Vaidio User Guide

Version: 5.0.0

Table of Content

1. Introduction

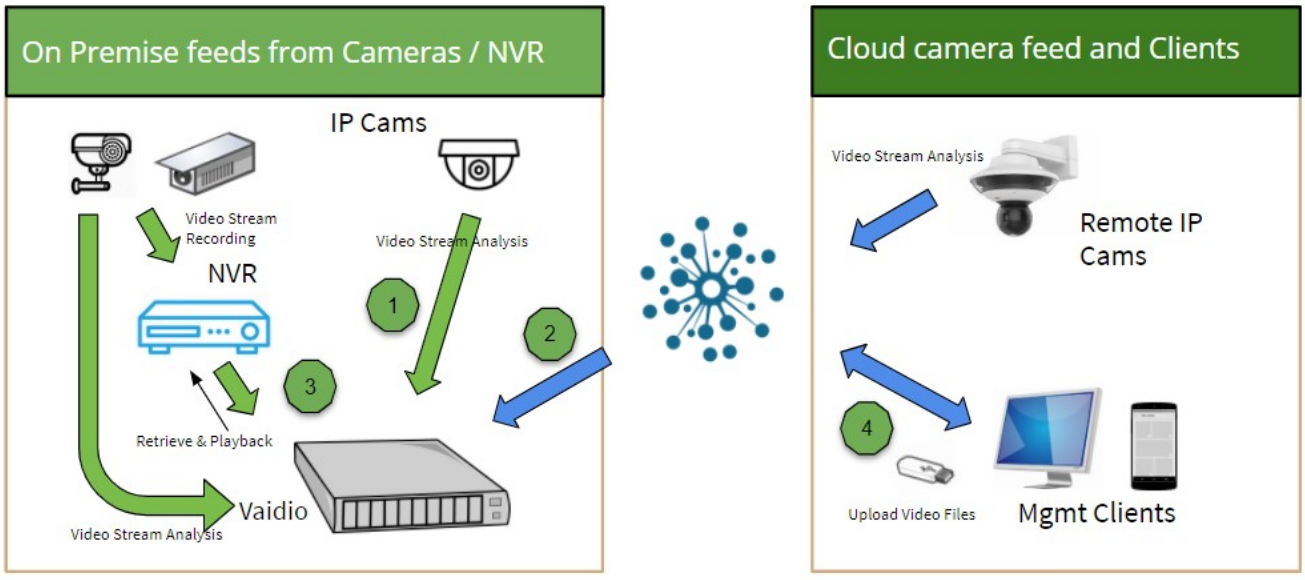
Vaidio uses deep learning technology for advanced AI Video Search, utilizing live streaming, and recorded videos from multiple Network Video Recorders (NVRs). The administrator can monitor the status of Vaidio, manually configure NVRs, cameras, or videos, and configure users with different privileges. The user can search for objects in analyzed videos with various criteria, upload videos, configure the range of retrieved videos for a camera, and apply analytic features such as Video Search, Intrusion Detection, Face Recognition, License Plate Recognition, People Counting, Vehicle Counting, Loitering and Illegal Parking to live streaming videos, video-search-based Statistics, and smart alert system. Vaidio supports up to eight languages including English, Traditional Chinese, Japanese, Korean, German, French, Spanish, and Arabic.

AI Model

Vaidio supports different AI models. When the AI models are switched, all functions, including Video search, Intrusion detection, and Alerts, are affected (in the defined alert rules, the object types change according to the selected AI model). The user will not be able to search for object type from the previous AI model after changing to a different model.

Environment Setup

Vaidio ia an analytic service can run without NVRs, in which case only live stream and uploaded files are supported, no video retrieval from NVRs.



Default IP	192.168.100.100 or the IP of SW installed PC
Default Login	admin / admin888

2. System Startup

When the environment has been set up, refer to the following steps to start the Vaidio system.

1. Make sure that all NVRs and cameras are powered on and functioning properly.
2. Press the power button on Vaidio to turn on.
3. Wait about 4 minutes for Vaidio to be ready.

3. Software System Requirements

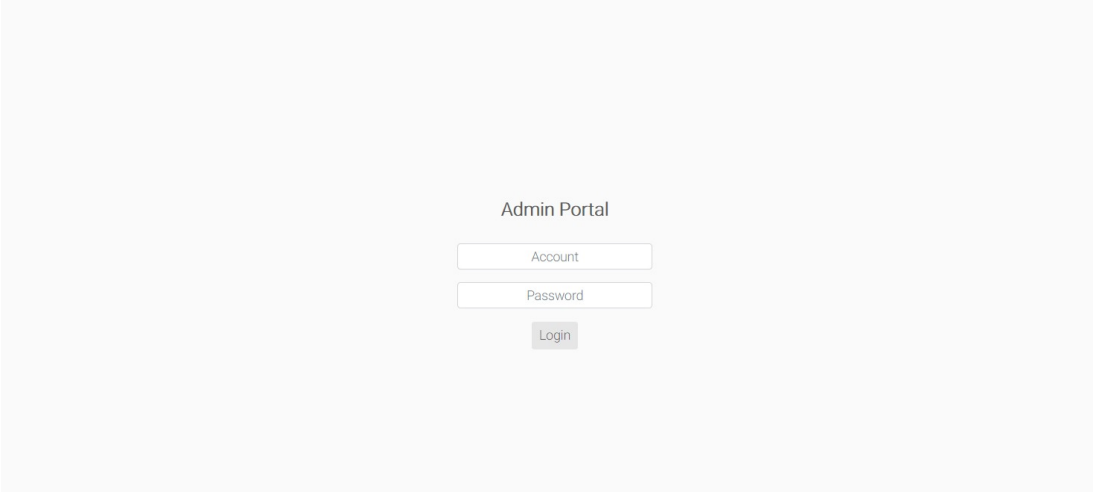
To use and view Vaidio properly, the user will need to install one of the following software on the computer.

- Google Chrome
- Best screen display 1920 x 1080 px

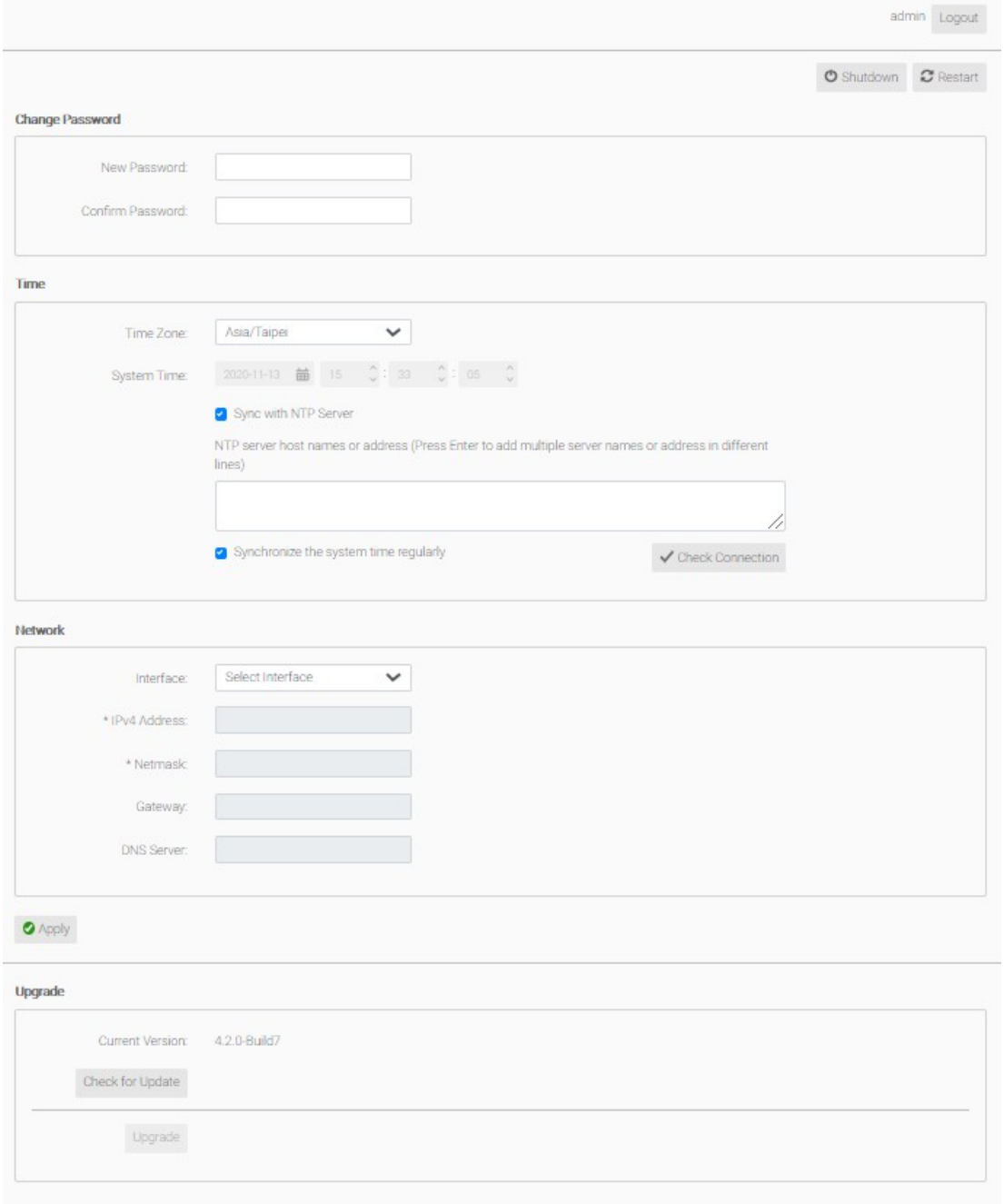
4. Admin Portal

After Admin Portal is installed, access http://ip:8000 and log into Admin Portal for necessary configurations: Change Password, Time, Network and Upgrade.

Log into the Admin Portal using the manufacturer provided Account and Password when you purchase Vaidio.



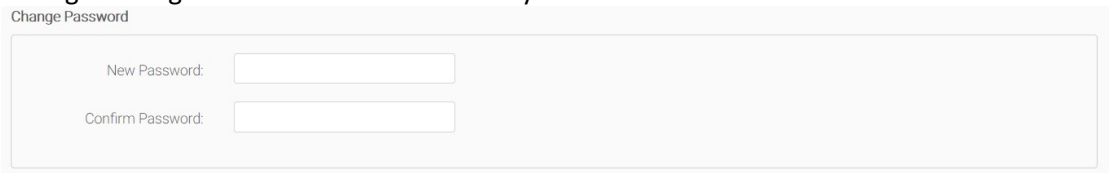
Admin Portal Login window



Admin Portal window

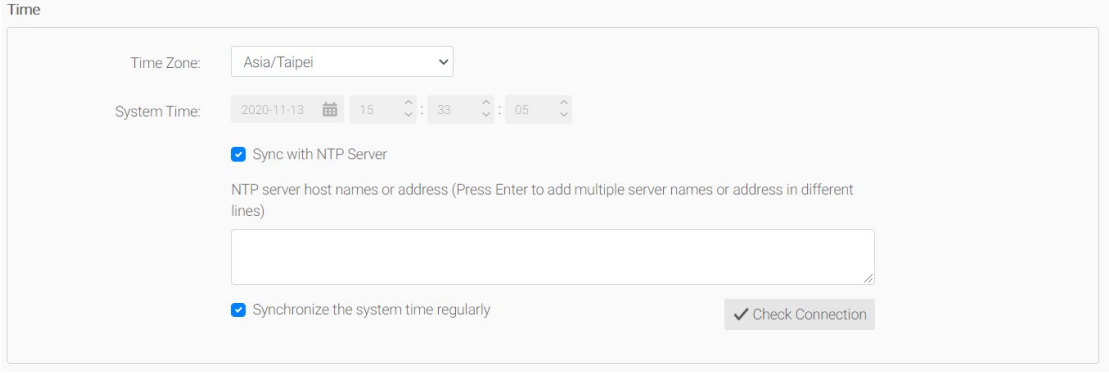
Change Password

Admin can change the login Password but should always use the default Account.



Time

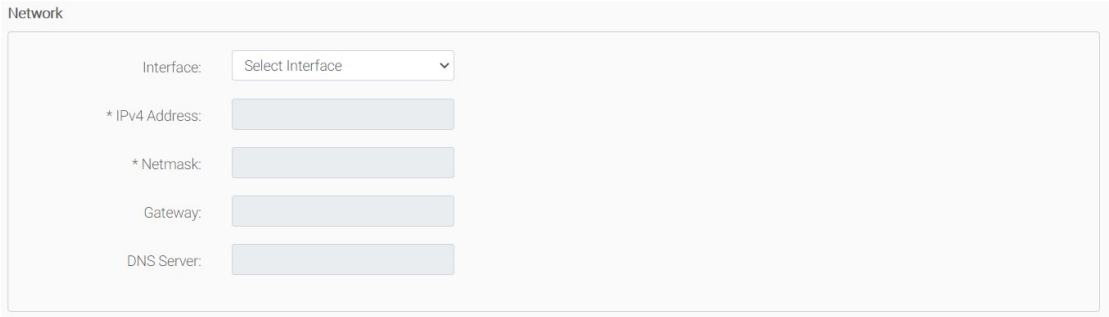
Set up Time Zone and System Time



Item	Description
Time Zone	Select the user's time zone from the list.
System Time	Display the current date and time for Vaidio. Clear the **Sync with NTP server** checkbox to manually select the date and time for Vaidio.
Sync with NTP server	Select to enter NTP servers in the textbox below. Each server takes one line.
Synchronize the system time regularly	Select to consistently synchronize the time for Vaidio with the available NTP server. This checkbox is available after the user has clicked on **Check Connection** and an NTP server is found.

Click **Check Connection** to detect if any of the NTP servers configured above is available. When an NTP server is detected, the server connected displays on the left of the **Check Connection** button. If the NTP server is available.

Network
Set up system network



Select the Interface, then enter IPv4 Address, Netmask, and Gateway, enter DNS servers for Internet connection if needed.

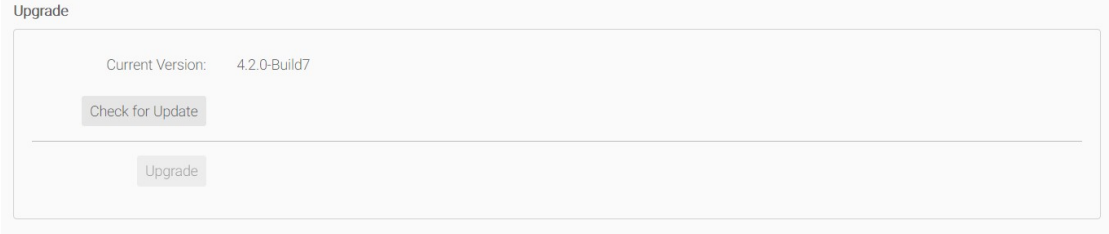
Apply
Click **Apply** to apply above change(s).

Upgrade
Make sure the product warranty is still valid and internet connection is stable to perform upgrade process.

Note: You cannot upgrade if the warranty date is expired. Go to System/License page to renew license and get valid warranty date. Then come back to admin portal and does online upgrade.

Note: Contact your support team for offline upgrade.

Click **Check for Update** to check if there is updated version available.
Click **Upgrade** if there is updated version available for upgrade.
After click Upgrade, you will see progress bar indicate the progress of upgrade



5. Log into Vaidio

1. Open Google Chrome on the computer.
2. Enter the IP address or domain name of Vaidio and directory: http(s) ://< ACCESS_IPADDR> or http(s)://<ACCESS_DOMAIN>.
   <ACCESS_IPADDR> or <ACCESS_DOMAIN> is the IP address or domain name of Vaidio.
   Ex. http(s)://192.168.100.100 (Factory default)

Login URL

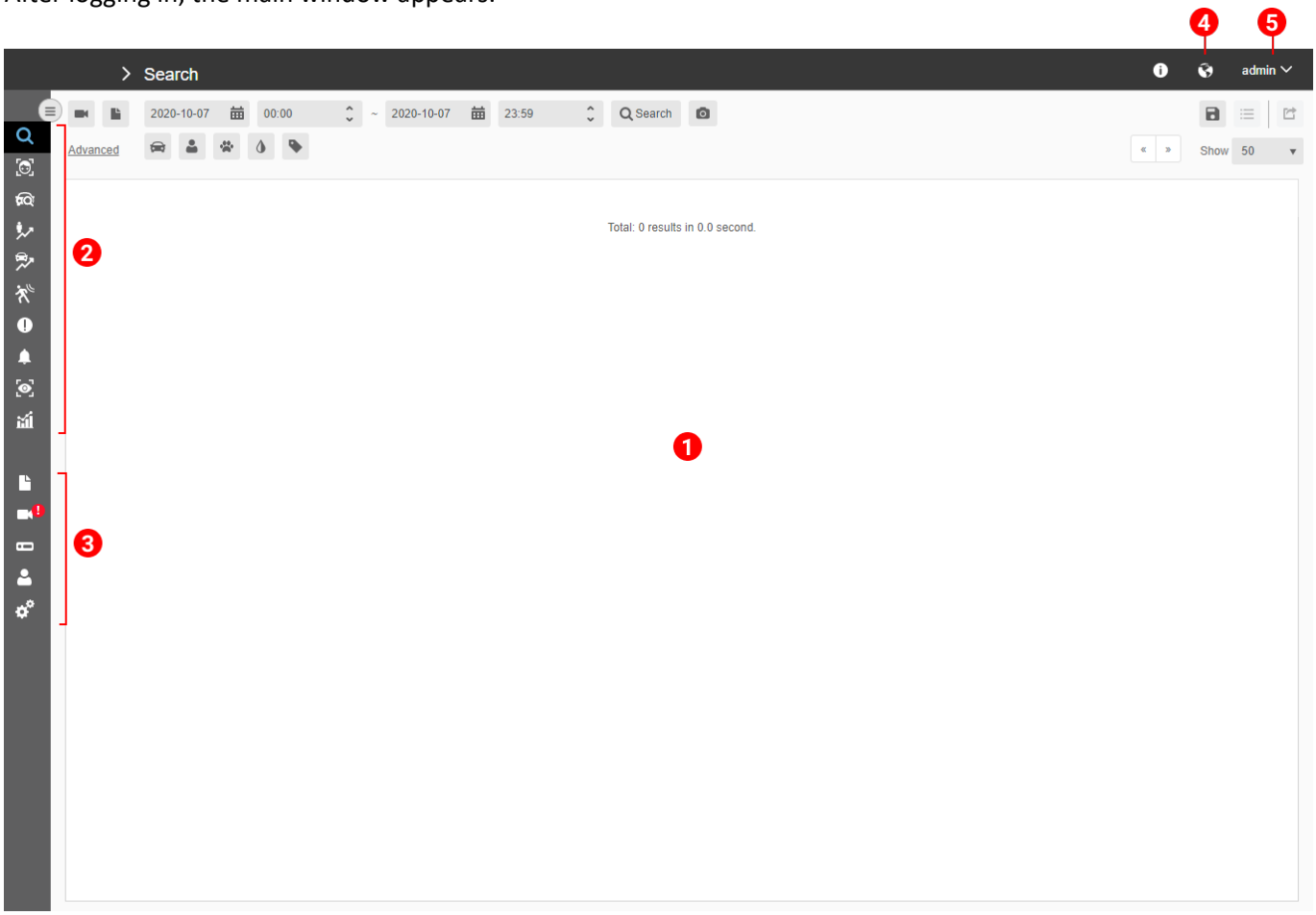
3. Press ENTER.
4. Check that the following login window is displayed.

Login Window

5. Enter the administrator-level username in **Account** and password of the administrator in **Password**, and click **Login**. The username and password are provided with the Vaidio system when shipping.

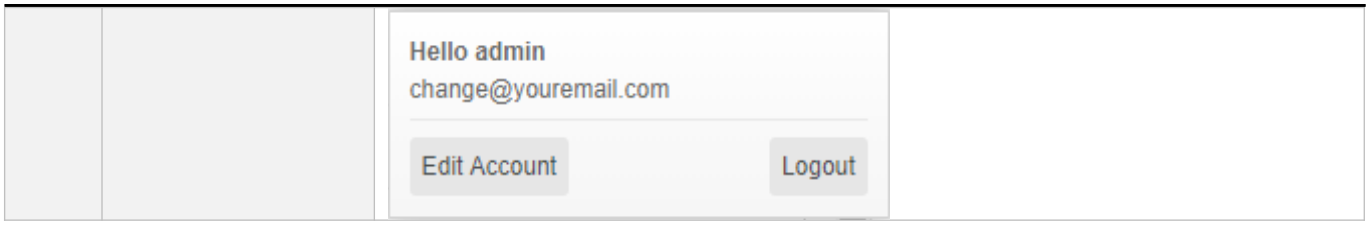
6. Main Window

After logging in, the main window appears.



Main Window

No.	Name	Description
1	Main Window	This area displays the search results and other functional buttons.
2	Functional Menu	Click the icon to access the feature application for: Search, Face Recognition, License Plate Recognition, Identity Recognition, People Counting, Vehicle Counting, Intrusion, Abnormal, Alert, Live View, and Statistic. **Note:** Mouse hovers over the menu icon to view the full name in the tooltip.
3	Management Menu	These icons are for managing and configuring information and data for Vaidio. Vaidio, Files, Cameras, NVR, Users, System **Note:** Mouse hovers over the menu icon to view the full name in the tooltip.
4	Language	Click the icon to select the language for the user interface.
5	User Account	User account name. Click to **Edit** or **Logout** from the account.

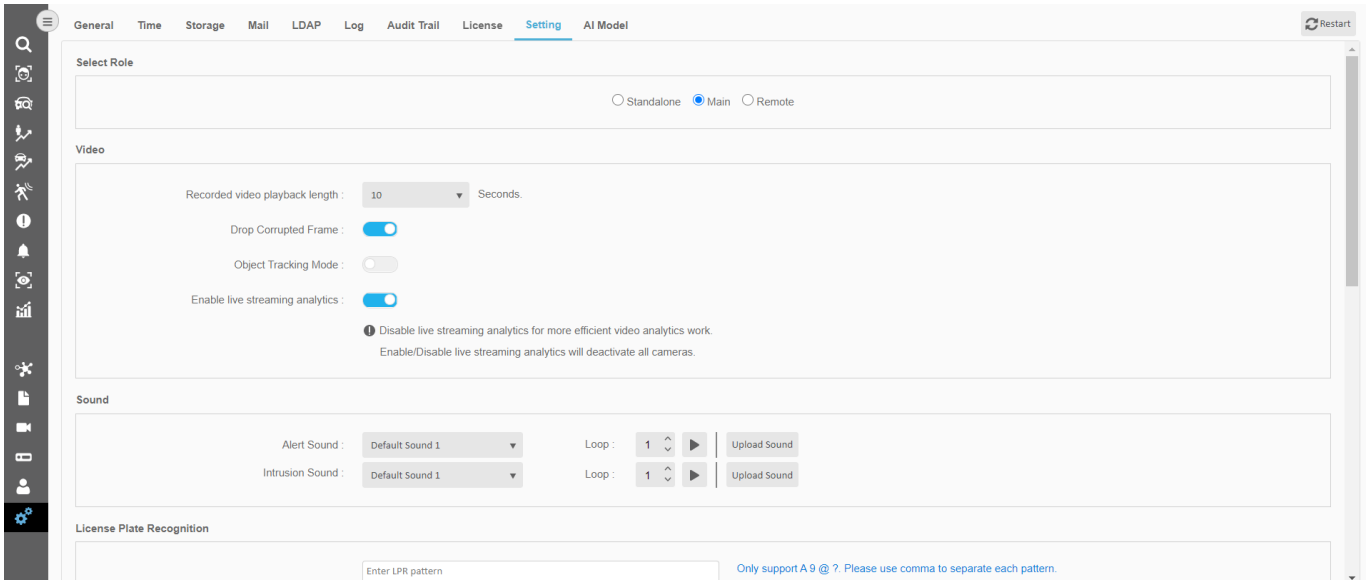


Click ☰ to expand the menu bar to see the full name of feature application and click ‹ to collapse the menu.

Some function tabs may be grayed out in the display and cannot be accessed. To enable the desired function, contact Aicuda for more details.

Standalone, Main, and Remote

Main, Remote, and **Standalone** are established in System/Setting; Standalone is the default.
Once a Vaidio Role is defined, the system will have few changes.



System/Setting Select Role

Some functions will be hidden and disabled in Remote and Standalone.

	Vaidio Page	Vaidio Filter
Standalone	X	X
Main	O	O
Remote	Only System tab is left for access	

- Vaidio page and filter are hidden for Standalone.
- When changed to Remote, all functional and management menu are hidden except for the System page.

System Initialization

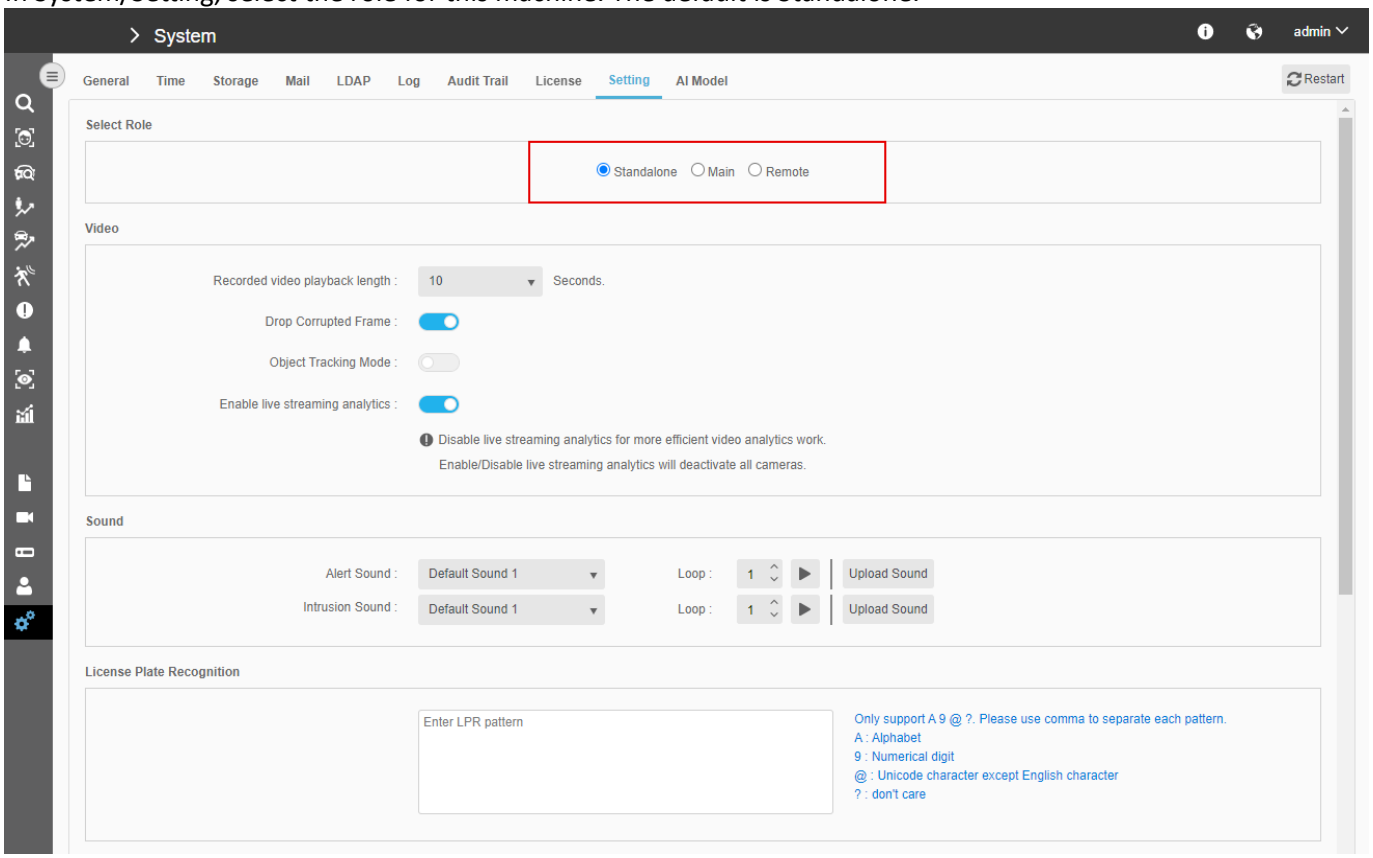
When logging in for the first time, the user needs to customize the system environment.

1. Select the Role
2. User password and email account
3. System Time

4. Notification Server Account

Select the Role

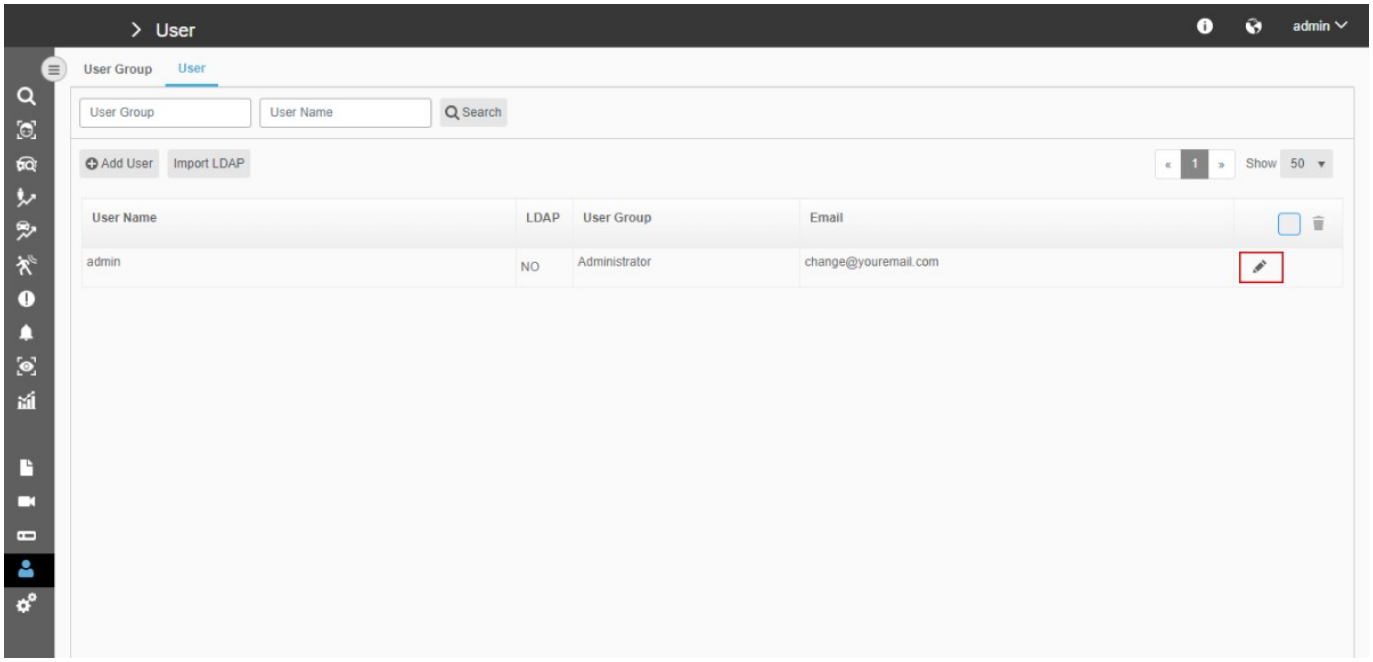
In System/Setting, select the role for this machine. The default is Standalone.



Select Role

User password and email account

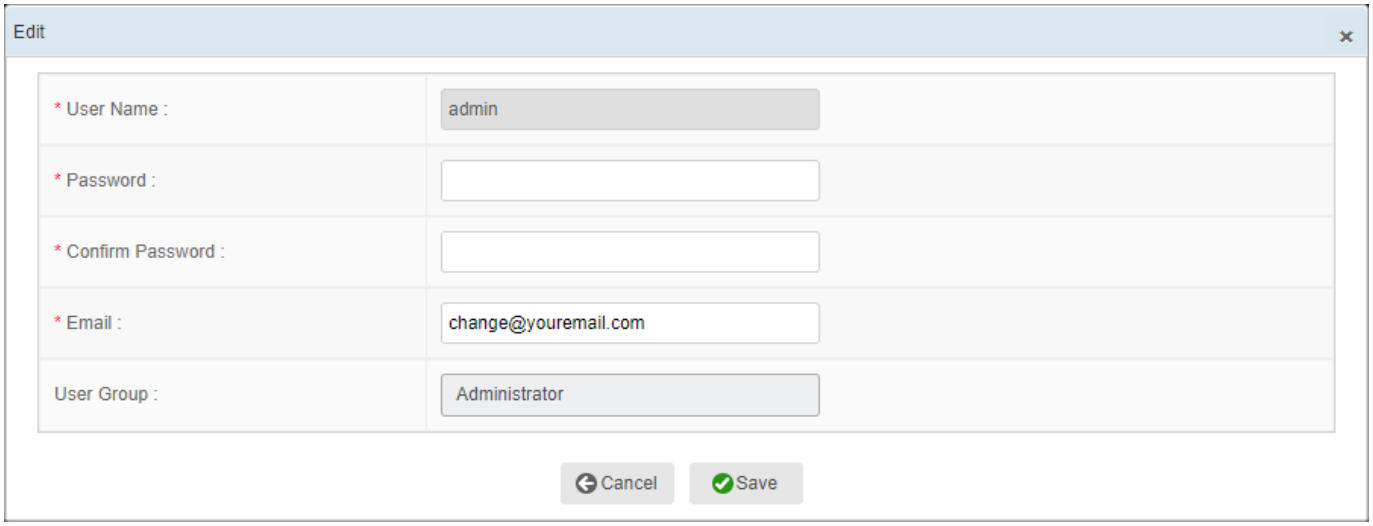
To change the login password and email account, go to the **User** tab and click the **Edit** button for the admin user.



Edit User Account

In the Edit User window, set the new login password and email to ensure the security of the computer account. The email account used here is for alert notification and account recovery when forgetting the password.

Refer to Chapter 21 User for more details.

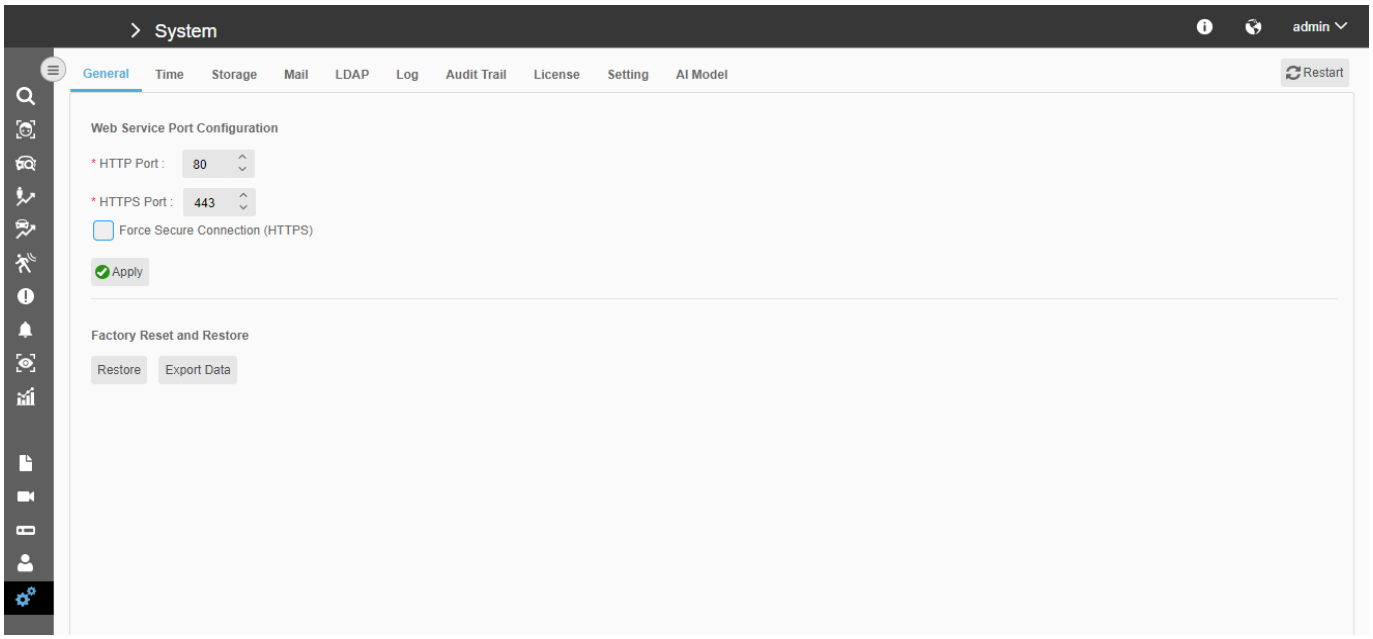


Edit User Window

Server Name

Change the Server Name in the **System/General** tab, input the new Server Name, and click Apply to save the changes.

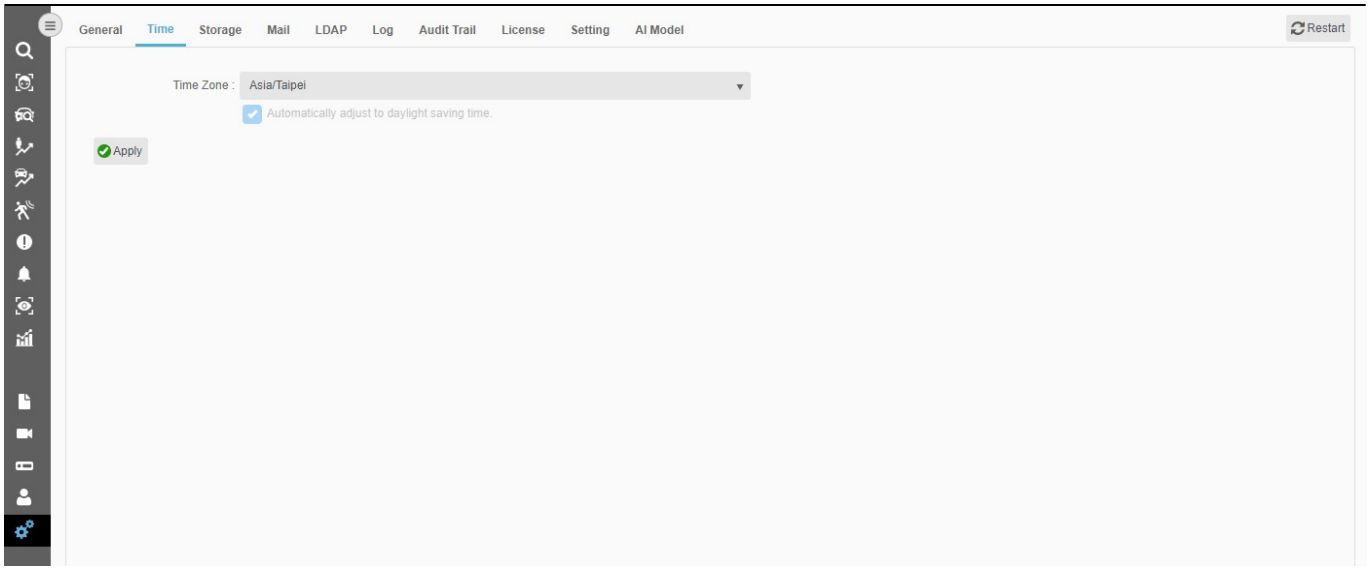
Refer to Chapter 22.1 General for more details.



General Window

System Time

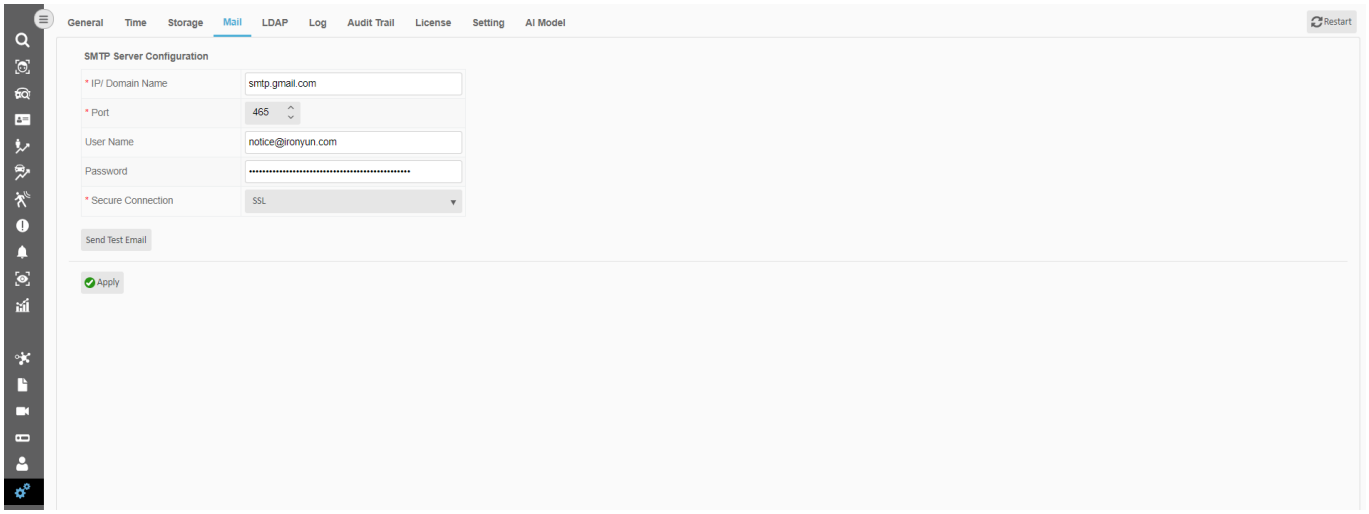
Change the System Time to the local time zone.



Time Window

Mail Server Account

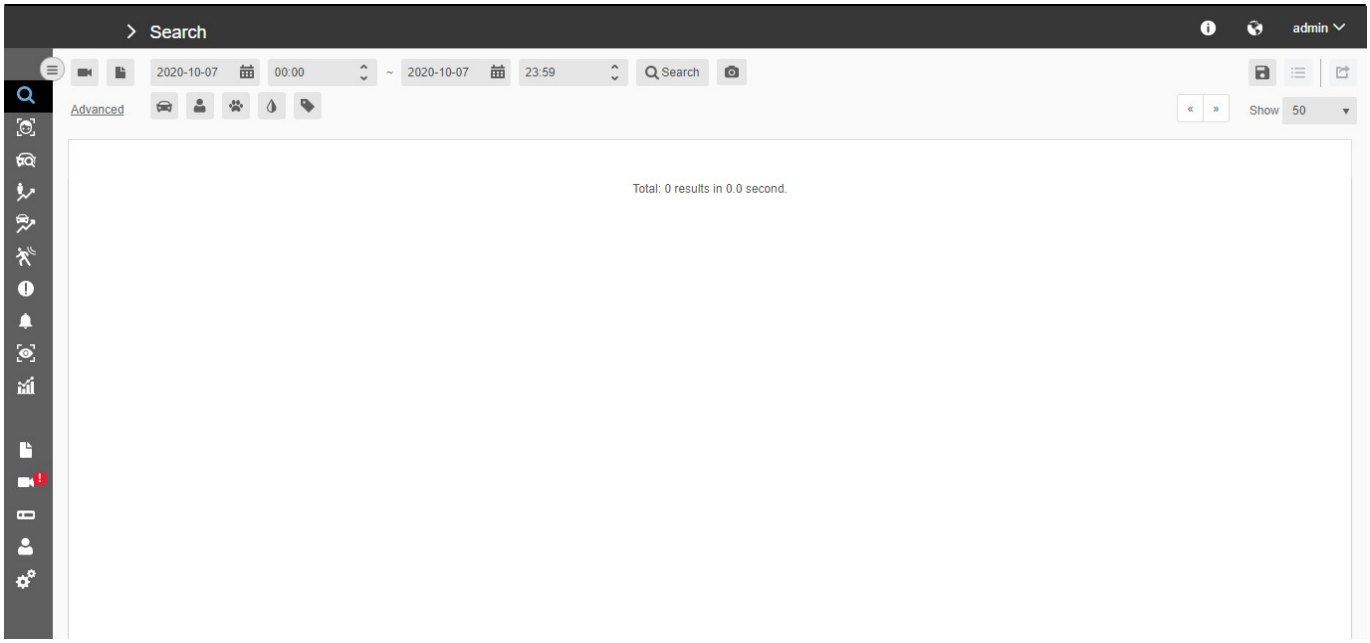
Change the Mail Server Account under the **Mail** tab.
This authenticator will send an email to the user.
Refer to Chapter 22.4 Mail for more details.



Mail Window

7. Search

In Video Search, click the **Search** tab to see the window below. Vaidio provides basic search and advanced search. Click the **Advanced**/ **Basic** hyperlink to switch from the basic search to the advance search. The default is **Basic** video search.

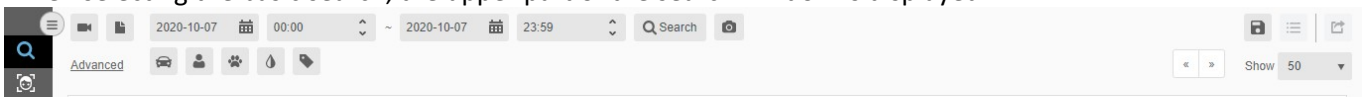


Search Window

In Vaidio, Video Search enables a global search for LPR (License Plate Recognition). The user can search for a license plate number and/or whether it matches with a license plate in any black/white list when searching for the vehicle type.
Refer to Chapter 9 License Plate Recognition for more details.

7.1 Basic Search

When selecting the basic search, the upper part of the search window is displayed.

