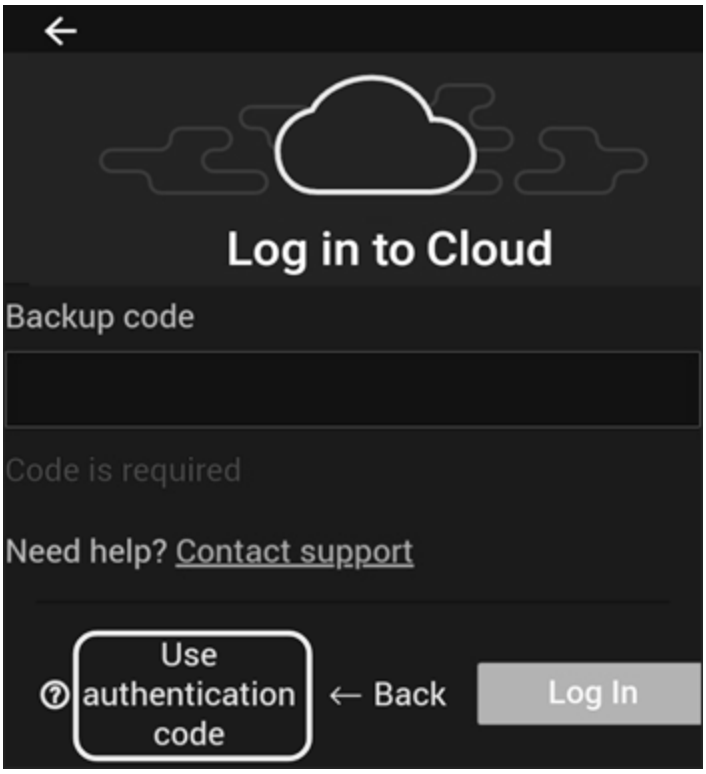
Touch the "**No access to the authentication app?**" text to open the backup code dialog.



Using a 2FA Backup Code

1. Enter a previously generated 2FA backup code.
2. Tap the **Log In** button to authenticate.
   - Backup codes can only be used once.

Tap the **Use authentication code** text or the back arrow to return to the 2FA verification code entry dialog.



2.3 Tabs & Breadcrumbs

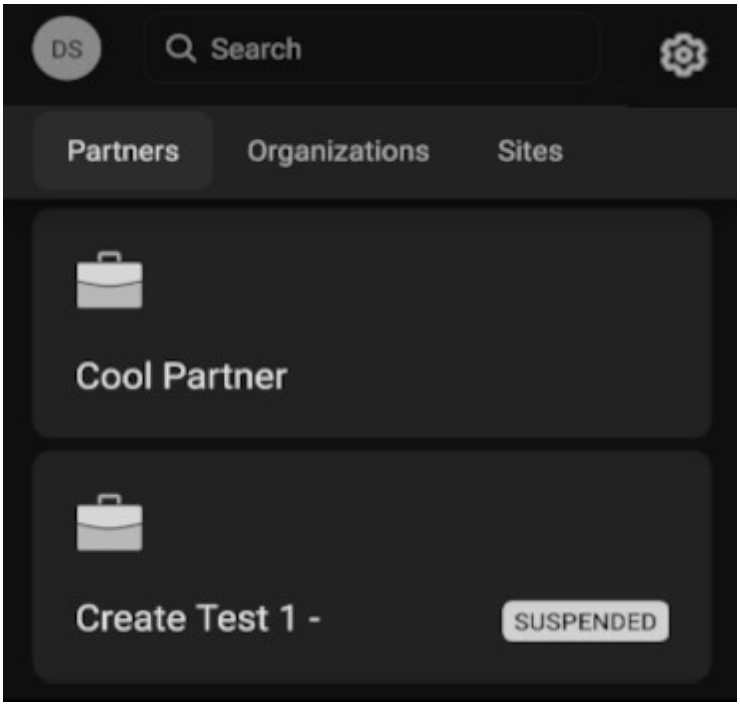
Enterprise users may find navigation tabs and/or a breadcrumb of navigational history displayed that reflects their account permissions.

Enterprise Tabs

- The Partners and Organizations tabs are only shown when available to you.
- Sites is the default tab; the Sites tab is only shown when either the Partner and/or the Organization tab is displayed.
- The tabs function as a filter to display a selected entity type.

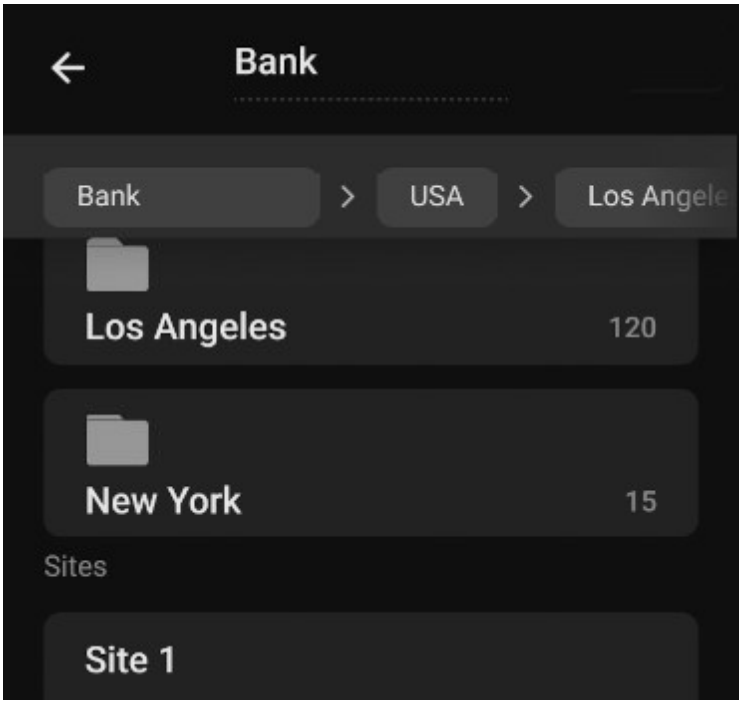
Metadata:

- Status label, when the status is not active.
- The Organization name a Site belongs to.
- Organization and folder tiles include a count of Sites contained within.



Enterprise Breadcrumbs

- Swipe breadcrumbs sideways to navigate.
- Tap on any breadcrumb label to open that specific location.
- Use the back arrow to return to the previous screen.

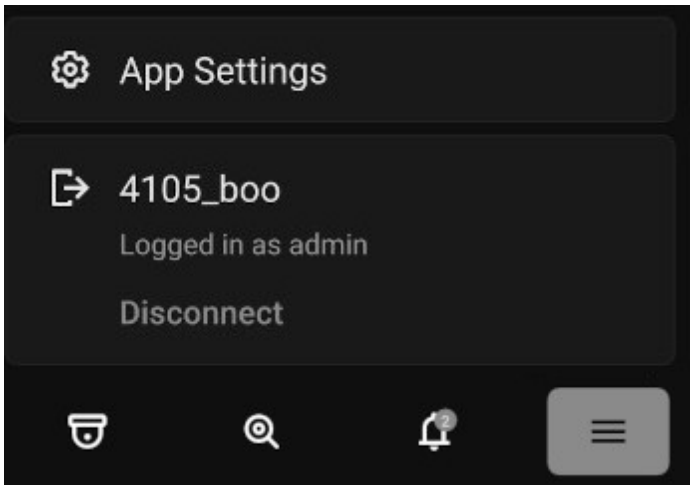


2.4 Change Sites or Disconnect

Disconnecting from a Site and returning the selection screen is done through the client menu.

Disconnect from a Site

1. The menu button is available when viewing the Device List or a layout.
2. Tap the 3-bar icon to open the menu.
3. Touch the tile for the currently connected Site to exit and disconnect.
4. The Connection Screen is again displayed where another Partner, Organization, or Site can be selected.



3 User Interface

The mobile client has two primary user interfaces; The Welcome Screen and the Device List, where thumbnails of video stream are shown and additional features can be accessed.

The remaining topics in this section focus on specific features and functional tasks of the mobile client.