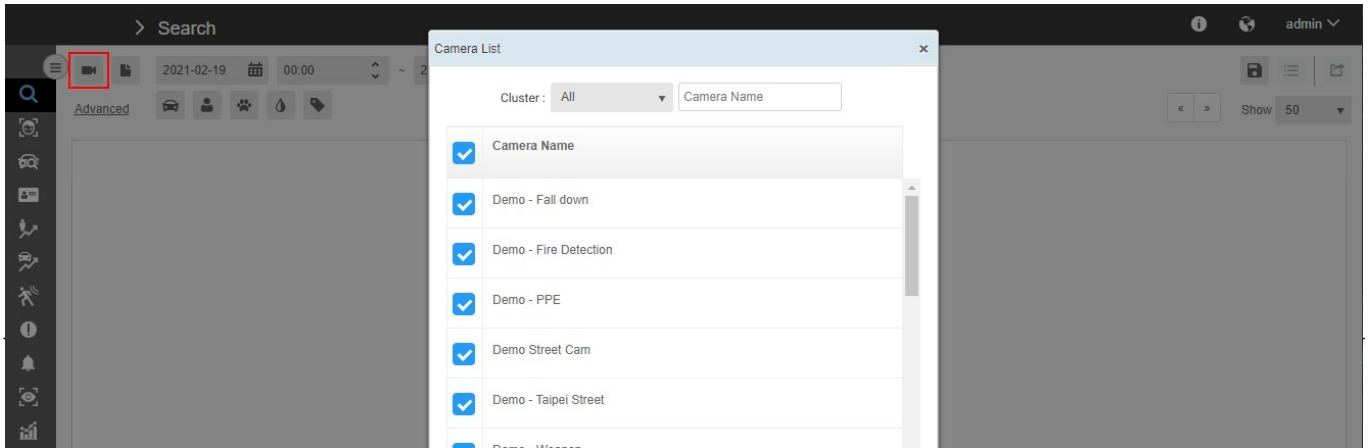


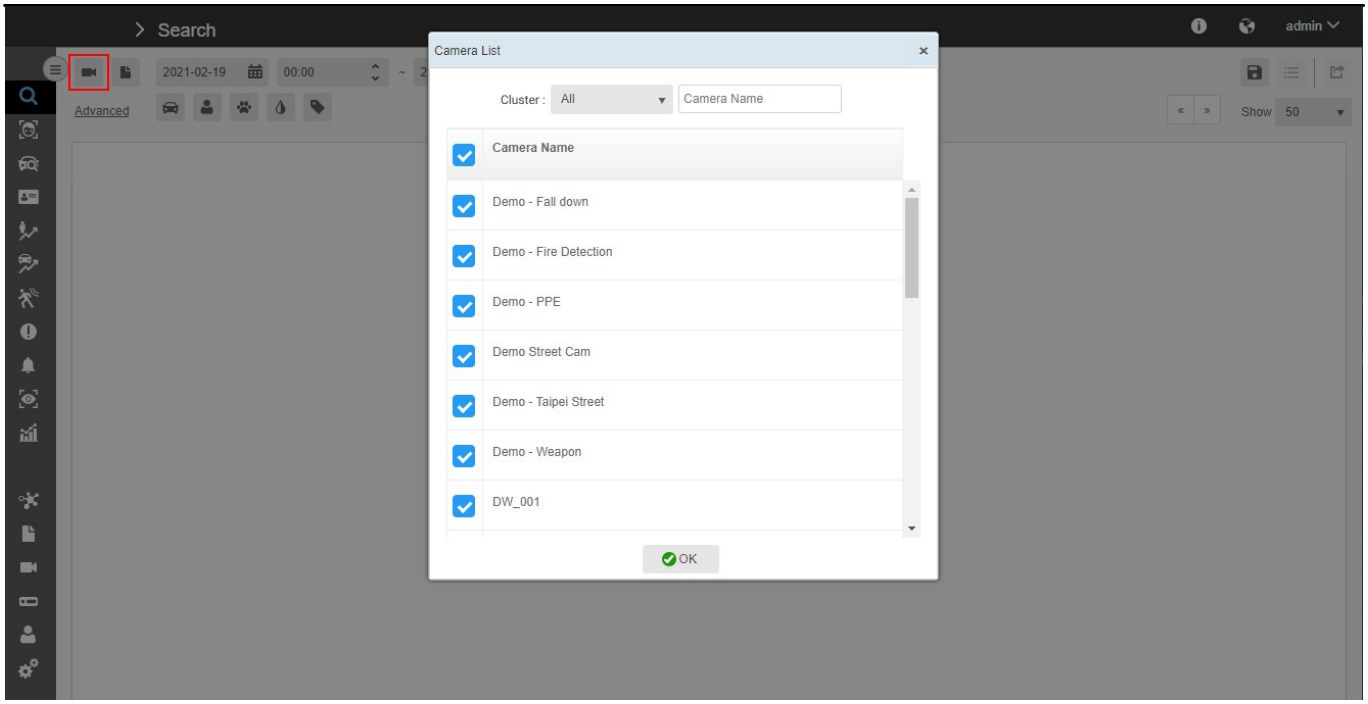
Basic Search

Search by Camera List

 Click to see the available camera list as shown below.

Note:
Vaidio supports the central search of multiple Vaidios. The camera connected to the remote Vaidio is shown with the remote Vaidio name(s) in brackets.
Refer to Chapter 18. Vaidio for more details.





Camera list Window

In **Search for**, select **Camera Name** or **Camera Location** and enter the corresponding keyword string to search for a specific camera name or camera location.

In the available camera list, select the corresponding checkbox to assign the camera for the search criteria.
Click **OK** to confirm the selection.

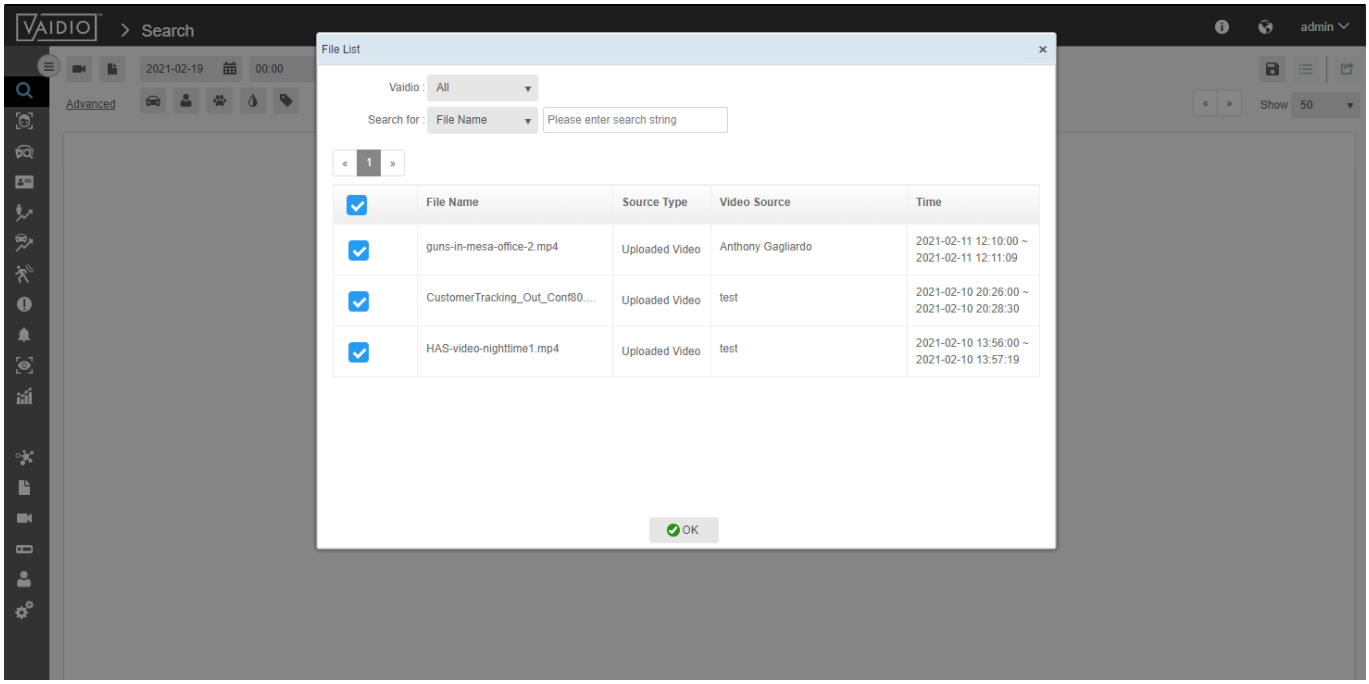
Type or select the range of date and time in which the user wants to search. The maximum range is 30 days.

Search by File List

Click to see the available camera list as shown below.

Note:
Vaidio supports the central search of multiple Vaidios. The file connected to the remote Vaidio is shown with the remote Vaidio's name in brackets.

Refer to Chapter 17. Vaidio for more details.



File list Window

In **Search Video Source**, enter the corresponding keyword string to search for a specific video source.
In **Video Source**, select the available video source.
In the available video source list, select the corresponding checkbox to assign the video source for the search criterion.
Click **OK** to confirm the selection.

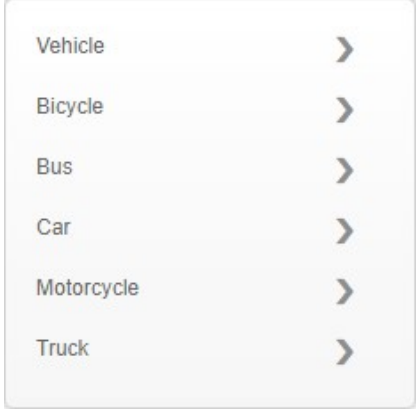
Type or select the range of date and time in which the user wants to search. The maximum range is 30 days.

Search by Object Type

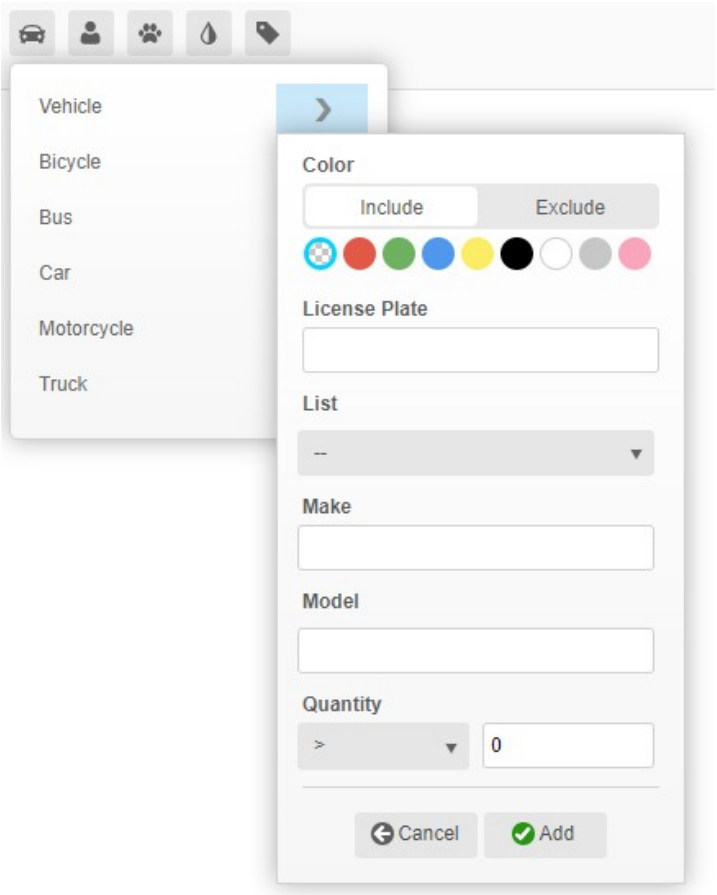
The list of object types changes according to the selected AI Model. Each AI Model provides a different set of object types.
Refer to Chapter 22.10 AI Model for more details.

Vehicle detection

 Click to see the Vehicle list as shown below.

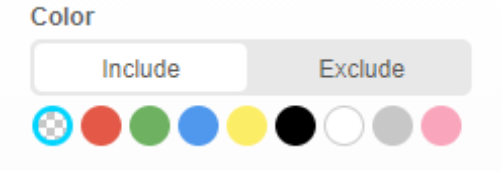


To search for a vehicle type, click on the search item.
To search for a vehicle type with specific properties, click › to select the color, quantity, and more.



For **Color** selection, there are two types of color settings for the user to search.

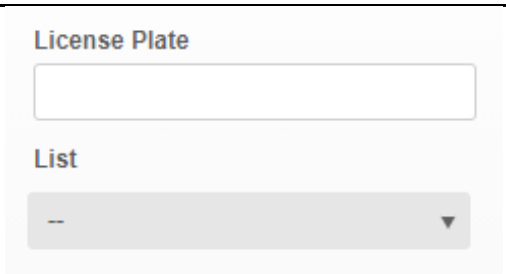
Include: The default color search, select the desired color to see in the search result. Multiple colors can be selected for the search.



Exclude: Switch the toggle to conduct the color exclusion search; only one color at a time can be excluded. Any color except the excluded color will appear in the search results.

Example: Color Red is selected for **Color Exclude** in a vehicle search, so all non-red vehicles will appear in the search results.

Under the **LPR** section, search for a specific vehicle based on the license plate and/or List.



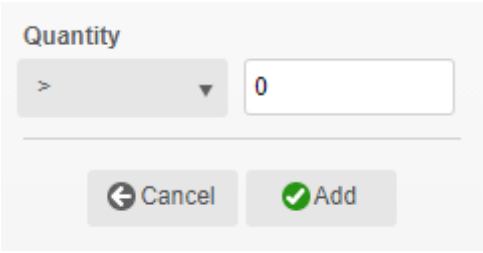
License Plate: Input digits and letters to search for a specific license plate with an exact character match (LPR Video Search requires the input of the full license plate).

List: Click to define the query criteria by specifying the List.
By default, "- -" is selected, in which case the LPR List is not relevant in the search.

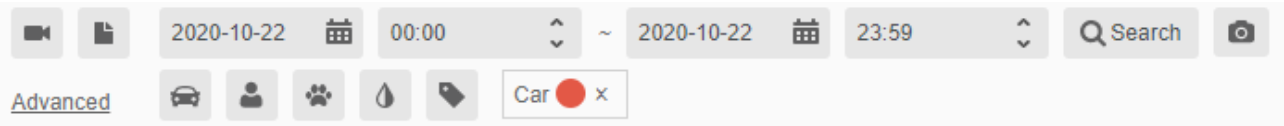
Using the **Make & Model** selection, search for a specific vehicle based on the vehicle make and model.

Make & Model search requires an exact search with type-ahead available.

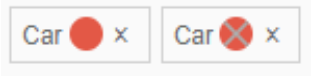
Finally, select the desired quantity and click **Add** to search.



When the user completes the search criteria, it will appear on the right. The following image is an example of the search criteria for Vehicle.



The user can simultaneously conduct Color **Include** and **Exclude** in one search query.
Example:
The user wants to find an image with at least two cars, one (or more) in red and one (or more), not in red.
The following image is an example of the search criteria.



The search result will contain at least two cars, a red one, and a non-red one.
The same concept applies to all other color object searches.

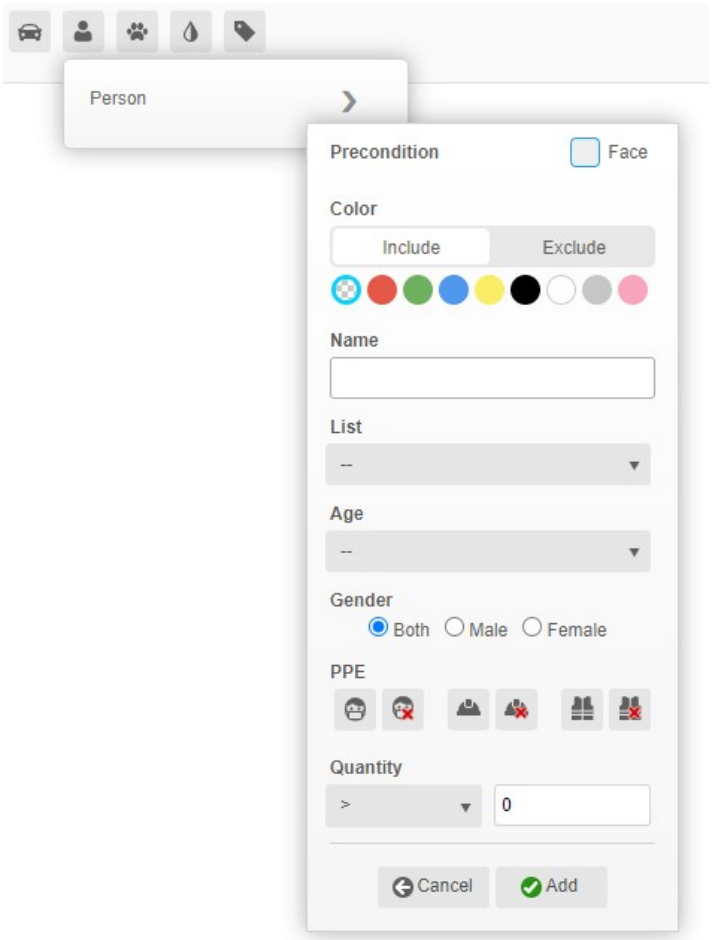
Car(Blue)

Car(Red)

Human detection

Click to see the Human list as shown below.

To search for a person, click the search item button.
To search for specific properties, click › to select age, gender, quantity, and more.

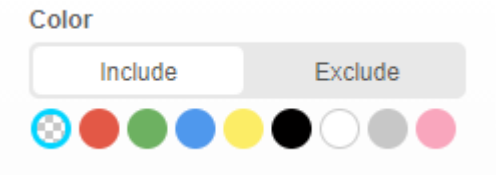


In the **Precondition** section, check the Face checkbox to get results with face included.

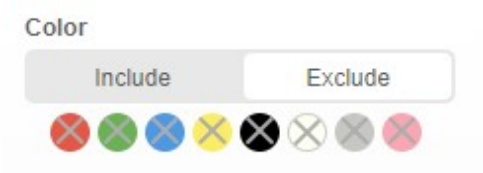
When Face is unchecked, search results will consist of persons with or without face detection.

For **Color** selection, there are two types of color settings for the user to search.

Include: The default color search, select the desired color to see in the search result. Multiple colors can be selected for the search.



Exclude: Switch the toggle to conduct the color exclusion search; only one color at a time can be excluded. Any color except the excluded color will appear in the search results.

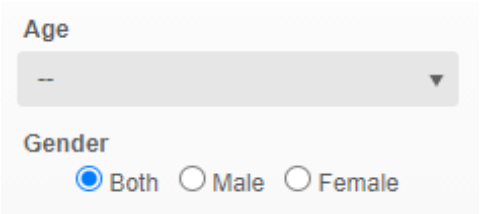


Example: when the color Red is selected for **Color Exclude** in the person search, anyone not in red will appear in the search results.

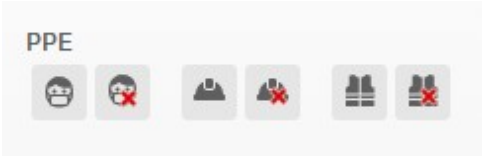
Name and List

Enter the Name of the person and select a List from the existing lists in FR as the filter when looking for a particular person in Video Search.

Under **Age & Gender**, search for people of a specific age range and/or gender type in the given selection field. Age is "- -" by default, which indicates that the age is not relevant in the search, and people of all detected ages will appear in the search.
Use the drop-down menu in the Age field to select for the age group of interest.



In the **PPE** section, conduct the Personal Protective Equipment search for a person with/without a helmet (hard hat) and/or safety vest.



 Click to search for a person wearing a Mask.

 Click to search for a person not wearing a Mask.

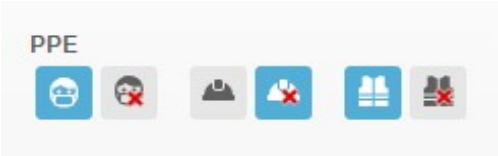
Click to search for a person wearing a Helmet.

Click to search for a person not wearing any Helmet.

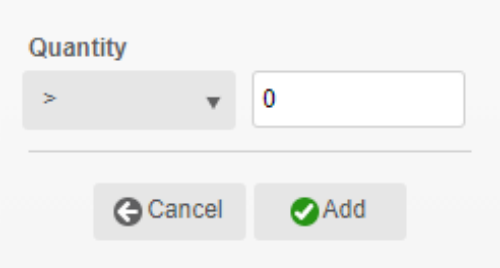
Click to search for a person wearing a Safety Vest.

Click to search for a person not wearing any Safety Vest.

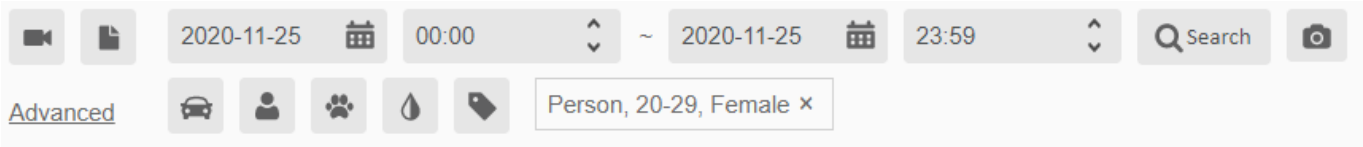
The enabled PPE button will change to blue.



Select the quantity and click **Add** to search.

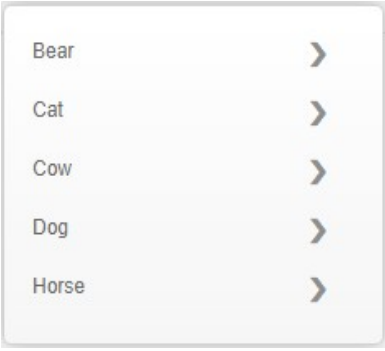


When the user completes the search criteria, it will appear on the right. The following image is an example of the search criteria for a Person's search with age and gender.

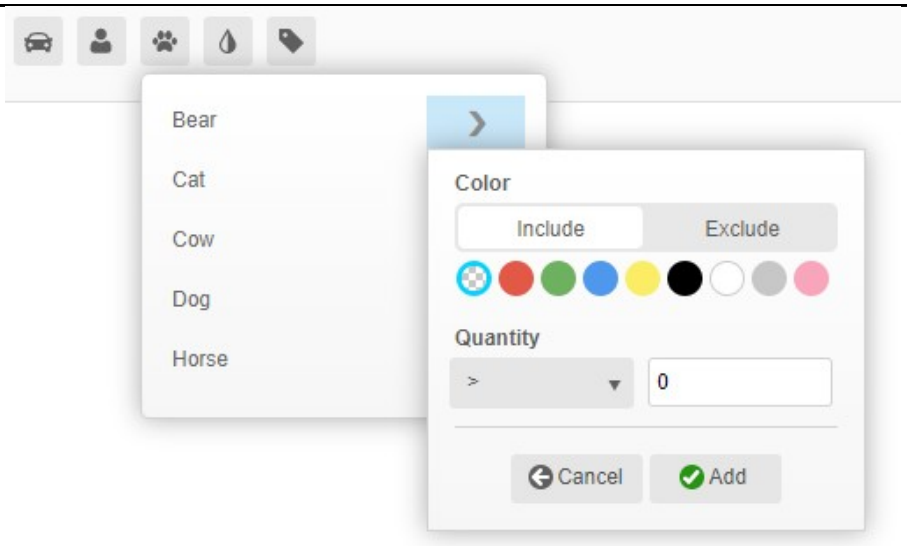


Animal detection

Click to see the Animal list as shown below

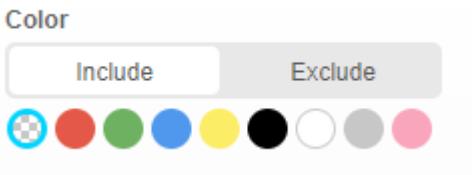


To search for an animal type, click the search item button.
To search for specific properties, click › to select the color and/or quantity.

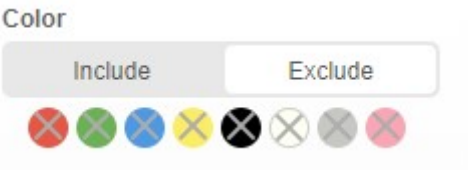


For **Color** selection, there are two types of color settings for the user to search.

Include: The default color search, select the desired color to see in the search result. Multiple colors can be selected for the search.

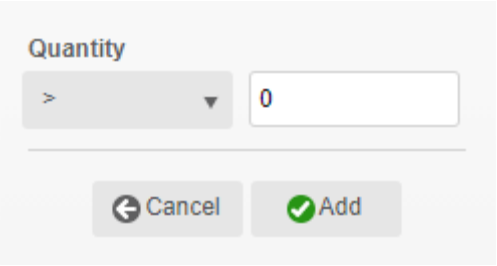


Exclude: Switch the toggle to conduct the color exclusion search; only one color at a time can be excluded. Any color except the excluded color will appear in the search results.



Example: if Color red is selected for **Color Exclude** in the search, any animal not in red will appear in the search results.

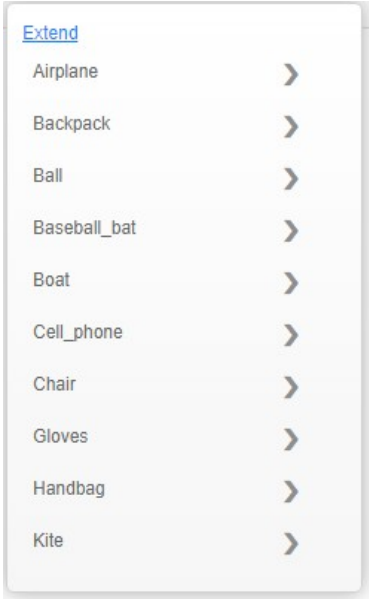
Select the quantity and click **Add** to search.



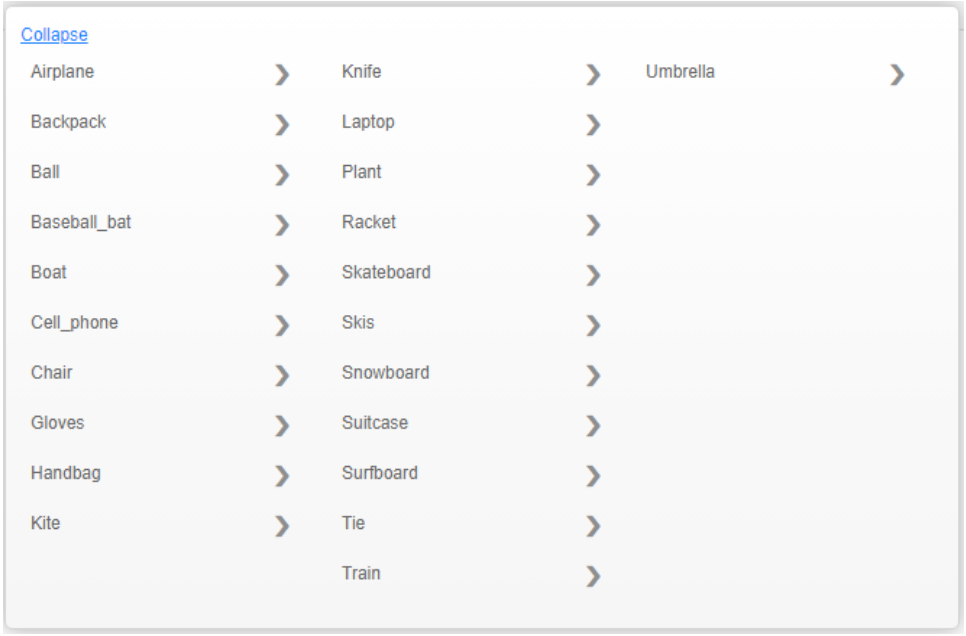
When the user completes the search criteria, it will appear on the right. The following image is an example of the search criteria for the animal search.

Object detection

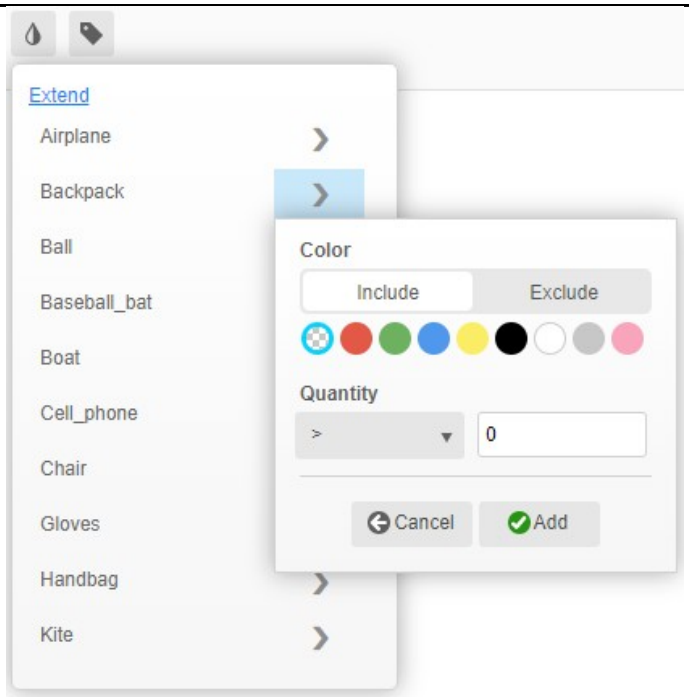
Click to see the Object list as shown below.



Click **Extend** to extend the object list. All available object types will be displayed.

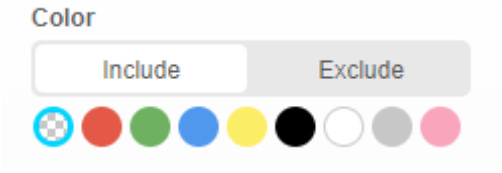


To search for an object type, click the search item button.
To search for specific properties, click › to select the color and/or quantity.



For **Color** selection, there are two types of color settings for the user to search.

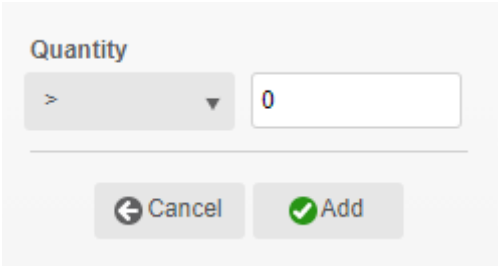
Include: The default color search, select the desired color to see in the search result. Multiple colors can be selected for the search.



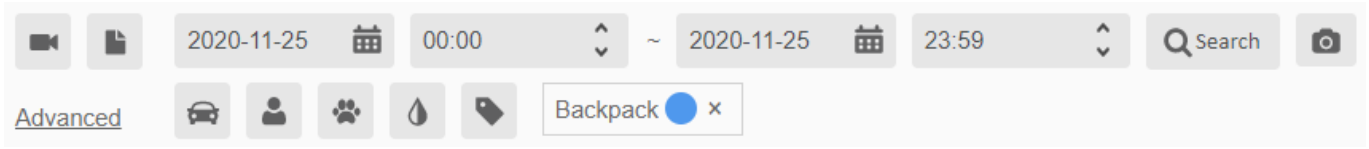
Exclude: Switch the toggle to conduct the color exclusion search; only one color at a time can be excluded. Any color except the excluded color will appear in the search results.

Example: if Color red is selected for **Color Exclude** in the search, any animal not in red will appear in the search results.

Select the quantity and click **Add** to search.

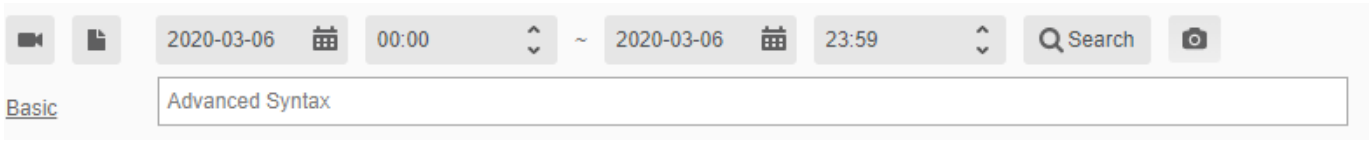


When the user completes the search criteria, it will appear on the right. The following image is an example of the search criteria for object search.



7.2 Advanced Search

When selecting the advanced search, the upper part of the search window is displayed as follows.

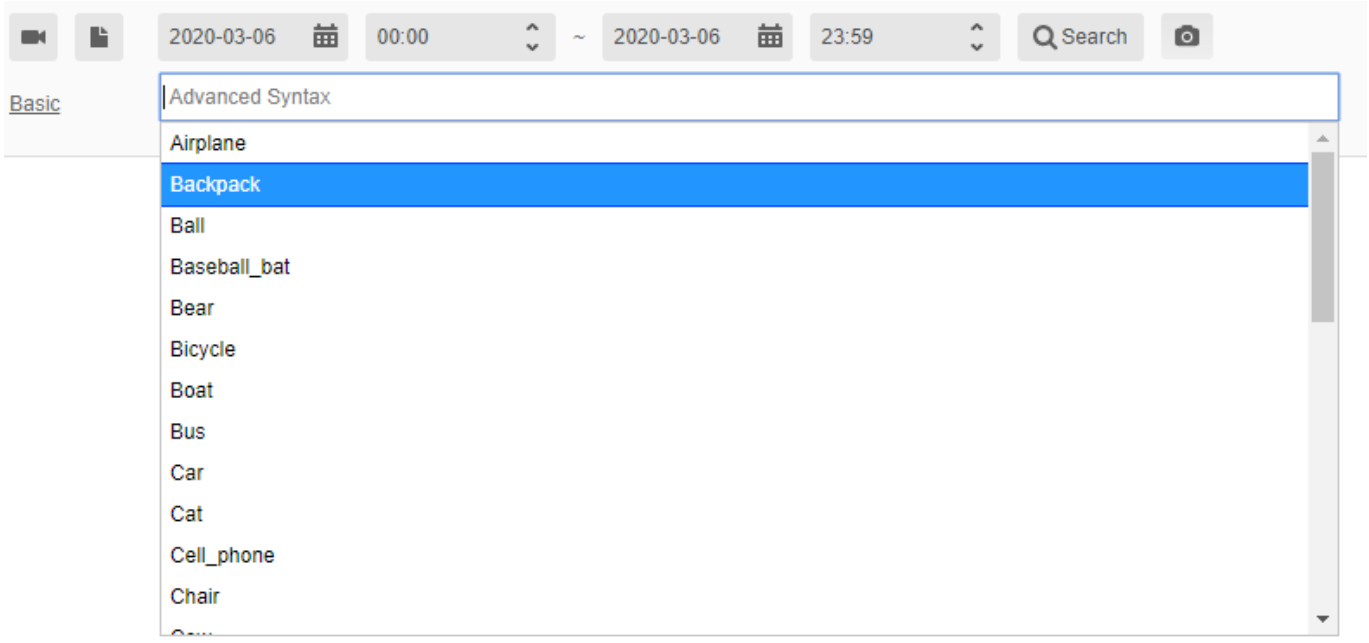


Advanced Search

Enter the Advanced Syntax in this field to form a search pattern. For example, car=1. For more information about how to insert the advanced search syntax, refer to the Appendix.

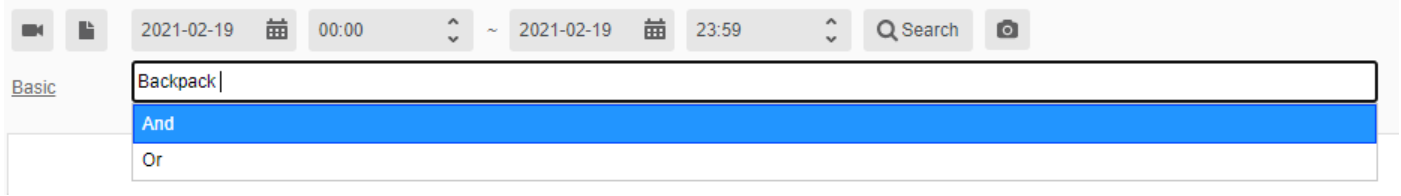
Type-ahead

Advanced search type-ahead appears when entering the alphabet.



Type-ahead of object selection

After selecting an object type, press the space key to extend one space. The operator type-ahead appears, and the user can select **and**/**or** continue to complete the regular expression for Advanced search.

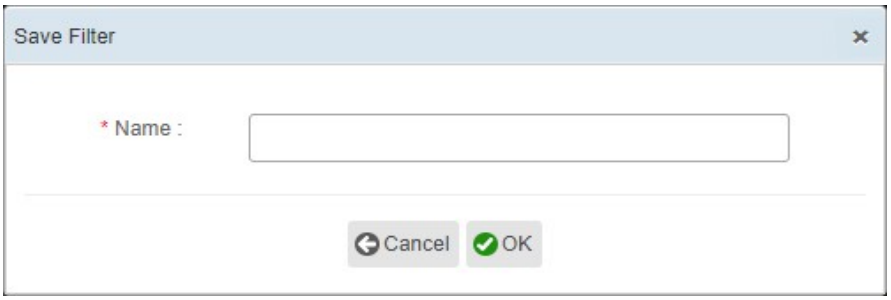


Type-ahead of operator selection

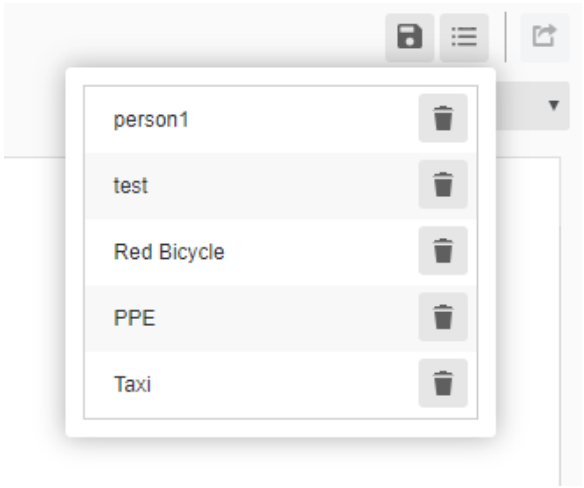
Save and Use Search Filter

The user can save the search criteria for both Basic and Advanced searches.

Click to see the following window. Enter the name of the filter and click **Save** to save the current search criteria for future use.



Click to see the saved filter in the following window. Select an entry to retrieve the search criteria.

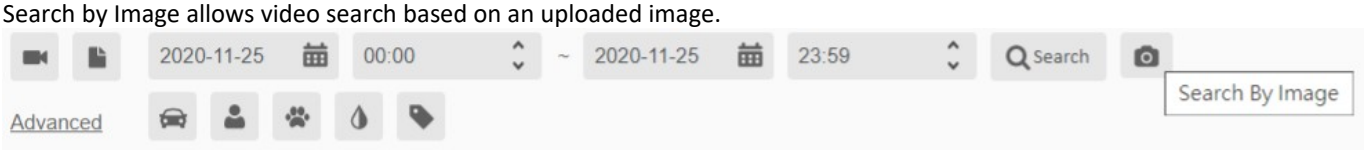


Click the corresponding delete button to remove the entry.
Click the **Search** button and view the result at the lower part of the window.

Click to export the search results as an Excel file.

7.3 Search by Image

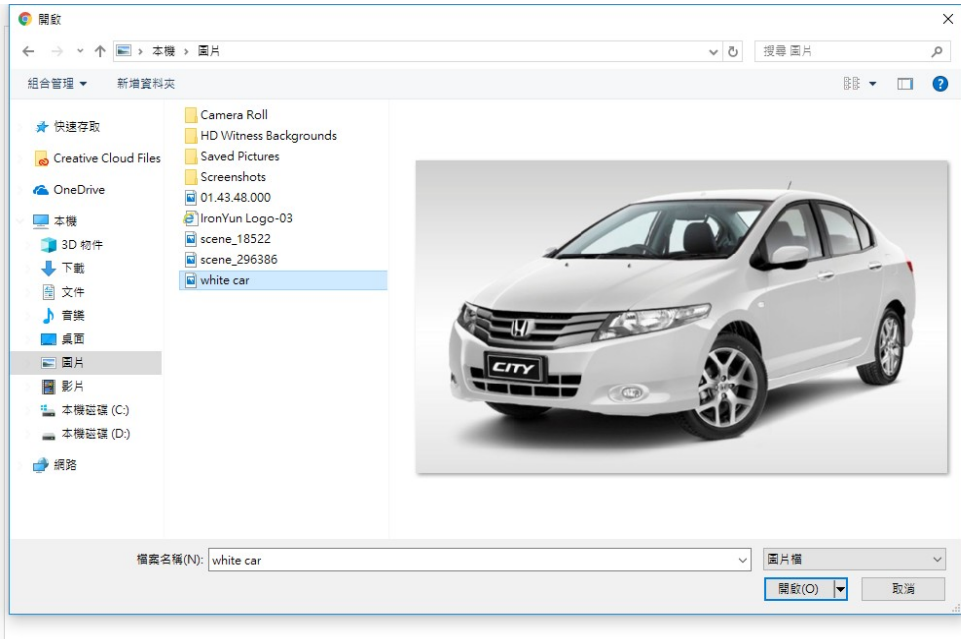
Search by Image allows video search based on an uploaded image.



Search by Image

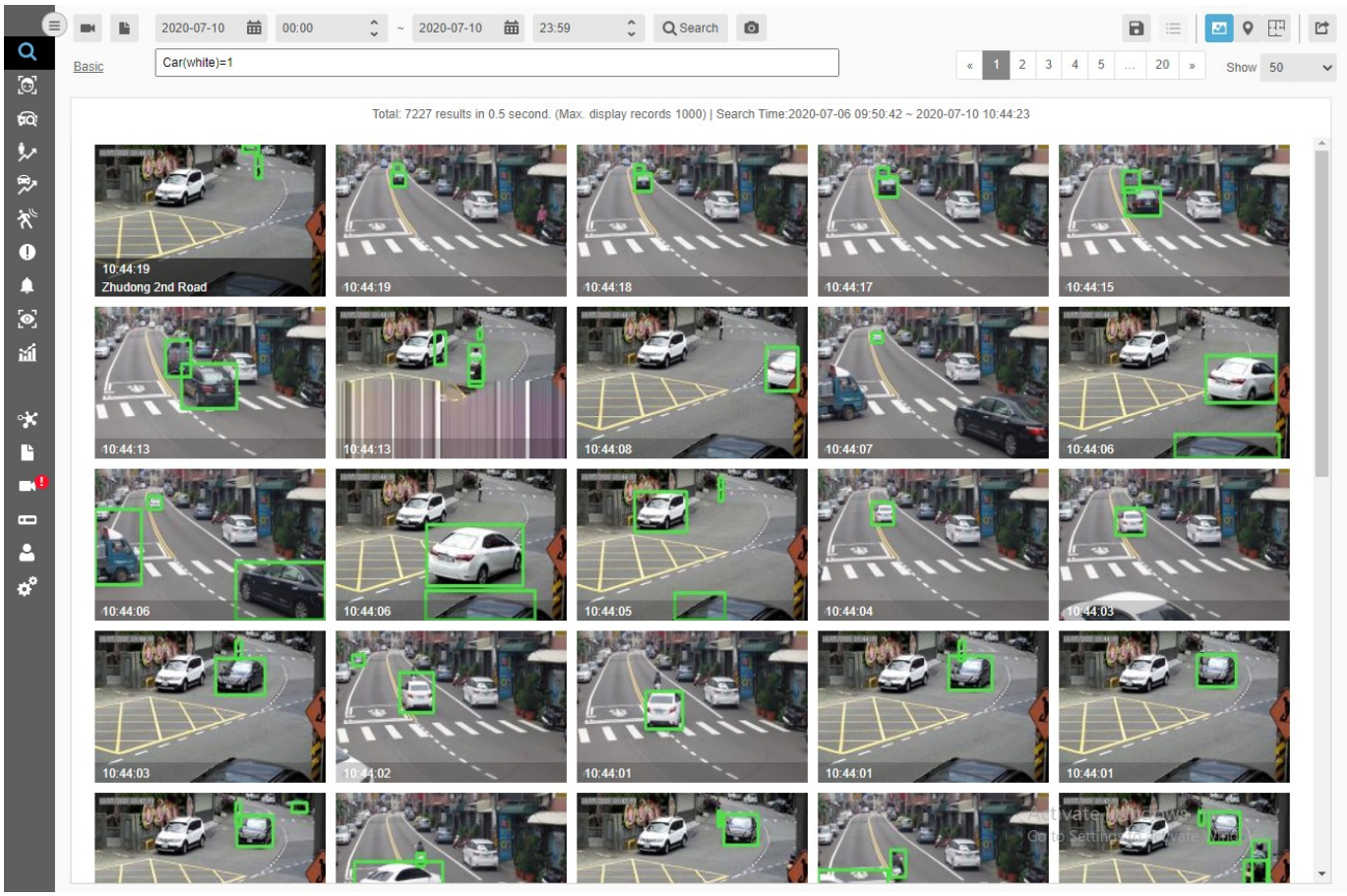
Click **Search by Image** button to insert an image file from a local drive.

Note:
Image upload maximum size: 20MB, format: JPEG/PNG



Insert an image

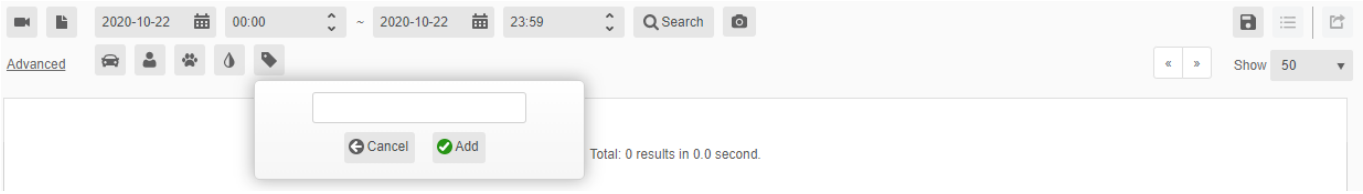
After inserting the image, Vaidio analyzes the keyword on the inserted image and automatically applies the keyword for the search. In this example, the keyword analyzed from the inserted image is car(white)=1. The search results automatically show an available white sedan from Vaidio in the advanced mode.



Result of Search by Image

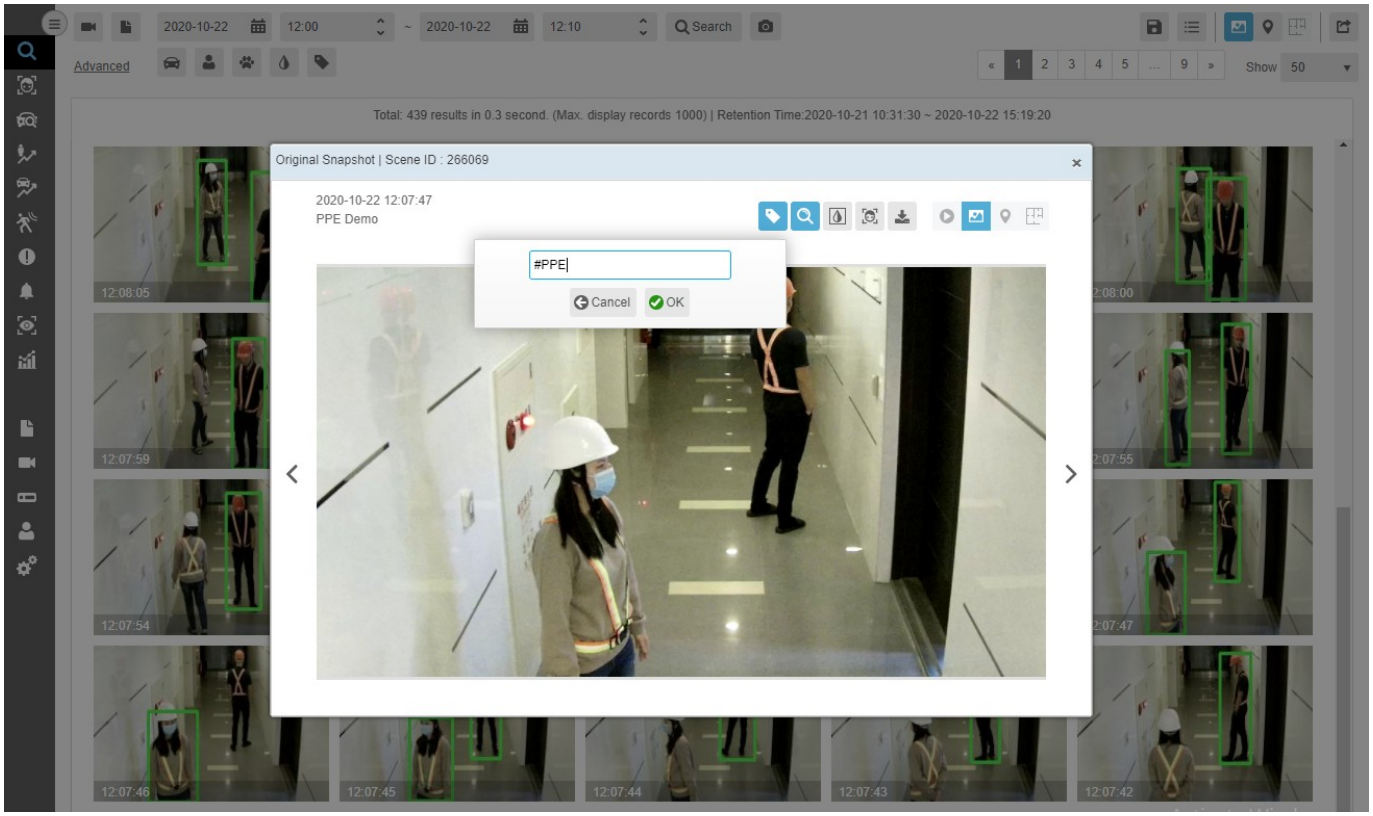
7.4 Hashtag

Click the **Hashtag** button to get text box filter for predefined hashtags.
Hashtag can act like a bookmark in video search, it allows users to apply user-generated keyword that can be used in later search. User can also use type ahead to easily find previous saved event scenes.



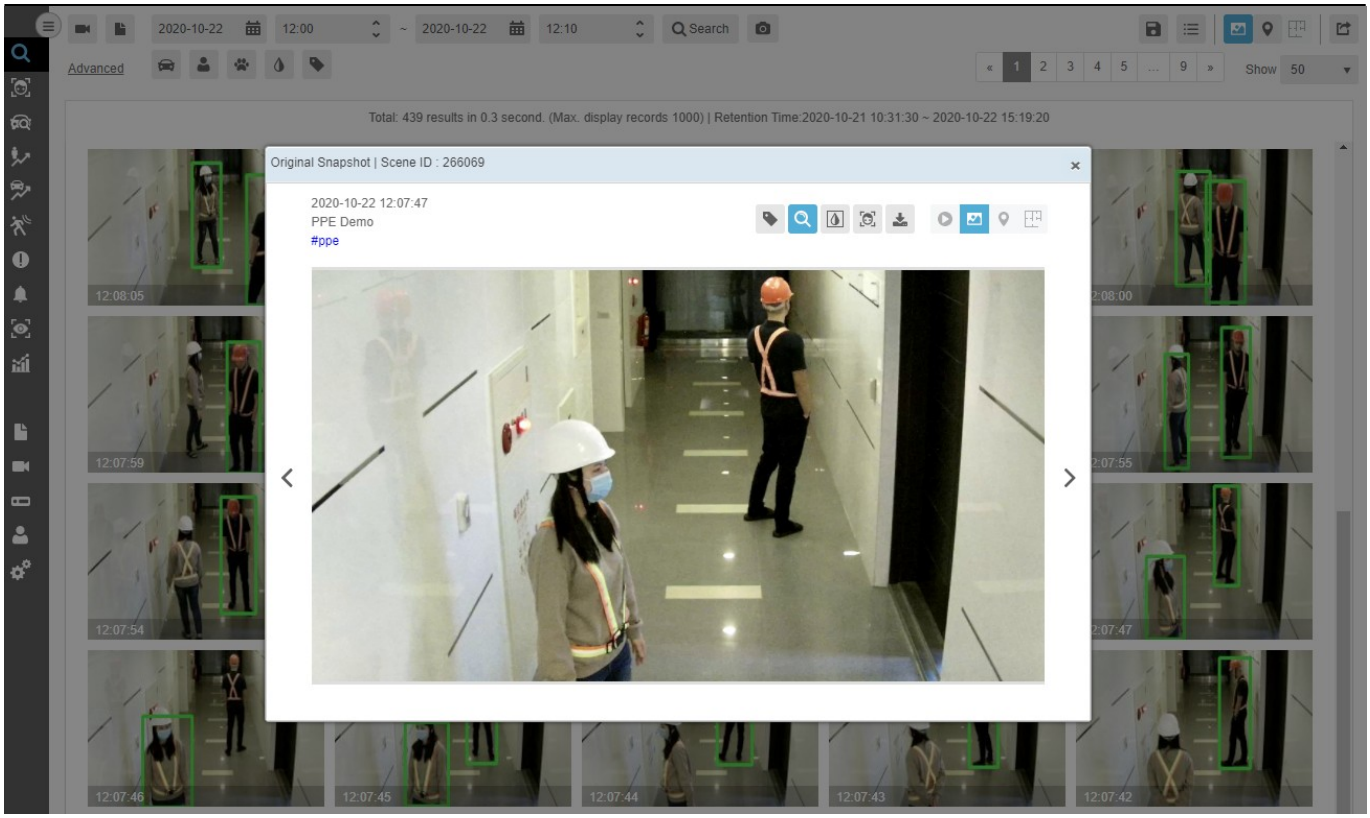
Hashtag Search

To assign hashtags, click the hashtag button in detail page and input specific keyword or content for tagging.
Note user can input up to 3 hashtags per detail page.



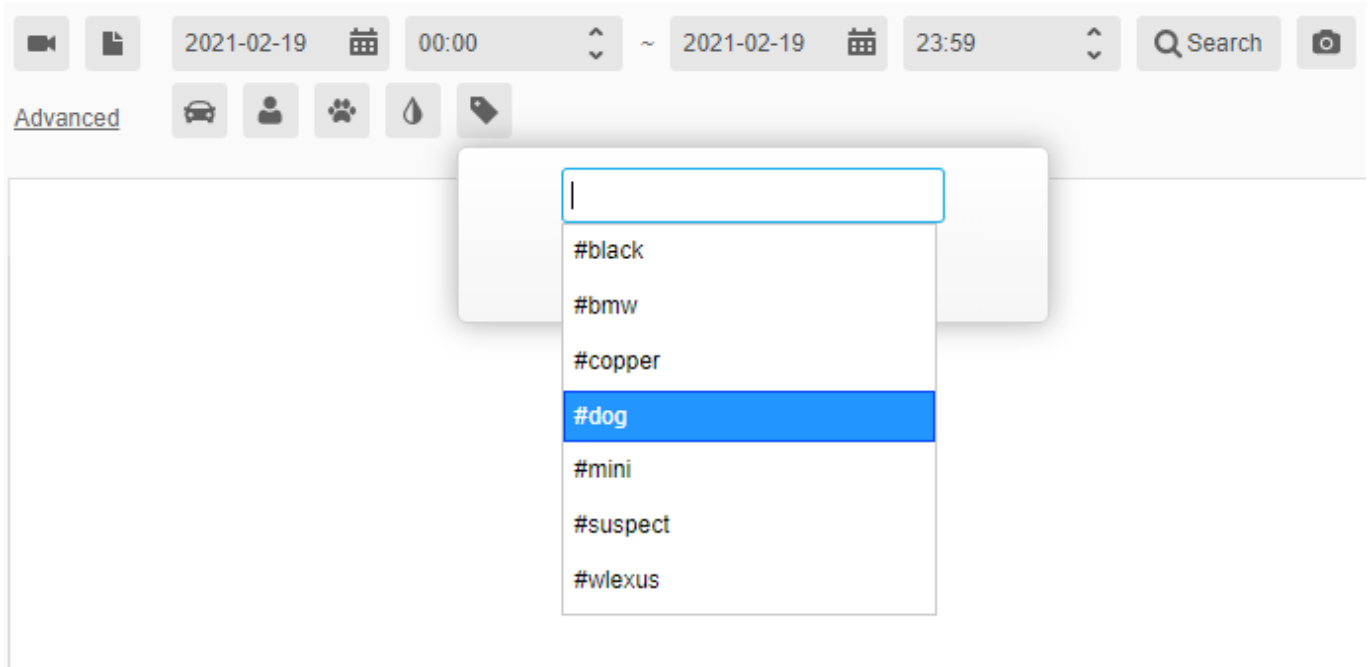
Add Hashtag

Once hashtag keyword is assigned, the scene detail page would consist hashtag in blue print under scene camera name.



Hashtag Assigned

All hashtags saved in scenes can be found in hashtag search bar.



7.5 Search View

Click the **Search** button to view the search results.

Search Result Window

Click to export the search results to an Excel file.

Grid View/ Map View switch tab; click to switch the result display method. The buttons only appear after a search has been conducted.

Show: 50 Select the number of result images displayed per page.

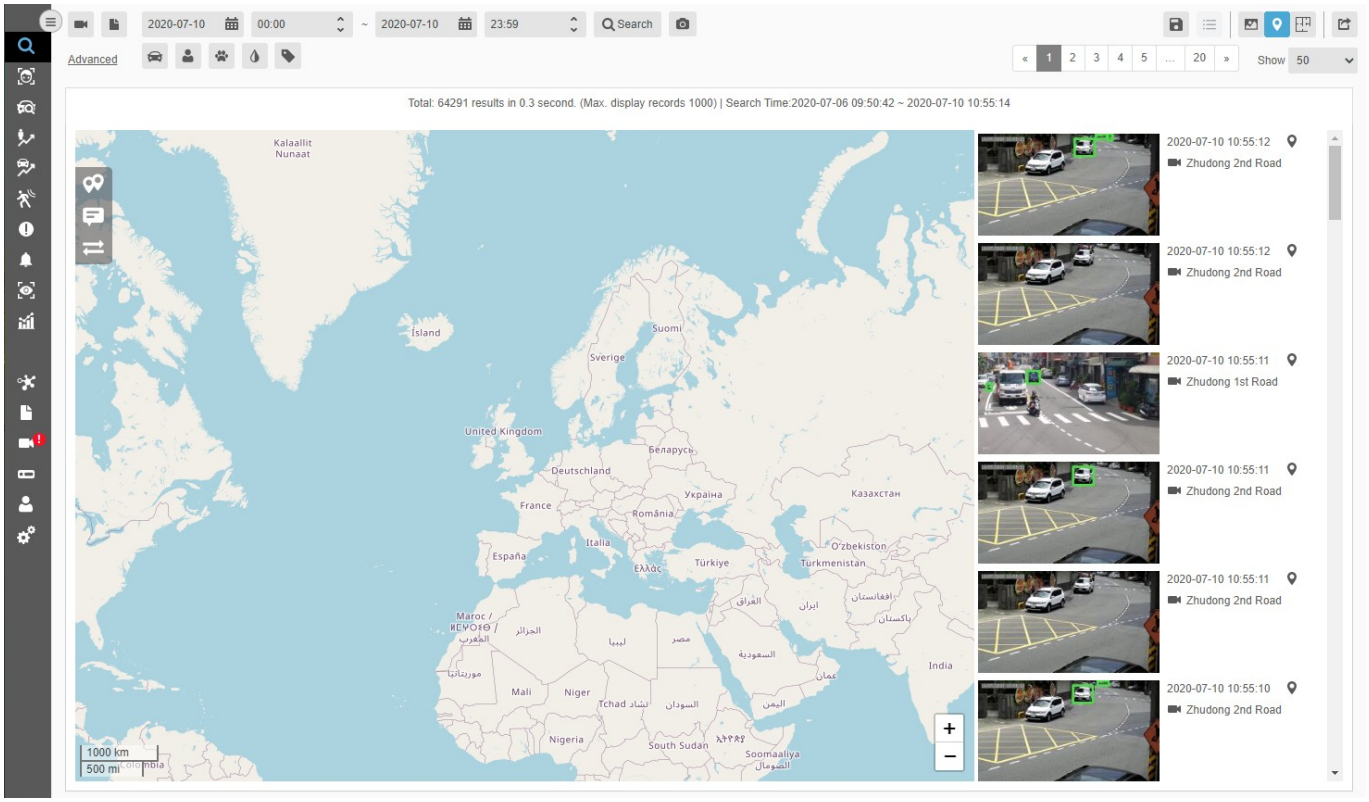
7.5.1 Grid View Results

After the user clicks the **Search** button, all images that meet the search criteria will appear. By default, the results are displayed in the grid view.

Grid View Search Result

7.5.2 Map View Results

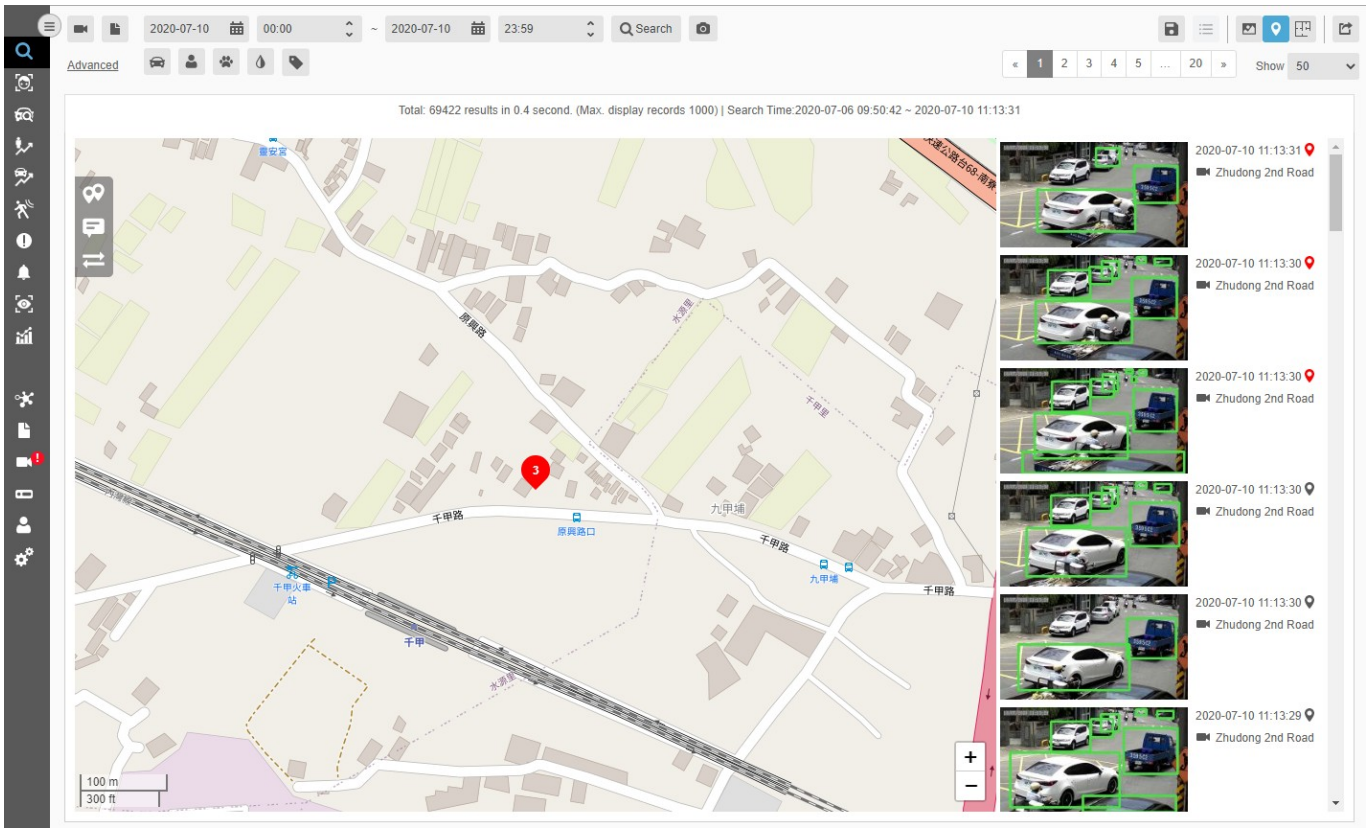
Click the Map View icon to switch to the map result display. By default, no pinpoint will show on the map because no scene is selected for the pinpoint location.



Map View Search Result

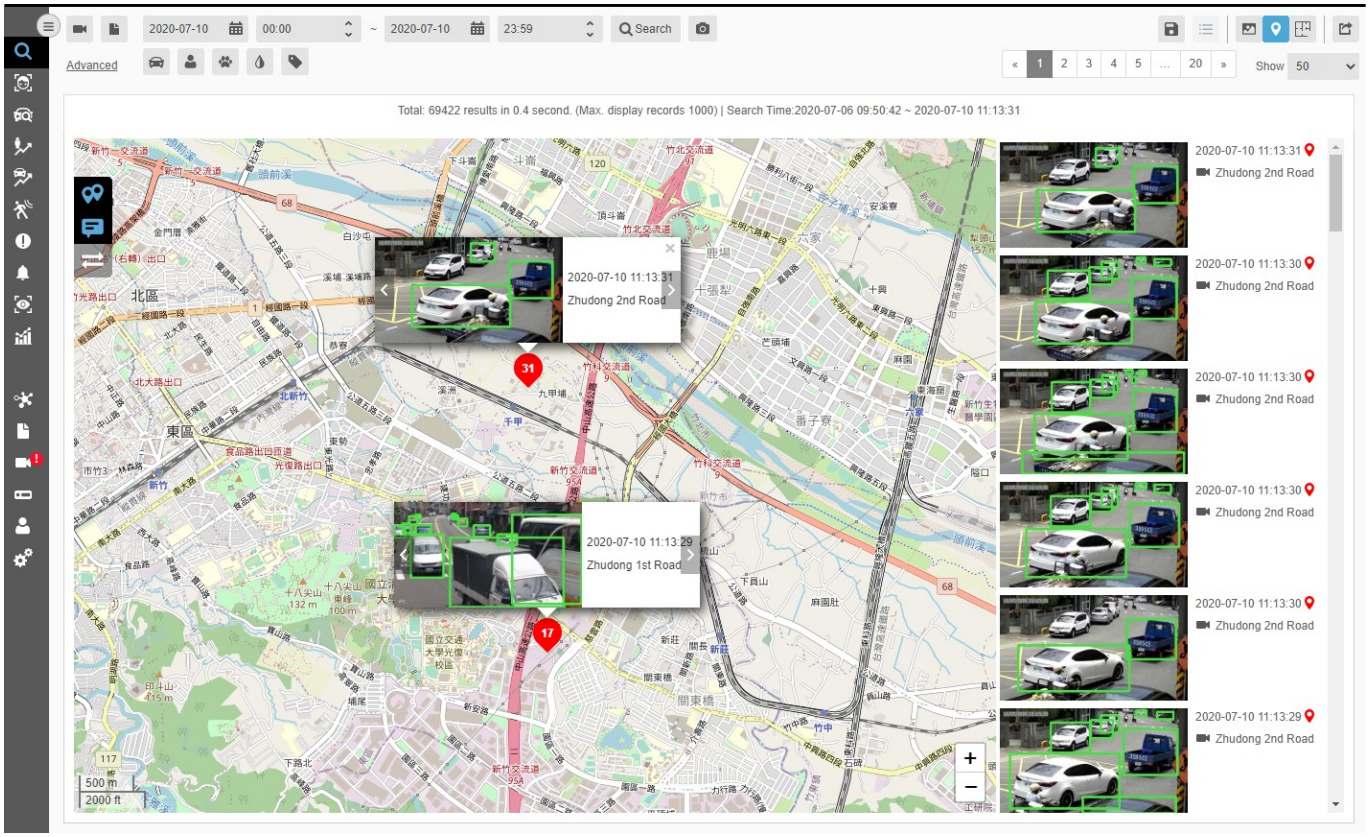
Name	Description
Map Pin All	Select **Map Pin All** to see all events on the map, all cameras with GPS coordinates will show based on event location.
Info Window	Select **Info Window** to see thumbnail pop-ups for pinpoints available on the map.
Path	Select **Path** to see the pathway of pinpoints according to event timestamp.

The user can manually select the desired scene to locate on the map; the number on the pinpoint indicates the captured scene number and selected location.



Selected Pin info window

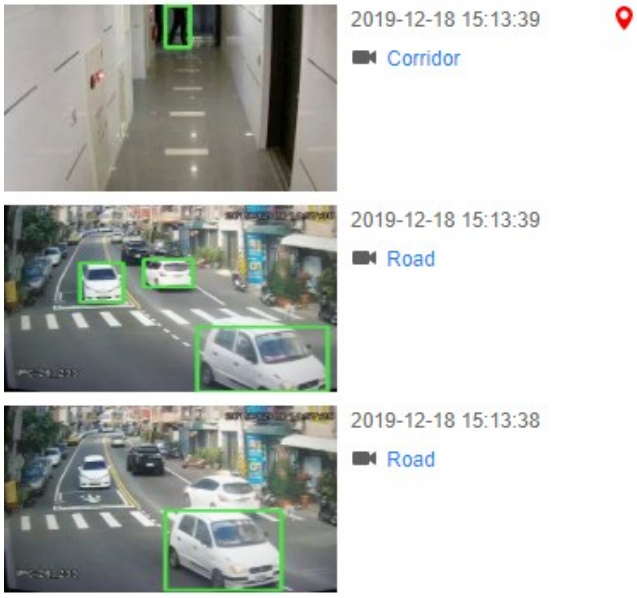
To see the map location for more scenes, the user can check **Map Pin All** to see more scenes on the map. Note the number of **Map Pin All** is based on the pagination and Show results number. The user can only locate the scenes of the current page on the right.



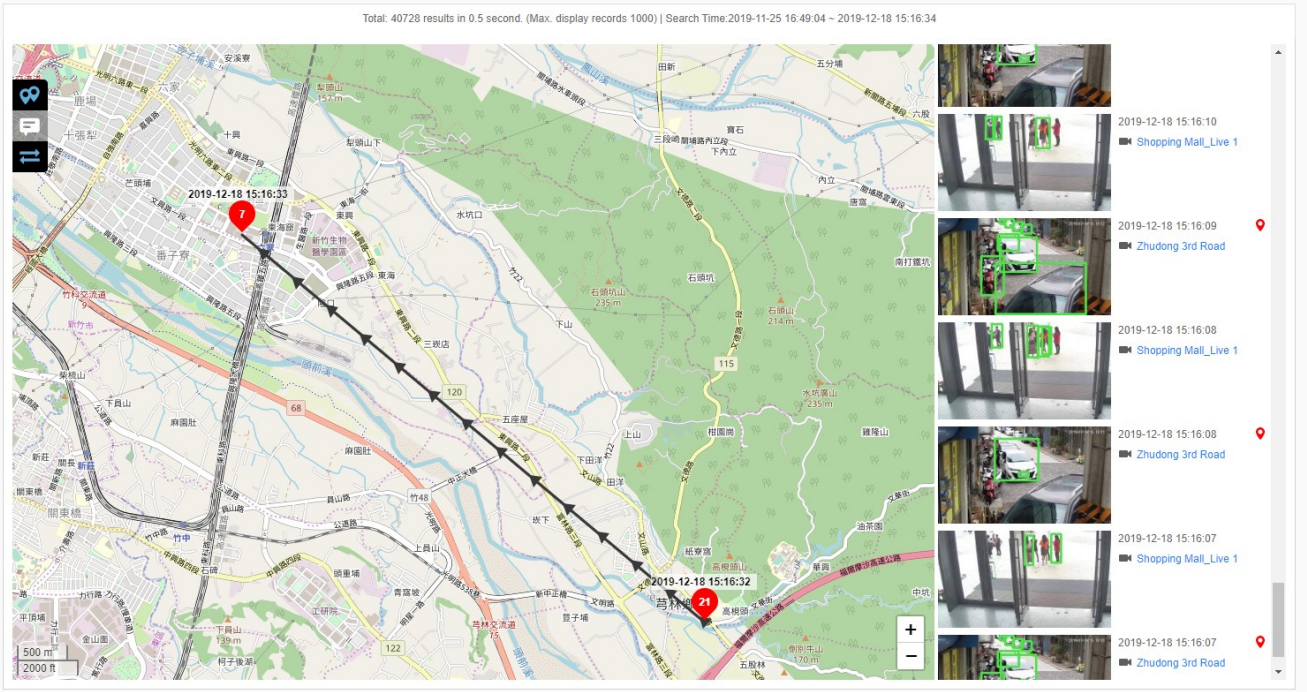
Map View Search Result

When **Map Pin All** is checked, the pinpoints on the right for each result will change from gray to red, and the event location will also display on the map. The user can turn on the thumbnail to see the popup information of the selected location on the map.

In some cases, the scene on the right does not have the pinpoint icon in a display; i.e., no GPS Coordinates were assigned to this camera.

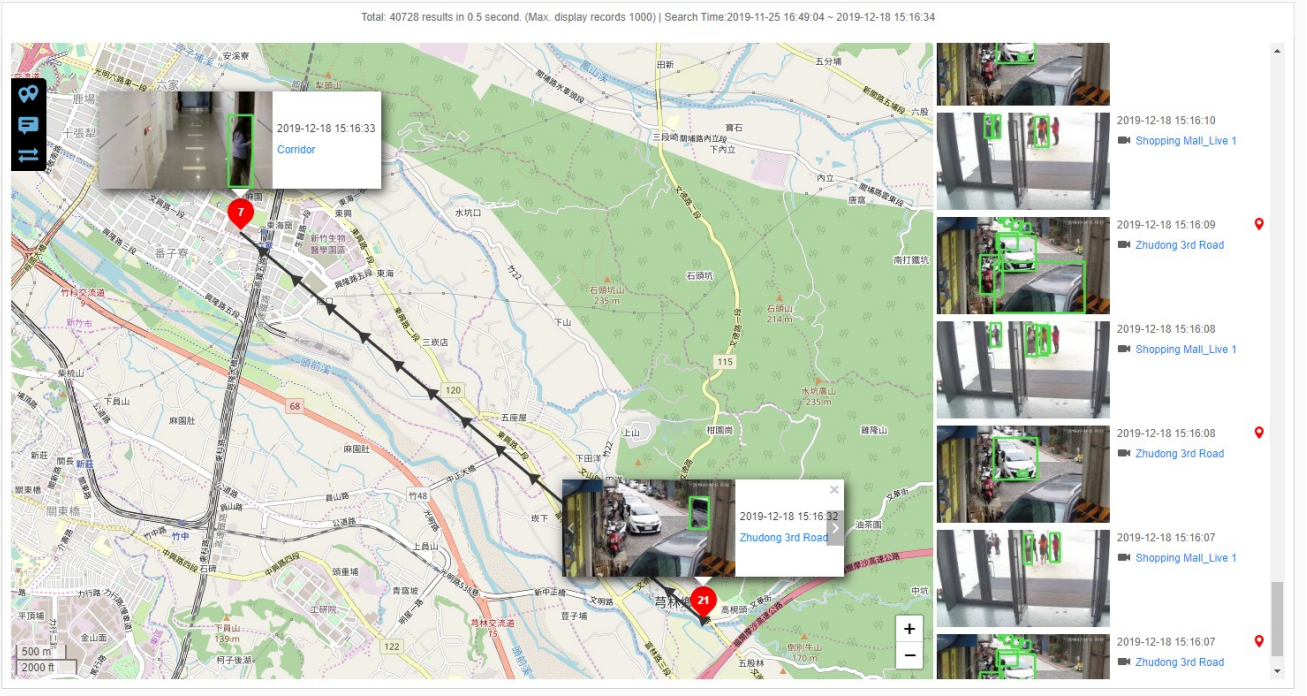


To track the path of an object, the user can manually pinpoint the scenes of interest (the icon changes from gray to red). Toggle on the Path switch to see the path that the object has taken, including the timestamps of the object in each scene.



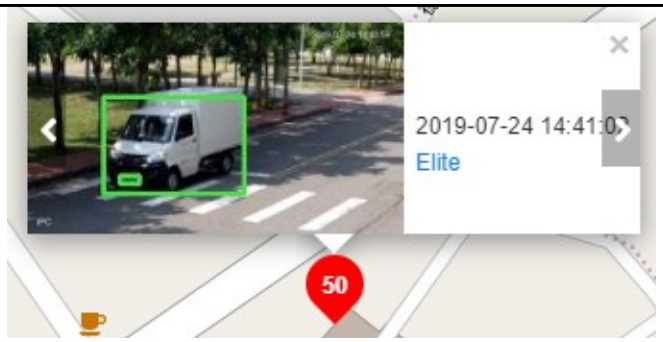
Map Object Path Search

For more useful information when tracking an object, the user can turn on both Thumbnail and Path toggles to get a better view of the object.



Thumbnail and Path Search

In Video Search, the user can mouse hover over the thumbnail popup window to see the Delete and Arrow buttons. Click “x” to close the popup or click on the arrow icons to view the previous or next thumbnail image.

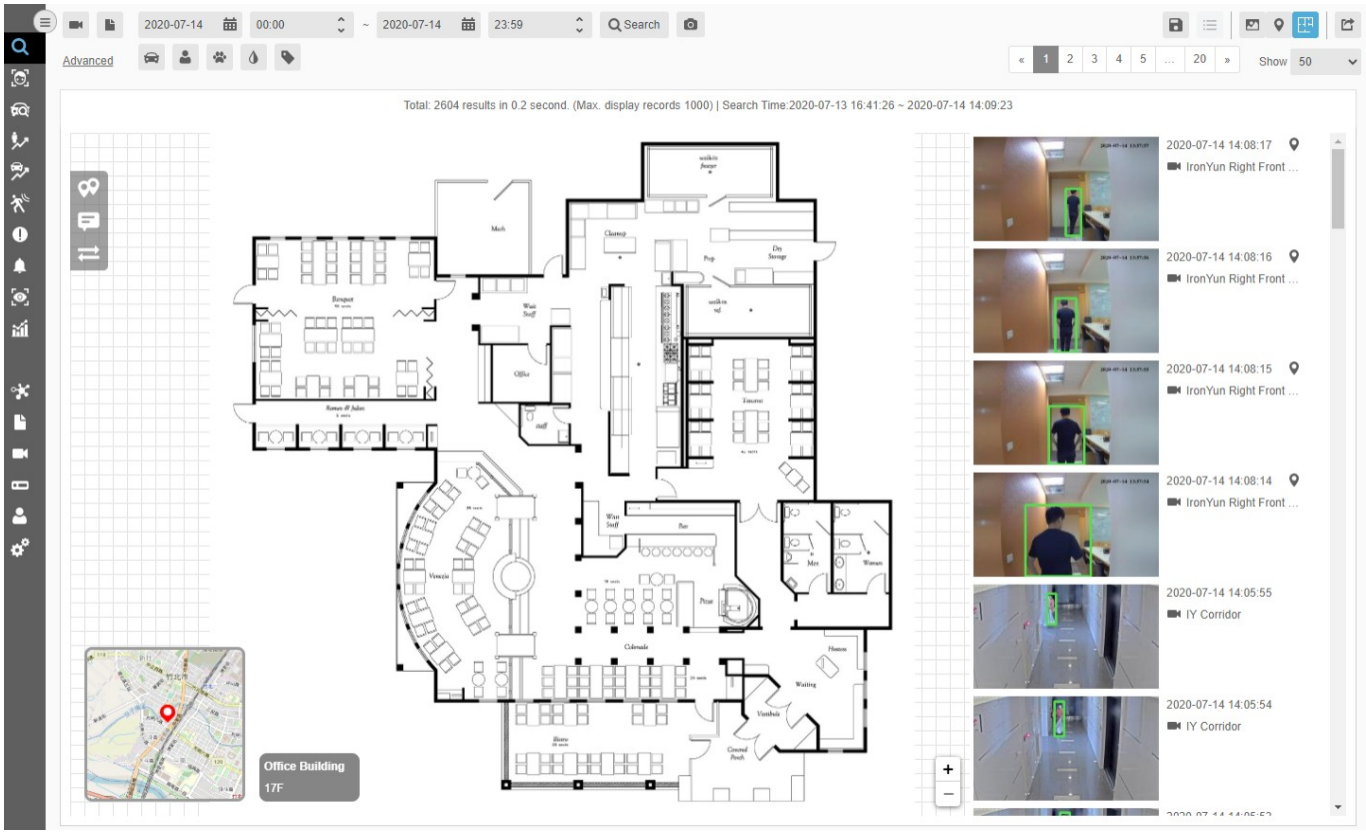


To get more information about the scene, click on the thumbnail to view the **Detail Page** window.

7.5.3 Indoor Map View Results

Click the Indoor Map View icon to switch to the floor plan result display. Once the Indoor Map view is clicked, a list of floor plans available will appear for the user to choose from.

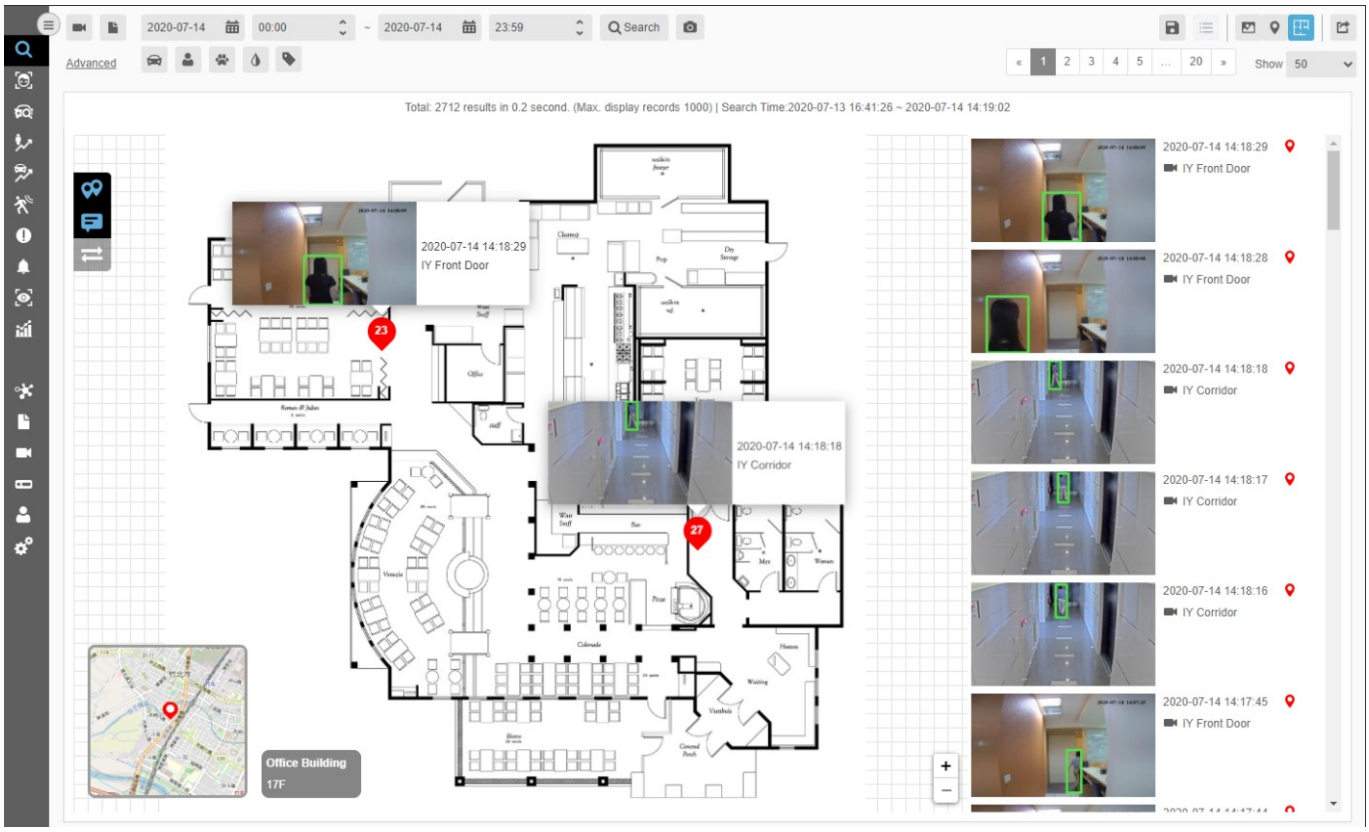
By default, no pinpoint will show on the map because no scene is selected.



Indoor Map View Search Result

Name	Description
Map Pin All	Select **Map Pin All** to see all events on the map; all cameras with GPS coordinates will appear based on the event location.
Info Window	Select **Info Window** to see thumbnail pop-ups for pinpoints available on the map.
Path	Select **Path** to see the pathway of pins according to the event timestamp.

The user can manually select the desired scene to locate on the map; the number on the pin indicates the number of captured scenes at the selected location.



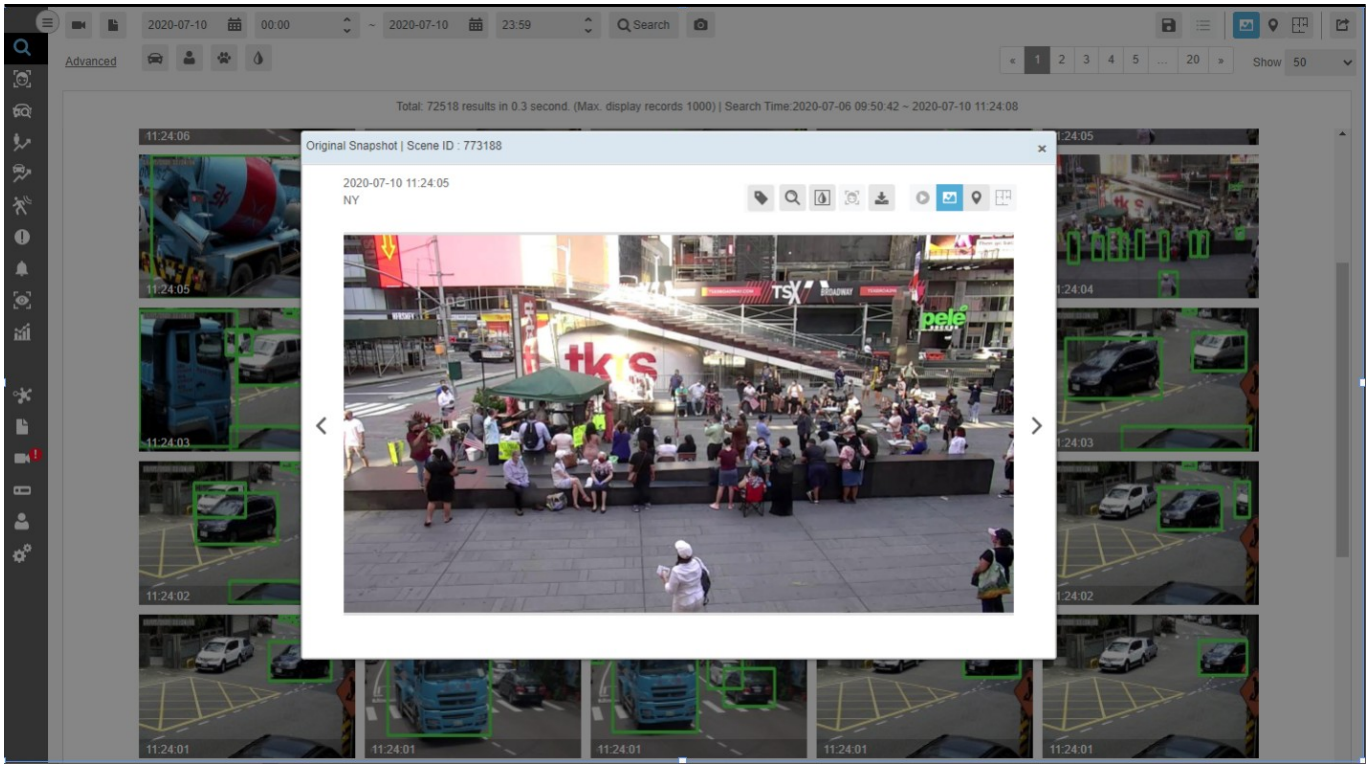
Indoor Map View Search Result

When **Map Pin All** is checked, the pinpoints on the right for each result will change from gray to red, and the event location will also appear on the map. The user can turn on the thumbnail to see the popup information of the selected location on the map.

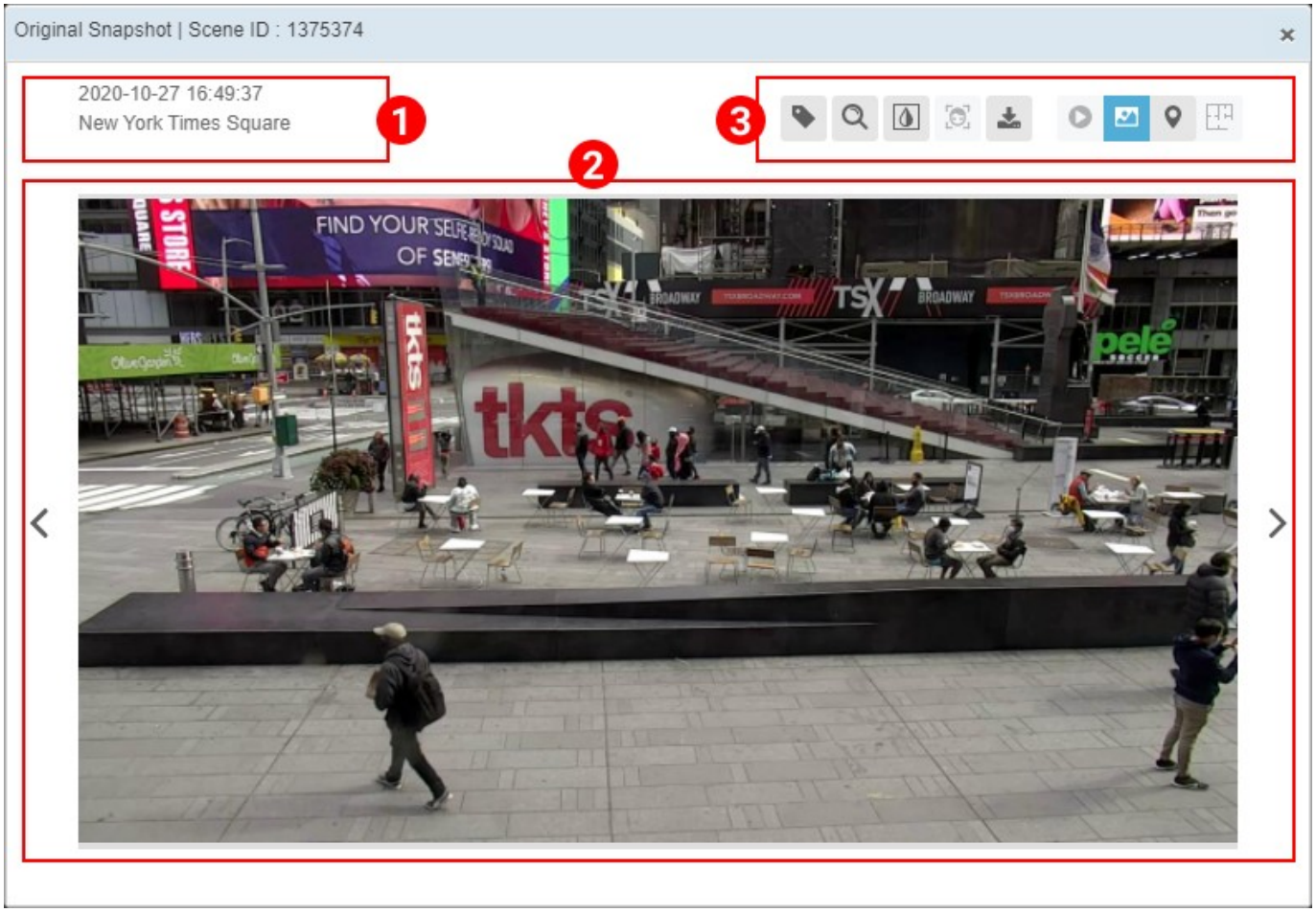
In some cases, the scene on the right does not have the pin in the display; i.e., no Floor Plan was assigned to this camera.