- Device List
- Resources
- Layouts
- Object Search
- Bookmark Search
- Sharing Video
- Motion Search
- Timeline View
- Pan Tilt Zoom
- Calendar Widget
- Image Dewarping
- Soft Triggers
- 2-Way Audio
- Export Video (beta)
- Camera Options
- Notifications
- App Settings

3.1 Device List

- Once connected to a Site, the mobile client generates a grid of thumbnail images and status messages.
- The device list can be scrolled, zoomed, and rotated - tap a device to open the Timeline View.
- Open to Resources panel to search and browse for specific devices.
- Use the 3-bar menu to Change Sites or Disconnect your cloud account.

Elements on the Device List

Resources

Site Name **TestSite**

Search Resources

Notification Status

Device List (this page)

Object and Bookmark Search

Disconnect and App Settings

3.2 Resources

The Resource panel supports dynamic search and manual browsing of Layouts and Cameras available to the current user.

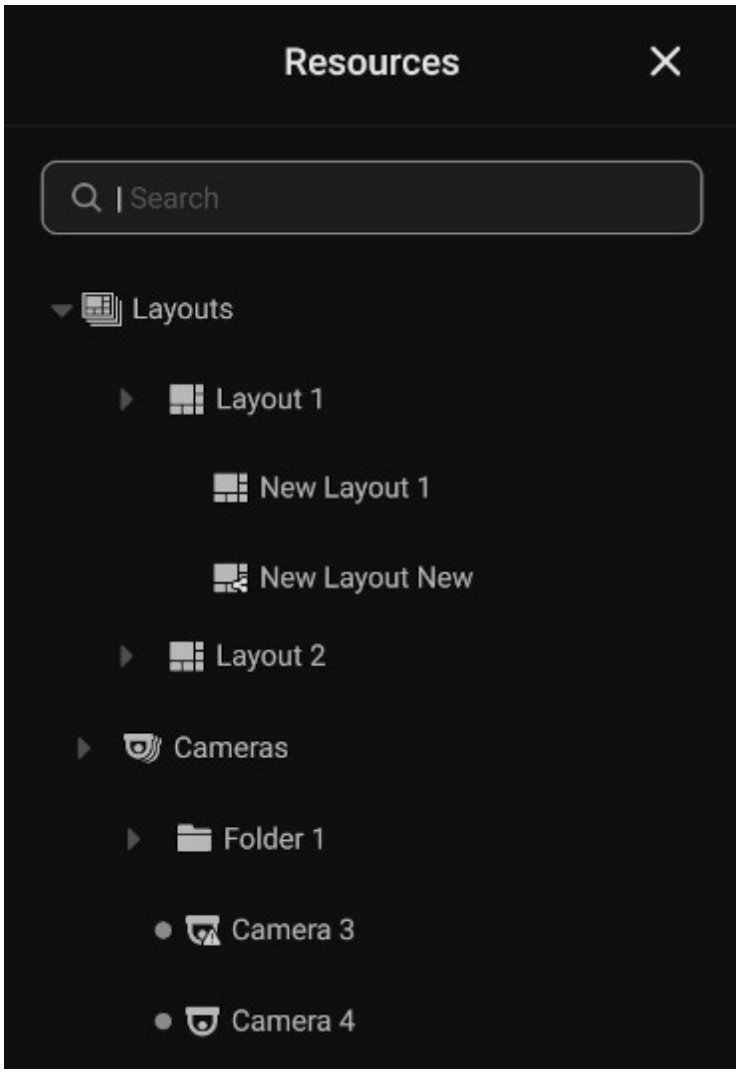
Using the Resource Panel

Searching

- Tap on the search box to open the keyboard.
- Search results are updated for every character entered into the search box.
- Search wildcards support:
  - Question marks (?) are single character wildcards.
  - Asterisks function as anything before (*ABC) or after (ABC*) the asterisk and can be combined with the single character wildcards.
  - Most special characters are treated as qualified search input.
  - Logic conditions are not supported in the search function.

Browsing

- Default view is to expand the first level of Layouts and Cameras.
- Groups and folder created using the full client are displayed.
- Tap a layout group or folder name to expand or collapse the item.
- Select a Layout or Camera to view.



NOTE: Tap the **[X]** button to close the resource panel and return to the previous screen.

3.3 Layouts

Open the Resources panel to browse or search for Layouts created in the Desktop Client.

Viewing Layouts

- Types of layouts:
  - User layouts belong to your account and only you can access or view them.
  - Shared layouts are bound to a Site and only available when you are connected to the Site.
  - Cloud layouts are also known as Cross Site Layouts; these are available to the active Cloud account no matter which Site is currently connected.
- Contents of a Layout:
  - Items on a layouts do not retain their grid positions in the mobile client.
  - Only resources available to the user are displayed in the layout.
  - Integrations are not supported within mobile client layouts.
  - Camera names are prefixed with a red-dot when recording is enabled.
  - I/O modules and audio only devices may have limited functionality.
- "**No cameras available**" is displayed when:
  - The layout was created without cameras.
  - Users lacks permission to view all cameras that are on the layout.
  - Cameras deleted after the layout was created.
- Searching while viewing a layout will search all Site devices and is not limited to the devices on the active layout.

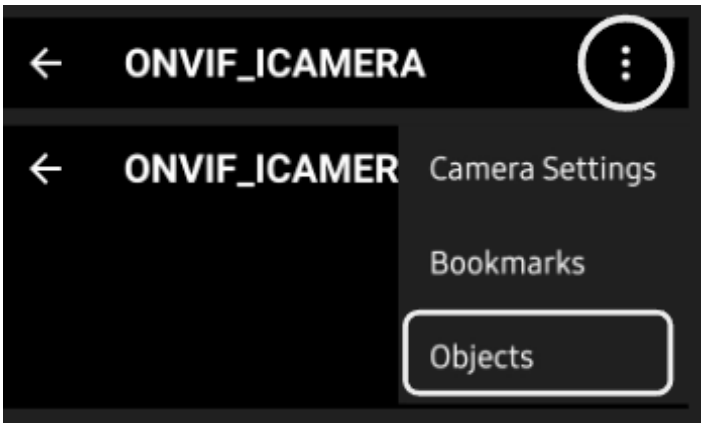
3.4 Object Search

Object search utilizes advanced analytical methods and optional plugins to recognize objects within a video stream. The mobile client can only offer the analytic options that have been configured in the desktop client for the selected device. The performance of object search will vary based on each camera and plugin combination. Contact the equipment vendor or solution provider for more information.

Access Object Search

- When the Timeline View is open, tap the 3-dot icon to the right of the device to open the sub-menu and select **Objects**.
  -OR-
- When the Device List is active, tap the Search Icon that is focused on an object and located in the center of the bottom toolbar.

NOTE: Default or previously defined filter and object detection settings may limit initial results.

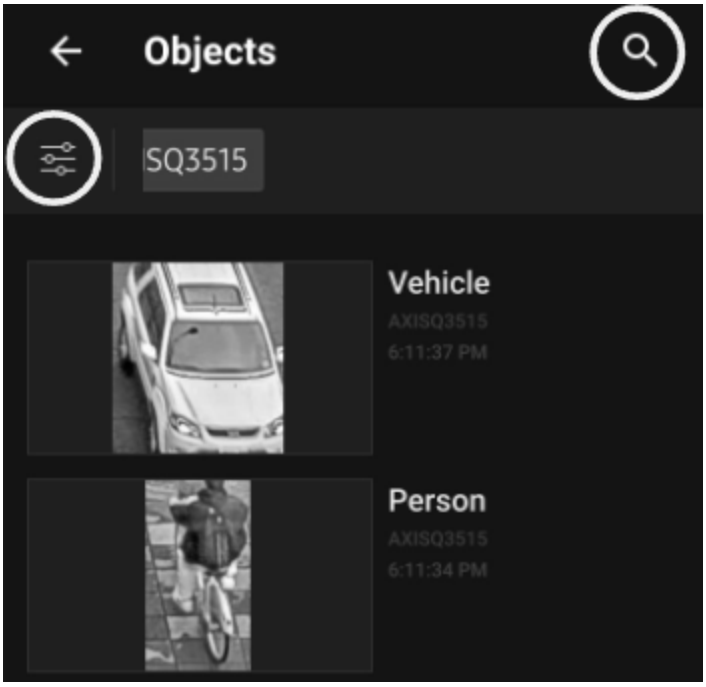


Results Display - Filter and Search

The Objects display screen includes a search function and a filter button that opens a sub-menus for selecting additional object detection parameters.

In the example screen:

- The camera name is SQ3515.
- No search and filters are set (shown next to camera name).
- Multiple **'vehicle'** objects have been identified.
- One **'person'** object has been identified.