7.5.4 Detail Page

Click on the thumbnail to open a new window browser for more detailed information.

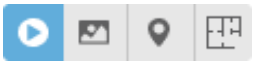
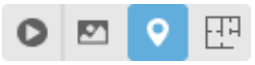
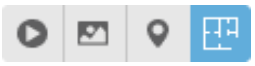


Search Detail Page



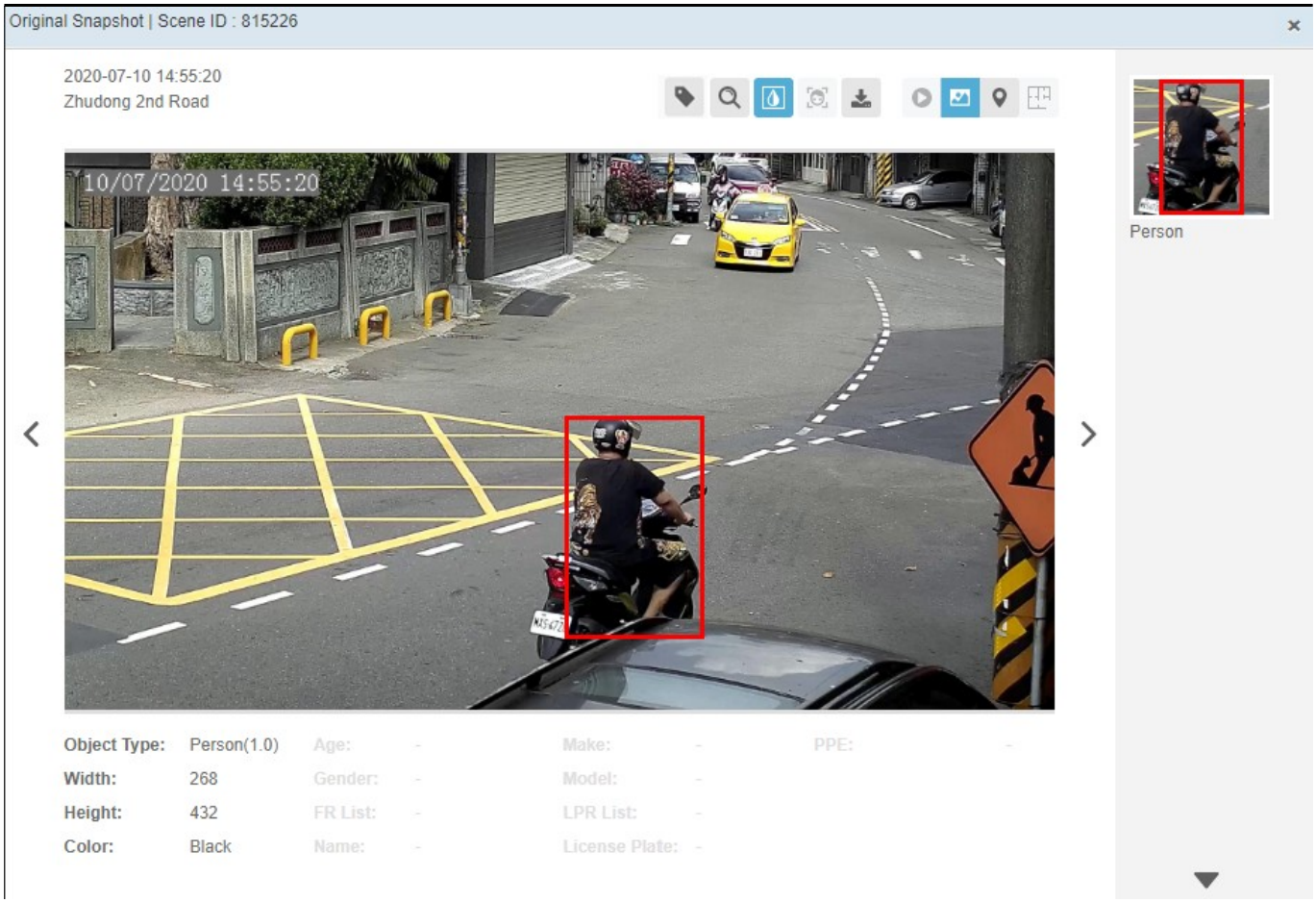
Scene Detailed information

No.	Name	Description
1	Image Information	Detected time of the image followed by camera name and information.
2	Original Snapshot	Display the original snapshot where the object is detected based on the search

		criteria. Click  to see the previous detection result. Click  to see the next detection result.
3	Additional Feature	 Click to enable the hashtag function  Click to enable the magnifying glass  Click to see bounding boxes of the detected objects in the image.  Shortcut to the Face Search page using the image of a detected face. For Face Search, refer to Chapter 7.4 Face Search for more details.  Click to download the image to a local directory.  Enable Recorded Video to watch the video; only available for video files and cameras connected to an NVR.  Default Image View.  Enable Map View to check the event location; only available for a file or camera with assigned GPS coordinates.  Enable Indoor Map View to check the event on a floor plan; only available for a camera with assigned Indoor Map.

When **Bounding Box** is enabled, the detected objects will be framed with bounding boxes and a panel of cropped images will be displayed on the right side for object selection.

To view detailed information of the detected object display at the bottom:
Select the cropped image on the right side to see the corresponding bounding box turn red in the scene image for better indication, or simply click on the detected object in the image.



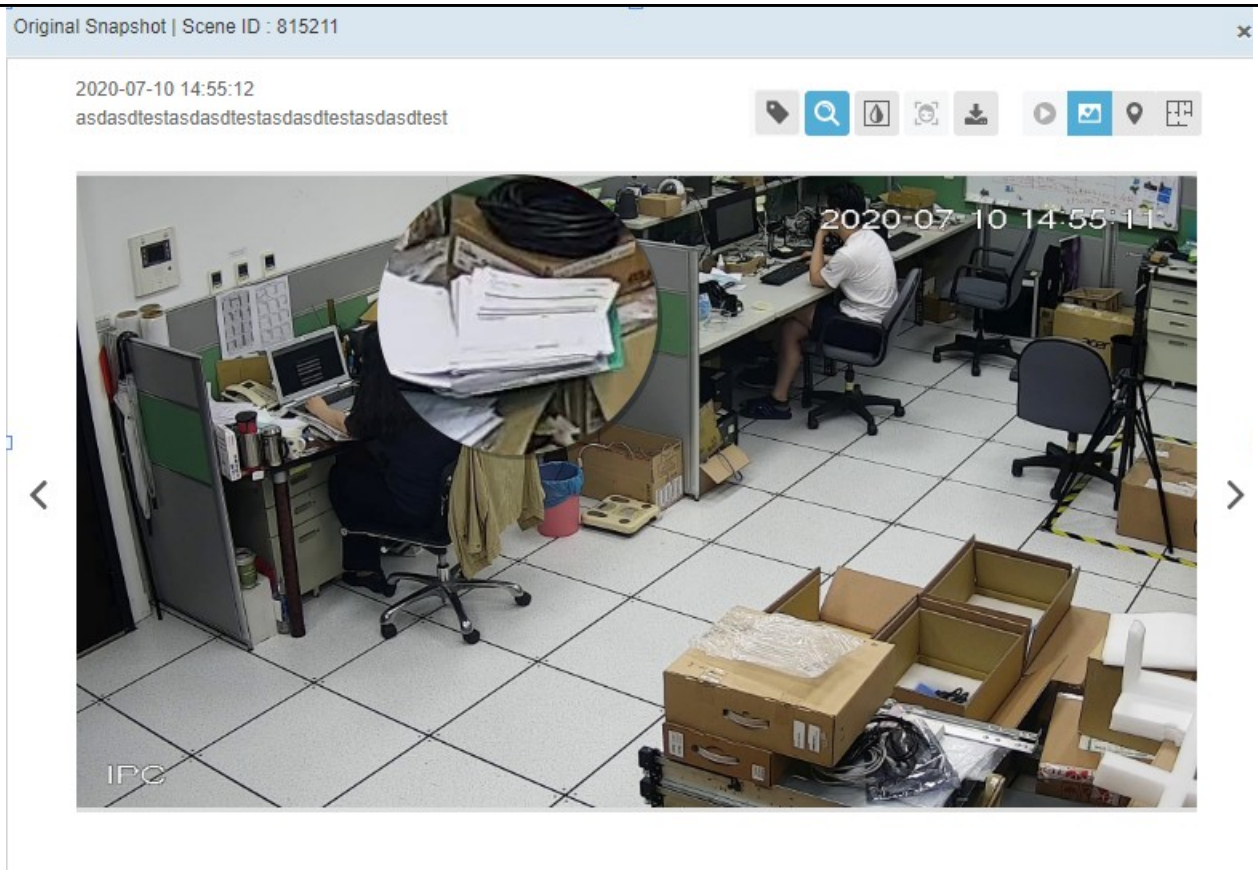
The scene with Bounding boxes

The detected objects are displayed in a cropped squared thumbnail to the right of the original snapshot.

Items from the search criteria will be auto displayed as the detected objects; click  to expand and see additional detected objects from this snapshot.

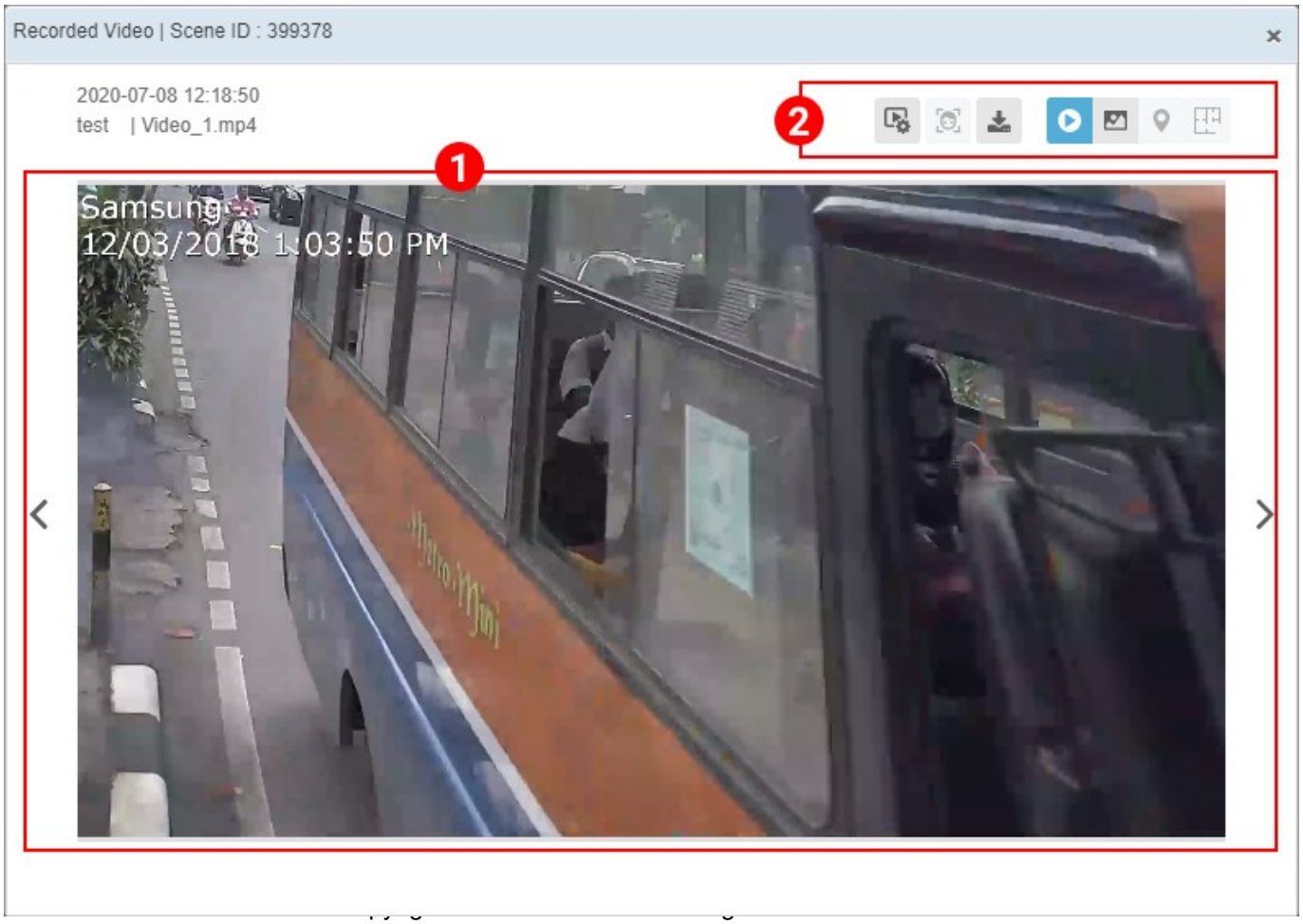
 **Magnifying glass**

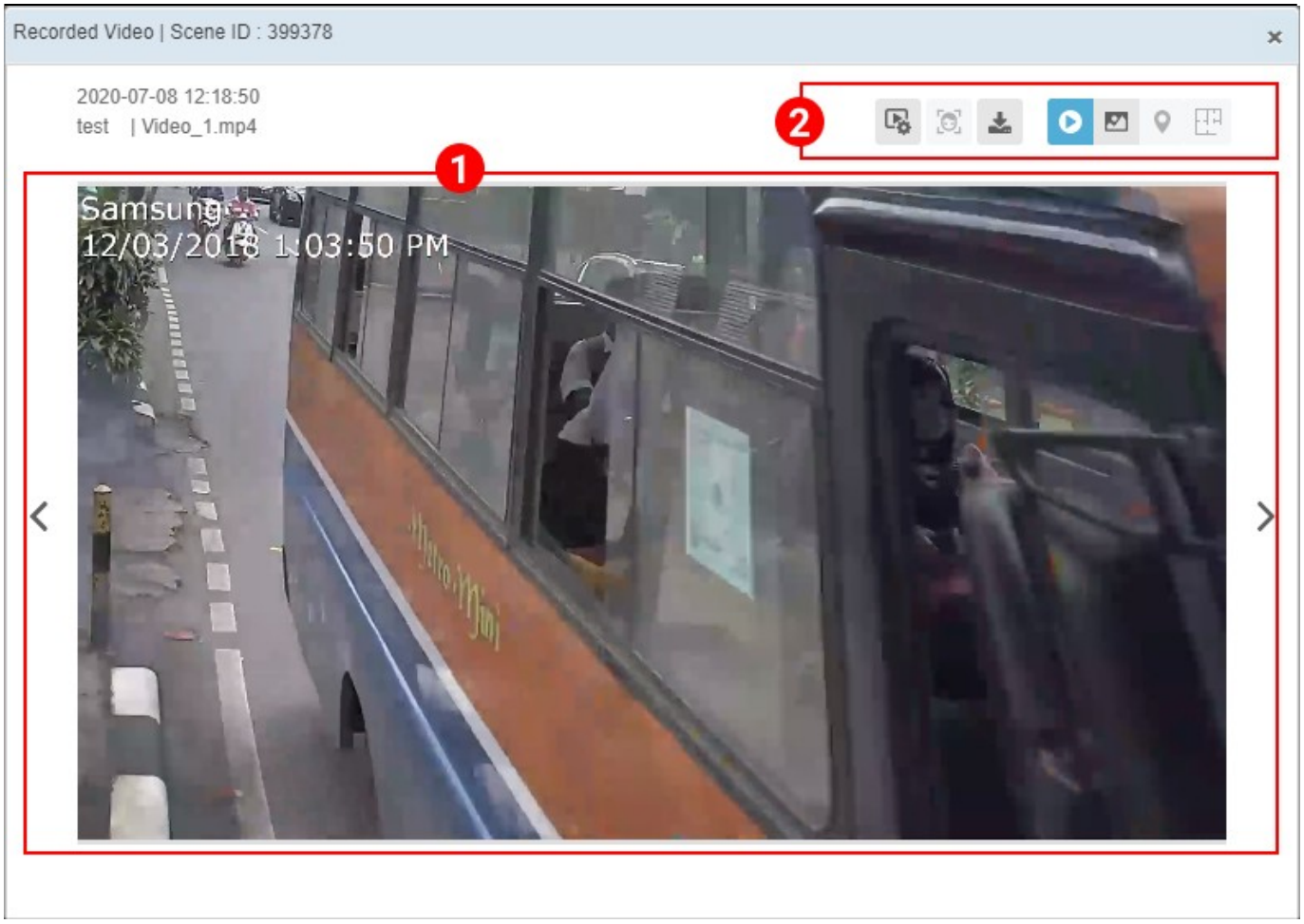
Mouse hover the original snapshot to activate the magnifying glass feature; zoom-in on the image to have a better view of the search objects.



Original Snapshot with the Magnifying Glass

By default, the **Detail Page** always opens with the Original Snapshot; switch to the Recorded Video for video clips (this button is disabled when the camera is not connected to an NVR).

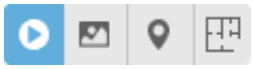




Recorded Video

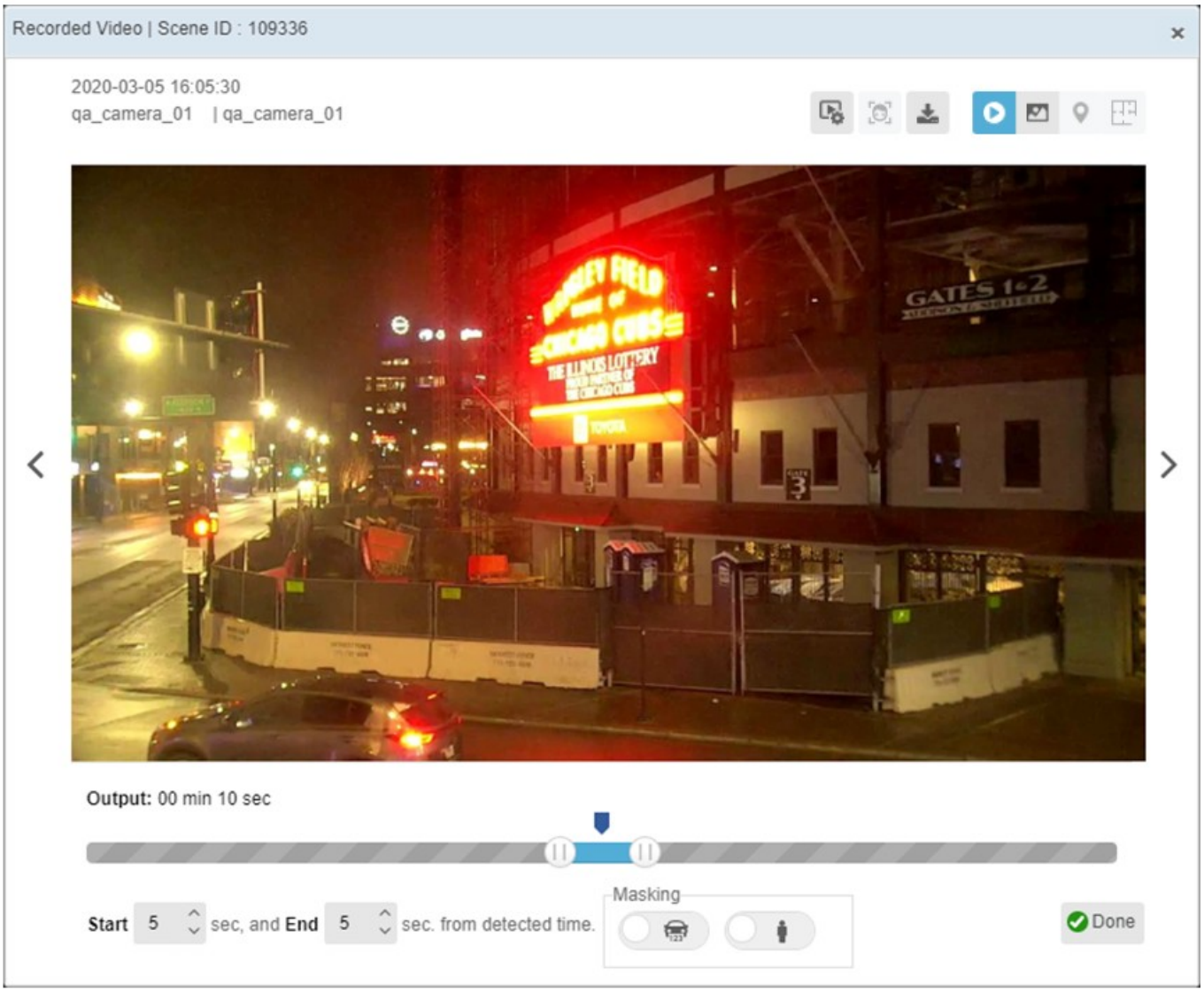
Once the Detail Page is switched to the video mode, the video of the detected event will start playing automatically.
The Recorded Video has 10 seconds of playback video by default. The video clip plays 5 seconds before and after the detected scene. The user can adjust the playback time in System/Setting.

Note: Camera without an assigned NVR does not have playback video, and the Recorded Video button is disabled.



No.	Name	Description
1	Recorded Video	Play the recorded video of the detected event. Mouse over the playing video and click to capture video images to download to the local directory. Click to see the previous detection result. Click to see the next detection result.
2	Additional Feature	Click to expand for additional video configurations. Shortcut to the Face Search page when a face is detected. For Face Search, refer to Chapter 7.4 Face Search for more details. Click to download the recorded video image to a local directory. Use the switch tab to change to Image view or Map view.

Click the **Edit Video** button to expand to the Recorded Video feature.

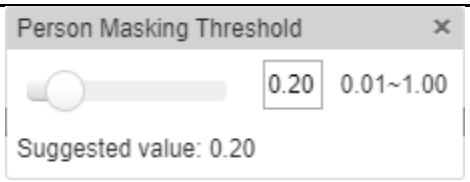


Recorded Video Configurations

Use the scale slider or time field to adjust the video length to the desired timeframe. Note that the scale slider and time field input are synced, and the user only needs to adjust one to obtain the same result for both.
Click **Done** to see the playback with the newly adjusted timeframe and new duration time.

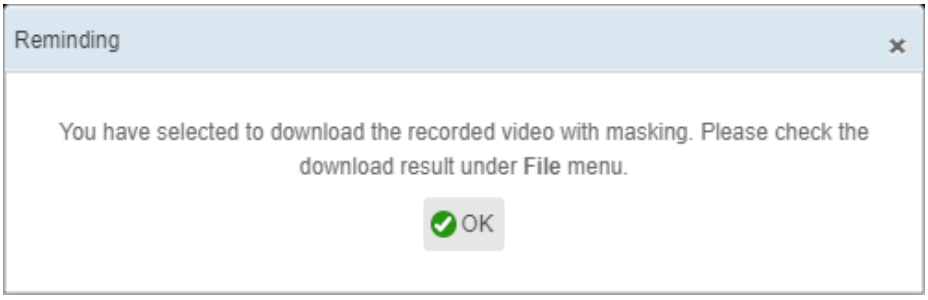
Masked Download
For a video with vehicles and people, the user can select to download the video with the masking feature for security privacy concerns.
To apply Masking to the video, simply turn on the Masked Download toggles before video download.

For person masking, a setting icon will appear when person masking is enabled. The user can click the icon to adjust the Person Masking Threshold.

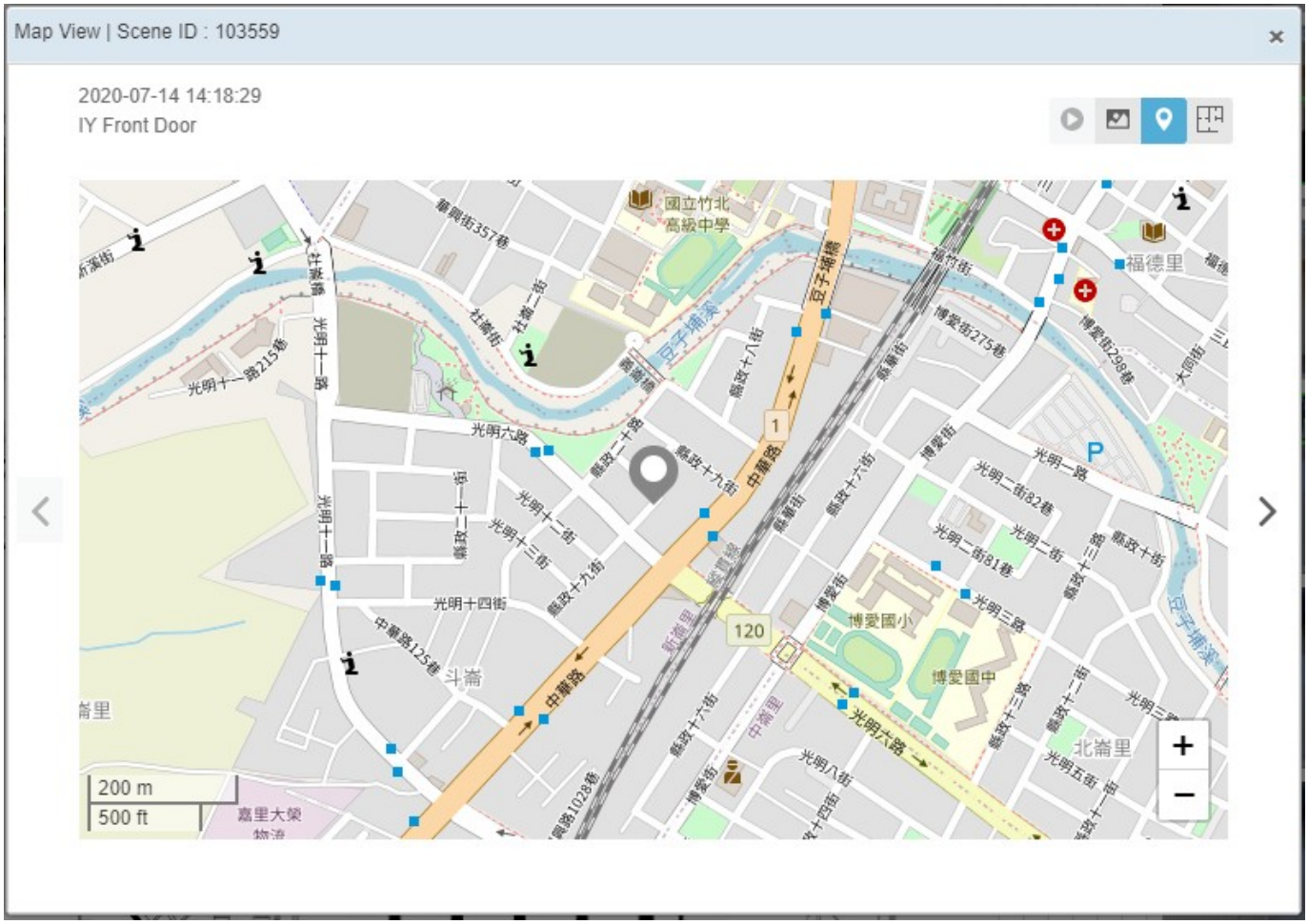


A higher threshold corresponds to less masking in the video. When the user decreases the threshold, more objects may be identified as people, and more masking will be applied.

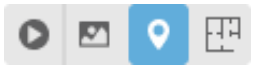
When download video with masking applied, a notification window will appear to remind the user that the downloaded masking video is saved to **File**.



Find the masking video under the File tab and download it.
For Masking Video File, refer to Chapter 15 File for more details.



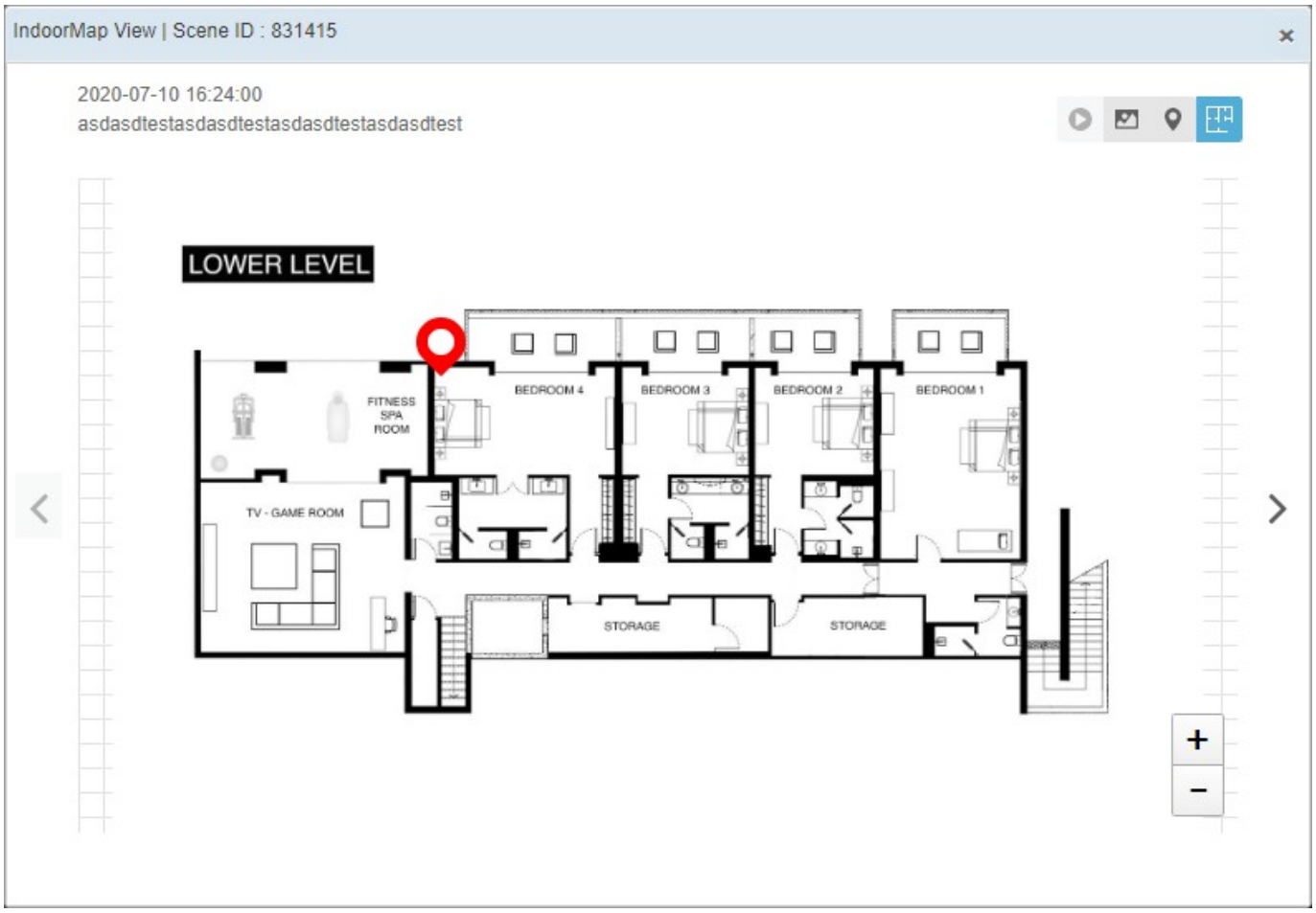
Detail Page Map View



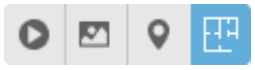
Click the Map icon to switch to Map View, in this view the user can find the map location of

the detected scene.

 The Drop Pin button option is also available when Video Search is in the Map View setting. Enable the feature to see the drop pin change from gray to red as the location is marked for that detected scene.



Detail Page Indoor Map View

 Click the Indoor Map icon to switch to Floor Plan View, where the user can find the Floor Plan location of the detected scene.

Appendix Search Syntax

Query Syntax

clause = type [({property}[,{property}...])] [{op}{number}]
query = clause [{bit operator} clause]

Supported Type

General Model

Category	Type
Transportation	Bicycle
	Bus
	Car
	Motorcycle
	Truck
	Person
Animal	Bear
	Cat
	cow
	Dog
	Horse
Object	Backpack
	Baseball bat
	Cellphone
	Handbag
	Laptop
	Suitcase
	Umbrella
Extend Object	Airplane
	Balls
	Boat
	Chair
	Gloves
	Kite
	Knife
	Plant
	Racket
	Skateboard

	Skis
	Snowboard
	Surfboard
	Tie
	Train

Human Model

Category	Type
Transportation	Bicycle
	Car
Human	Person
Object	Backpack
	Bag
	Baseball bat
	Gun
	Helmet
	Suitcase
	Umbrella
Extend Object	Baseball glove
	Boot
	Dress
	Glasses
	Hat
	Headphones
	Jacket
	Roller skates
	Scarf
	Shirt
	Shorts
	Sports uniform
	Tie
	Trousers

	Wheelchair

Fire Model

Category	Type
Transportation	Car
Human	Person
Object	Fire
	Smoke

Weapon Model

Category	Type
Human	Person
Object	Handgun
	Rifle

Supported Property

Color: Red, Green, Blue, Yellow, Black, White, Gray, Pink.
Color Exclude: Place **"!"** before the selected color.

Supported Operator

>, <, >=, <=, =

Supported bit operator

Advanced Search provides the "AND", "OR" query syntax, where "OR" outputs results when either object rule is applied.

Example: for an "AND" search, the user is searching for a red car and people:

```
car(red) and person
```

The search result will show events when both red cars and people are detected in one scene.

Example: for an “OR” search, the user is searching for a red car or people:

```
car(red) or person
```

The search result will show events when either a red car or people is detected, including events that do not contain both a red car and people.

Example

Advanced Search provides the type-ahead that enables the users to see possible criteria in the system. The following example shows the available options for a search.

Car search:

Car

Car with color, e.g., yellow:

car(yellow)

Multiple cars in one scene, e.g., 2 cars:

car=2

Search for 2 or more vehicles with different colors, e.g., yellow and white:

car(yellow,white)>=2

Search for a scene with a car or a bus:

car or bus

Search for a scene with 2 cars or more than 3 buses:

car=2 or bus>3

Car with license plate “ABC123”:

car(plate=ABC123)

Red car in list “A” with license plate “ABC123”:

car(red;plate_category=A;plate=ABC123)

Car with license plate “abc123” and cannot be in red:

car(plate=abe123;!red)

Search for a person whose age is between 20 to 29:

face(age=20-29)

Search for male:

face(gender=Male)

Search for a male person whose age is between 20 to 29:

face(gender=Male;age=20-29)

Multiple people not in blue:

person(!blue)>1

A person not in blue and multiple people in red:

person(!blue) and person(red)>1

Multiple faces of age 30-39:

face(age=30-39)>1

A person with a detected face wearing helmet and vest

Person(Face;Vest=Yes;Helmet=Yes)>0

A person with or without face detected with helmet, without a vest.

Person(Vest=No;Helmet=Yes)>0

Multiple yellow cars with license plates “ABC123” in the list of “stolen car”:

car(yellow;plate=ABC123;plate_category=stolen car)>1

Multiple buses not in black with license plates “DEF123” and not in any list:

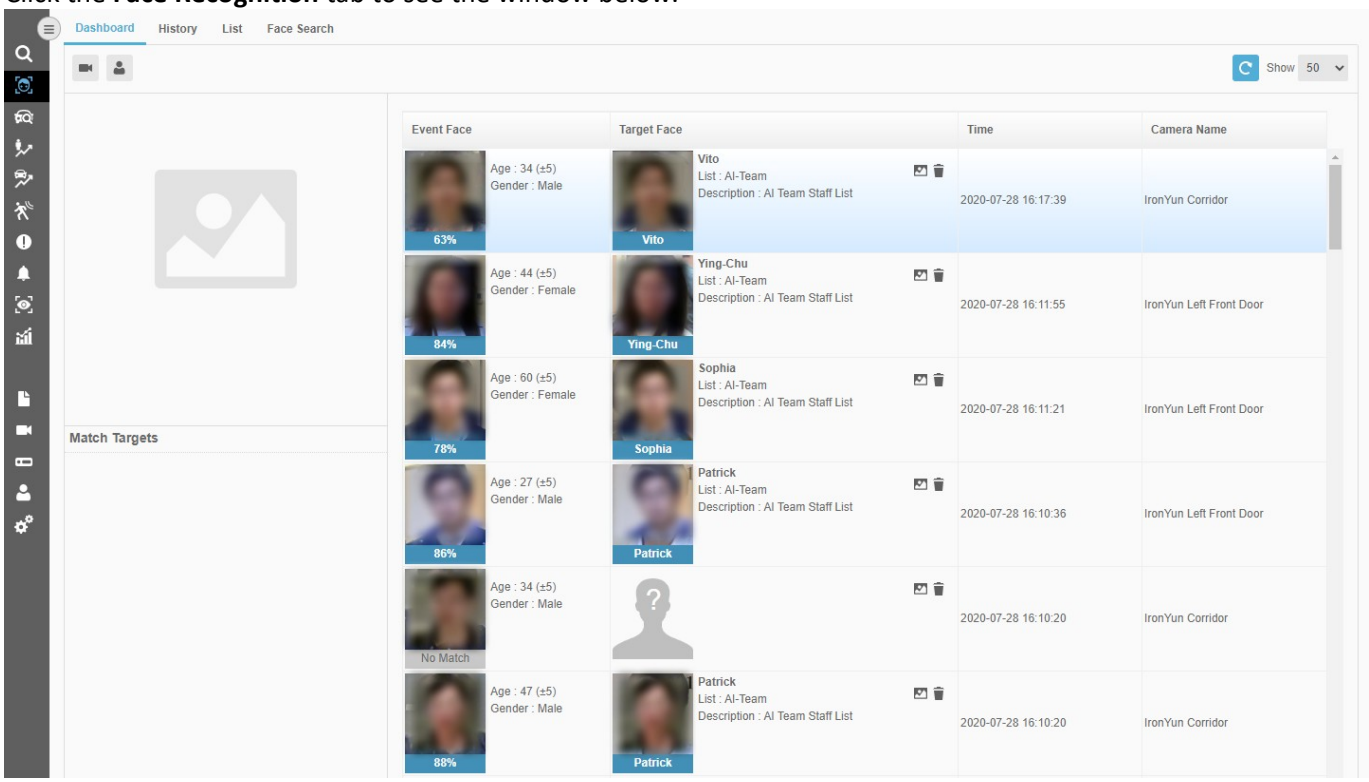
bus(!black;plate=DEF123)>1

i18n support

Vaidio provides the type-ahead support with the chosen language in an advanced search.

8. Face Recognition

Click the **Face Recognition** tab to see the window below.



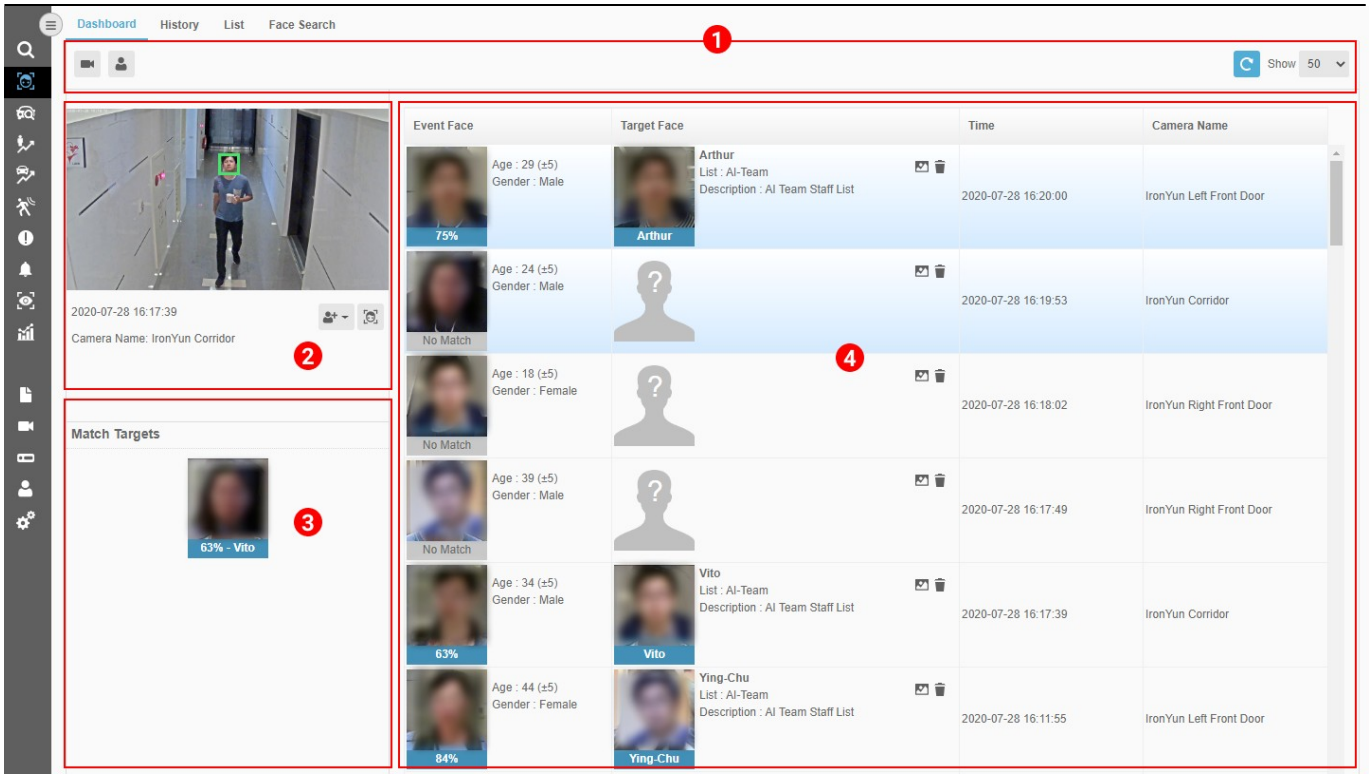
Face Recognition Window

In the **Face Recognition** tab, there are four sub-tabs: **Dashboard, History, List,** and **Face Search**

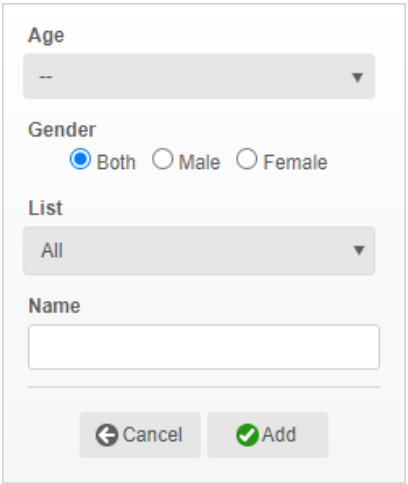
Name	Description
Dashboard	Face Recognition default page; the face recognition dashboard allows the user to see the runtime of the face detected.
History	Users can search and track for a specific face detection timeframe.
List	Categorize faces detected into branded lists.
Face Search	Users can search for a matched face from a video search result or upload an image. There are two switch tabs in Face Search: Match Video and Match List.

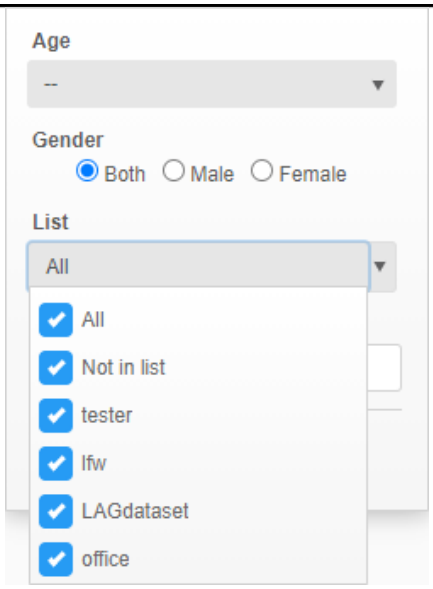
8.1 Dashboard

The Dashboard sub-tab is the default page of Face Recognition, shown in the window below.



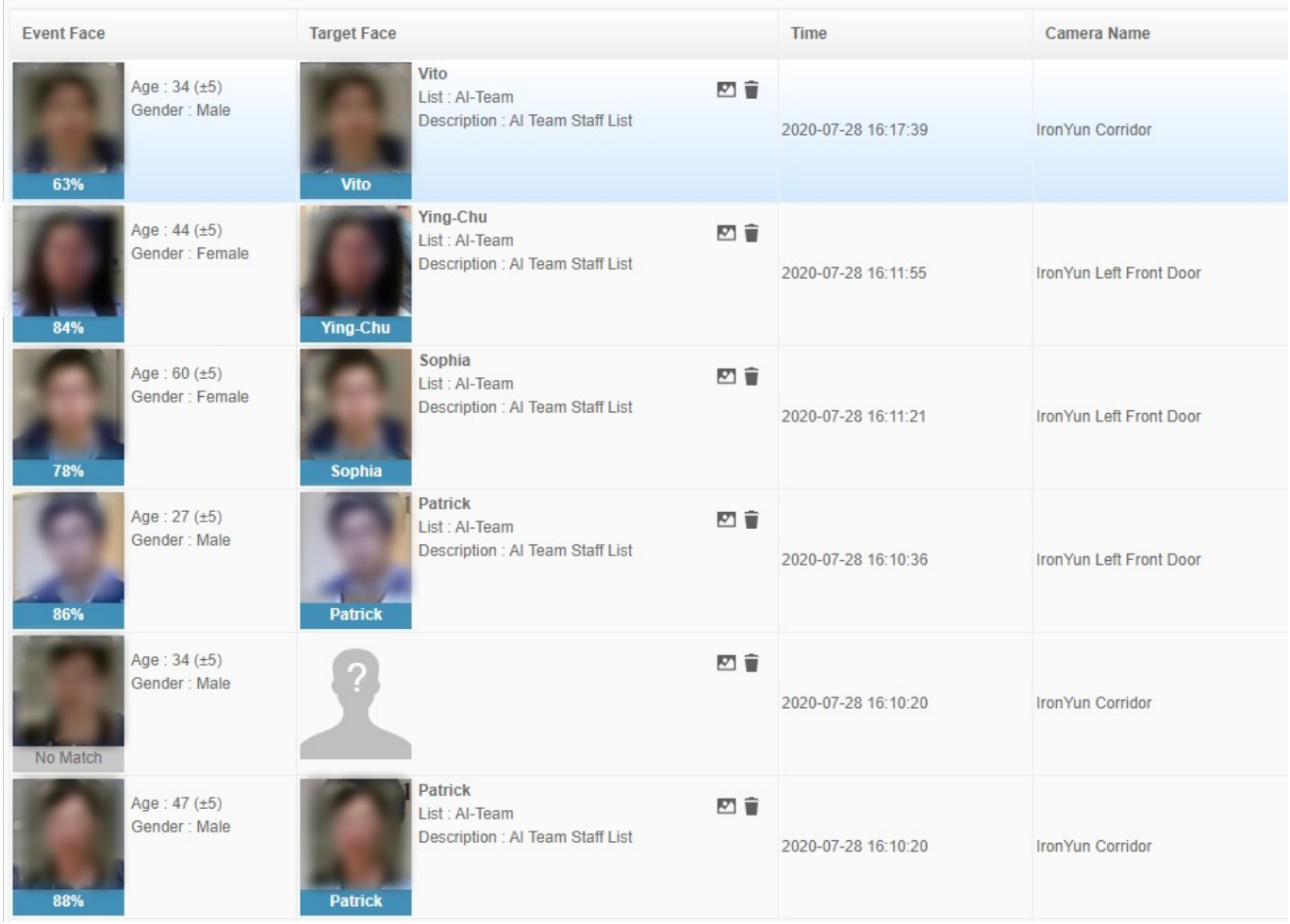
Face Recognition Dashboard Window

No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). Click to define the query criteria by specifying the Age, Gender, List (List can be created in the List tab under the Face Recognition tab) and Name.  Mach Target List allows multiple list selection.

		  Refresh is ON by default; disable to stop the dashboard from refreshing. Select the number of face recognition entries to display on the Dashboard.
2	Source Image View	**Source Image View** is vacant by default.  Click the source image icon from the dashboard result to enable source image on the left view.  Click to **Create New Target** or **Add to Existing List**  Shortcut to the **Face Search** page using this source image.
3	Top 5 Match Target	Display up to 5 faces with the highest similarity score to the detected face in **Source Image View.**
4	Dashboard Result	Display the runtime of face images detected in chronological order.

FR Dashboard Results

The dashboard table shows **Event Face** with Similarity, Age and Gender; **Target Face** with List Name, and Description; **Time, Camera Name.**



Face Recognition Dashboard Result

Face Recognition Dashboard runtime that occurs in the latest 1 minute will be highlighted in blue.

Name	Description
Event Face	The thumbnail of the detected Event Face. Click to link to a new window for more detailed information on the detected face. **Age**: detected age range **Gender**: detected gender **Similarity**: similarity score of Event Face compared to Target Face  Click the source image icon to enable source image on the left view.  Click to delete data.
Target Face	Face with the highest matching score, generated from a video search result image. Click to view the Personal profile of the Target Face. **Target Face name:** Name of the Target Face; predefined information from Target Face data. Event with blue bar indicates that the Event Face is matched with a listed target face. **List:** Display the list to which the Target Face is classified; predefined information when creating Target Face data. **Description**: Any additional information for the user reference.
Time	Event Face captured time.
Camera Name	The camera that captured the Face Image.

A Detected Event Face with no match will show no Target Face, Name, Similarity, List, and Description.

In this case, the user can add the newly detected face to a list for the record.

Target Face will display a gray headshot label “Deleted” to indicate the matched face has been removed from the target list.

Face Recognition Source Image

Click the source image icon from the dashboard result to display the source image on the left view.

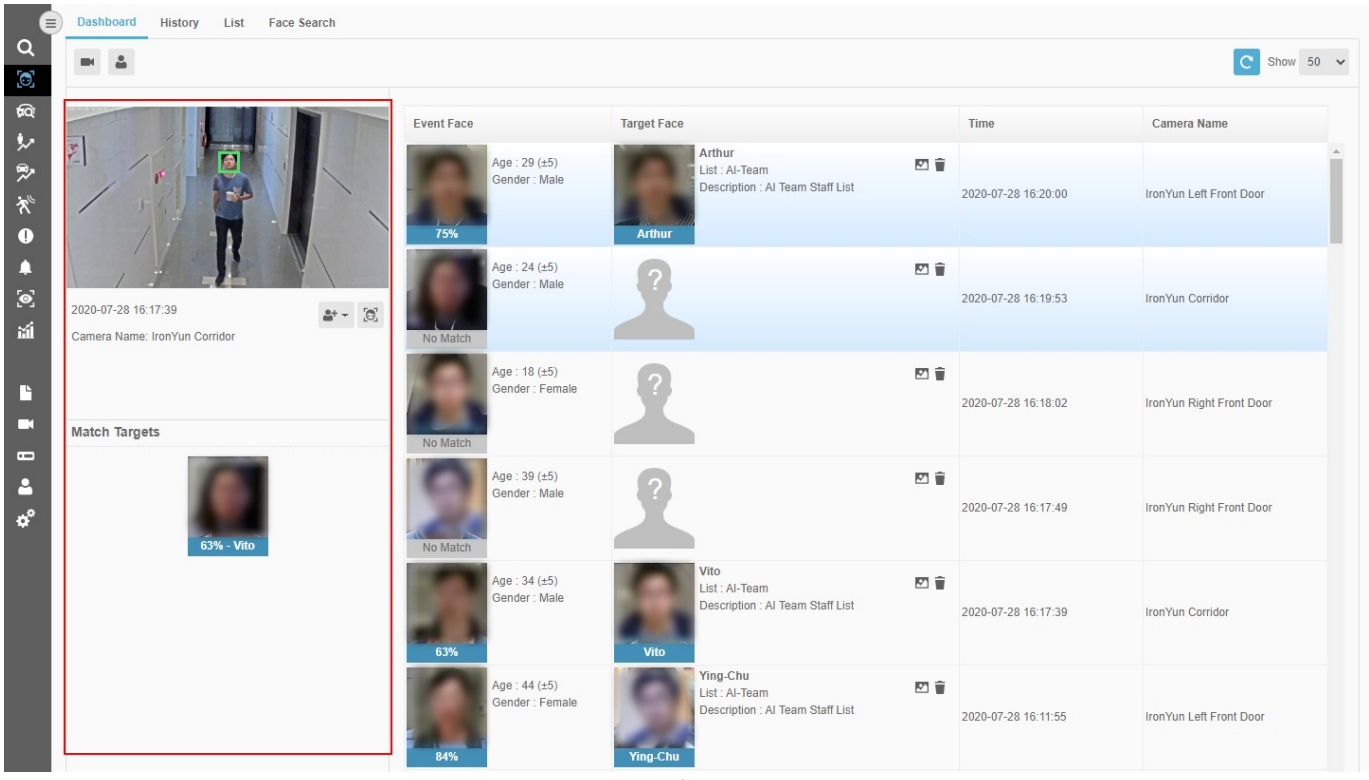
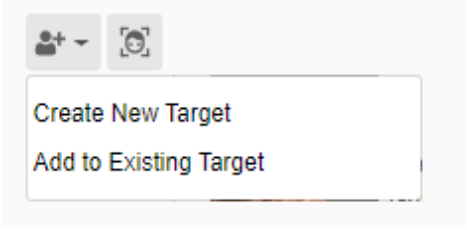
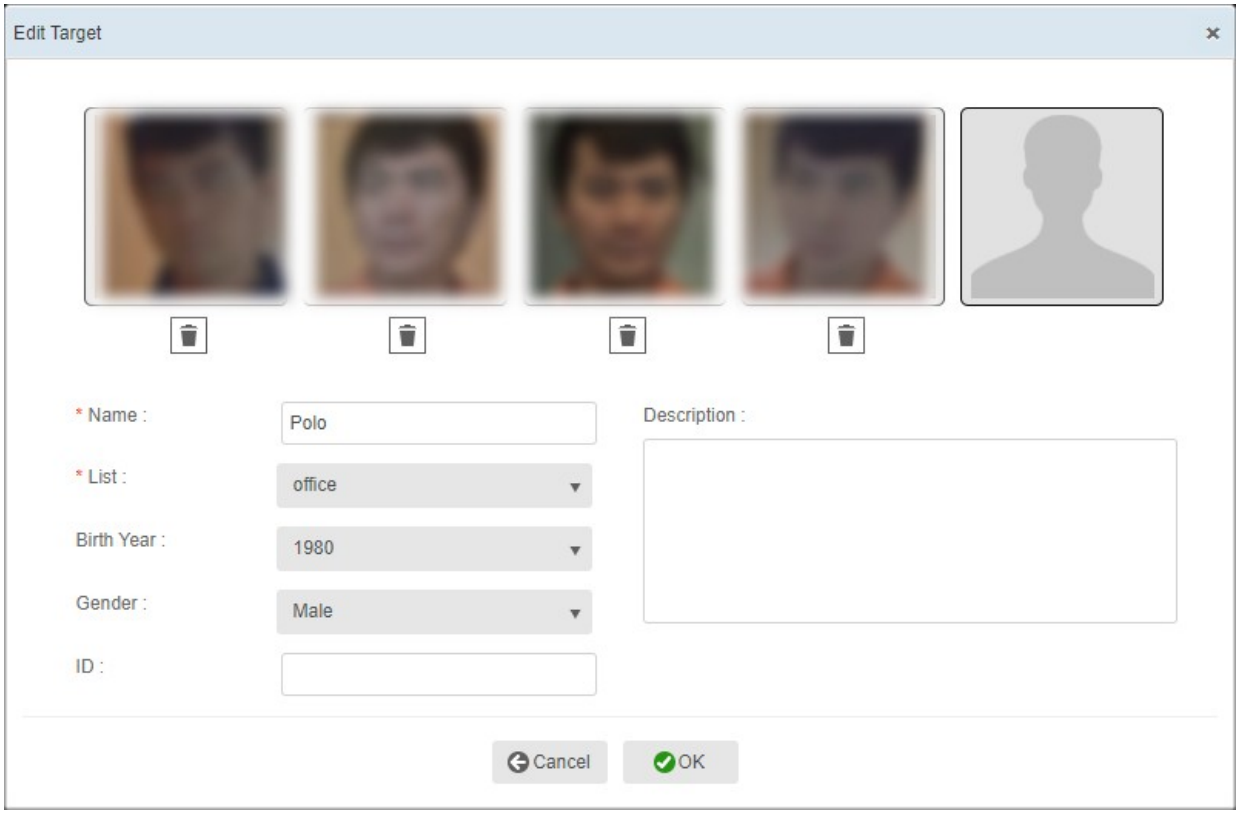


Image View of an Event Face

Click to expand the option for **Create New Target** and **Add to Existing Target.**

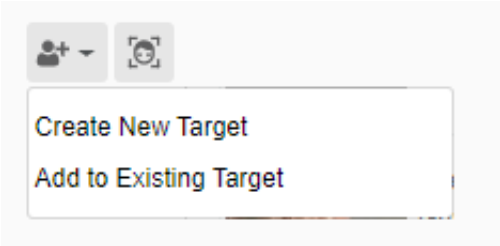


Select **Create New Target** to save the face detected and assign it to a list



Face Recognition Create New Target Window

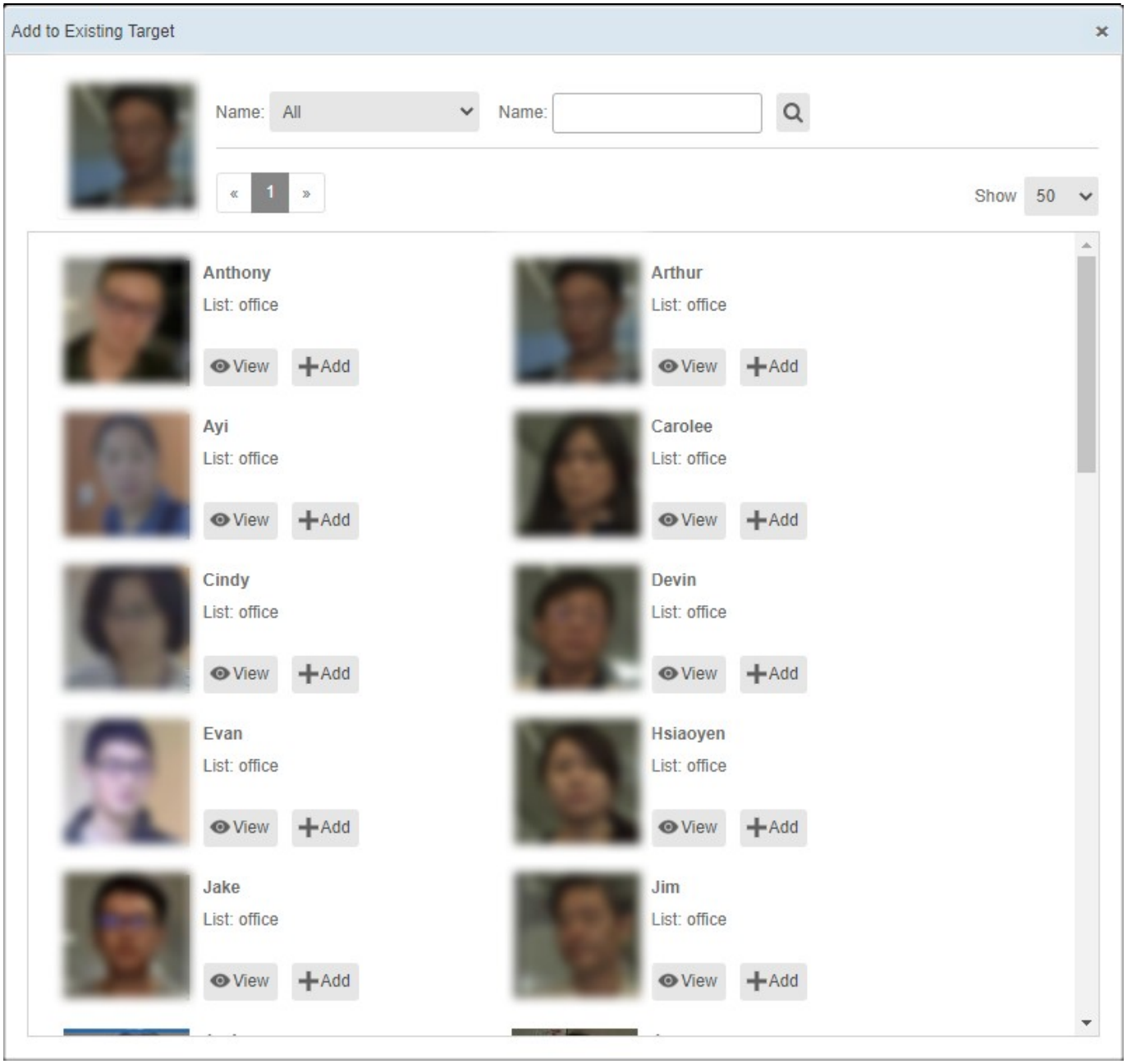
In the **Create New Target** window, the user can upload more face images to increase the detection accuracy (can add up to 5 images). Input additional personal data and assign it to the given List. Click **OK** to add the Face to the new target list.



Select **Add to Existing Target** to save the face detected and assign it to a list

If the user recognizes the Face Image and is aware that the detected person already belongs to a list, the user can select **Add to Existing List** to add the face image to the existing target and increase the accuracy.

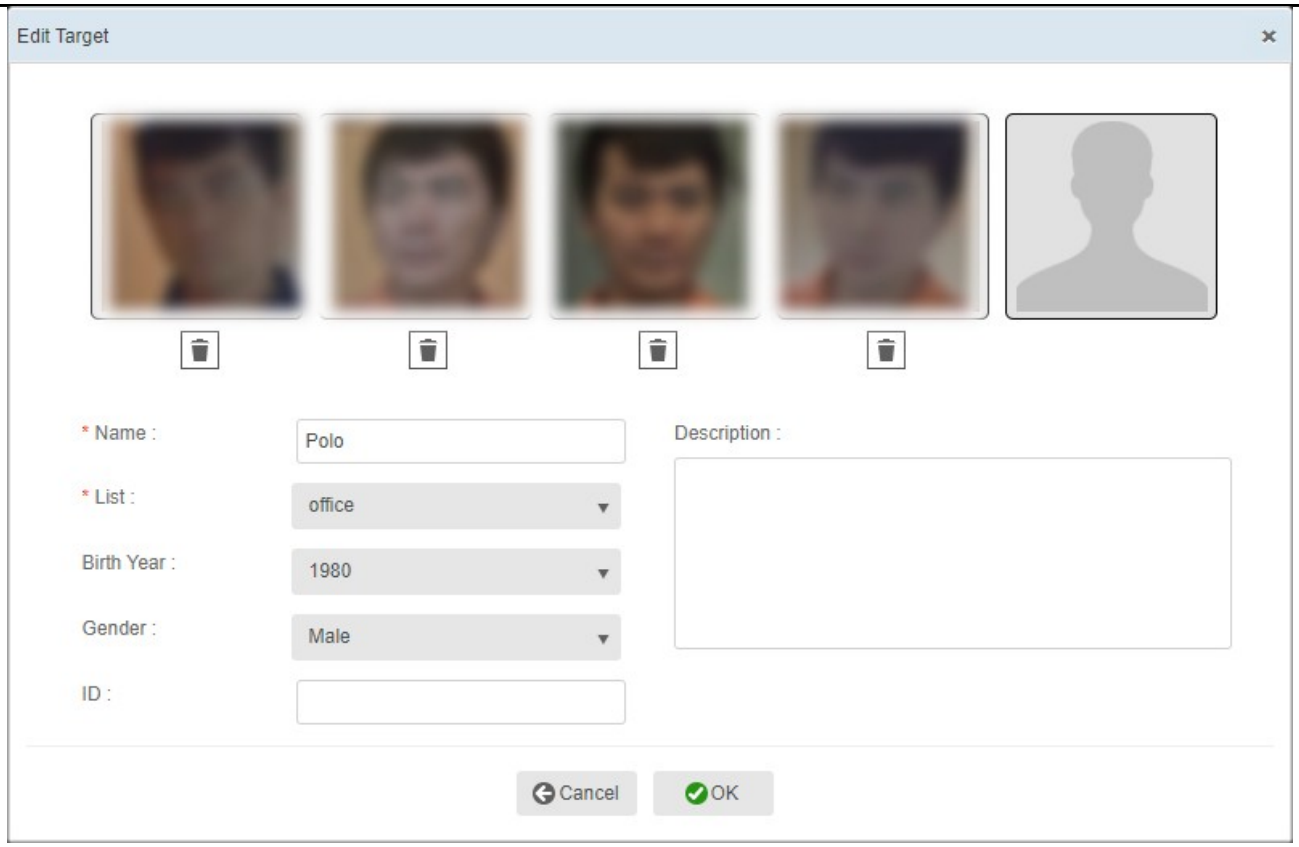
Select **Add to Existing Target** to view the window below,



Face Recognition Add to Existing Target

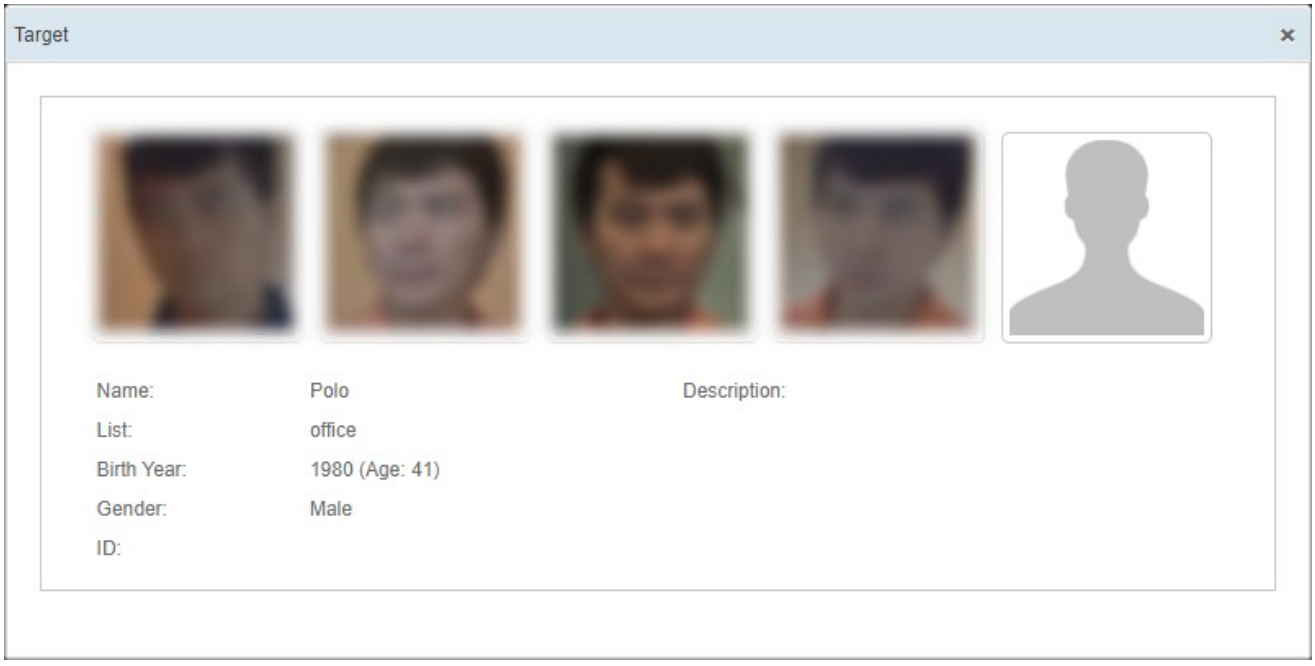
In the **Add to Existing Target** window, search for the existing list profile by entering the name of the detected person. Then, the user can find the correct match from the list and click **Add** to add him/her to a list or click **View Profile** to check the profile information.

When the user clicks on **Add**, the new face image will be added to the existing target, as shown below:



Face Recognition Add to List

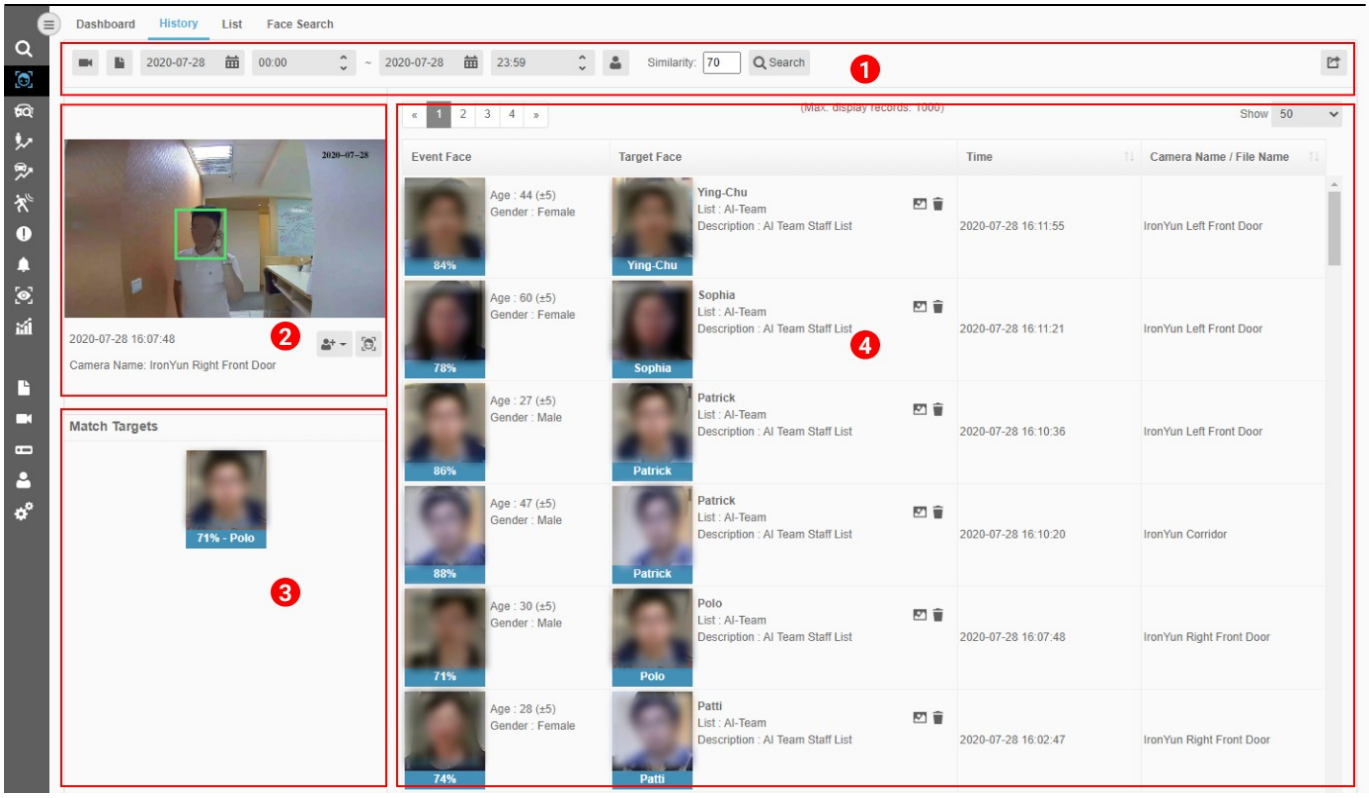
Click **View Profile** to see the information below:



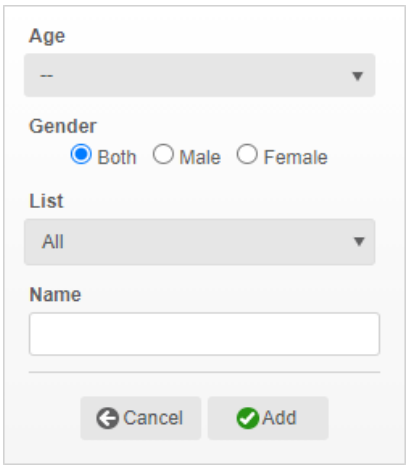
Face Recognition Profile

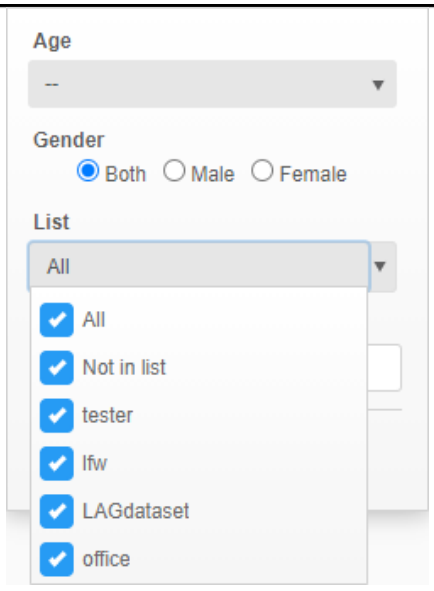
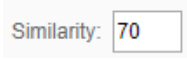
8.2 History

Under the **Face Recognition** sub-tabs, click **History** to see the window below.

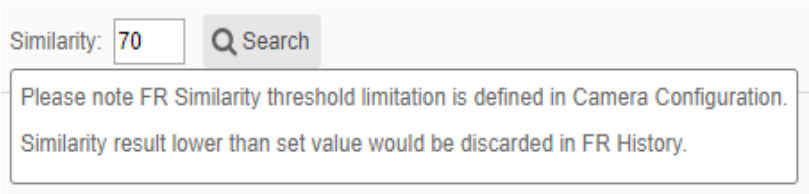


Face Recognition History Window

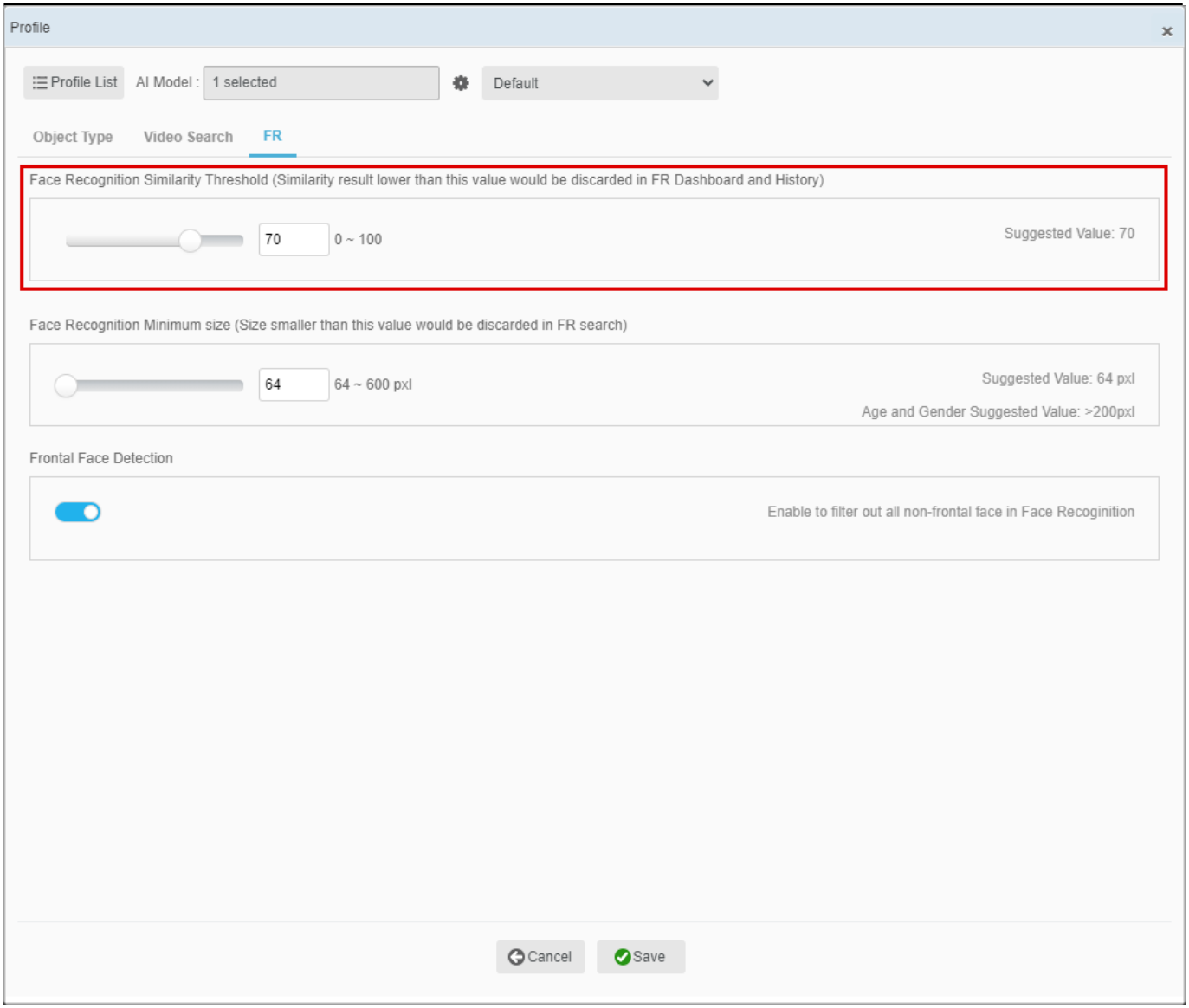
No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). Click to define the query criteria by specifying the file(s). 2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time. Click to define the query criteria by specifying the Age, Gender, List (a list can be created in the List tab under the Face Recognition tab) and Name.  Mach Target List allows multiple list selection.

		  Similarity default is set at 70; input different values according to the user preference. A lower number generates a wider range of matched faces. A higher number generates fewer but more accurately matched faces. Click **Search** to see the result  Click to export the results to an Excel file.
2	Source Image View	**Source Image View** is vacant by default.  Click the source image icon from the dashboard result to enable source image on the left view.  Click to **Create New Target** or **Add to Existing List**  Shortcut to the **Face Search** page using this source image.
3	Match Targets	Display up to 5 faces with the highest similarity compared to the detected face in **Face Image View**; only images with similarity scores greater than or equal to the similarity threshold set in the query are displayed.
4	History Result	Display face images detected in chronological order. In FR History, the captured Face Image results are from both cameras and files.

Face Recognition Similarity Threshold
Mouse hover over the similarity threshold to see a message regarding the threshold limitation configuration.



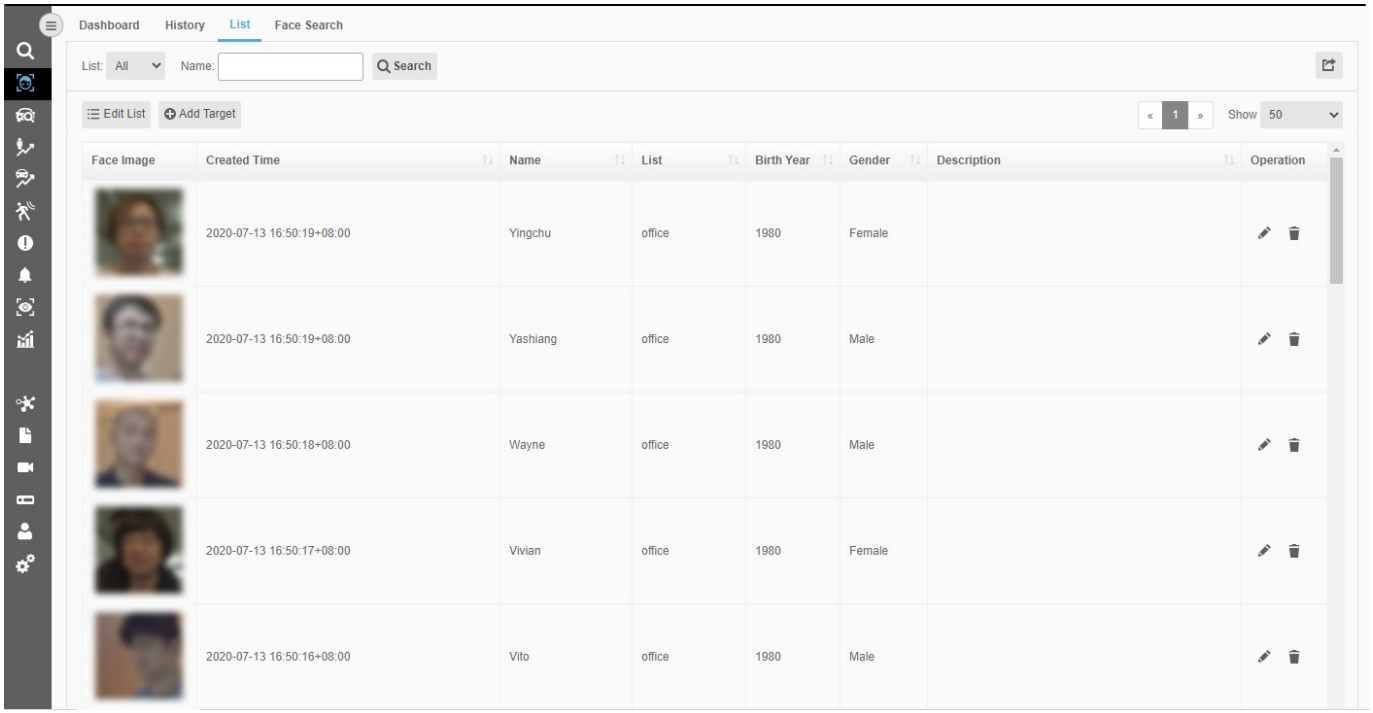
Note: the FR Similarity threshold **limitation** is defined in **Camera Configuration**.
For example, if the Similarity Threshold in Camera Configuration is set at 70, images with similarities below 70 are discarded in the FR **Dashboard and History**. In this case, only face matches with similarity above 70 are displayed in the FR Dashboard and History result.
Refer to Chapter 16.1.1 Profile Configuration for more details.



Camera Profile FR Similarity Threshold

8.3 List

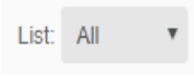
Under the **Face Recognition** sub-tabs, click **List** to see the window below.



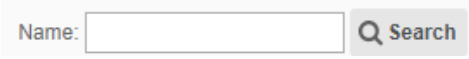
Face Recognition List Window

FR list allows the user to categorize people of interest into different watch lists. Through the predefined list, face recognition can identify the target in real-time using multi-camera and external file search.

Query Selection:
The user can search for a face Image by **List** and **Name.**



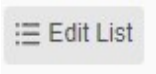
Click the **List** drop-down menu to select the query criteria by specifying the List



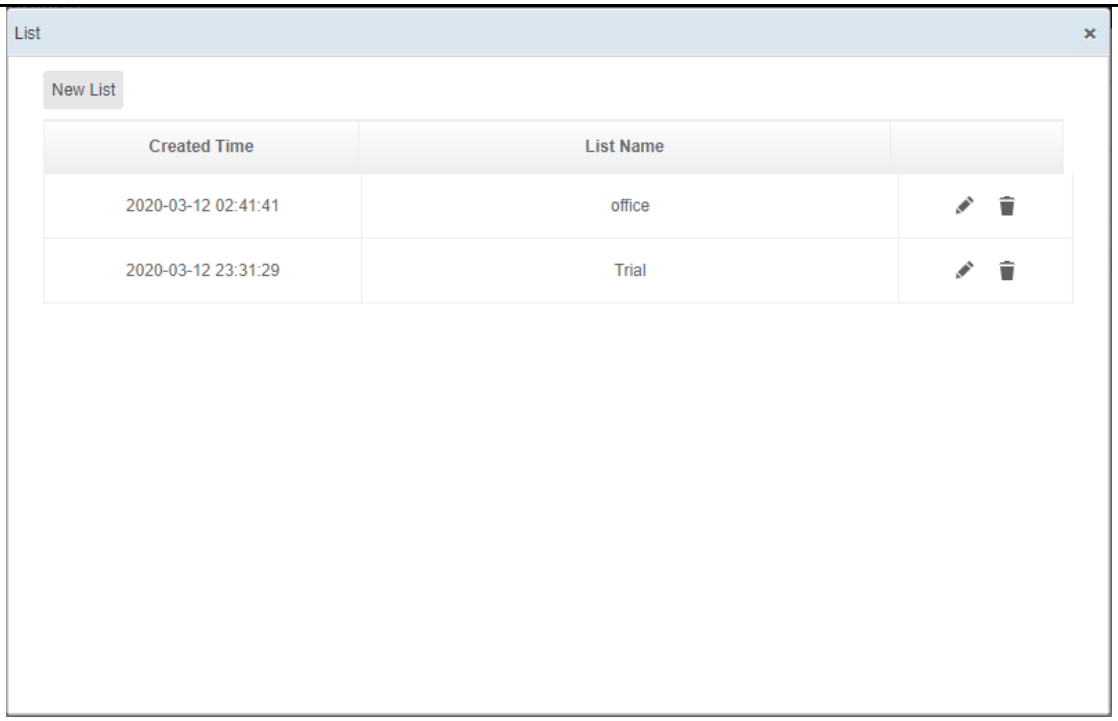
Input Name of interest to define the query criteria by specifying the name.

Click **Search** to see the result

Click to export the results as an Excel file.



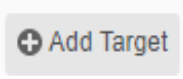
Click to create a new list, edit (rename) or delete an existing Face Recognition list



Face Recognition List Edit Window

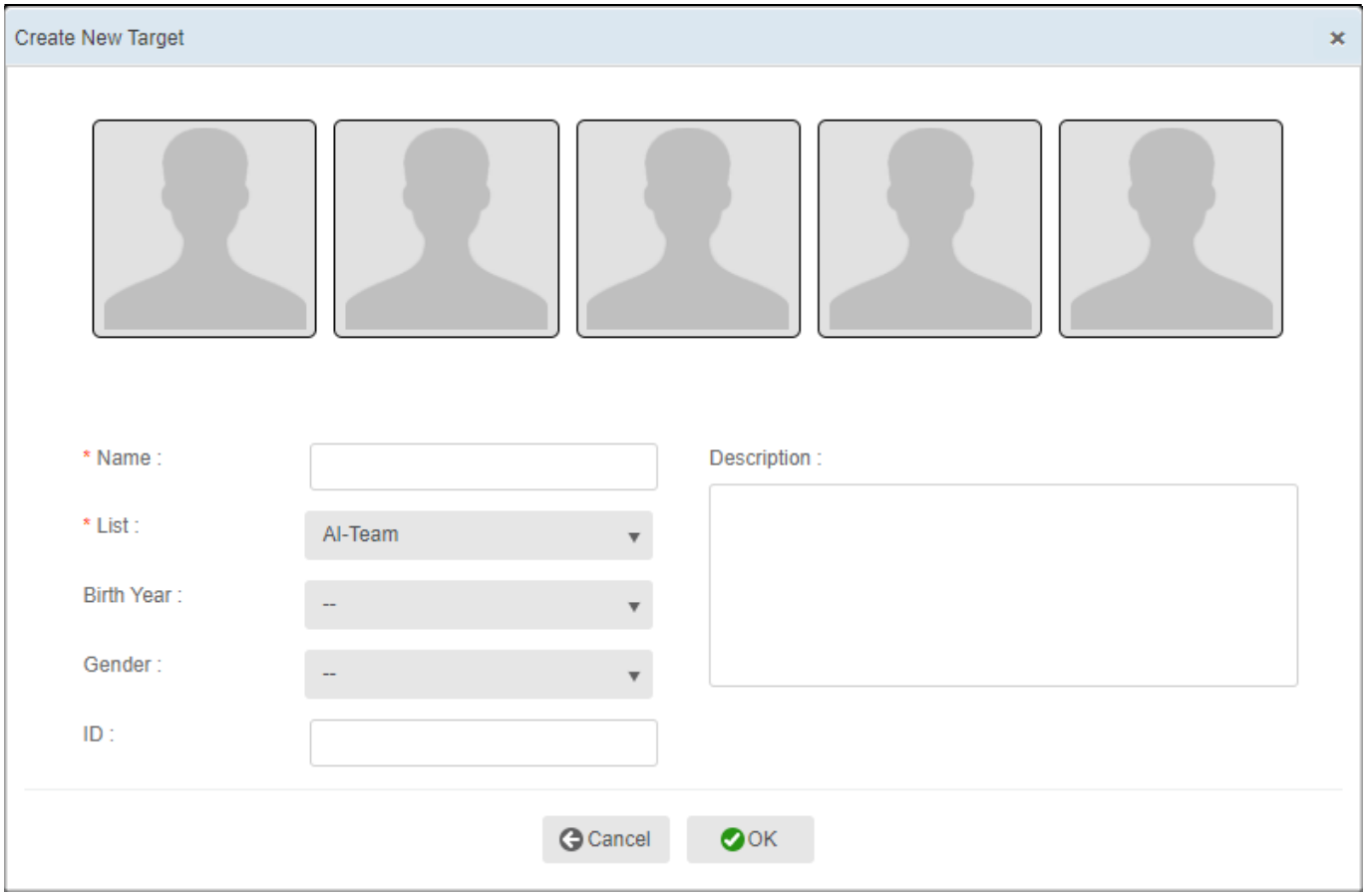
Click the **New List** button to see the window below:

Enter the new list name and click **Add** to apply to the list; once a new list is added, it will appear as one of the options in the List window. Each list can store up to 200 entries.



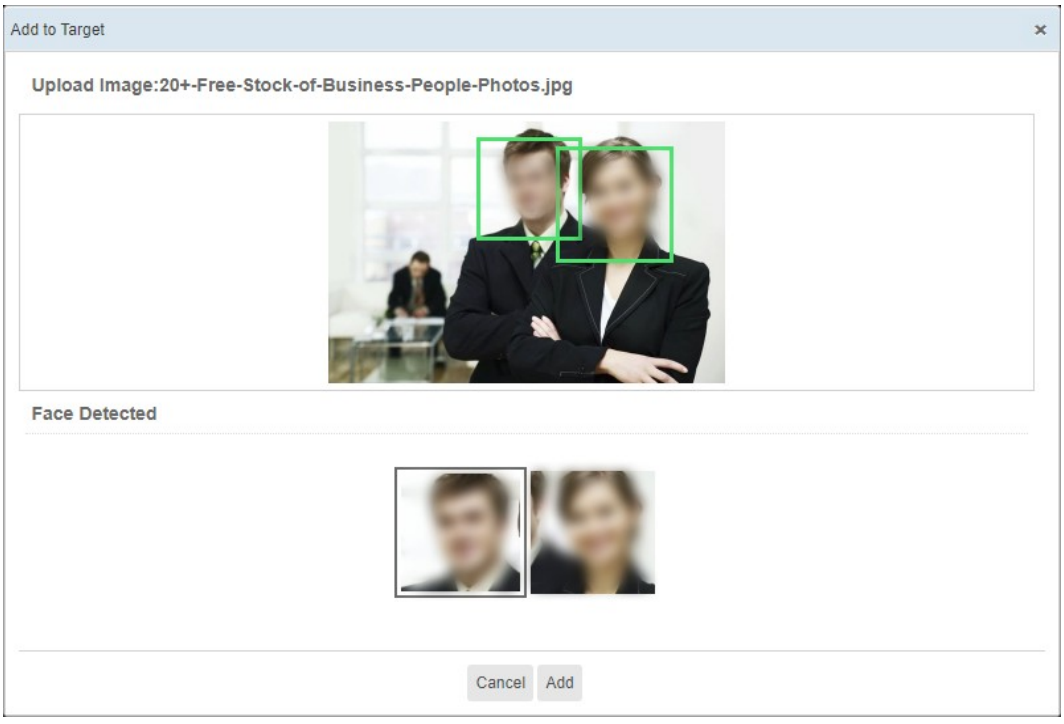
Click to open a new window to add a new target.
In the Create New Target window, the user can upload more face images to increase the detection accuracy (can add up to 5 images)

Click the gray headshot image to upload a new face image.