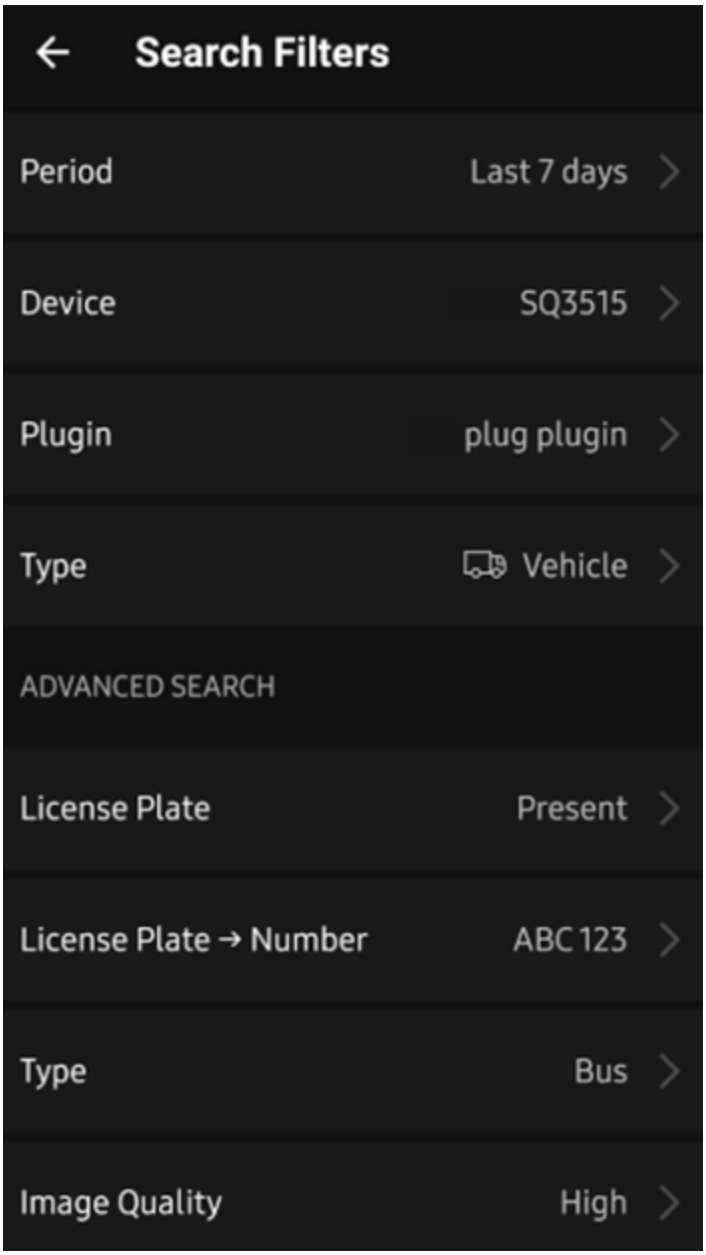


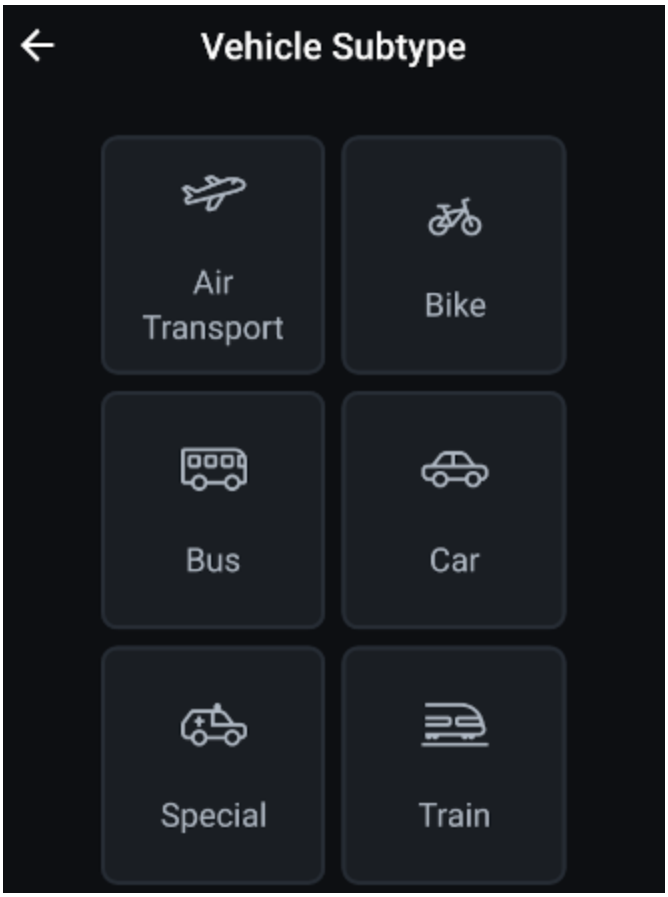
Set Object Filters

- The filters and options available vary depending on the devices selected.
- Results from all available devices will be shown unless a specific devices are selected.
- Tap on a filter label to access additional options.
- Press the back arrow button to apply the changes and refresh the search results.

The following filters are always available:

- Period (last day, last 7 days, last 30 days).
- Device (select from 1 to all).





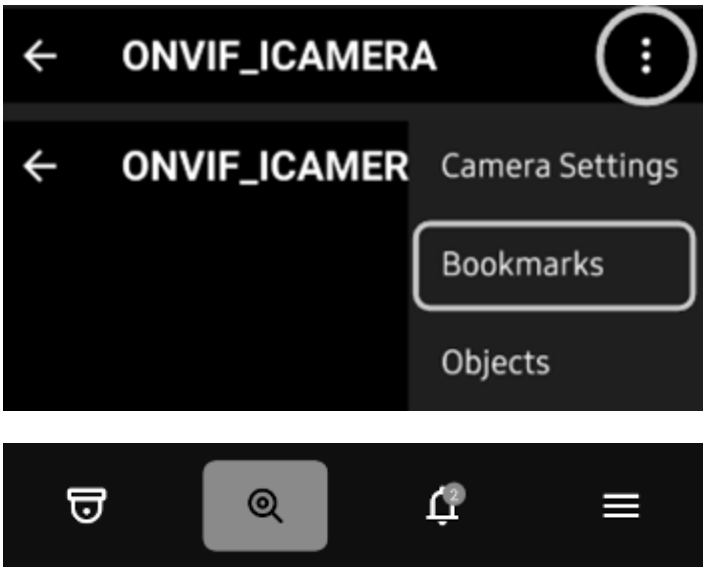
3.5 Bookmark Search

The mobile client can search available archives using device, time period, and keyword filters to find existing bookmarks, and then view and Export bookmarks - the mobile client cannot create bookmarks.

Open Bookmark Search

- When the Timeline View is open, tap the 3-dot icon to the right of the device to open the sub-menu and select **Bookmarks**.
  -OR-
- When the Device List is active, tap the Search Icon that is focused on an object and located in the center of the bottom toolbar, and then select **Bookmarks**.

NOTE: Default or previously defined filter and object detection settings may limit initial results.



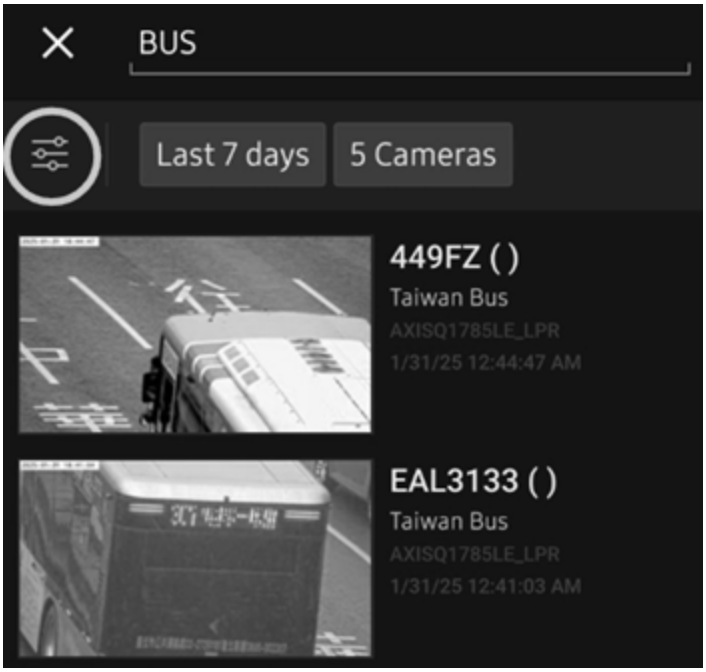
Filter and Display Bookmarks

The Bookmark display includes filters for devices and predefined time periods of the last day, the last 7 days, and the last 30 days - or select no filters to see all bookmark in the archive.