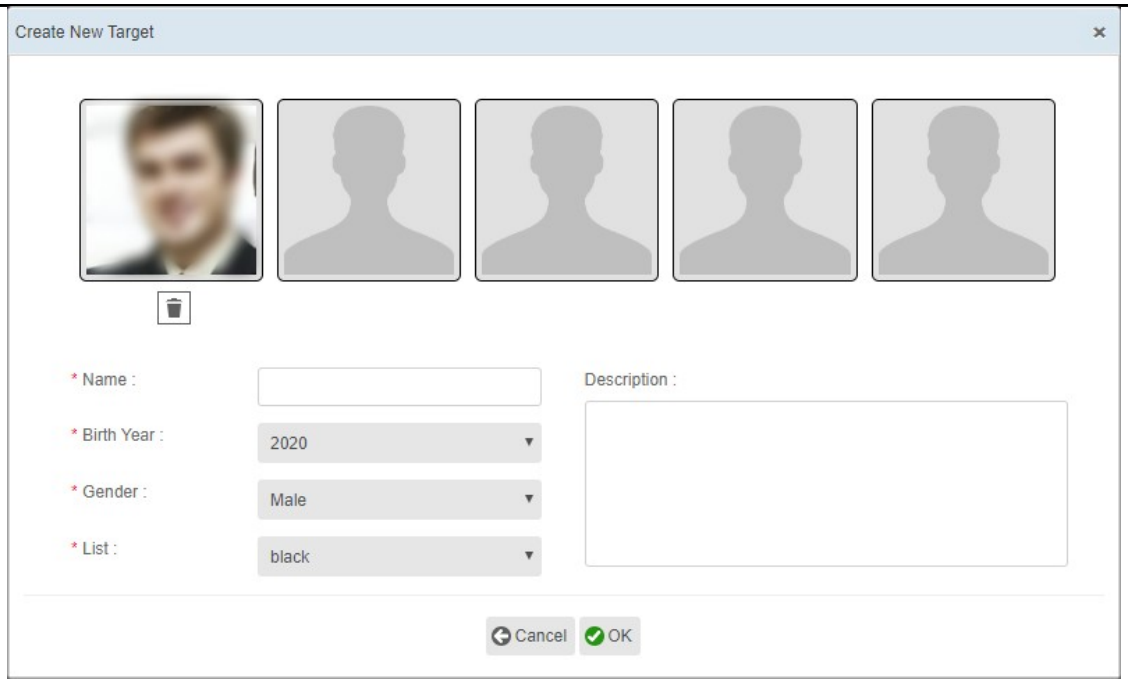
Add to List Window

Select the image file from a local device and upload the file to see the window below. The supported image file formats are .png and .jpg.



Add the detected face to a List

The detected face(s) will be cropped out and listed for the user to select. Select the face image and click Add to apply.

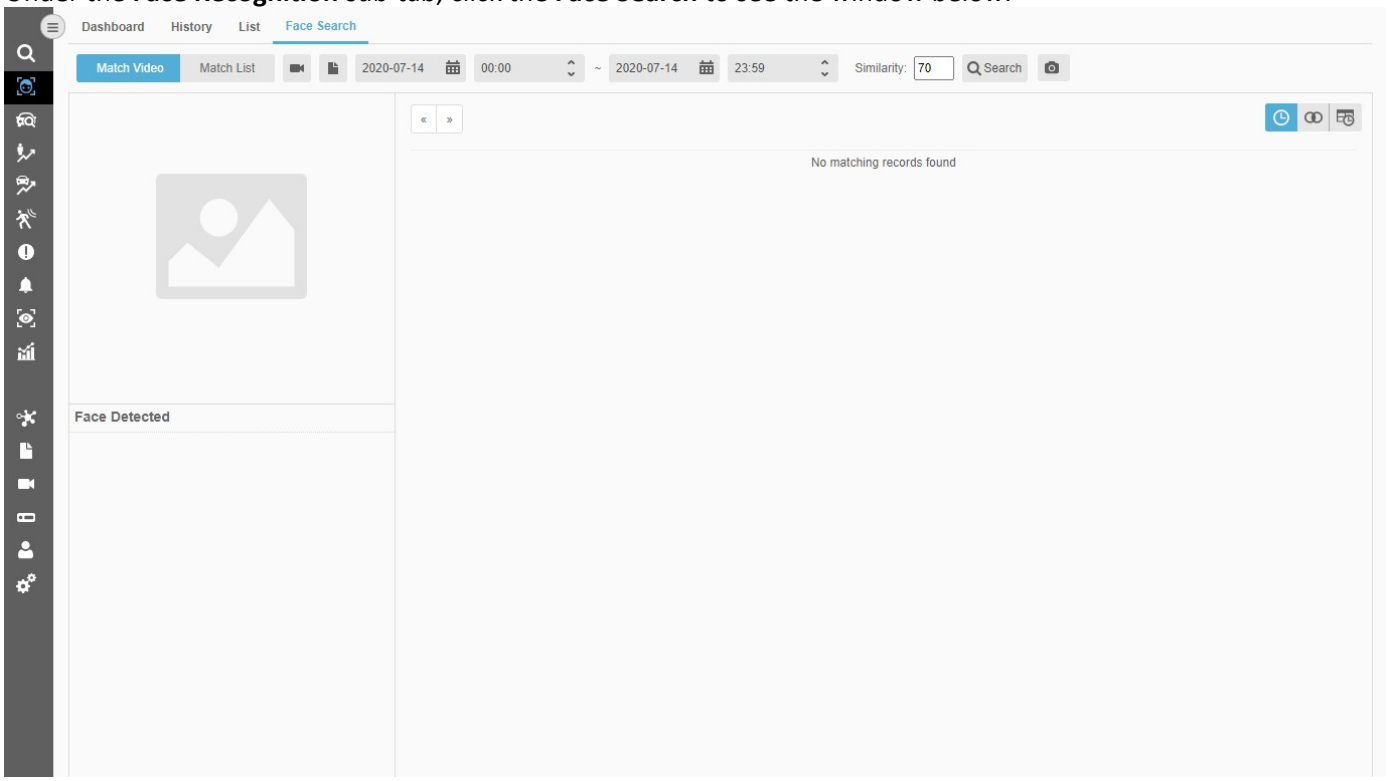


Add to List Window

Fill in the fields Name, Birth Year, Gender, List, and Description.
Click **Add** to add to the list or Cancel to exit.

8.4 Face Search

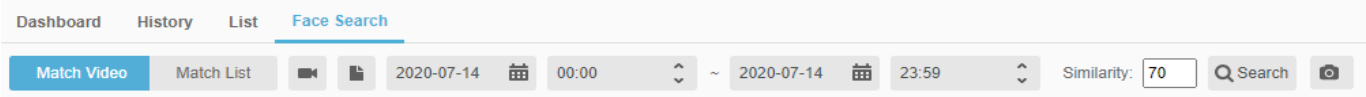
Under the **Face Recognition** sub-tab, click the **Face Search** to see the window below.



Face Search Window

8.4.1 Match Video

There are two settings in Face Search: **Match Video** and **Match List**
Match Video is the default page as shown below,



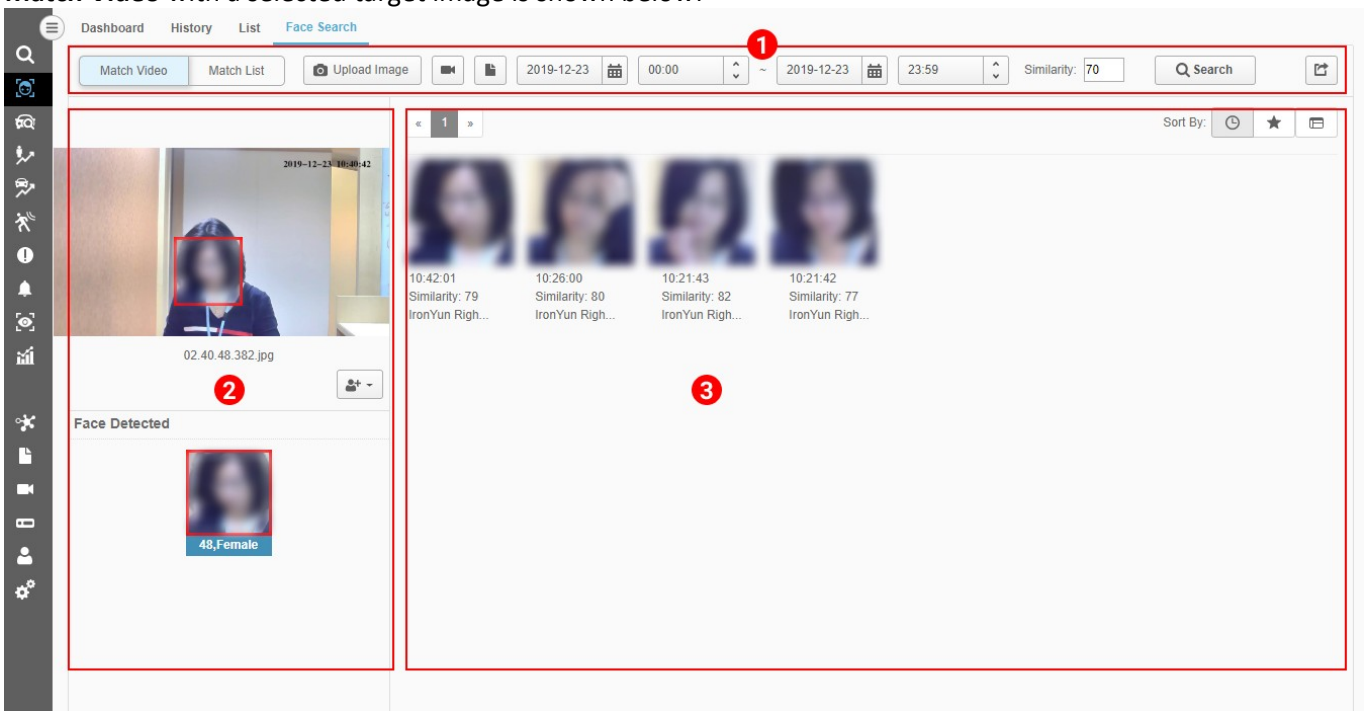
In **Match Video**, the user can search for a matched face from an uploaded image or a search result image.

Upload Image

Click to upload an image with the face(s) as the target image for the face search.
On the left panel, the original uploaded target image and detected face(s) of the image are displayed. The supported image file formats are png and jpg.
Click on the detected face to view all face match results in the window on the right side.

From video search
Face matching can be generated for a video search result image.
Refer to Chapter 6.4 Search Results for more details.

Match Video with a selected target image is shown below:

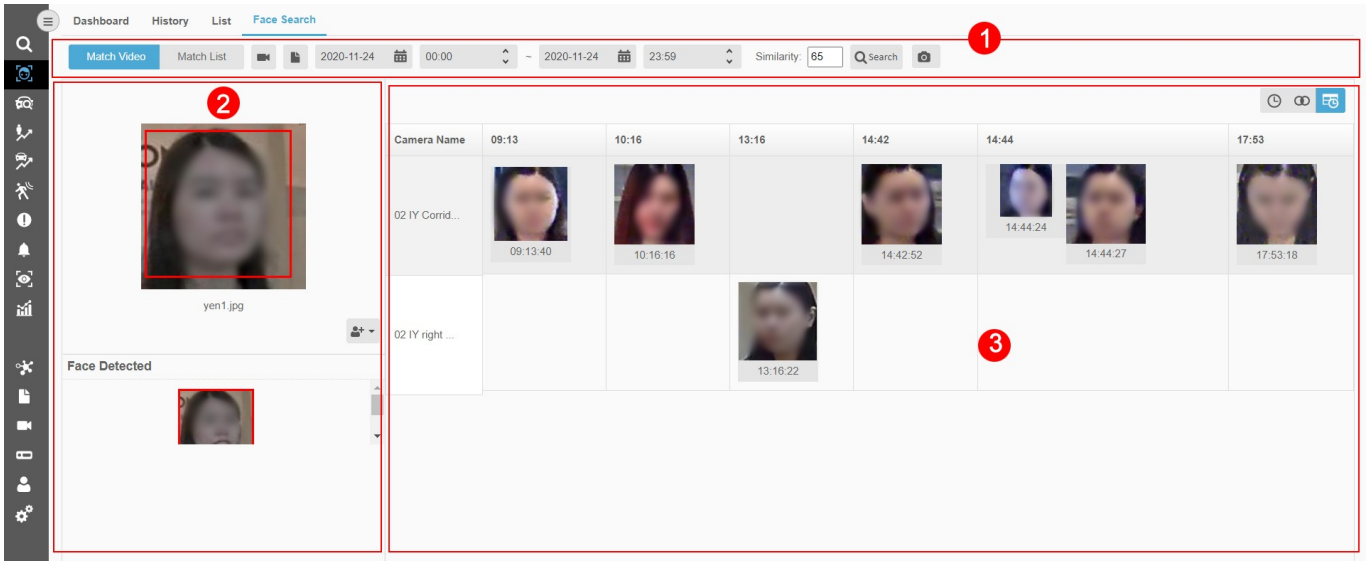


Match Video Window

No.	Name	Description
1	Query Selection	Select query type: Match Video / Match List Click to upload an image from a local drive. The system will automatically display the matched result. Note: Image upload maximum size: 5MB, format: JPEG/PNG Click to define the query criteria by specifying the camera(s).

		Click to define the query criteria by specifying the file(s). 2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time. Similarity: 70 Similarity default is set at 70; input different values according to the user preference. A lower number generates a wider range of matched faces. A higher number generates fewer but more accurately matched faces. Click **Search** for Results Click to export the results to an Excel file.
2	Target Image Information	Display the **Target Image**. The target image may be an uploaded image from a local directory or a result image from Video Search. The **Face Detected** section display detected face(s) from the target image. Click on the detected face to see its corresponding matched face(s) in the Result window on the right-hand side. Click to **Create New Target** or **Add to Existing List**
3	Result	Display the result of the matched face(s) from the selected face in **Target Image.** Select to sort results by time sequence, similarity, or timeline.

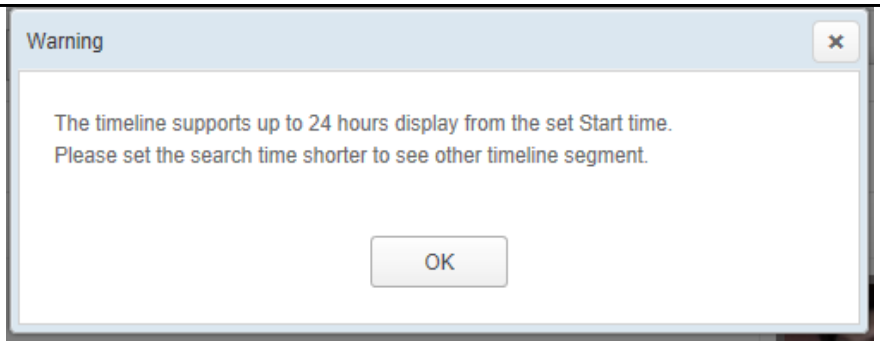
In the **Match Video** result page, select the Timeline to see the results as shown below:



Match Video Timeline Window

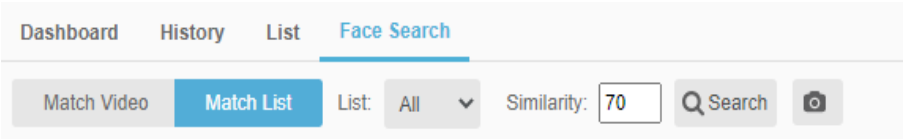
The timeline result can display up to 24-hour segments with a maximum of 3 snapshots per minute, which are sorted by the similarity score. The user can use the timeline matrix to track the target face based on the camera location and timeframe.

If the search schedule that the user sets exceeds 24 hours, a warning window will appear:



8.4.2 Match List

Select **Match Video** to see the page below:



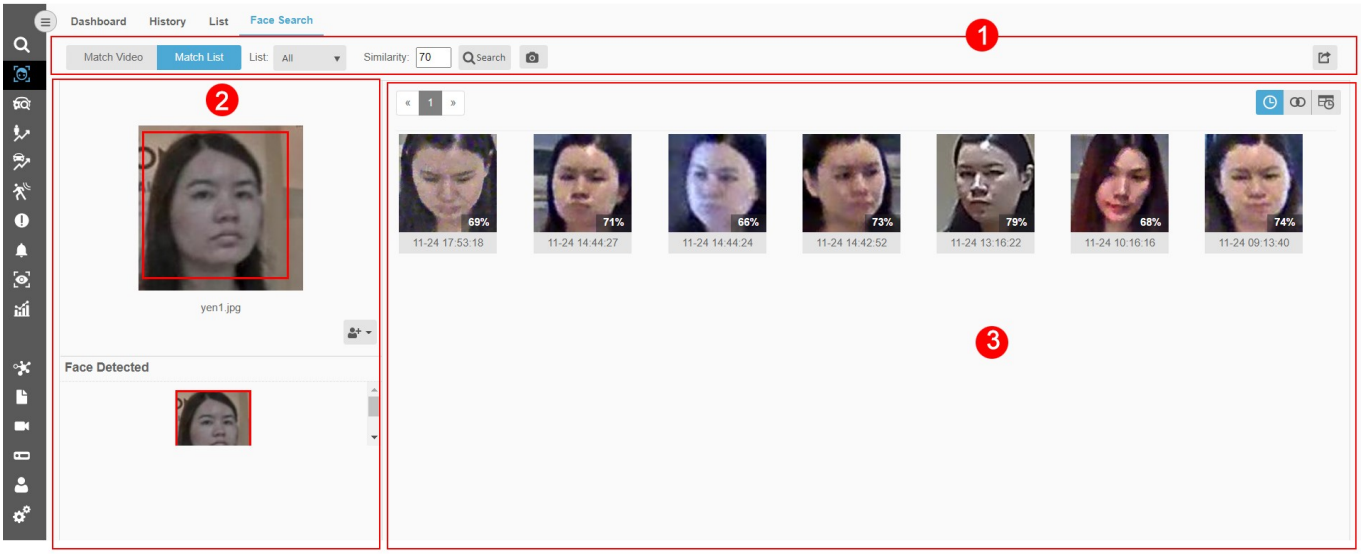
In **Match List**, the user can search for a matched face from an uploaded image or a search result image.

Upload Image

Click to upload a picture with the face(s) as the target image for Face Search.
On the left panel, the original uploaded target image and detected face(s) of the image are displayed.
Click on the detected face, the window on the right side will display all match face results of the selected detected face.

From Video Search
A face match can be generated from a Video Search result image.
Refer to Chapter 6.4 Search Results for more details.

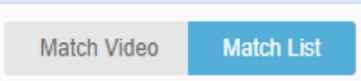
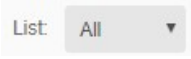
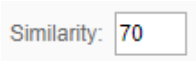
Match List with the selected target image as shown below:



Match List Window

In **Match List**, the user can select a detected face and find the list to which it belongs. One face can belong to

multiple lists based on its adaptation in the **List.**

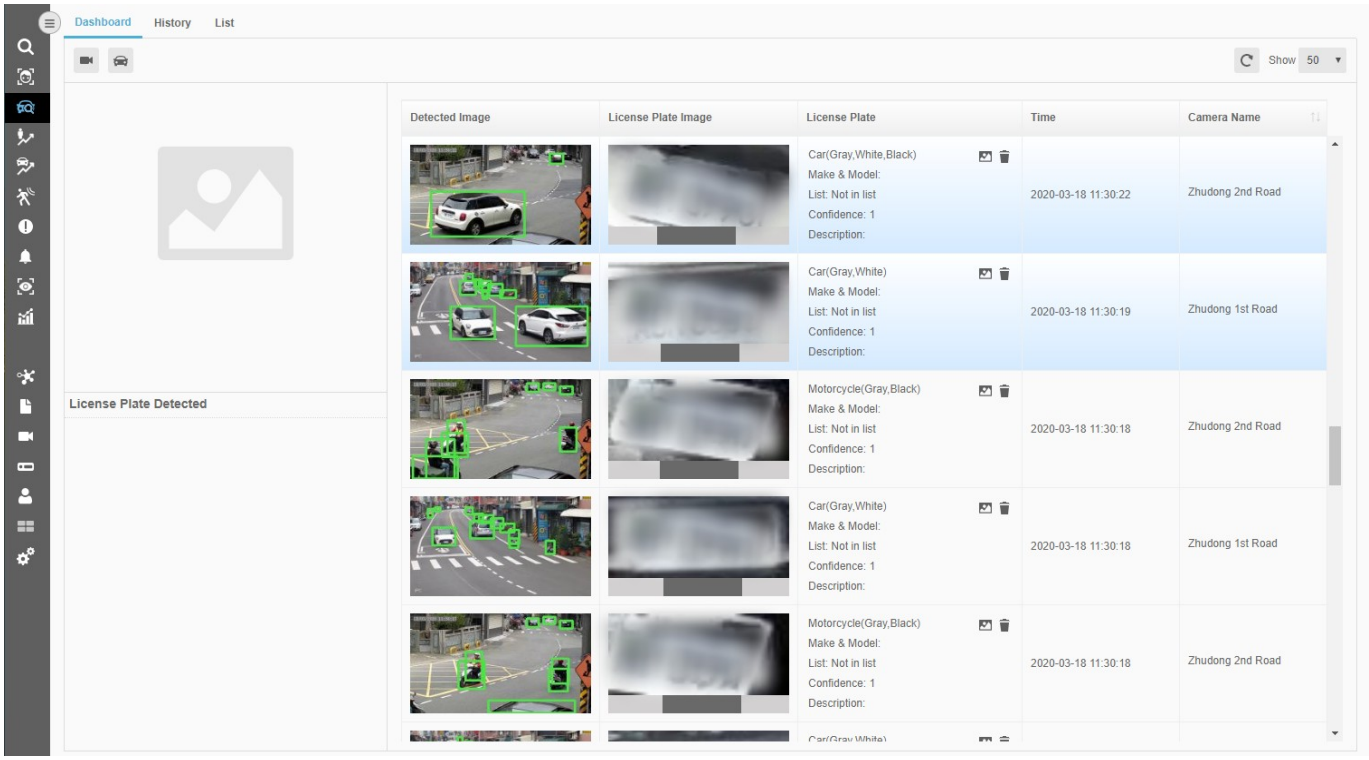
No.	Name	Description
1	Query Selection	Select query type:   Click to upload an image from a local drive. The system will automatically display the matched result. Note: Image upload maximum size: 5MB, format: JPEG/PNG  Click to select the wanted List in the dropdown menu.  Similarity default is set at 70; input different values according to the user preference. A lower number generates a wider range of matched faces. A higher number generates fewer but more accurately matched faces. Click **Search** for Results  Click to export the results to an Excel file.
2	Target Image Information	Display the **Target Image**. The target image may be an uploaded image from a local directory or a result image from Video Search. The **Face Detected** section display detected face(s) from the target image. Click on the detected face to see its corresponding matched face(s) in the Result window on the right-hand side.  Click to **Create New Target** or **Add to Existing List**
3	Result	Display the result of matched face(s) from the **Target Image** or a selected **Face Detected.** Each result face image shows the similarity score, identified List, and name.

Click a **Match List** face image result to open a Profile window for more details.

Face Recognition Profile Window

9. License Plate Recognition

Click on the **LPR** tab to see the window below.



License Plate Recognition Window

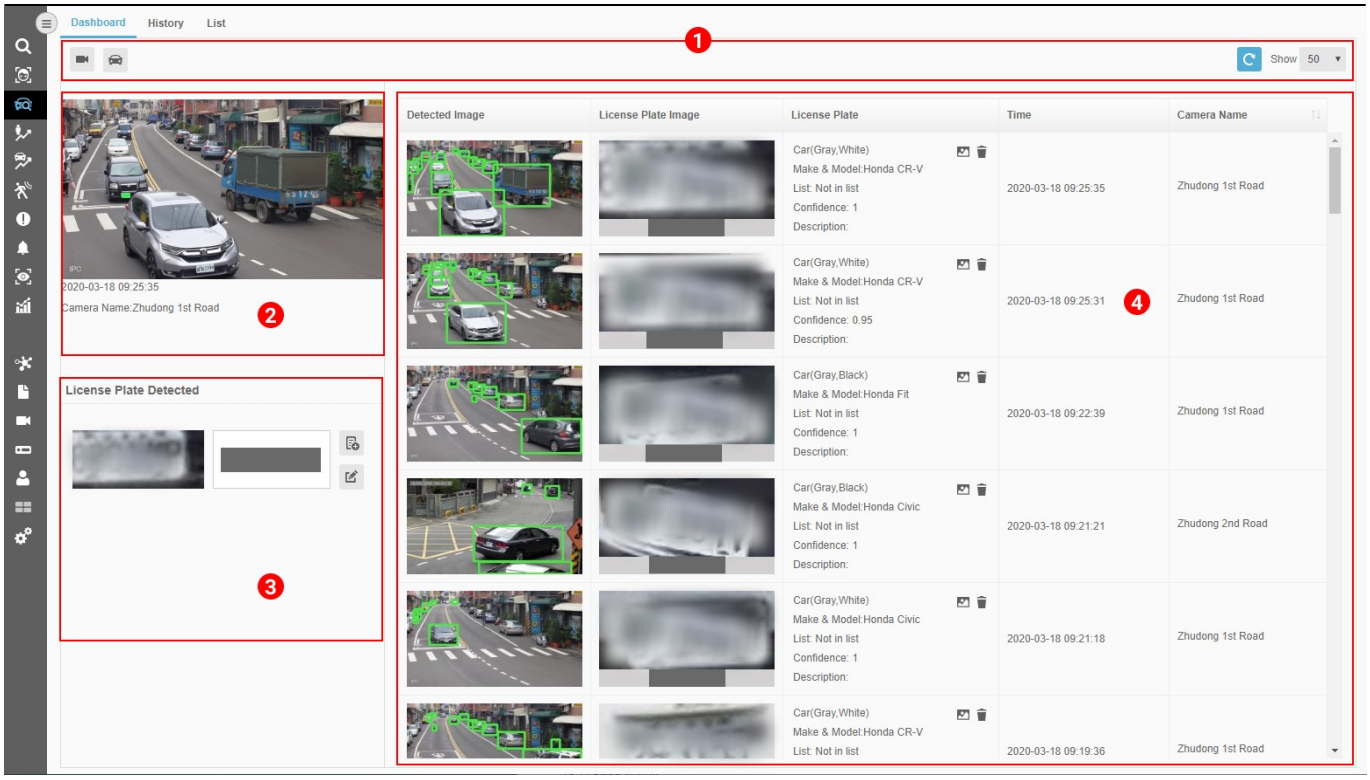
Name	Description
Dashboard	License Plate Recognition default page; allow the user to see the runtime of the license plates detected.
History	Users can search for and track a specific license plate in a timeframe.
List	Categorize the license plates detected into categorized lists.

In the **License Plate Recognition** tab, there are three sub-tabs: **Dashboard, History,** and **List.**

Note:
License plate number patterns are predefined according to the region. Apply the pattern standard of the desired country under System Setting > **Pattern Editor.**
Refer to Chapter 21.12 Setting for more details.

9.1 Dashboard

The Dashboard sub-tab is the default page of LPR, as shown in the window below.



LPR Dashboard Window

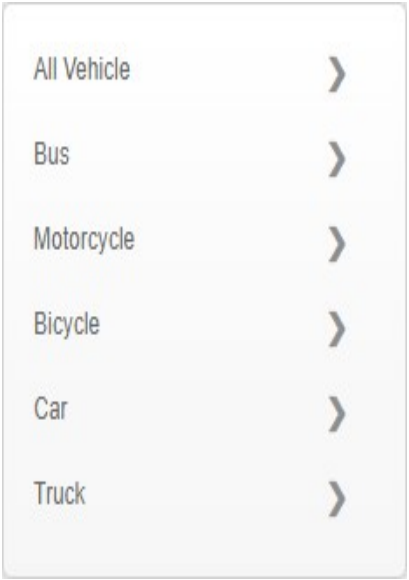
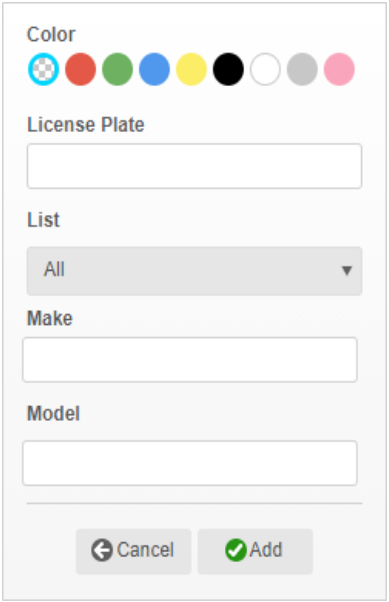
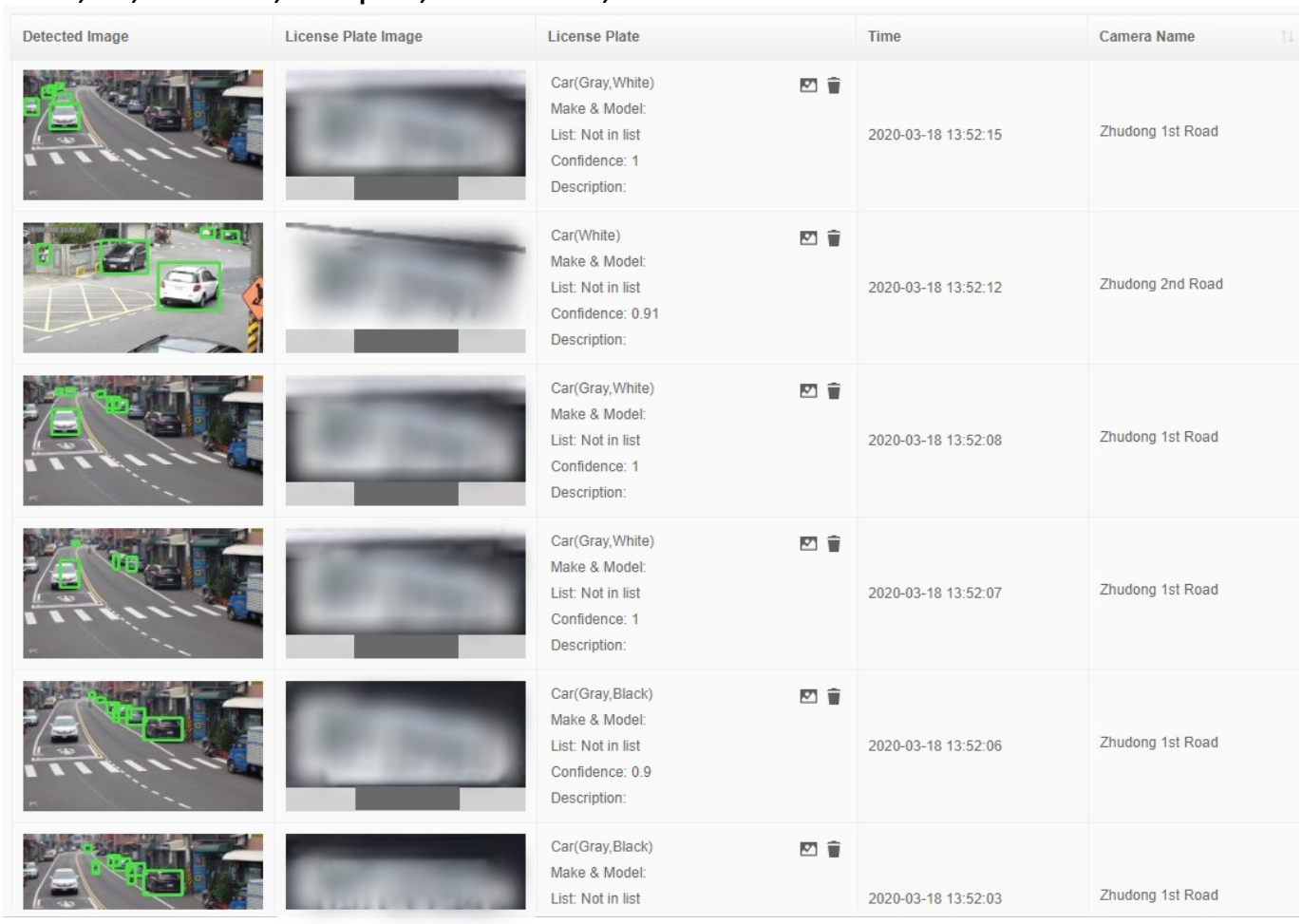
No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). Click to define the query criteria by specifying the vehicle type, color, license plate, List (List can be created in the List tab under the LPR tab), Make, and Model. Mach Target List allows multiple list selection.   Note: LPR page allows partial search of license plate. Refresh is on by default, disable to stop the dashboard from refreshing. Show 50 Select the number of face recognition entries to display on the Dashboard.
2	Source Image View	**Source Image View** is vacant by default. Click the source image icon from the dashboard result to enable source image on the left view. The source image in display provides the time and camera name of the captured

		image.
3	License Plate Detected	According to the source image, the License Plate Detected area displays the cropped license plate image and the detected number. There are two additional buttons: Click **Add to LPR List** to add the license plate number to a list. Click **Modify** to change the plate number if the wrong detection occurs, the user can modify the incorrectly identified plate number.
4	Dashboard Result	LPR Dashboard shows the runtime events of license plate detected, events detected within 1 minute is highlighted in blue. Click Detected Image to see the detail page.

LPR Dashboard Results

The dashboard shows **Detected Image, License Plate Image, License Plate Number, Vehicle Type, Color, Make & Model, List, Confidence, Description, Detected Time,** and **Camera Name.**



LPR Dashboard Result Window

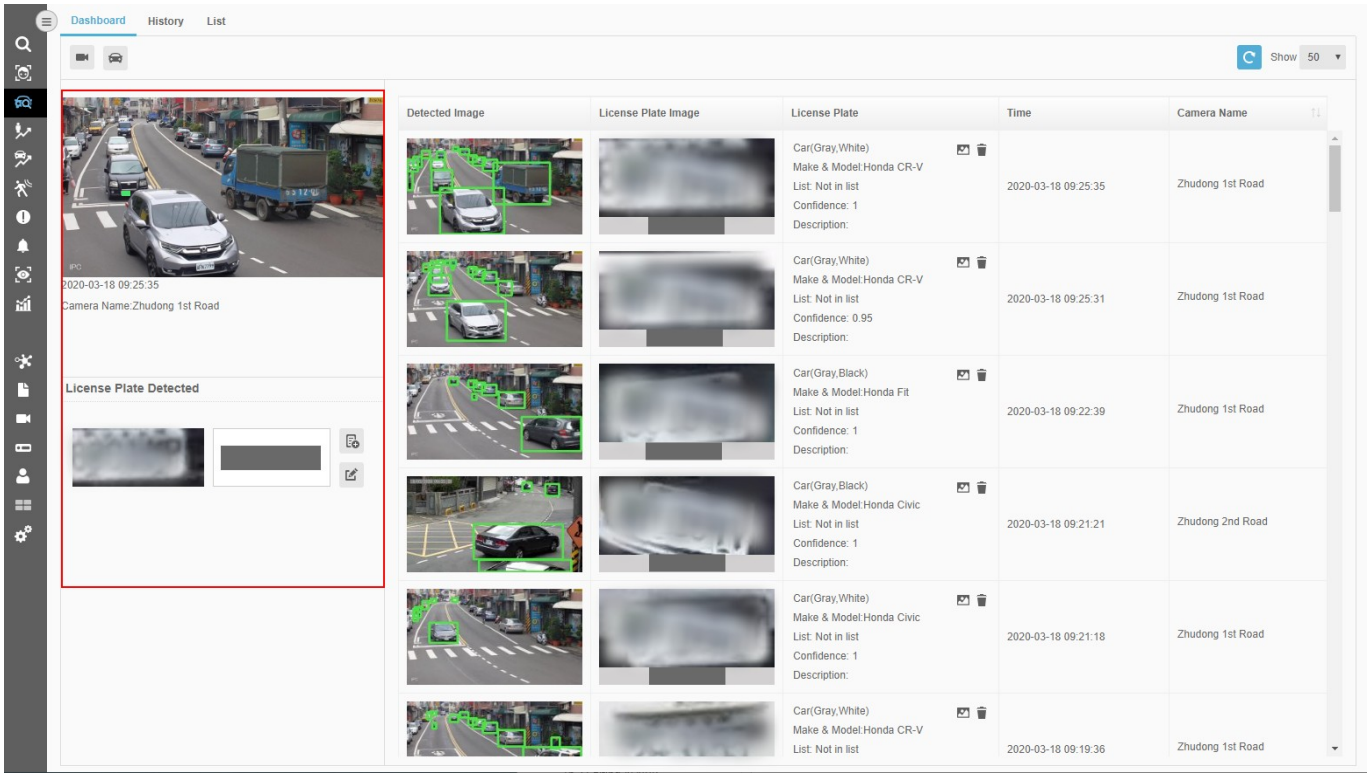
Item	Description
Detected Image	Thumbnail of the detected vehicle; click to open a new window with detailed information of the detected image.
License Plate Image	Thumbnail of the cropped license plate image; the image has a banner at the bottom with the detected number. A blue banner indicates that the license plate belongs to a list, a grey banner indicates that the license plate is not in a list.
License Plate	This section shows the following information: Vehicle type, vehicle color, Make & Model, list to which the vehicle is classified, confidence value, and description.

	Click to activate the source image on the left panel. Click to delete the result record from the table. **Note:** The confidence value indicates how accurately the system recognizes the detected image as a license plate. The maximum value is 1.
Time	Time of detection of the license plate.
Camera Name	The camera captured the license plate image.

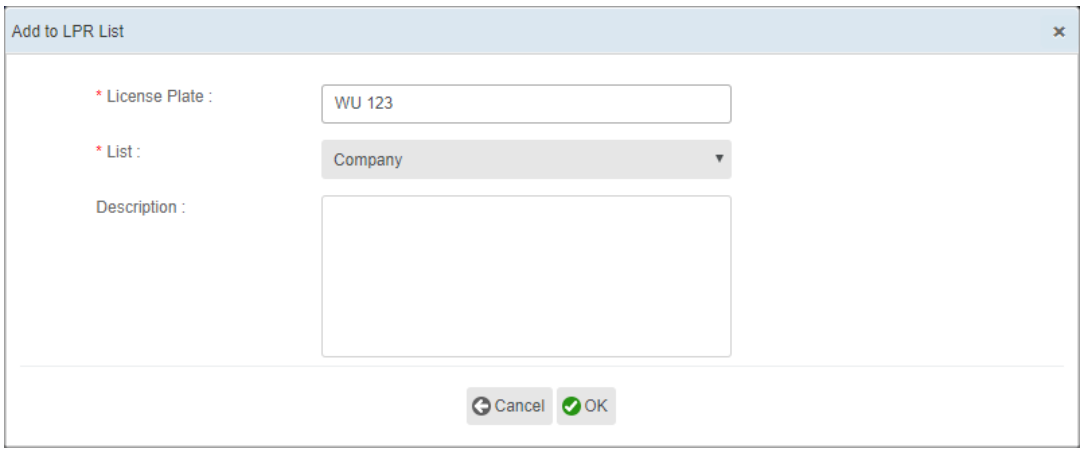
License Plate Recognition Screen View

To activate the screen on the left, select an LPR result, and click on the image icon in the **License Plate** column.

Once a license plate is selected, the left screen will display the original image of the **Detected Image.** The screen also displays the cropped License Plate Detected and functional buttons as shown below.



Click the **Add to LPR List** button to save the license plate and assign it to a list.

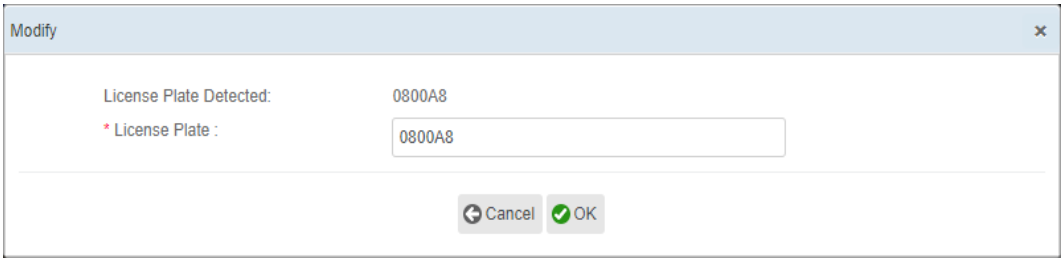


LPR Add to List Window

In the **Add to LPR List** window, the user can select the list in the drop-down menu and add a description for future

reference. Once a license plate is added to a list, the new data will appear on the dashboard.

Click on the **Modify** button to change the plate number with a new set of license plate characters, as shown in the window below.

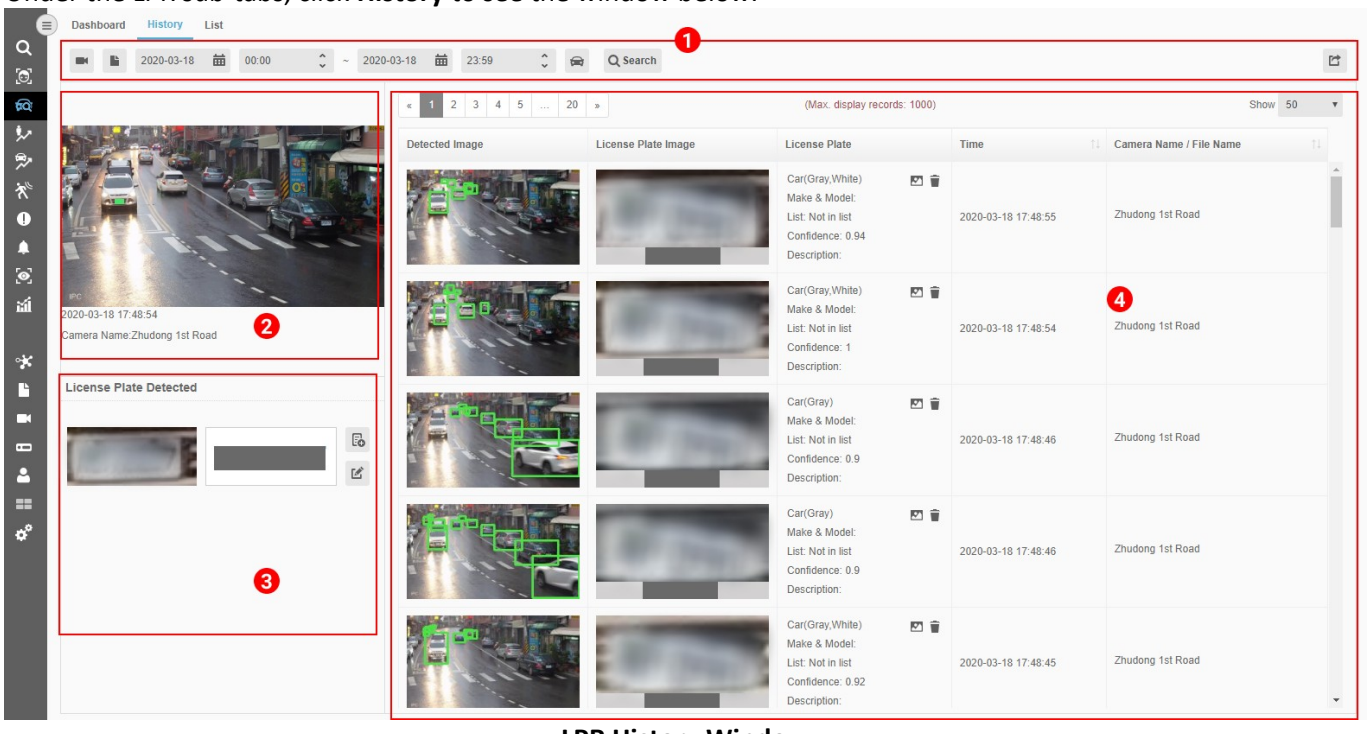


LPR Modify Window

Note: **Modify** can be used when the user finds an inaccurate license plate compared to the detected image. In particular use cases, the user can modify the plate number corresponding to the actual plate number. However, once the license plate is modified, its previous list record will disappear (if it has one). If the new modified license plate already exists in a list, the new modified license plate will automatically be included in the existing list.

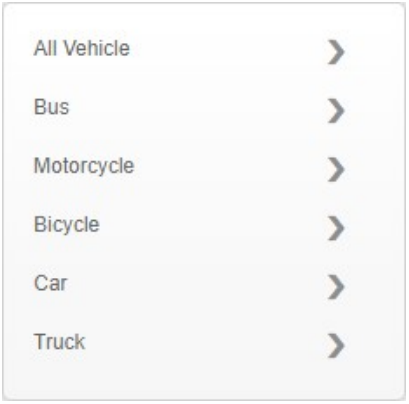
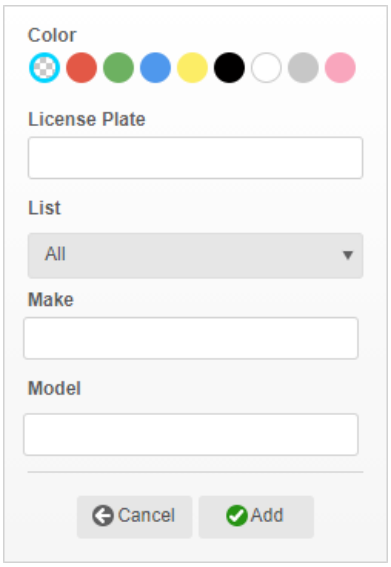
9.2 History

Under the LPR sub-tabs, click **History** to see the window below.



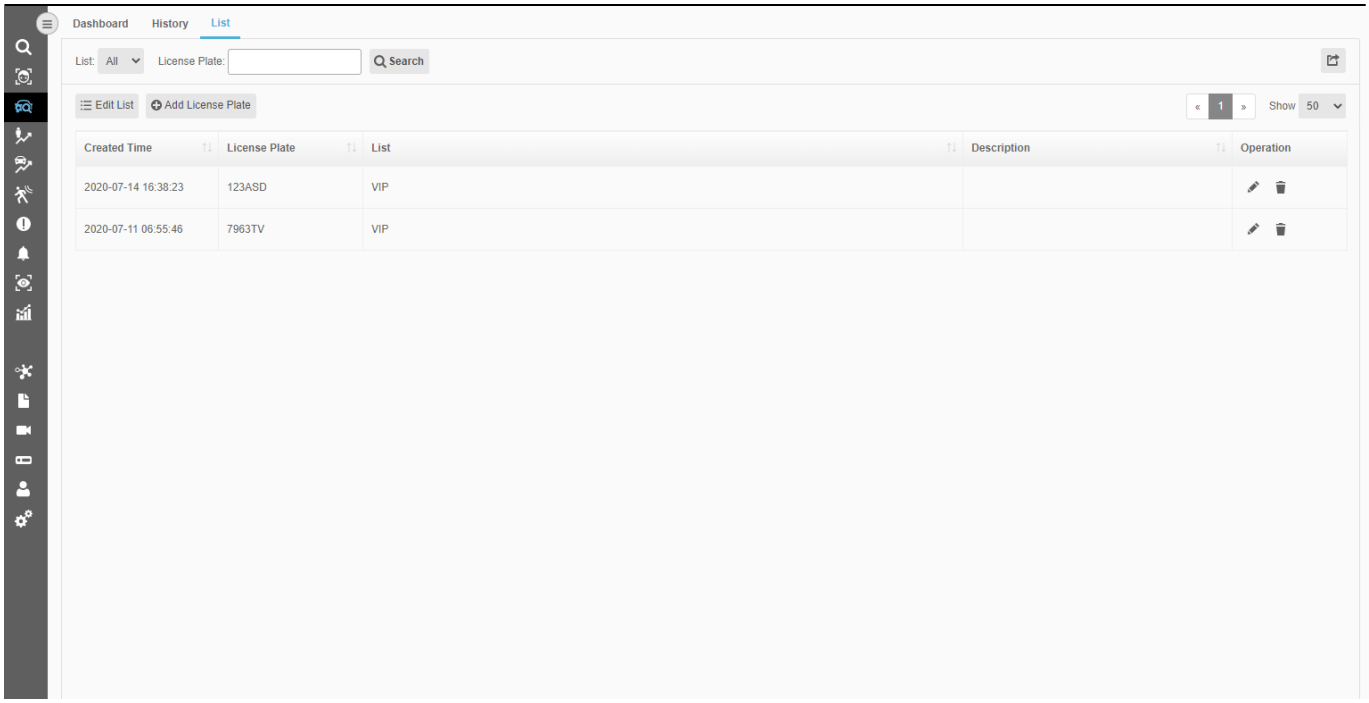
LPR History Window

No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). Click to define the query criteria by specifying the file(s). 2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time.

		Click to define the query criteria by specifying the vehicle type, color, license plate number, List (List can be created in the List tab under the LPR tab), Make, and Model. Mach Target List allows multiple list selection.   Note: LPR page allows partial search of license plate. Click **Search** to see the result Click to export the results to an Excel file.
2	Source Image View	**Source Image View** is vacant by default. Click the source image icon from the history result to enable source image on the left view.
3	License Plate Detected	According to the source image, the License Plate Detected area displays the cropped license plate image and the detected number. There are two additional buttons: Click **Add to LPR List** to add the license plate number to a list. Click **Modify** to change the plate number if the wrong detection occurs, the user can modify the incorrectly identified plate number.
4	LPR History Result	Display license plate detected in chronological order. In LPR History, the captured license plate results are from both cameras and files.

9.3 List

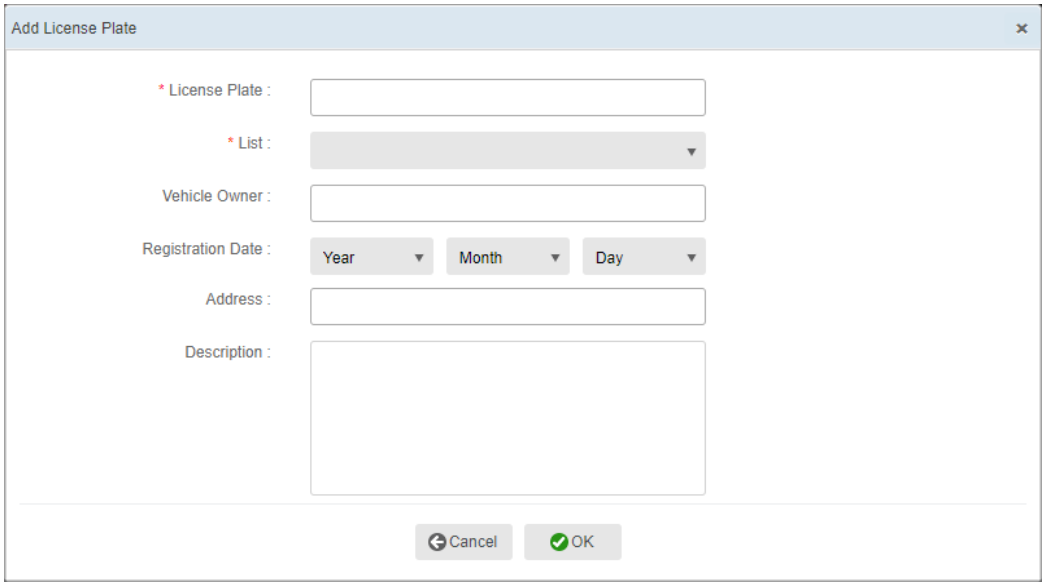
Under the **LPR** sub-tabs**,** click List to see the window below.



LPR List Window

LPR list allows the user to categorize vehicles of interest into different watch lists. Through the predefined list, license plate recognition can identify the target in real-time using multi-camera and external file search.
LPR List allows a maximum of 200,000 License plates.

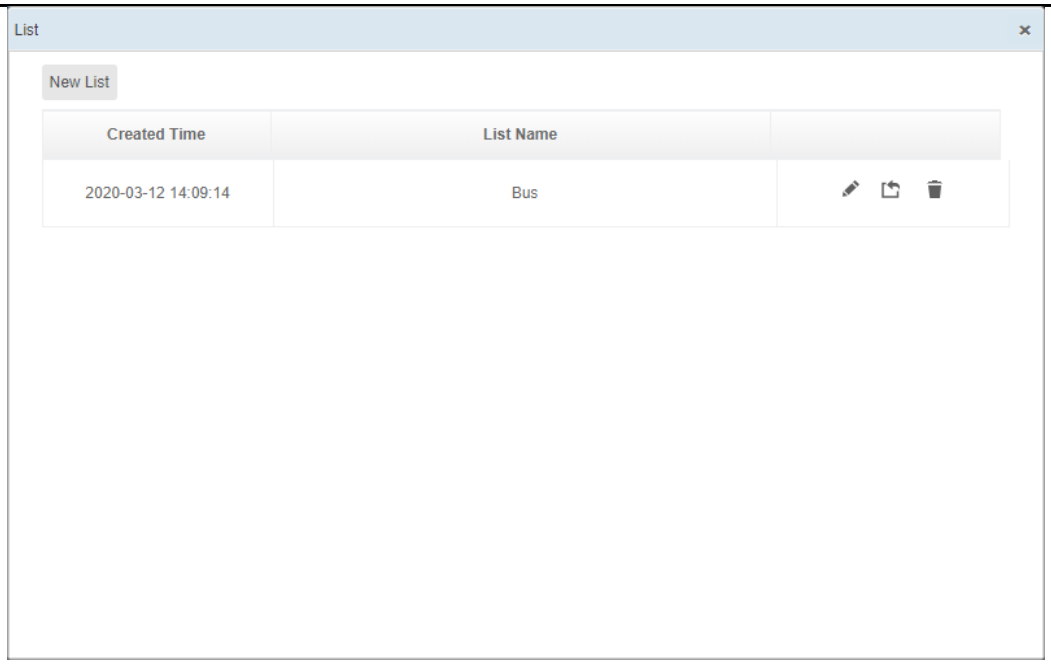
Click on the **Add to LPR List** button to add a license plate number to the list.



New List Window

In the Add to List window, the user can select a list from the drop-down menu and add the description for further reference.

Click **Edit List** to see the List window below:



LPR List Window

In this window, the user can see all available LPR Lists, edit (rename), or delete an existing list by operating the buttons on the right column. Click the Import button to import a large amount of license plate data into one list (The batch data import requires UTF-8 in .txt file format and English file name). The maximum allowed file size is 20 MB.

Click on the button on the top left to create a New List, as shown below.

LPR New List

Enter the new list name and click **Add** to apply to the list. Once a new list has been added, it will appear as one of the list options in the List window.

The user can search for a specific license plate by filtering the **List** and **License Plate.**
Query Selection:

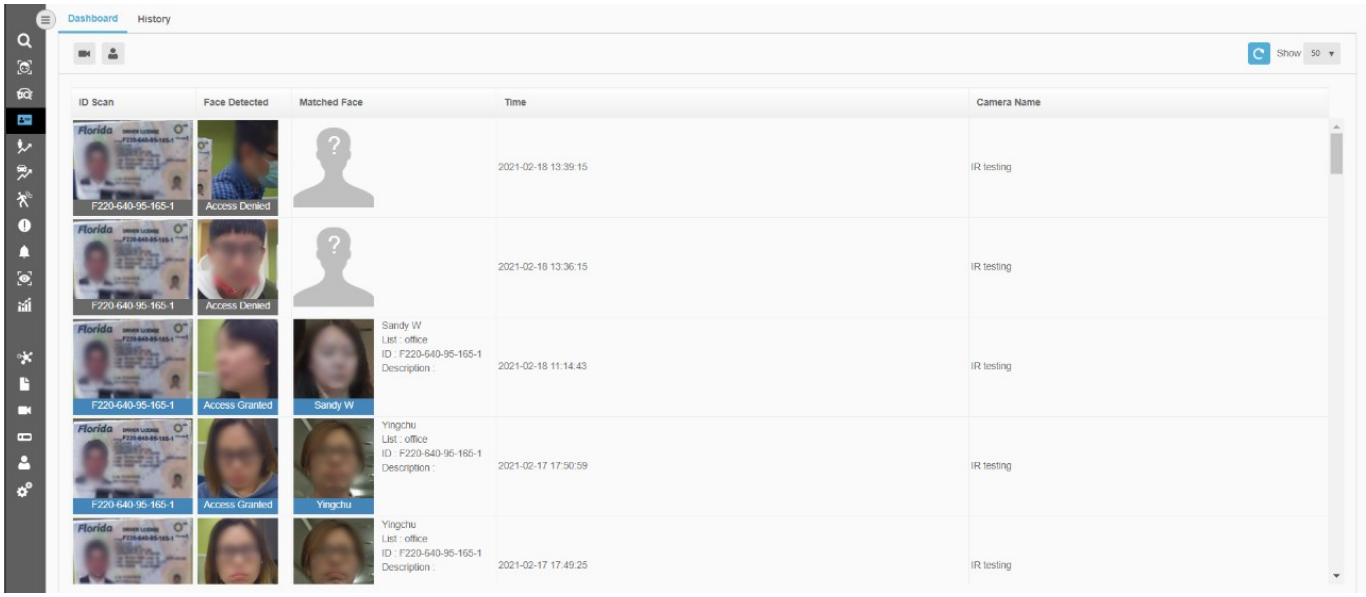
1. Optional: Click **List** to select the query criteria by specifying the List
2. Optional: Input a license plate to define the query criteria by specifying the license plate number.

Click **Search** to see the available results.

 Click to export the results as an Excel file.

10. Identity Recognition

Click on the **Identity Recognition** tab to see the window below.



Identity Recognition Window

Identity Recognition is an access control interface to detect both Face and Driver license number of a person. The target must hold out his/her driver license in front of the camera near his/her face; when both the real face and the card are detected by the camera, the match is counted and grants access.

Access Granted: When both target face and driver license number match the record in an **FR List**, the result will be Access Granted.
Access Denied: If the target face or driver license or both are detected by the camera but do not match the record in an FR List, the result will be Access Denied.

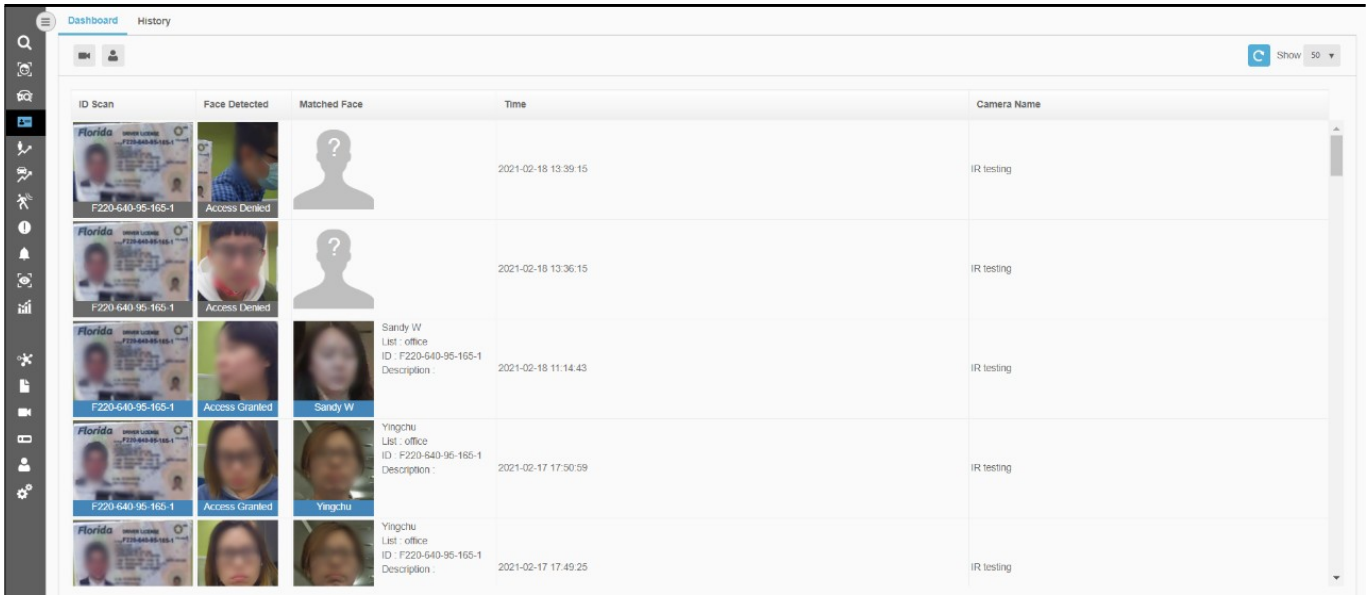
Name	Description
Dashboard	Identity Recognition default page; allow the user to see the runtime of the results of access granted or denied.
History	Use search criteria to specify the search item.

In the **Identity Recognition** tab, there are two sub-tabs: **Dashboard** and **History.**

Note:
Identity Recognition is exclusive for **Florida, USA** driver license in Vaidio 5.0.0.

10.1 Dashboard

The Dashboard sub-tab is the default page of Identity Recognition, as shown in the window below.

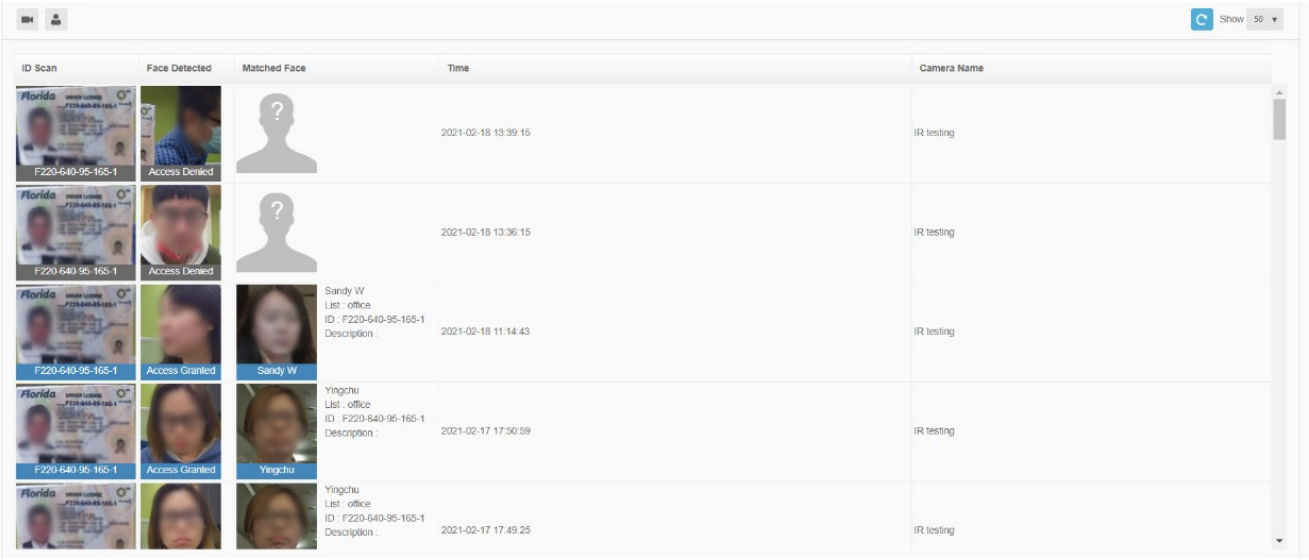


Identity Recognition Dashboard Window

No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). Click to define the query criteria by specifying the Access type, Name, List (List can be created in the List tab under the FR), and ID Number. Refresh is ON by default; disable to stop the dashboard from refreshing. Show 50 Select the number of face recognition entries to display on the Dashboard.
2	Dashboard Result	Identity Recognition Dashboard shows the runtime events of the detected face and driver license; events detected within 1 minute are highlighted in blue.

Dashboard Results

The dashboard shows **ID Scan, Face Detected, Matched Face, Time,** and **Camera Name.**



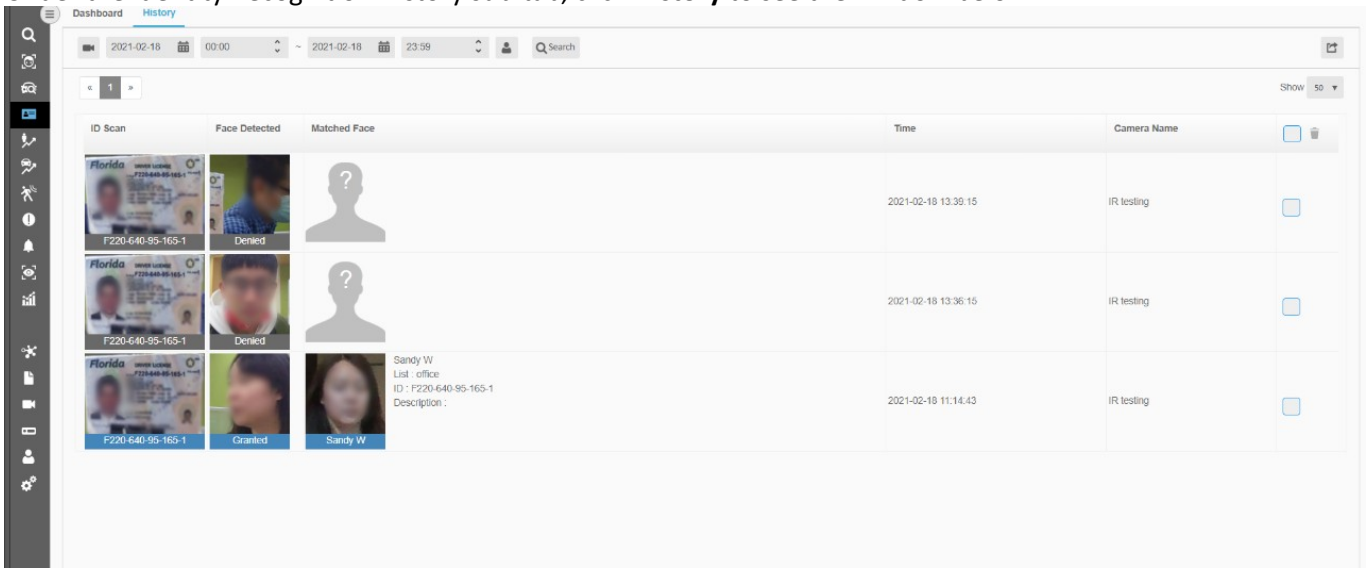
Identity Recognition Dashboard Result Window

Item	Description
ID Scan	Thumbnail of the detected driver license. The image has a banner at the bottom to

	display the ID Number detected by the engine. The blue banner indicates that the driver license number is matched to an FR list. Click to open a new window with detailed information of the detected image.
Face Detected	Thumbnail of the detected face; the image has a banner at the bottom to show **Access Granted** or **Access Denied**. Click to open a new window with detailed information of the detected image.
Matched Face	This section shows the following information: matched face, list to which the person is classified, ID number from FR list, and description. Click to open a new window with matched information from the FR list.
Time	Detection time of the face and driver license.
Camera Name	Assigned camera to capture the event.

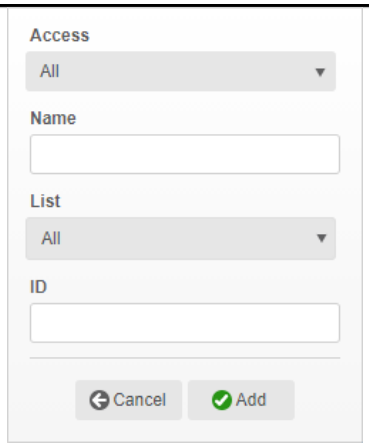
10.2 History

Under the Identity Recognition History sub-tab, click **History** to see the window below.



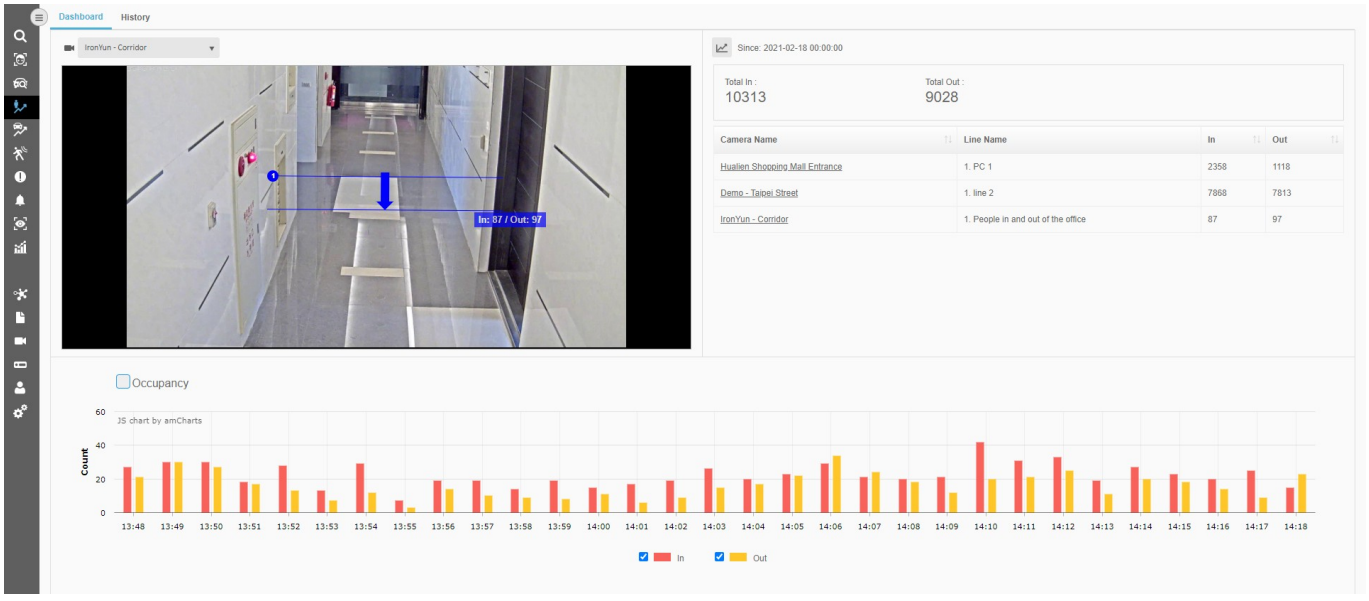
Identity Recognition History Window

No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the camera(s). 2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time. Click to define the query criteria by specifying the Access type, Name, List (List can be created in the List tab under FR), and ID number.

		 Click **Search** to see the result  Click to export the results as an Excel file.
2	Identity Recognition History Result	Identity Recognition History shows the runtime events of the detected face and driver license; events detected within 1 minute are highlighted in blue.

11. People Counting

Click on the **Counting** tab to see the window below; by default, this is **People Counting Dashboard**.



People Counting Window

People Counting has two sub-tabs: **Dashboard** and **History.**

Item	Description
Dashboard	Default Counting page; allow the user to see the live counting of people going in and out of a specified area.
History	Users can search for and track the number of people going in and out of the specified area in the desired timeframe.

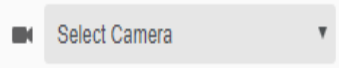
Note: Counting Configurations are defined in **Camera Advanced**.

11.1 Dashboard

The Dashboard sub-tab is the default page of **People Counting**, as below.

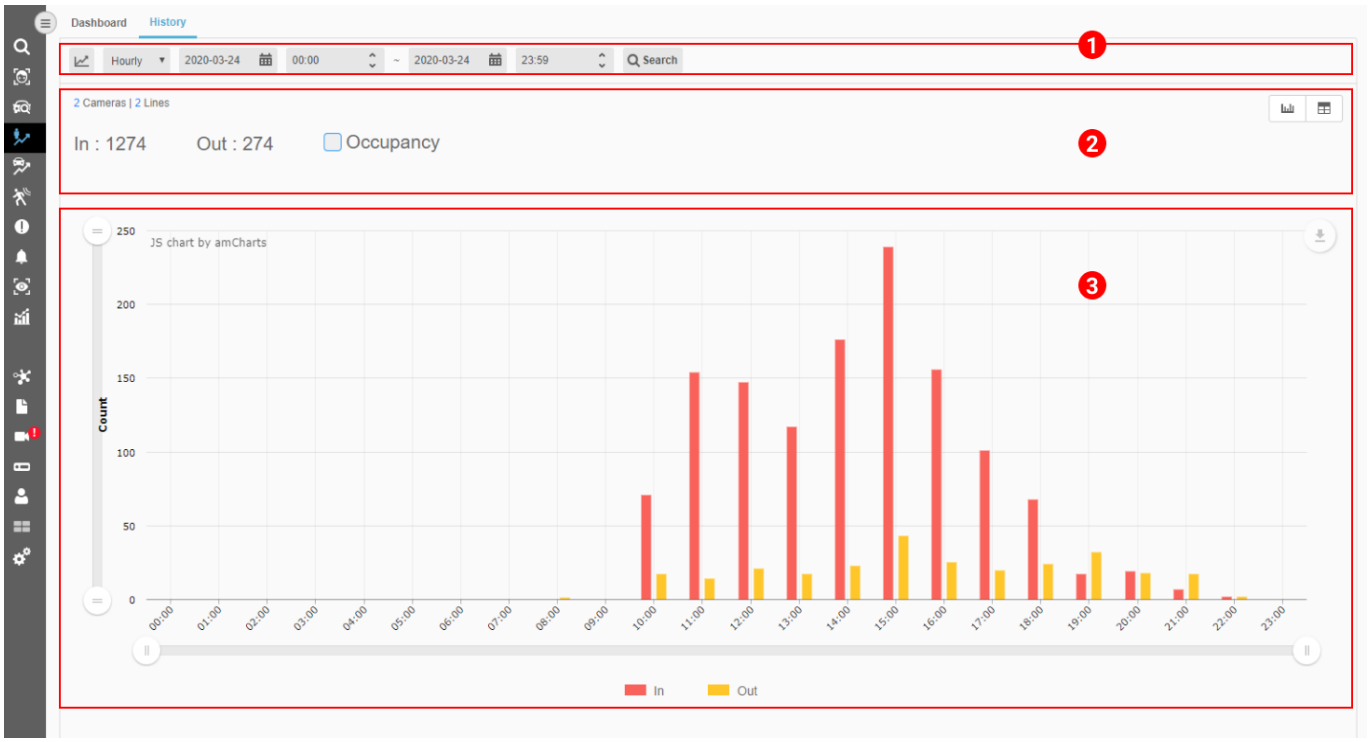
People Counting Dashboard

The People Counting Dashboard shows a live counting of people with a statistic graph to display the results every minute.

No.	Name	Description
1	Query Selection	 Use the drop menu to select a camera for live view. People Counting defined area is also displayed in live view.  Click to open a new window for the line set selection; the window lists ou all camera(s) with the configured line set and number label. Click the checkbox to enable the line set for the People Counting Dashboard. Click the underlined camera name to activate the captured snapshot.
2	Camera view	Display the live view of the selected camera, display the line configuration to count the number of people passing through the defined area. The user can activate the camera view by selecting from the camera drop menu or the People Counting table on the right.
3	People Counting Table	The top-row In and Out numbers indicate the total number of people moving inward and outward of the selected line set in the table below. In Dashboard, select and click the **Camera Names** in blue underline to activate live view on the left. The table displays the **Camera Name, Line Name,** and runtime of people in/ out of the configured line set.
4	People Counting Graph	The live counting graph shows the number of people in/out based on the selected line set. The graph updates every minute, the user can also enable the **Occupancy** checkbox to view occupancy in the graph. Mouse hover over the graph to see the tooltip for detailed data.

11.2 History

In the **People Counting** page, click **History** to see the window below.

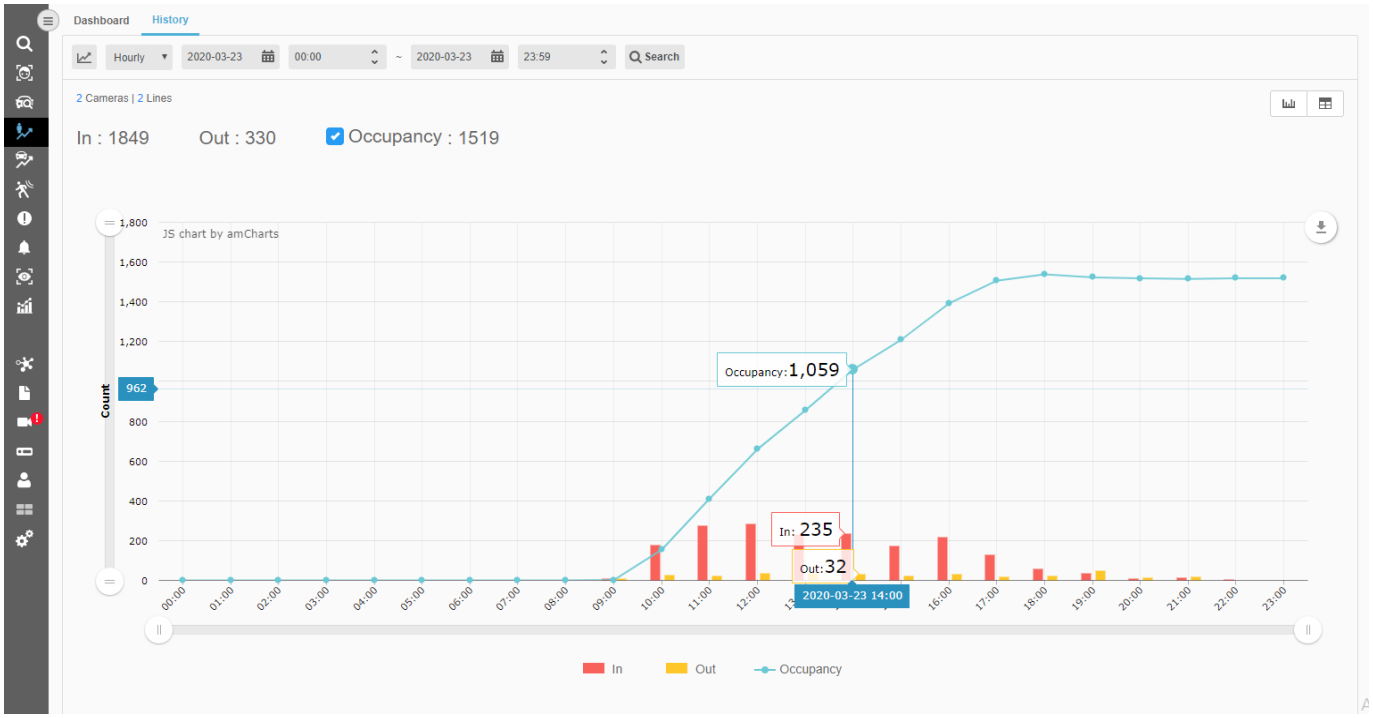


People Counting History

No.	Name	Description
1	Query Selection	Click to define the query criteria by specifying the line set. Hourly Click to define the timeframe query by **Hour, Day, Week,** or **Month.** 2020-01-01 00:00 ~ 2020-01-01 23:59 Click to define the query criteria by specifying the time; based on the timeframe query by **Hour, Day, Week,** or **Month**, the default time frame may vary. Click Search to see the result.
2	Information Display	Display the data of the selected line set and the number of cameras. Check the Occupancy checkbox to enable the occupancy data to display in the Graph and Table. There are two types of result display: **Graph View** and **List View**. Click the corresponding icon to switch the display.
3	History Result	This area displays the given criteria in the search query. In the Graph view result, the user can download the file as PDF or JPG. PDF JPG

Check **Occupancy** to see the occupancy data in the graph, mouse over the graph to see the tooltip for detailed

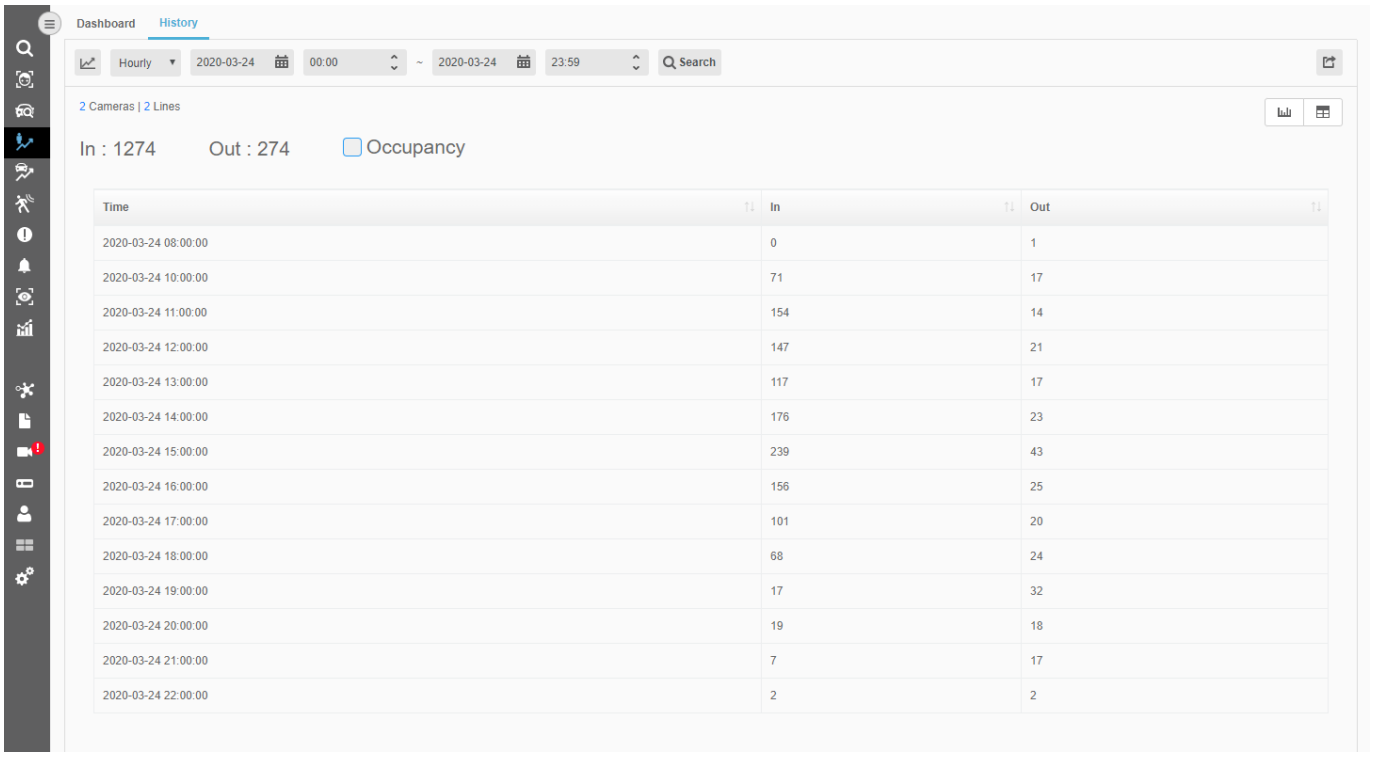
data.



People Counting Graph View

Click on the **List View** icon to switch the type of display.

For **List View**, click on the Export button to download the table as an Excel file and check Occupancy to see the occupancy value in the History Table.



Time	In	Out
2020-03-24 08:00:00	0	1
2020-03-24 10:00:00	71	17
2020-03-24 11:00:00	154	14
2020-03-24 12:00:00	147	21
2020-03-24 13:00:00	117	17
2020-03-24 14:00:00	176	23
2020-03-24 15:00:00	239	43
2020-03-24 16:00:00	156	25
2020-03-24 17:00:00	101	20
2020-03-24 18:00:00	68	24
2020-03-24 19:00:00	17	32
2020-03-24 20:00:00	19	18
2020-03-24 21:00:00	7	17
2020-03-24 22:00:00	2	2

People Counting List View

Counting History/ Default Start and End time Rule

Hourly

By default start from [today's] 00:00:00 and End with [today's] 23:59:59.

- Maximum data display is 168 hours (7 days).
- Start from HH: 00:00 for every hour

Daily

By default start from [1st day of this month] 00:00:00:00 and End with [last day of this month] 23:59:59.

- Maximum data display is 93 days (3 months).
- Start from 00:00:00 every day.

Weekly

Start from [1st week of this year] 00:00:00 and End with [last week of this year] 23:59:59.
E.g., the 1st Sunday of 2019 is January 6th, so week 1 of 2019 is from 2018/12/30 to 2019/01/05.

- Maximum data display is 1 year.
- The starting week may vary depending on the first Sunday of the year.

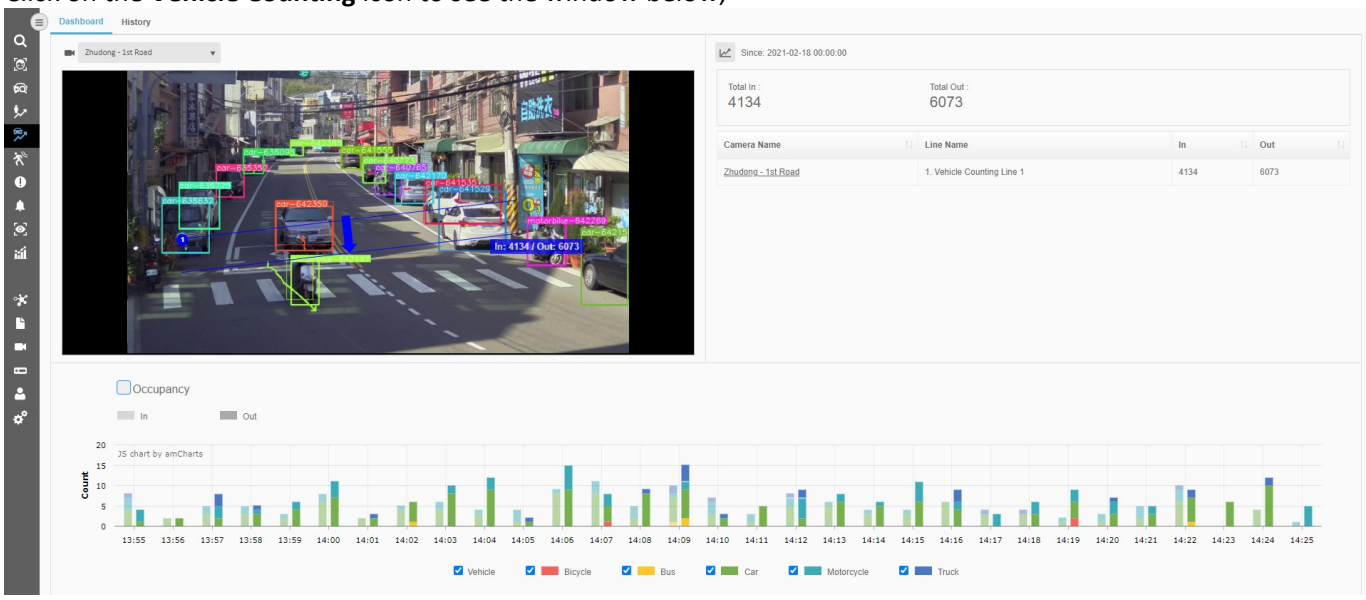
Monthly

Start from [1st day- January 1st of this year] 00:00:00 and End with [last day- December 31st of this year] 23:59:59.

- Maximum data display is 3 years.
- Start from the 1st day of every month.

12. Vehicle Counting

Click on the **Vehicle Counting** icon to see the window below,



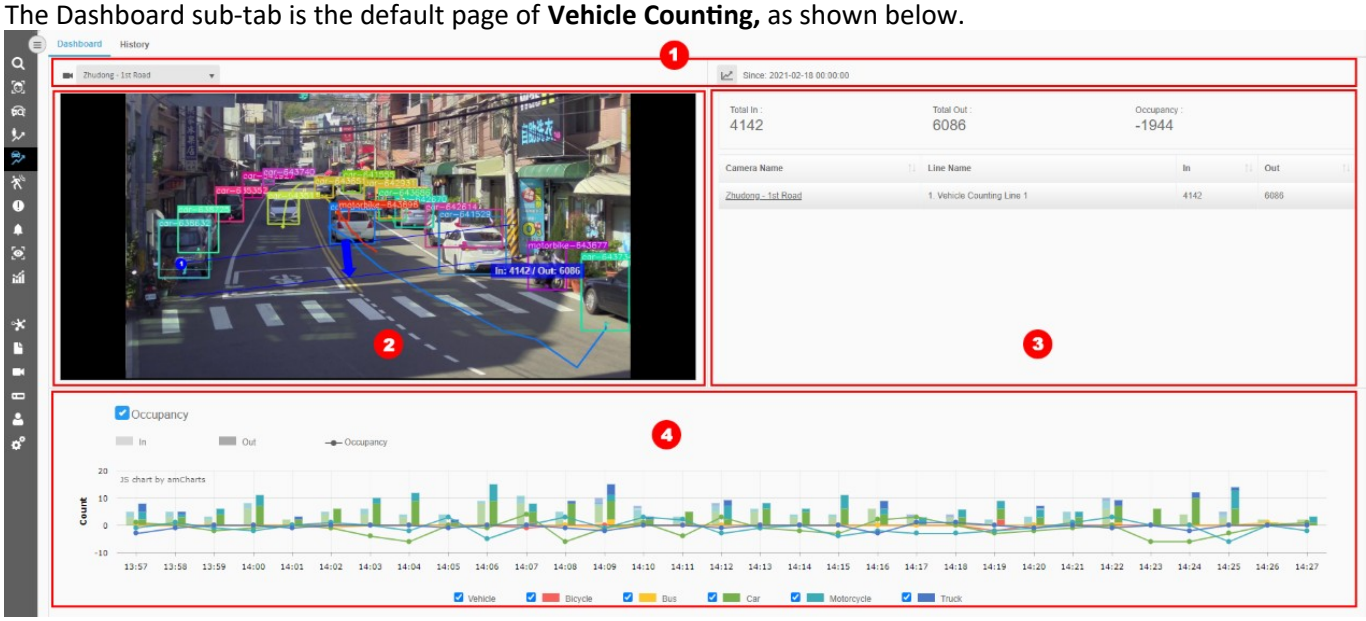
Vehicle Counting

In the **Vehicle Counting** tab, there are two sub-tabs: **Dashboard** and **History**

Item	Description
Dashboard	Vehicle Counting dashboard allows the user to see the live counting of vehicles going into and out of a specified area.
History	The user can search for and track the number of vehicles going into and out of the specified area based on the desired timeframe.