- In the example screen:
  - Five cameras are searched.
  - Only the last 7 days are searched.
  - The keyword BUS is manually entered.

This search example returns multiple, existing archive bookmarks that match the filters.

Tap a thumbnail to play or Export a bookmark.



3.6 Sharing Video

Enterprise Site users can generate and share a link to an existing bookmark, or create a new bookmark from the results of an Object Search, and then share the new bookmark using the services available on the mobile device. Shared video is accessible by anyone with the link, and password, if set.

How to Share Video Links

Sharing a Bookmark:

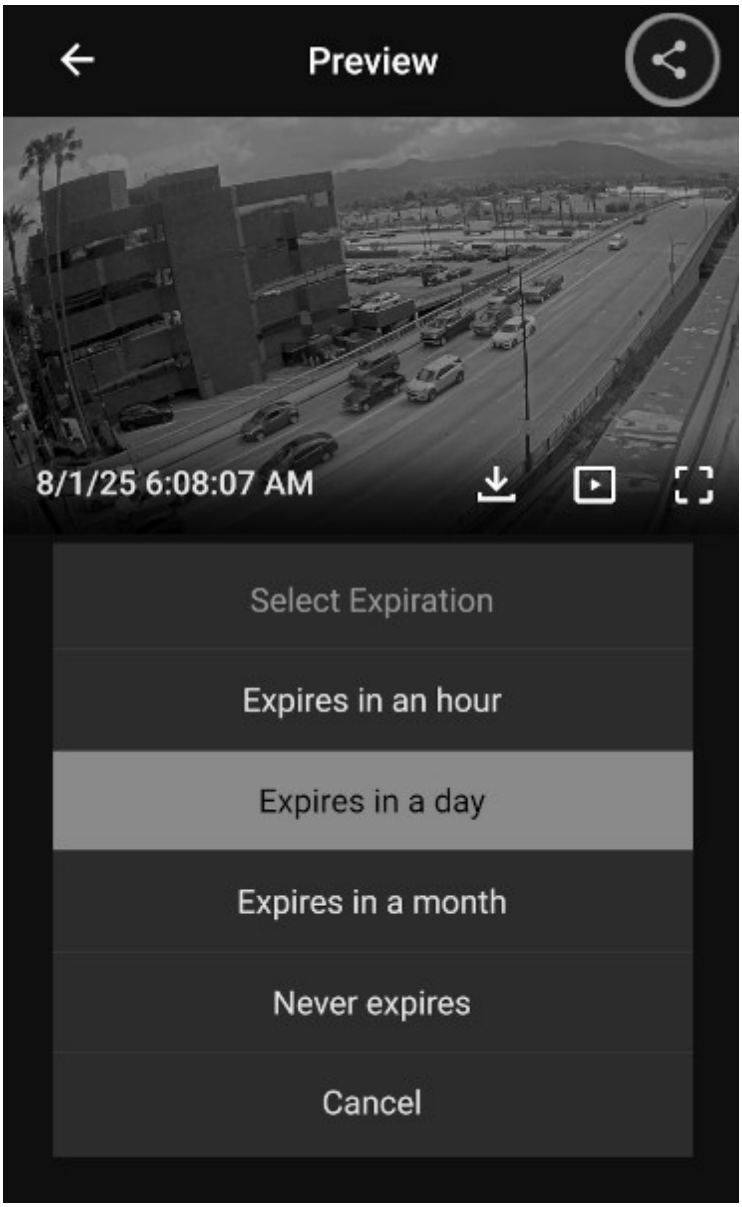
1. Use Bookmark Search to locate a bookmark to be shared.
2. Open a bookmark preview.
3. Tap the sharing icon and select an expiration period (hour, day, month, never).
4. Add an optional password (required for playback).
5. Share the link using the mobile device tools.

Sharing an Object:

1. Use Object Search to locate a video segment to be shared.
2. Tap the sharing icon and select an expiration period (hour, day, month, never).
3. Update the bookmark name & description.
4. Add an optional password (required for playback).
5. Share the link using the mobile device tools.

NOTES:

- The bookmark search results will place a SHARED banner on each bookmark thumbnail or sharing icon that has a active link shared.
- To remove a shared link, open the sharing panel as described above and then slide the switch to disable all sharing of the current bookmark



3.7 Motion Search

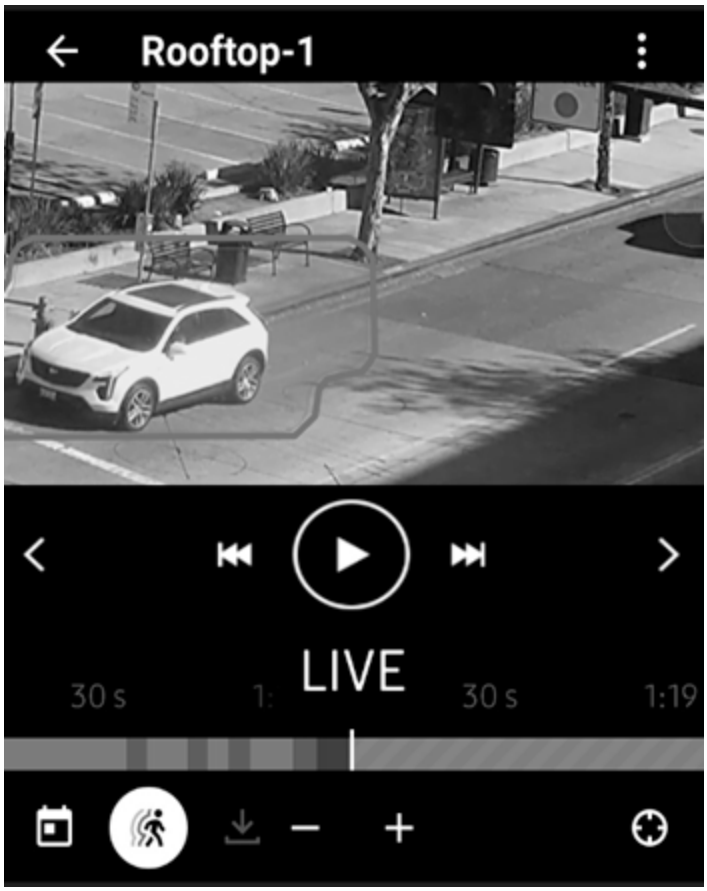
Motion Search can be applied to the entire video frame or a specified region of interest.

Enable Motion Search

- Tap the moving person icon on the toolbar to activate motion search—the icon is highlighted when motion search is enabled.

Live stream, full image motion detection

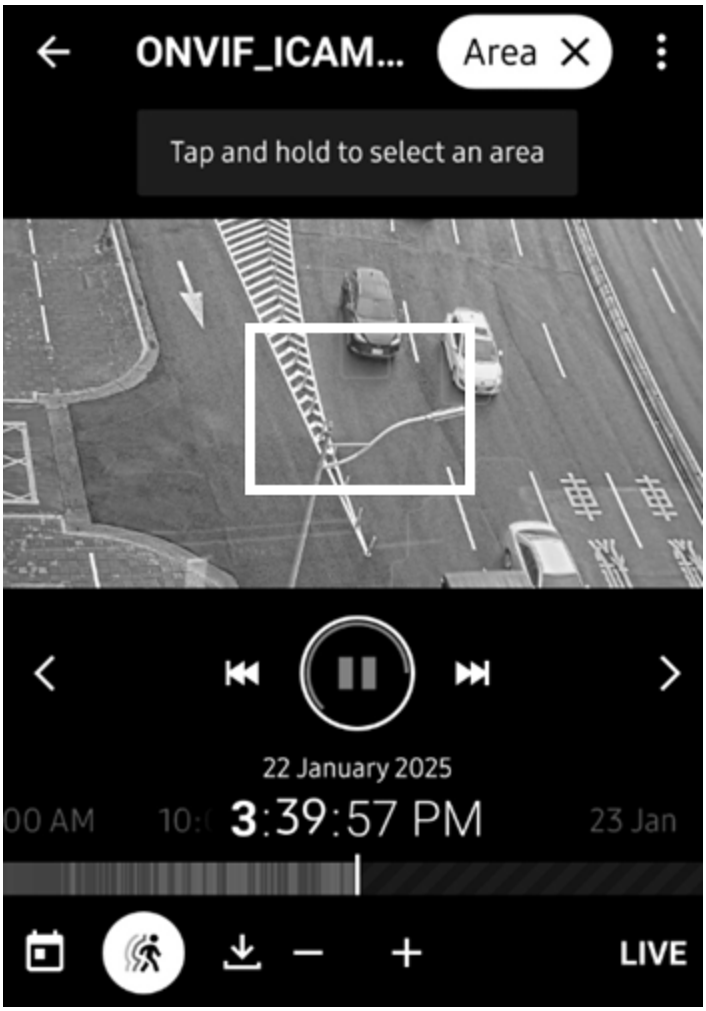
- The back arrow, device name, and 3-button Camera Options menu icon are displayed in the header of the motion search screen.
- Red squares overlay where motion is detected.
  - In this example, the white vehicle is in motion.
  - An outline of the motion detection squares is added for emphasis.
- Archive parts with motion detection are colored in red.
- The double-arrow buttons on either side of the play-pause control jump to the previous or next chunk of detected motion, when motion search is enabled, or the previous/next chunk of recorded video when motion search is not enabled.



Set a Region of Interest

Motion search of an archive can be limited to a defined region on interest. During playback, all motion in the frame is still be detected, but only motion in the region of interest is used to generate the motion search results.

1. Press and hold the video display at the starting corner of a new area of interest.
2. Drag the region of interest until it covers the desired area.
   - Reset the starting corner by performing the tap-and-hold action again.
   - A white square on the display indicates a defined region of interest.
   - Tap the Area Clear button to remove a region of interest.



3.8 Timeline View

Selecting a device from the device list, the search results, or the list of devices that belong to an accessible layout will open the viewing panel and display the information or video stream from a single device.

Device Title Bar

- The back arrow returns to the previous screen.
- The active device name is displayed.
- 3-bot menu for the Camera Options menu.

Device Viewing Area

- Double-tap to zoom in at the tapped location.
- Use the pinch or spread gesture to control zoom.
- Tap the display to toggle the control and information overlay.
- Touch, hold and drag to create an area of interest.

Play - Pause - Seek Control

- The outer, single arrows switch to the previous or next device.
- Inner double arrows jump to the previous or next chunk in the active archive.
- The center button toggles playback and pause.

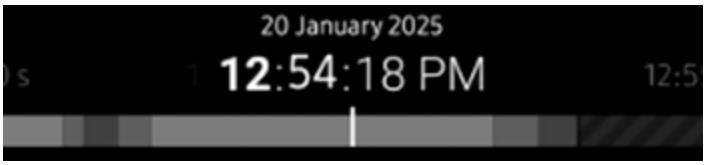
The lower part of the device view includes a timeline marker, timescale, playback status (LIVE or timestamped), and a toolbar that displays the features available on the current device.

Timeline - Live View

- Tap the timeline to jump to a different position.
- Touch and drag the timeline to seek relative to the timeline scale.

Timeline - Archive View

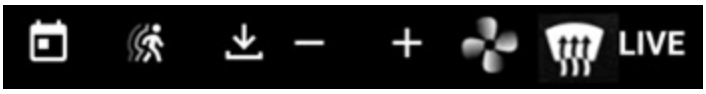
- Pinch or spread the timeline to adjust the scale.
- Drag the timeline to explore the archive.
- The Client Setting of server or device time is used for the the timestamp.
- Bright green sections are recorded video.
- Red sections are motion detected in the archive.
- Use the Calendar Widget to quickly change the day, month, and year of the playback position.



Toolbar Icons

The bottom toolbar contains icons representing the device capabilities, user's permissions, and configured Soft Trigger.

Available toolbar icons can include: Calendar Widget | Motion Search| Export Video | Timeline Zoom | Soft Triggers| Pan Tilt Zoom| Device Wiper | Device Heater | 2-Way Audio| LIVE mode



Note: Toolbar icons may be gray or hidden if unsupported by the device or user permissions.

3.9 Pan Tilt Zoom

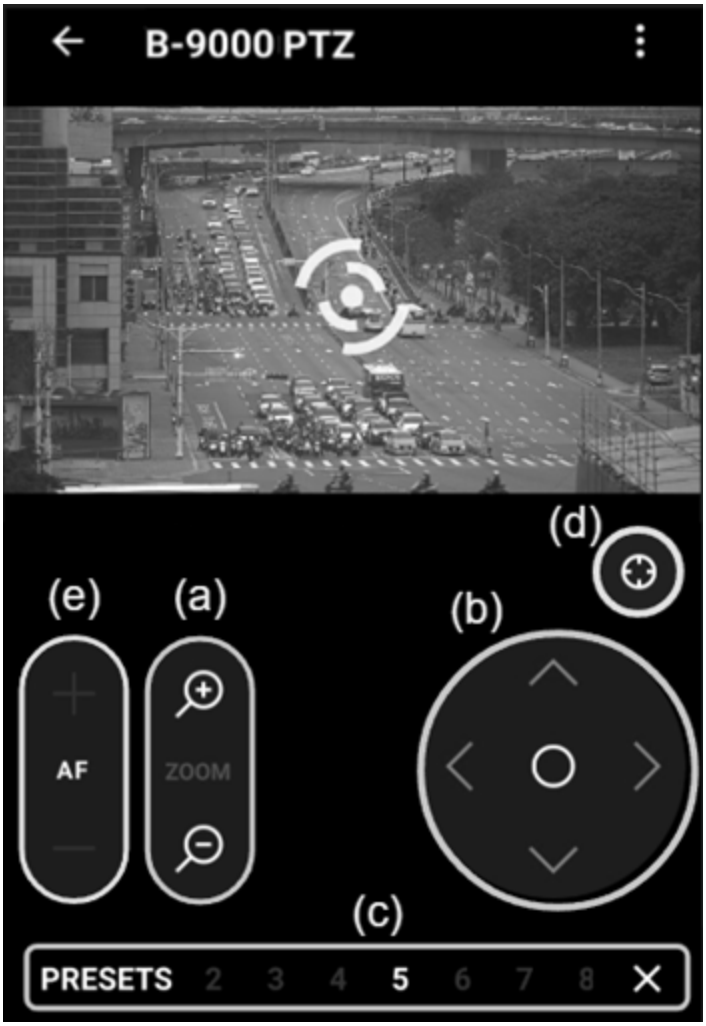
All devices that are detected as supporting Pan, Tilt, and Zoom functionality will present a PTZ control icon in the right corner of the bottom toolbar when in the single device viewing mode.

The PTZ Icon

Tap the PTZ icon to display the PTZ controls.

The PTZ Controls

The PTZ control panel has up to five functional areas labeled (a) through (e) for reference:



- (a) Zoom:
  - Tap the (+) or (-) icons to zoom by one level.
  - Hold the zoom icons for continuous zoom.
- (b) Manual position.
  - Drag across pad or hold a directional arrow to manually change device position.
  - A series of arrows can appear on the display as the device receives movement commands.
- (c) Recall PTZ Presets:
  - Tap a preset number to load the position
  - Side-scroll to see additional presets.
  - Presets can only be defined in the desktop client.

<u>Device dependent controls:</u>

- (d) Pinpoint positioning:
  - Tap the pinpoint position icon above the manual position control (b).
  - Touch a location on the image to automatically reposition to that point.
- (e) Auto Focus:
  - Hold the (+) and (-) icons to change focus level.
  - Tap the AF text to auto-focus the image.
  - Auto Zoom action icon shown in example.

3.10 Calendar Widget

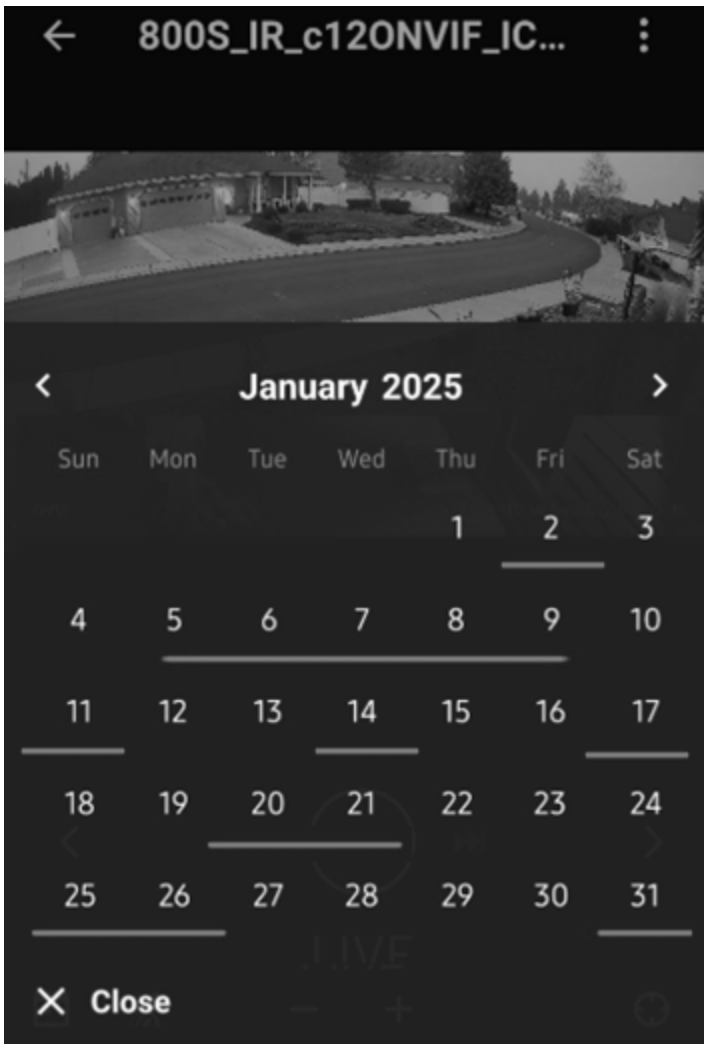
The calendar widget will quickly move the archive position marker to a specific day, month, or year.

Open the Calendar

- Tap the calendar icon to open the widget.
- The calendar icon is gray or unavailable when the active device lacks archived footage.

Navigating the Calendar

- The arrows on the sides of the displayed month and year move the calendar by one month.
- Scrolling up/down will move the calendar forward/backward by one month at a time.
- Dates that are underlined in green have recorded data in the archive.
- Selecting a date that does not have an underline will set the playback date to the next available date containing a motion chunk.
- To close the calendar, tap the the [X] button or or touch anywhere outside the calendar.



3.11 Image Dewarping

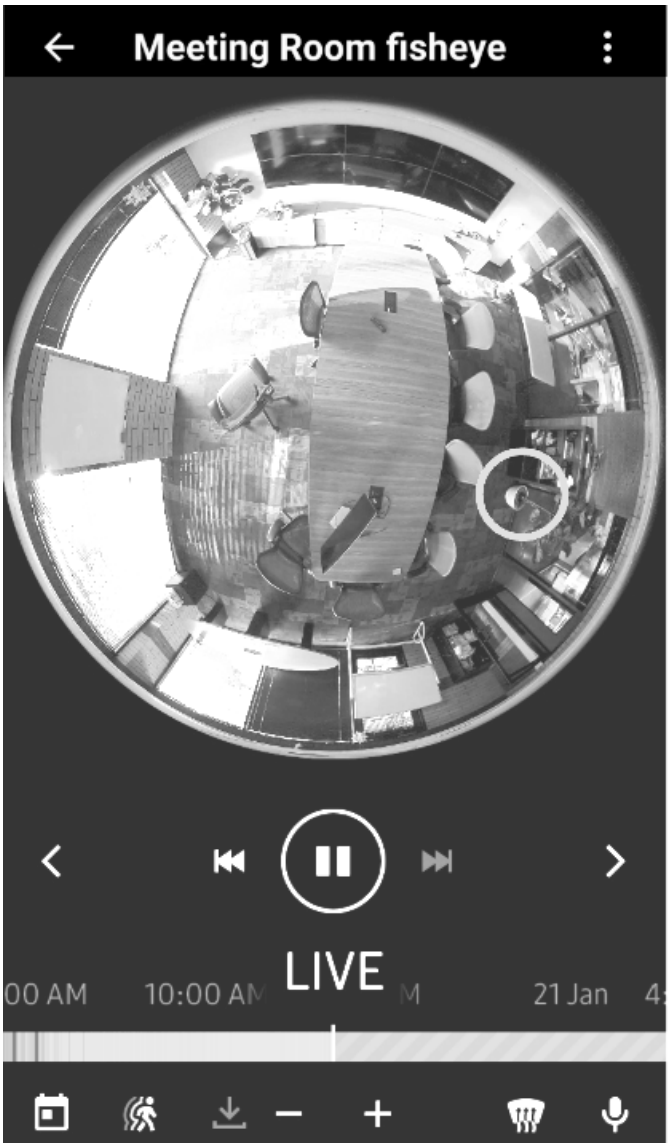
The mobile client can control the level of dewarping and rotate a LIVE or archived video stream when dewarping is enabled on a device. The mobile client cannot enable or disable dewarping on a device.

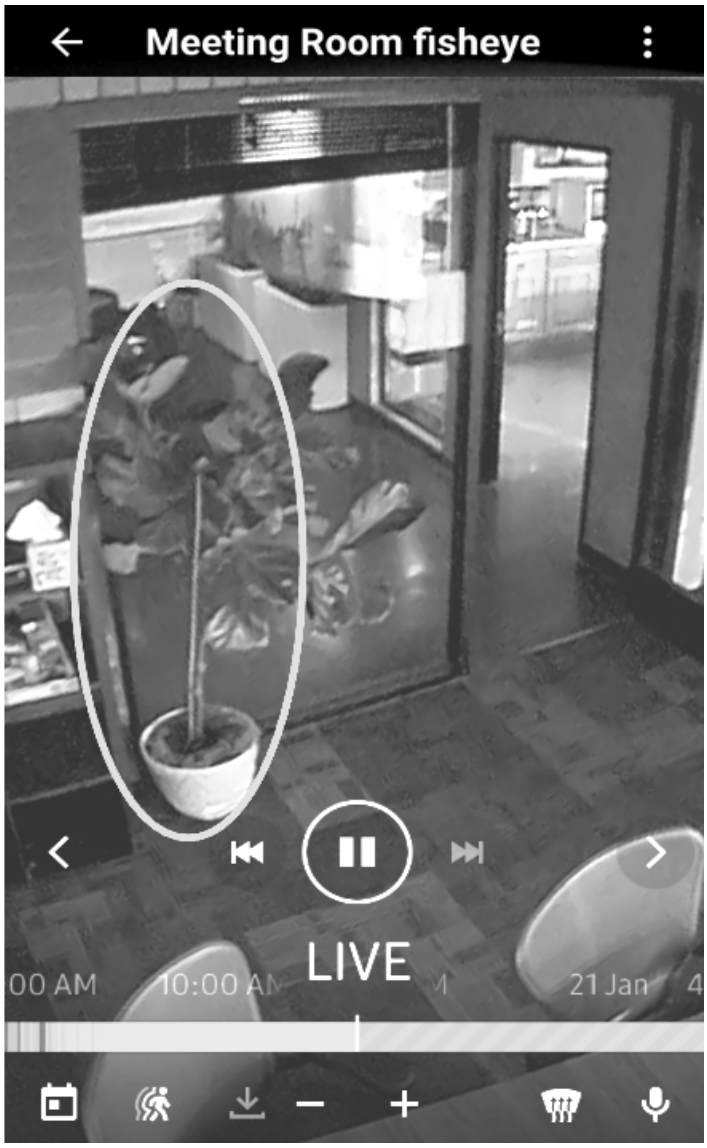
To Dewarp and Rotate a Device:

1. Open a device that has dewarping enabled.
2. Pinch or spread the image using two fingers.
3. Drag one finger around the image to rotate it.

In the example below, the image was dewarped and rotated to show the potted plant.

Image Dewarping Example



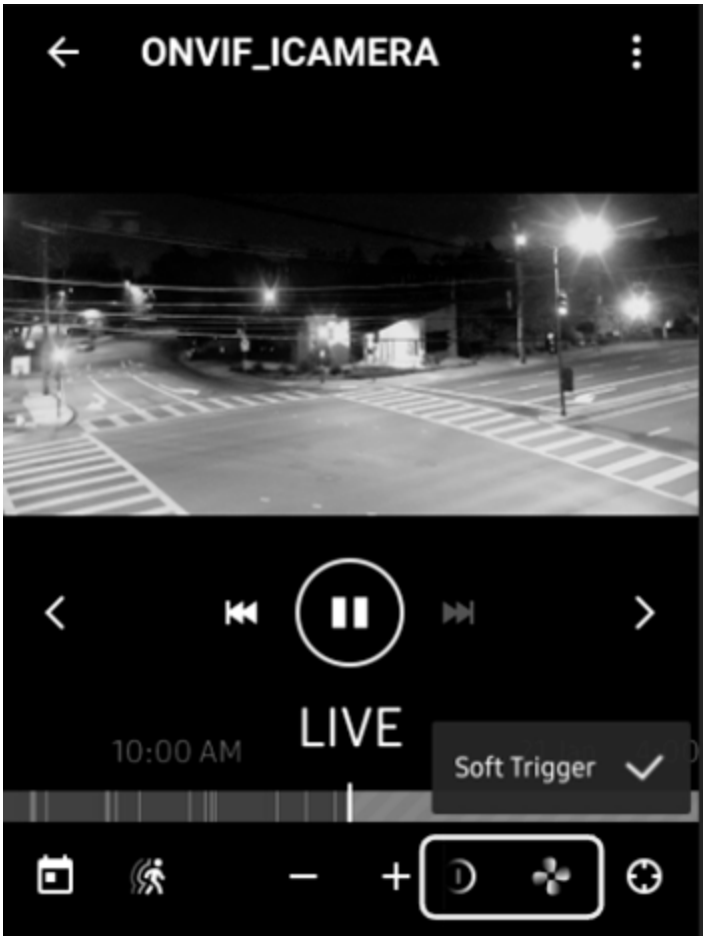


3.12 Soft Triggers

Soft triggers are touch icons that initiate a predefined action (sound an alarm, switch an I/O, send an email or text notification) when pressed. Soft triggers can only be configured in the desktop client and the icon will only be shown on devices defined in the soft trigger settings.

Activate a Soft Trigger

1. Open a Camera View with active Soft Triggers configured.
2. Ensure the camera is in the LIVE streaming mode.
3. Find the Soft Trigger icon on the bottom toolbar.
   - Scroll the Soft Trigger icons sideways to display additional options.
4. Press the Soft Trigger to start the action.
5. A confirmation message is temporarily displayed when a Soft Trigger is activated.



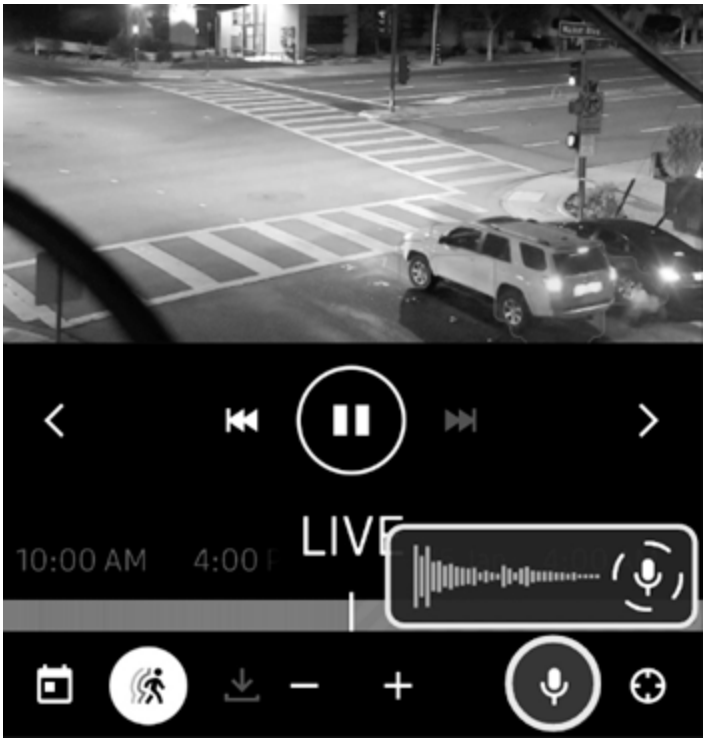
3.13 2-Way Audio

Devices detected to have a speaker will include a microphone icon on the bottom toolbar of the mobile client. User permission to access two-way audio on a device is set in the desktop client.

Send Audio to a Device

To send audio to a device:

1. Press and hold the microphone icon until the audio input meter appears.
2. Speak slowly and clearly into the mobile device to record audio.
3. All audio captured by the mobile device microphone will be transmitted.



Notes:

- Network capacity can impact the fluidity of two-way audio.
- There is no confirmation that transmitted audio was received or played on the target device
- There are many device settings and Site configuration options related to audio, please check the following when having issues with two-way audio:
  - The mobile client has permission to access to mobile device microphone.
  - The user has permission to access audio on the device or Site resource.
  - The output device is configured to receive and perform audio playback.
  - Volume controls and microphone sensitivity settings are in a useful range.

3.14 Export Video (beta)

Authorized users connected to version 6.0 or later servers can export existing archive chunks or manually selected video segments to the mobile device as an .MP4 file. Exported video files are saved to the download location specified by the default internet browser of the mobile device.

Export Video from Bookmark or Object Preview

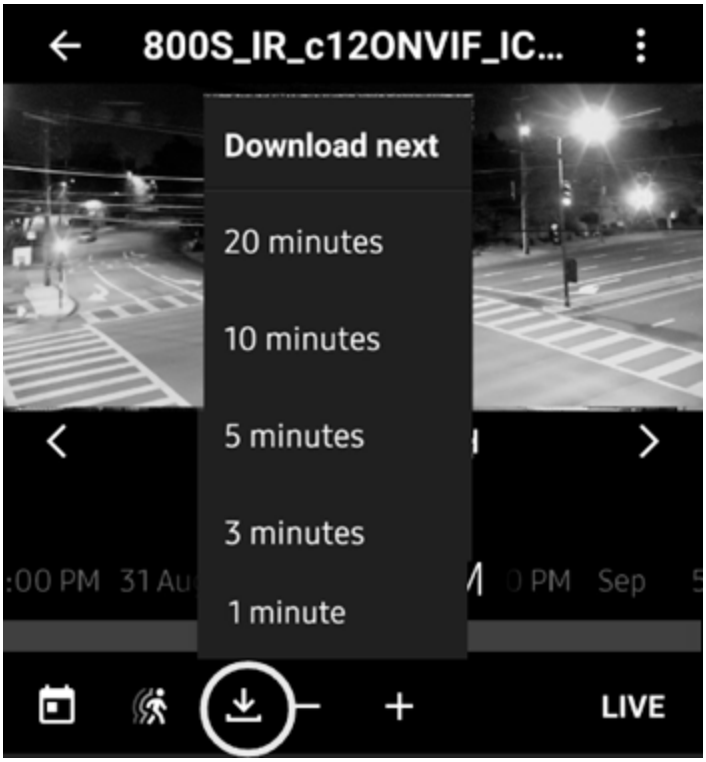
1. Use Bookmark Search or Object Search functions to open a chunk of video in the preview panel.
2. Touch the export icon in the lower toolbar
3. A .MP4 file will be saved to the mobile device.

Manually Select Video to Export

1. Open the device containing the video to export.
2. Pause the playback and set the position at the starting point of the video segment to export.
3. Tap the Export icon on the toolbar.
4. Select the duration of video to export starting at the current position from the options available in the "**Download next**" menu.

Known Issues with this beta feature:

- Exported video can be longer than selected.
- UTC timestamps are not supported.
- Exported quality can be low when transcoding.
- Playback issues on iOS when resolution changes.
- Audio may be incomplete or distorted.



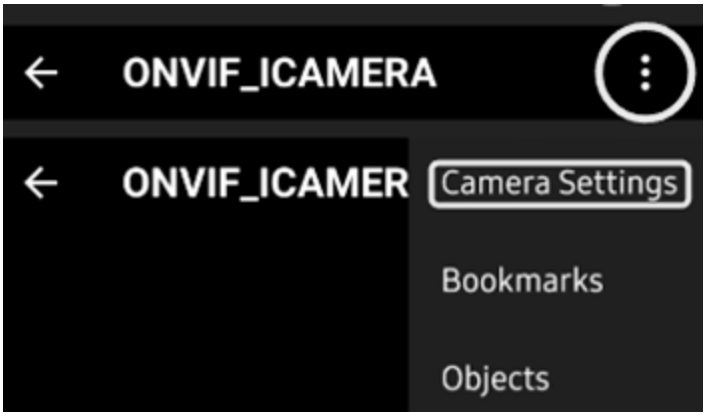
3.15 Camera Options

The mobile client can display camera information over the video stream, toggle if audio received from a device, and change the video resolution received from a camera. These are local settings only applicable to the mobile client experience and will not change Site settings for other users.

Open the Camera Setting Menu

To open the camera settings menu:

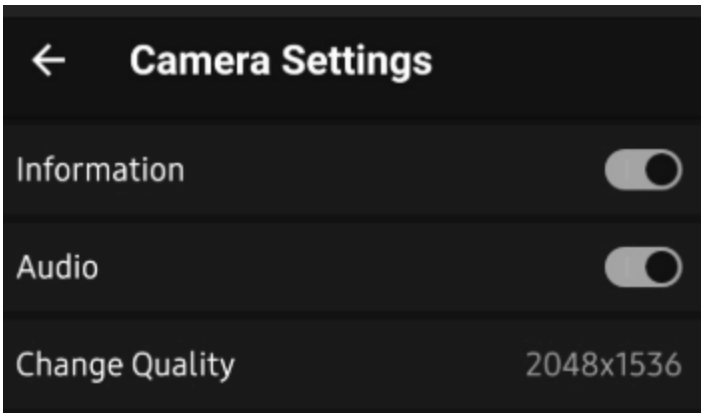
1. Tap the stacked 3-bot icon in the upper right corner of the mobile client to open the camera menu.
2. Touch the **Camera Settings** text to open the device settings menu.



Change Camera Settings

The mobile client can change the following camera options:

- **Information**: Provides an overlay that shows the following information, when available from the device:
  - The current video resolution,
  - The current frames per second,
  - Device bandwidth,
  - Other available information.
- **Audio**: Use the switch to select if the mobile device can receive audio.
- **Change Quality**: Touch to open the video resolution selection menu.
  - ARM servers will have limited quality options when they are unable to transcode video.
  - Quality options will vary per device.



3.16 Notifications

When push notifications are enabled in the Client Settings settings menu, the mobile client receives and displays notifications from all Cloud-connected Sites linked to the Logged in to Cloud Account.

Notification Icons

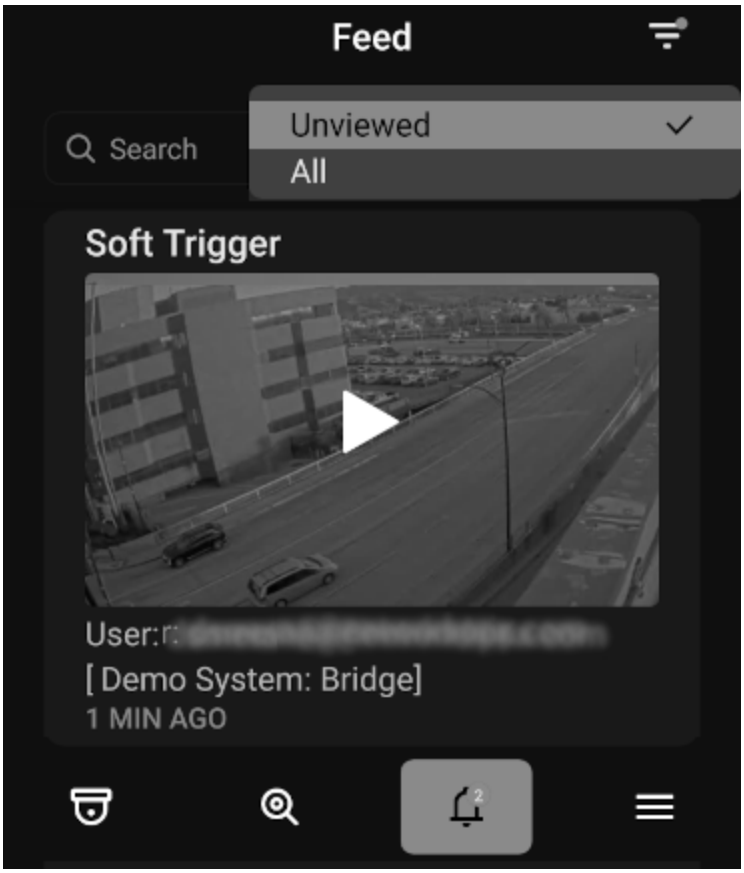
Bubble count of new notifications.

No (new) Notifications received.

Notification status (enabled / disabled).

Notification Feed

- Tap the filter icon next to the Feed title to select the types of notifications displayed.
- Notifications that have not been viewed will have a colored dot in the upper corner.
- The contents of a push notification will vary based on how the notification is configured in the originating Site.
- Typically a push notification includes the Title, a timestamp, notification text, and a thumbnail image from the device.
- Touch the playback icon in the center of the image to open the timeline view.
- The notification counter-bubble will dynamically update as notifications are viewed and new notifications are received.



3.17 App Settings

The App Settings menu is opened by tapping the gear icon on the The Welcome Screen, the Device List screen, or from the Disconnection dialog.

Use the slide-switches to enable or disable options - changes are applied immediately.

Interface

Live previews	Cameras with a secondary stream will be shown when the resolution is less than 800*600 or secondary stream i-frames when resolution is 800*600 or more. Single channel cameras and RTSP/HTTP feeds are shown LIVE when the resolution is less than 800*600 and a static thumbnail is shown resolution is 800*600 or more.
Use server time	When enabled, timeline displays the server time instead of the device time.

Security (see Server Certificates)

Save passwords	Log in to different Sites without re-entering your credentials.
Security (SSL Server Certificate options)	• Recommended (default) - Allows connections to servers with valid self-signed and public certificates. • Strict - Only allows connects to Wisenet WAVE servers with valid public certificates. • Disabled - The certificate will not be checked.

Performance

Enable hardware acceleration	Hardware decoding is available for H.264 and H.265 streams but may need to be disable if active streams or resolutions glitch or when hardware decoding cannot be enabled.
Enable software decoder fallback	When enabled, the mobile client will switch to software decoding when hardware decoding fails to process video. Software decoding may use extra computational resources.

Beta Features

Video Download	Enable Video Export functions and downloading the local device.
Speedup connections:	The client will attempt to improve network performance when enabled.
Maximum decoders count:	When enabled, the client will use all available decoders.

Push Notifications

Toggle	Enable to receive notifications from other user-connected Cloud Sites.
Site Selection	Tap the word (All) next to the switch to set which Sites can push notifications.

App Info

Display	Tap the heading to view version details.
Copy	Tap the copy icon to copy details to the device clipboard.

Server Certificates

Recommended (default)	The mobile client can connect to a server after certificate acceptance.. • **Connect to an UNKNOWN System** – The server provides a custom, self-signed, or public certificate without chain information, a prompt to use to "*Connect to the server for the first time*?" The certificate will stored the warning message will not reappear. • **Connect to a KNOWN System** — When connecting to a known Site with certificate(s) that cannot be verified, a prompt will warn that it "Cannot verify the identity of Server." The user will be prompted to check the certificate for issues and manually complete the connection by selecting **Connect**. This message will reappear.
Strict	Servers using default, self-signed certificates will be rejected by the mobile client. Only servers with a valid public certificate and the correct hostname can connect. The user will be prompted to check the certificate validity.
Disabled (not recommended)	The mobile client will bypass the validation process and connect to the server without a warning message.

Notes:

- Valid certificates are issued by a public Certification Authority and contain the completed certificate chain.
- Warning messages do not appear for servers with a valid (public) certificate and matching hostname.
- Public certificates without a certificate chain will be considered invalid.
- Certificates may need to be re-accepted at first connection after updating the mobile client.

Renewing a Certificate:

Renew self-signed certificates by restarting the server. Contact your Site administrator to renew public certificates.

Wisenet WAVE
Mobile Client User Manual