12.1 Dashboard

The Dashboard sub-tab is the default page of **Vehicle Counting,** as shown below.



Vehicle Counting Dashboard

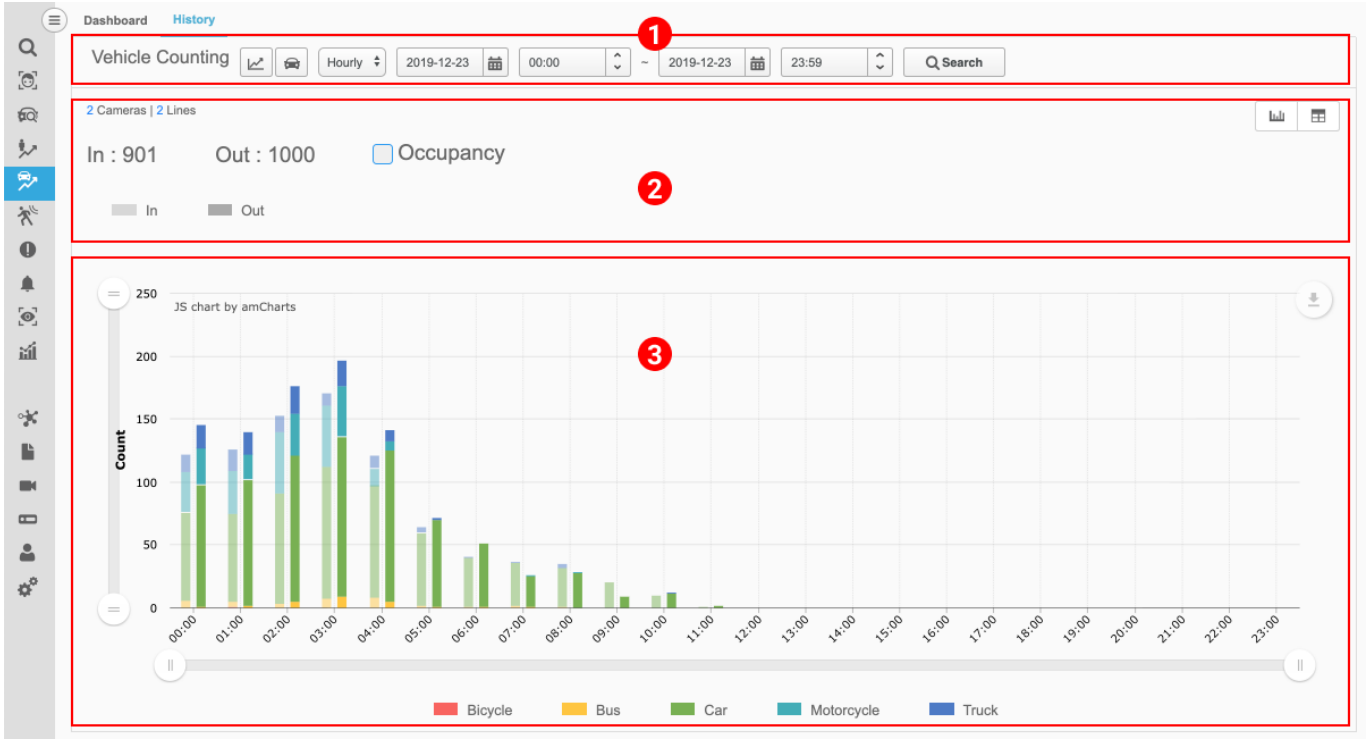
Vehicle Counting Dashboard shows the live counting of vehicles with a statistic graph to display the result by the minute.

No.	Name	Description
1	Query Selection	Click to see the camera(s) available in the drop-down menu; select the camera to view on the screen below.  Click to open a new window for the line set selection. The **Select Line** window lists the camera(s) with the configured line set and number label. Click the checkbox to enable the line set for the vehicle counting dashboard. Click on the underlined camera name to activate the screen on the right to see the line set. The checked **Line Name** will appear in the Dashboard table for live vehicle counting.
2	Camera view	Display the live view of the selected camera, the live view shows the line configuration used to measure the number of vehicles that pass through a specified area. The user can select the camera based on the camera menu bar above the screen view or click on one of the **Camera Name** from the table on the right.
3	Vehicle Counting Table	The In and Out numbers in the camera top row indicate the total numbers of vehicles moving along the inward and outward directions of the selected line set displayed in the table below. In the dashboard table, select and click on one of the **Camera Names** in blue underline to see the live view on the left. The table displays the **Camera Name, Line Name,** and runtime of **In/Out** vehicles for the configured line set.
4	Vehicle Counting Graph	The live counting graph shows the number of vehicles moving inward/outward corresponding to the selected line set. The graph is generated every minute, the user can also view the **Occupancy** value by enabling the checkbox at the top left of

		the graph. Mouse hover over the graph to see the tooltip for detailed information. There are 5 vehicle types: Bicycle, Bus, Car, Motorcycle, and Truck. The user can click on the legend to enable or disable any vehicle type in the graph display. By default, All Vehicle is selected.

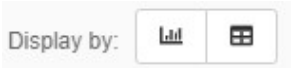
12.2 History

In the **Vehicle Counting History**, click on **History** to see the window below.

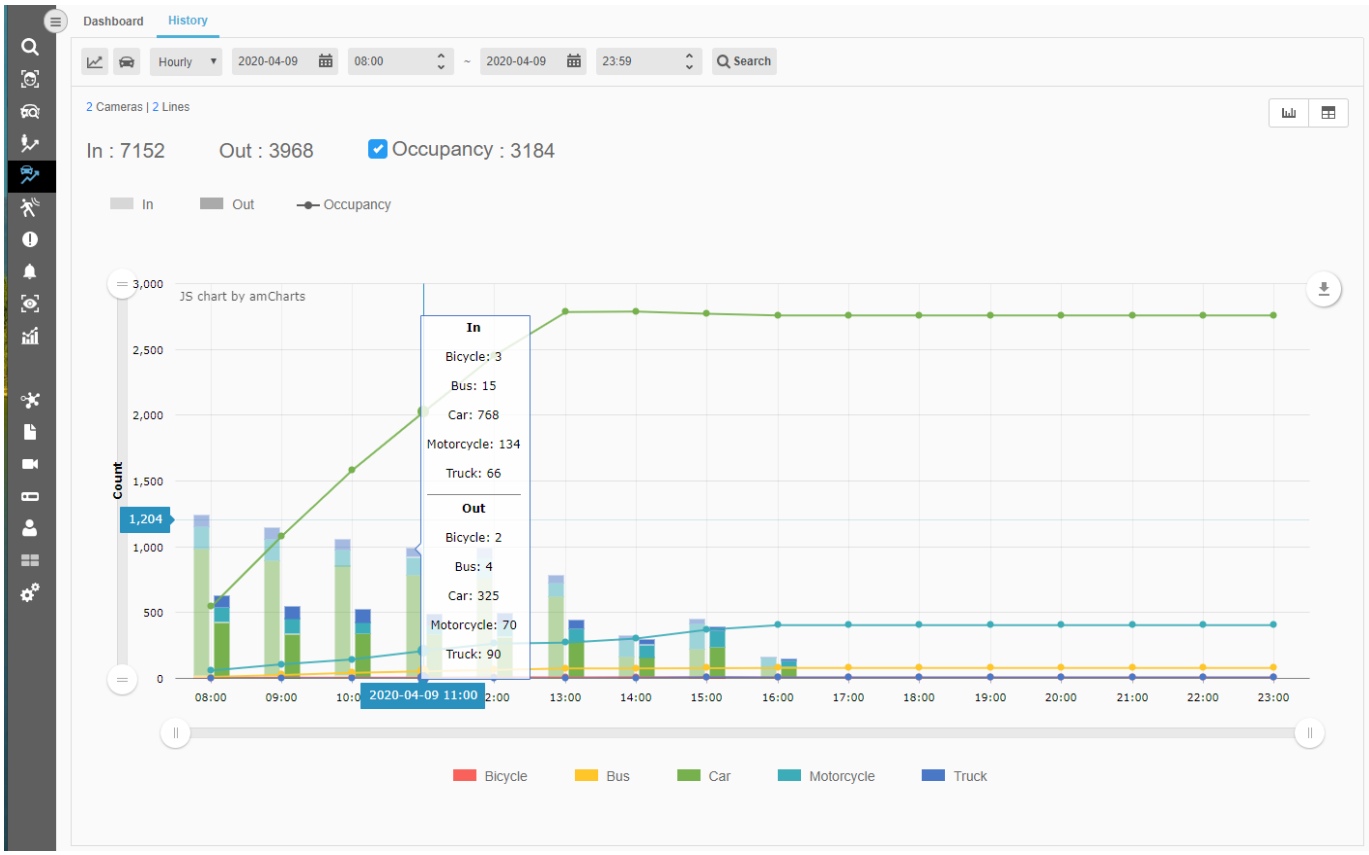


Vehicle Counting History

No.	Name	Description
1	Query Selection	Display the selections of query criteria for a search Click to define the query criteria by specifying the line set. Click select the vehicle type for the query. Hourly Click to define the timeframe query by **Hour, Day, Week,** or **Month.** 2020-01-01 00:00 ~ 2020-01-01 23:59 Click to define the query criteria by specifying the time; based on the timeframe query by **Hour, Day, Week,** or **Month**, the displayed result may vary. Click Search to see the result.
2	Information Display	Based on the selected line set for each camera, the number of selected lines and cameras will be indicated at the top left corner for the user reference. Check the Occupancy checkbox to enable the occupancy display in the Graph and Table below. The In/Out values are aggregated within the query timeframe. Occupancy is displayed when checked.

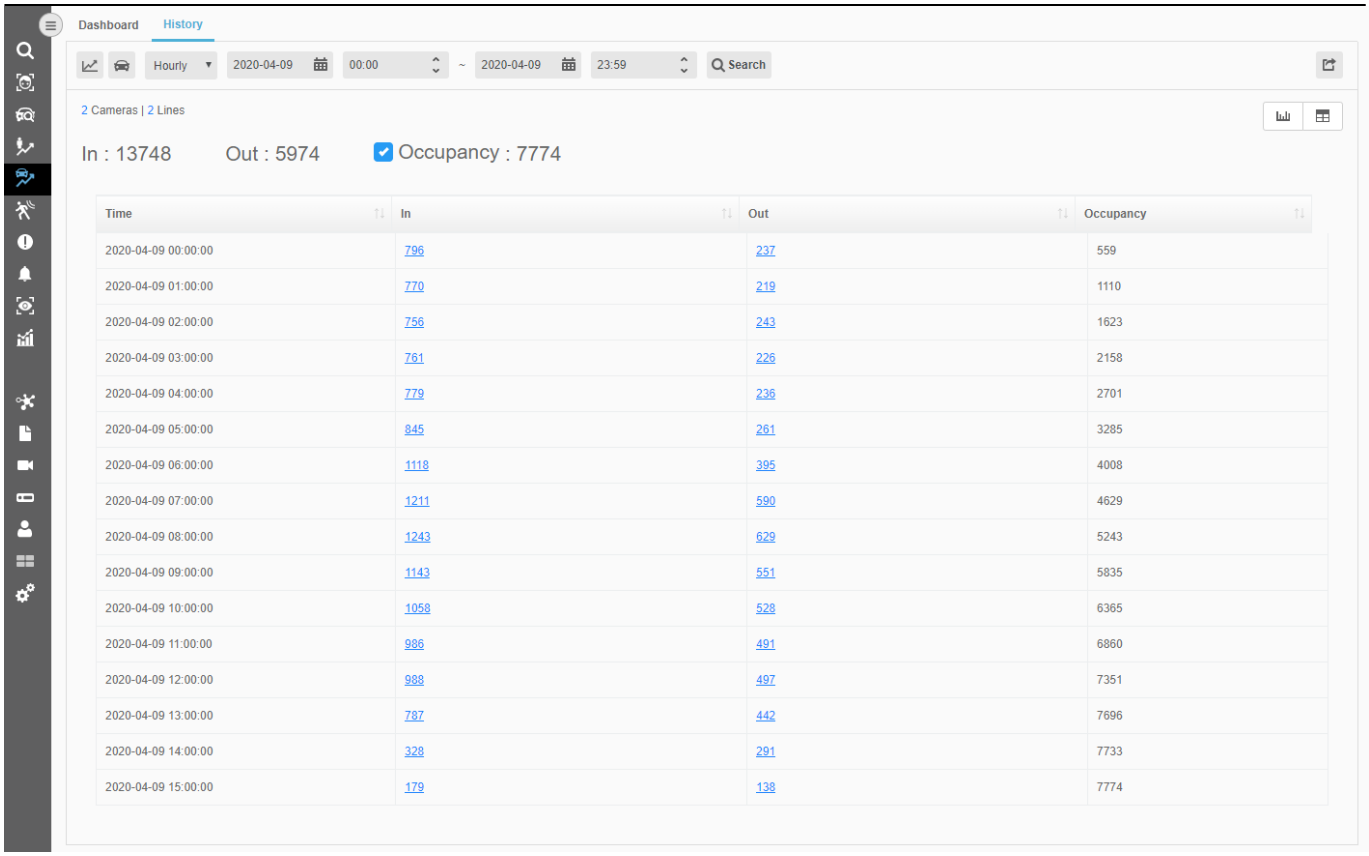
		In-Vehicle Counting History, there are two types of result display: **Bar Graph** and **List Table**. Click on the corresponding icon to switch the type of display. 
3	History Result	After the user completes the query criteria and clicks on Search, the Vehicle Counting history of the given criteria is displayed. For the Bar Graph result, the user can download the file as PDF or JPG. 

In-**Vehicle Counting History**, the Bar Graph display is the default window.
Check **Occupancy** to see the occupancy value in Graph and mouse hover over the graph to see the tooltip for detailed information.



Vehicle Counting History Graph

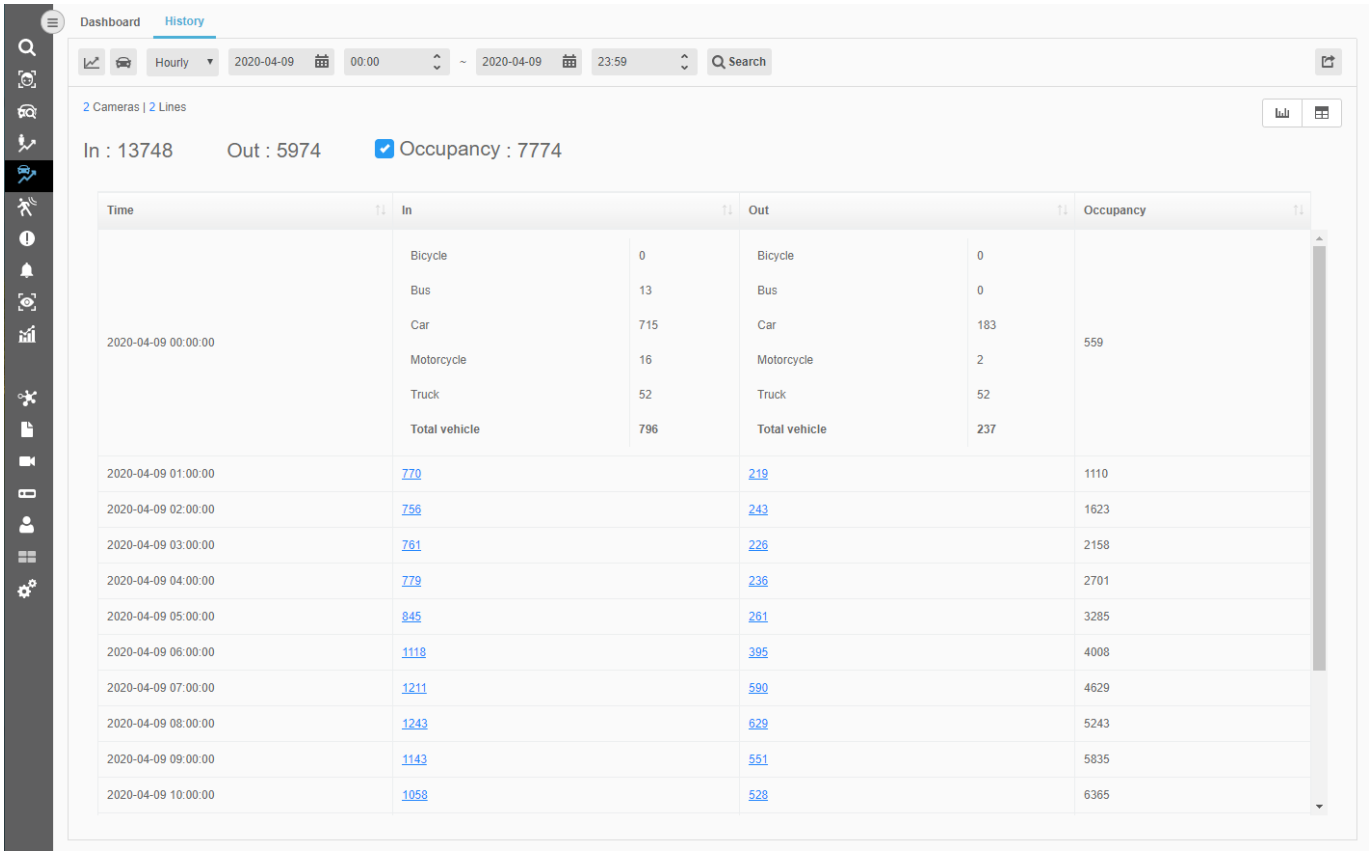
For the Vehicle Counting History Table, click on the Export button to download the table as an Excel file.
Check **Occupancy** to see the occupancy value in the History Table.



Time	In	Out	Occupancy
2020-04-09 00:00:00	796	237	559
2020-04-09 01:00:00	770	219	1110
2020-04-09 02:00:00	756	243	1623
2020-04-09 03:00:00	761	226	2158
2020-04-09 04:00:00	779	236	2701
2020-04-09 05:00:00	845	261	3285
2020-04-09 06:00:00	1118	395	4008
2020-04-09 07:00:00	1211	590	4629
2020-04-09 08:00:00	1243	629	5243
2020-04-09 09:00:00	1143	551	5835
2020-04-09 10:00:00	1058	528	6365
2020-04-09 11:00:00	986	491	6860
2020-04-09 12:00:00	988	497	7351
2020-04-09 13:00:00	787	442	7696
2020-04-09 14:00:00	328	291	7733
2020-04-09 15:00:00	179	138	7774

Vehicle Counting History Table

The Vehicle Counting History Table displays the **In, Out,** and **Occupancy** values of all selected vehicle types in the query criteria; click on the value with a blue underline to expand the list and show individual vehicle types with the corresponding detected values.



Time	In		Out		Occupancy
2020-04-09 00:00:00	Bicycle	0	Bicycle	0	559
	Bus	13	Bus	0	
	Car	715	Car	183	
	Motorcycle	16	Motorcycle	2	
	Truck	52	Truck	52	
	Total vehicle	**796**	**Total vehicle**	**237**	
2020-04-09 01:00:00	770		219		1110
2020-04-09 02:00:00	756		243		1623
2020-04-09 03:00:00	761		226		2158
2020-04-09 04:00:00	779		236		2701
2020-04-09 05:00:00	845		261		3285
2020-04-09 06:00:00	1118		395		4008
2020-04-09 07:00:00	1211		590		4629
2020-04-09 08:00:00	1243		629		5243
2020-04-09 09:00:00	1143		551		5835
2020-04-09 10:00:00	1058		528		6365

Vehicle Counting History Table Detail

Counting History/ Default Start and End time Rule

Hourly

By default start from [today's] 00:00:00 and End with [today's] 23:59:59.

- Maximum data display is 168 hours (7 days).
- Start from HH: 00:00 for every hour

Daily

By default start from [1st day of this month] 00:00:00:00 and End with [last day of this month] 23:59:59.

- Maximum data display is 93 days (3 months).
- Start from 00:00:00 every day.

Weekly

Start from [1st week of this year] 00:00:00 and End with [last week of this year] 23:59:59.

E.g., the 1st Sunday of 2019 is January 6th, so week 1 of 2019 is from 2018/12/30 to 2019/01/05.

- Maximum data display is 1 year.
- Starting week may vary depending on the first Sunday of the year.

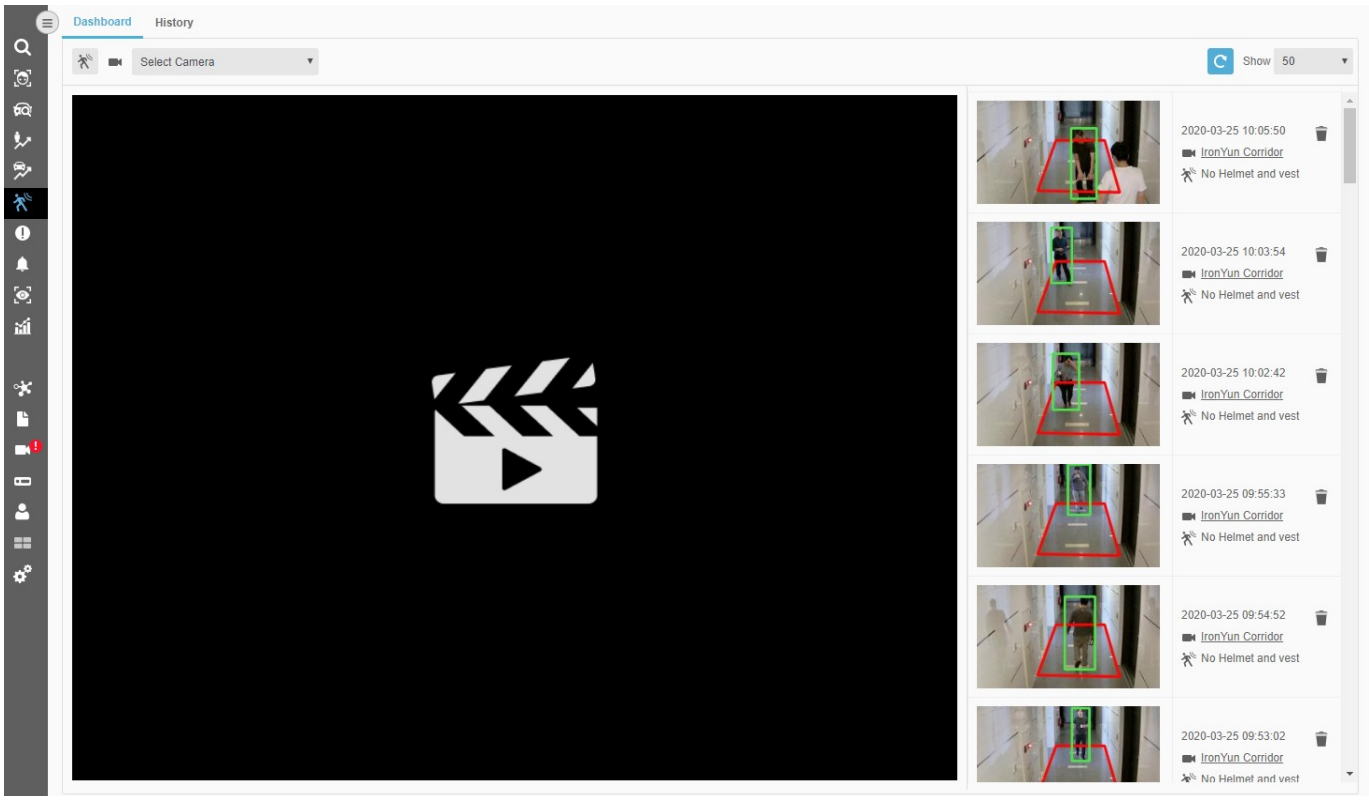
Monthly

Start from [1st day- January 1st of this year] 00:00:00 and End with [last day- December 31st of this year] 23:59:59.

- Maximum data display is 3 years.
- Start from the 1st day of every month.

13. Intrusion

Click on the **Intrusion** tab to see the window below. The Intrusion feature allows the user to see the runtime intrusion occurring.

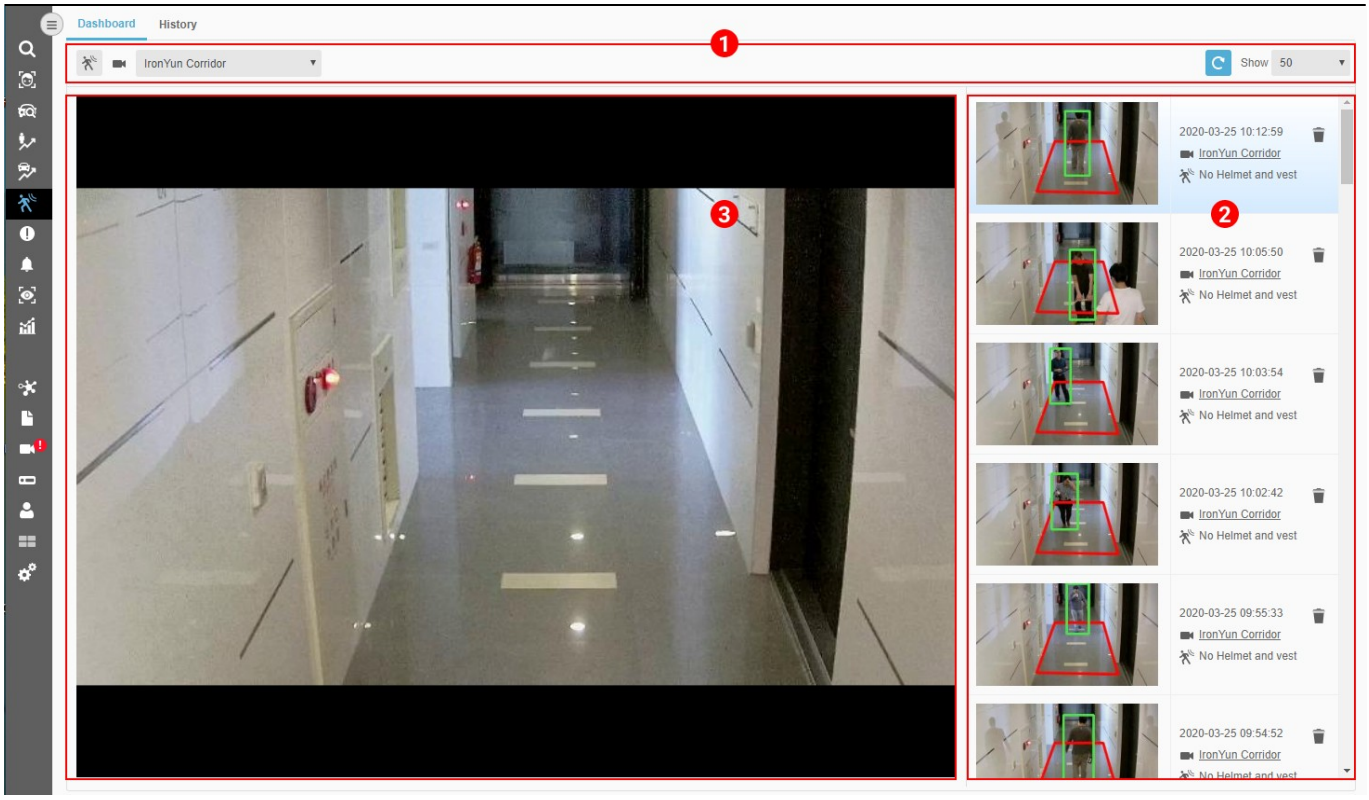


Intrusion page

In the **Intrusion** tab, there are two sub-tabs: Dashboard and History
To activate the camera view on the left, select the camera in the drop-down menu or click on the Camera Name in blue underline.

13.1 Dashboard

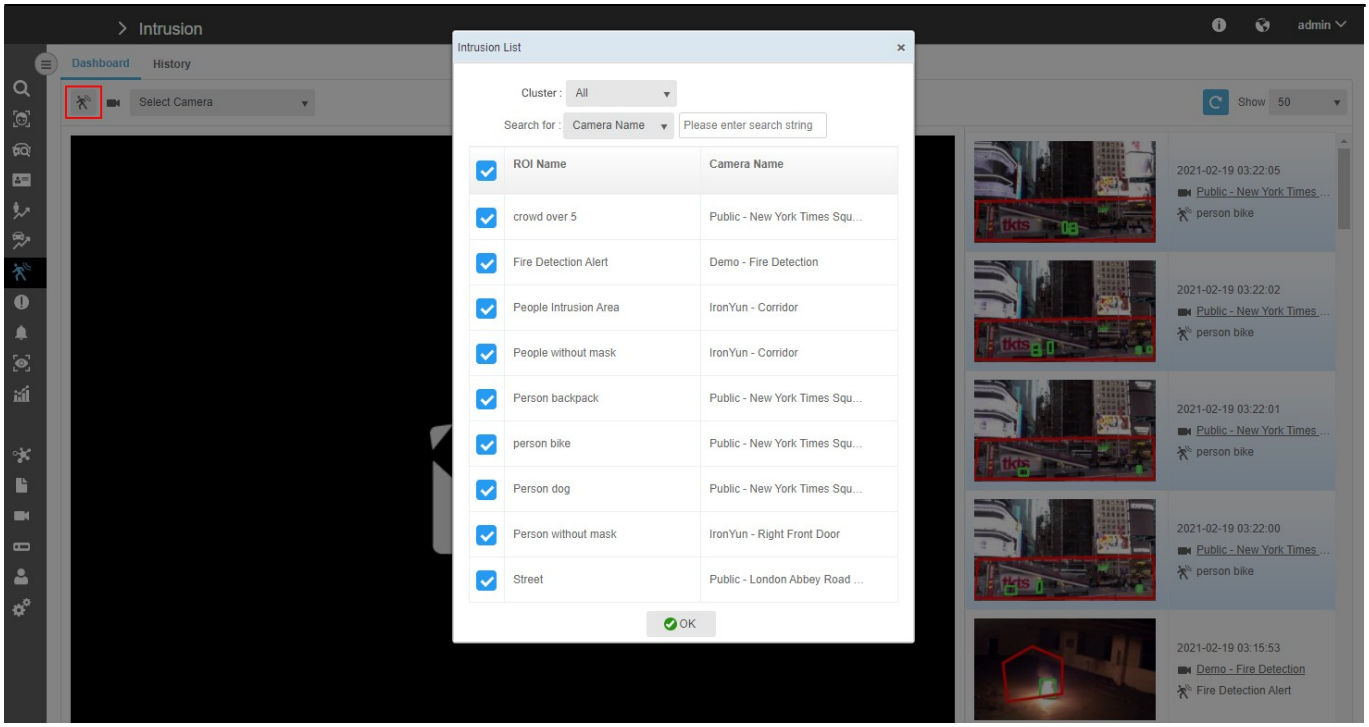
Click on the **Dashboard** sub-tab to see the window below, which is the default page of Intrusion.



Intrusion Dashboard

No.	Name	Description
1	Query Selection	Intrusion Dashboard shows the runtime intrusion, and the intrusion event that occurred within 1 minute is highlighted in blue.  Click **Select Intrusion** button to define the query criteria by specifying the Intrusion.  Refresh is enabled by default; disable to stop the dashboard from refreshing event entries.  The user can select a show number for runtime intrusion entries displayed.
2	Intrusion Dashboard Results	Runtime display incorporates **Result, Camera Name, ROI Name, Event Time,** and **Delete.**
3	Live camera view	To activate a live camera: Click the drop-down menu for the camera(s) available for selection. Select and click on one of the **Camera Names** in the Intrusion History Result to see the live view on the left.

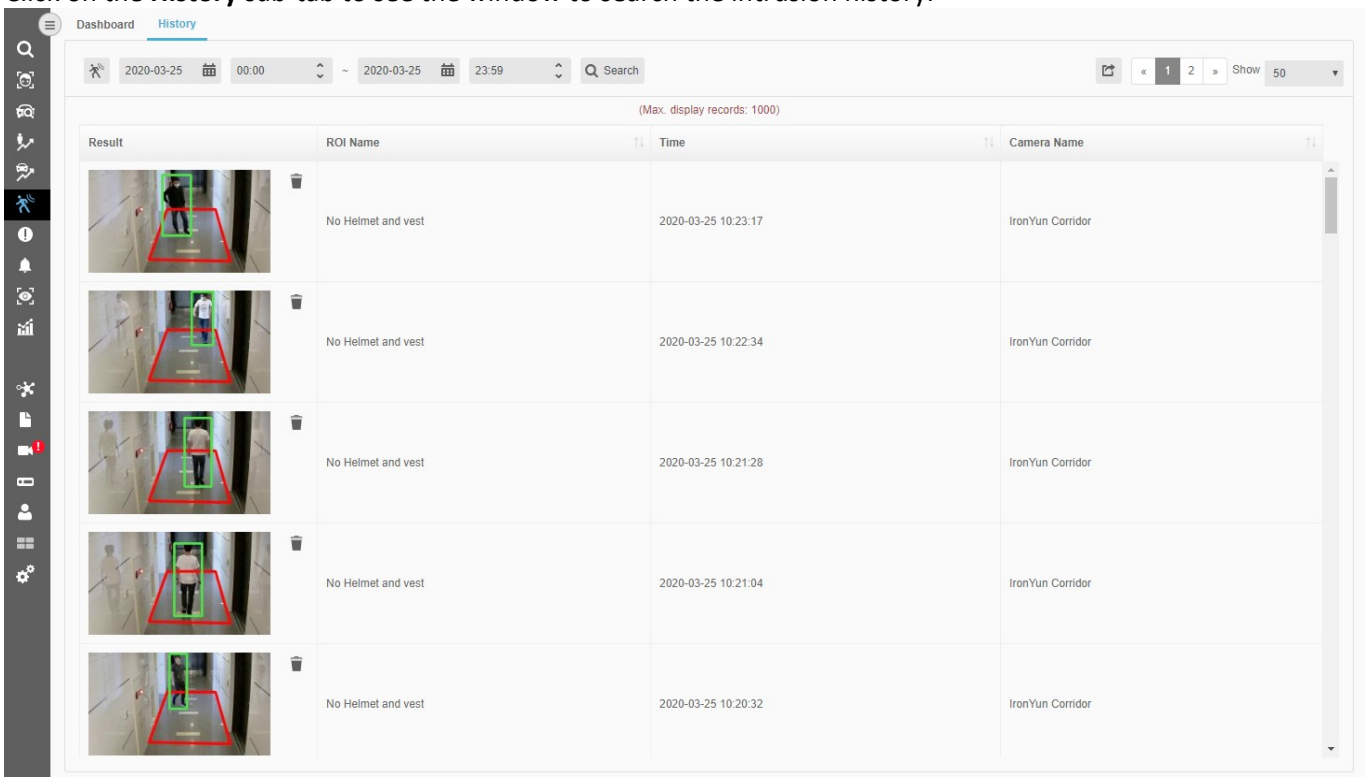
 Click to open the ROI List to select the ROI rule. All configured ROIs have been put in the ROI List for the user to enable/disable the intrusion by selecting the checkbox.



ROI List

13.2 History

Click on the **History** sub-tab to see the window to search the intrusion history.



Intrusion History Window

 Click to define the query criteria by specifying the Intrusion.

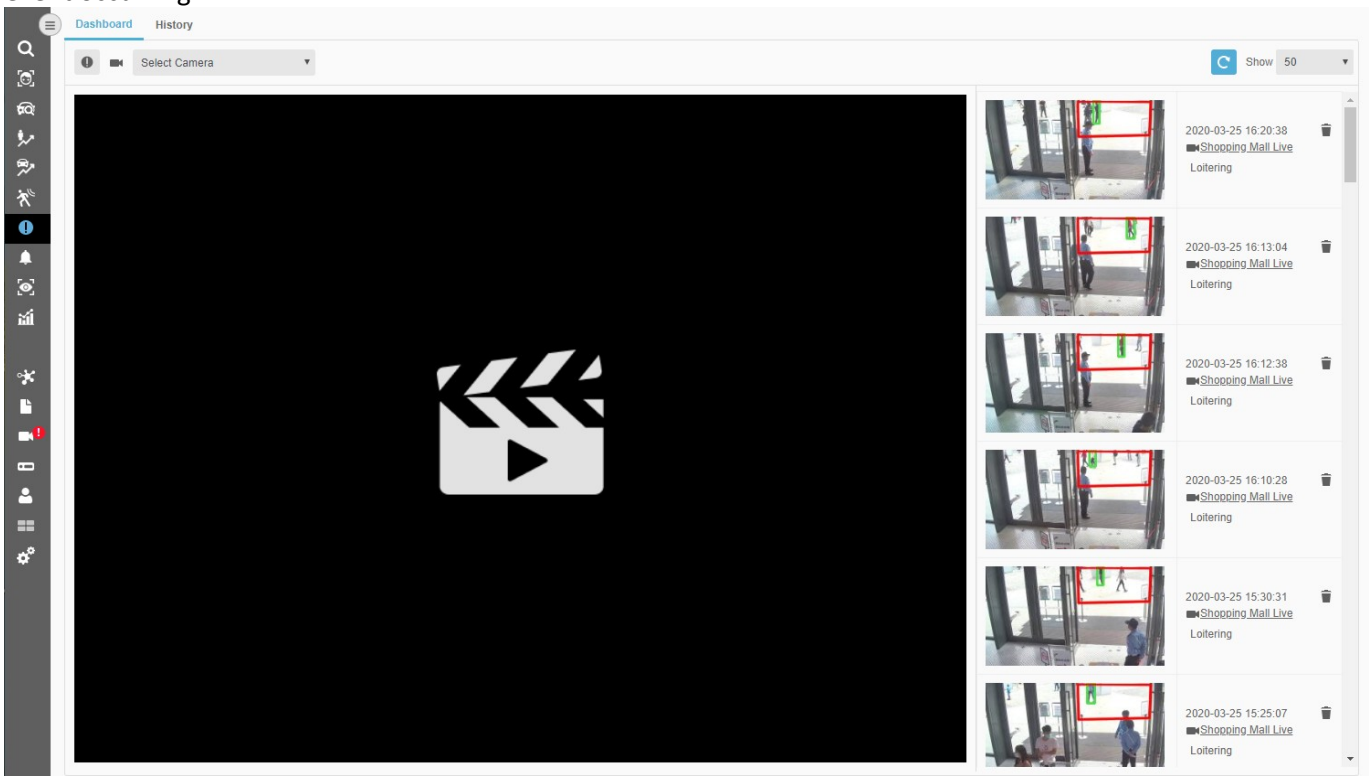
 Define the query criteria by specifying the date and time.

Click **Search** to see the result.
Once the user has completed the query criteria and clicks **Search**, the Intrusion history of the given criteria is displayed. Similar to the dashboard, the result incorporates Result, ROI Name Detected, Time, and Camera Name.

Click to export the results as an Excel file.

14. Abnormal

Click on the **Abnormal** tab to see the window below. This feature allows the user to see the runtime Abnormal event occurring.

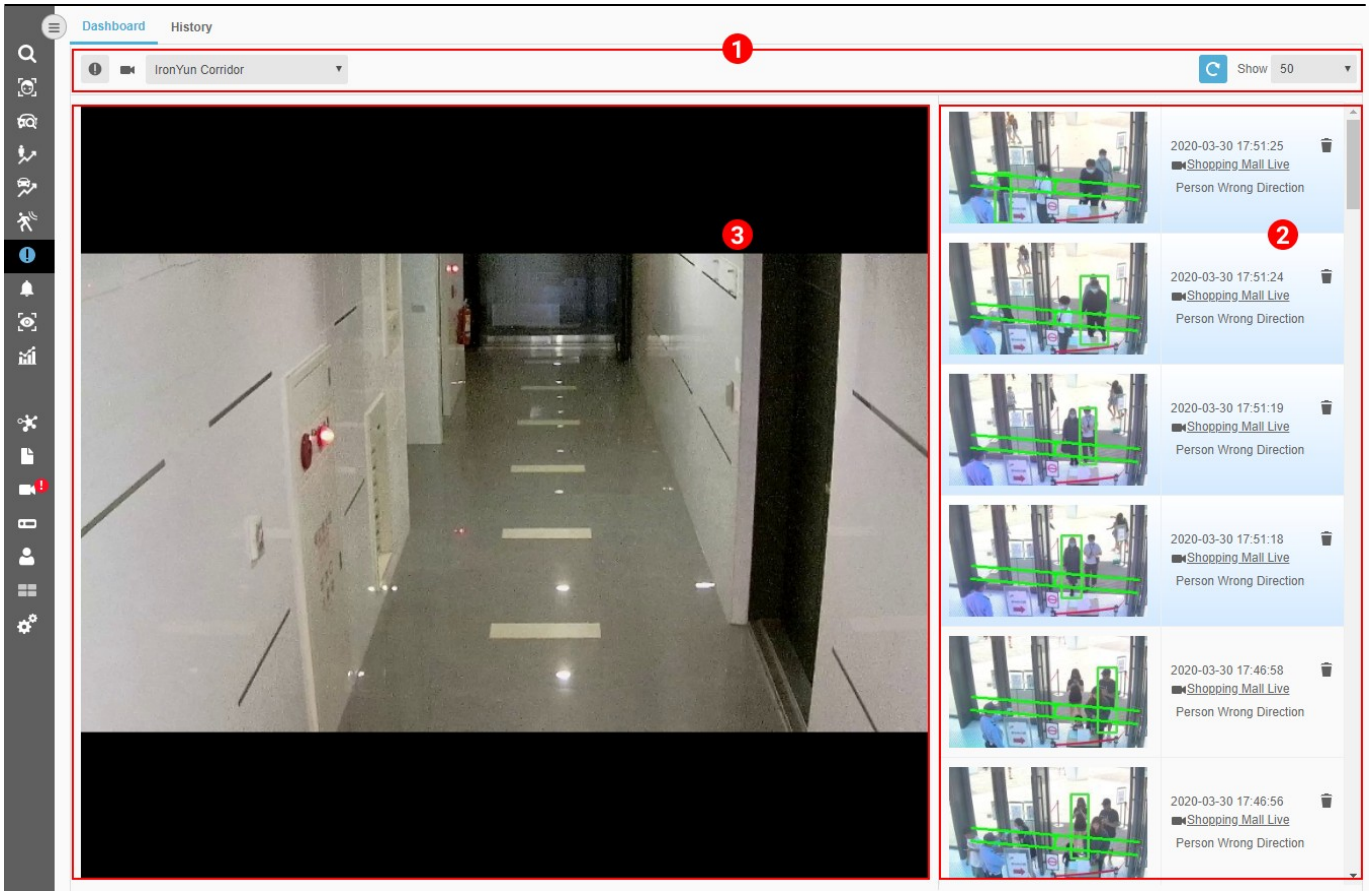


Abnormal Page

In the **Abnormal** tab, there are two sub-tabs: Dashboard and History
To activate the camera LiveView, select the camera(s) in the drop-down menu or click the Camera Name from the event scenes.

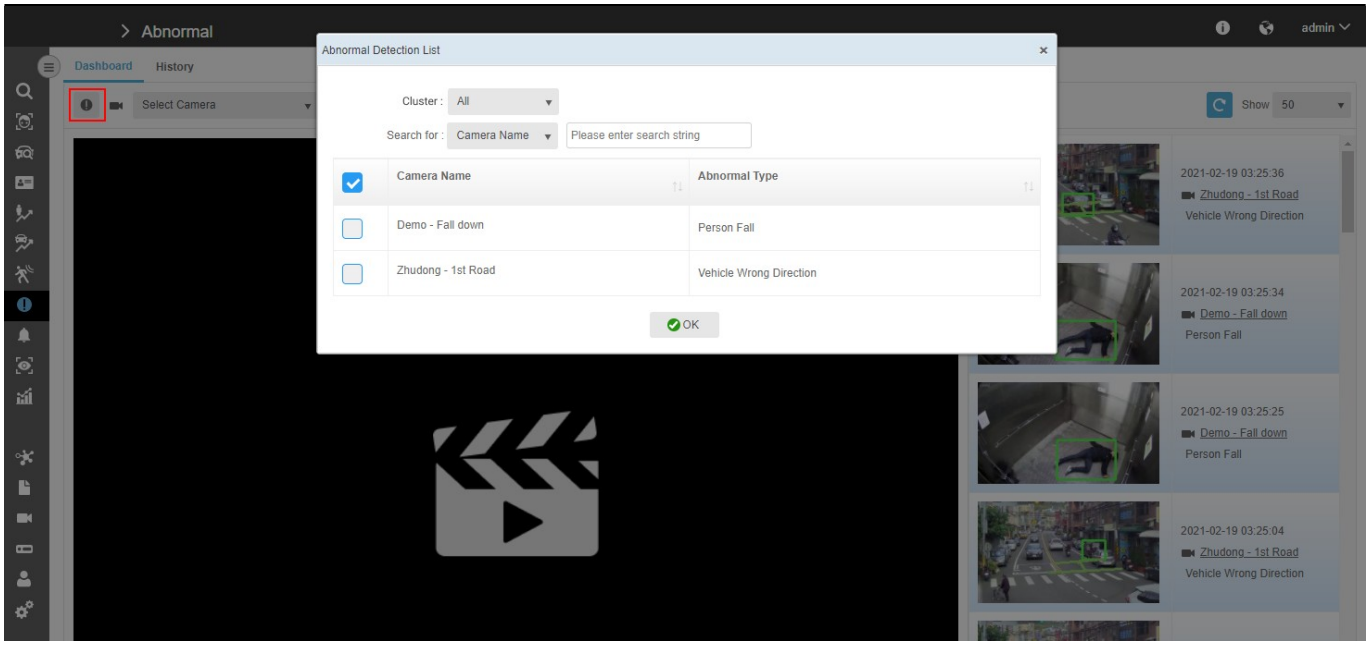
14.1 Dashboard

Click on the Dashboard sub-tab to see the window below, which is the default page of Abnormal.



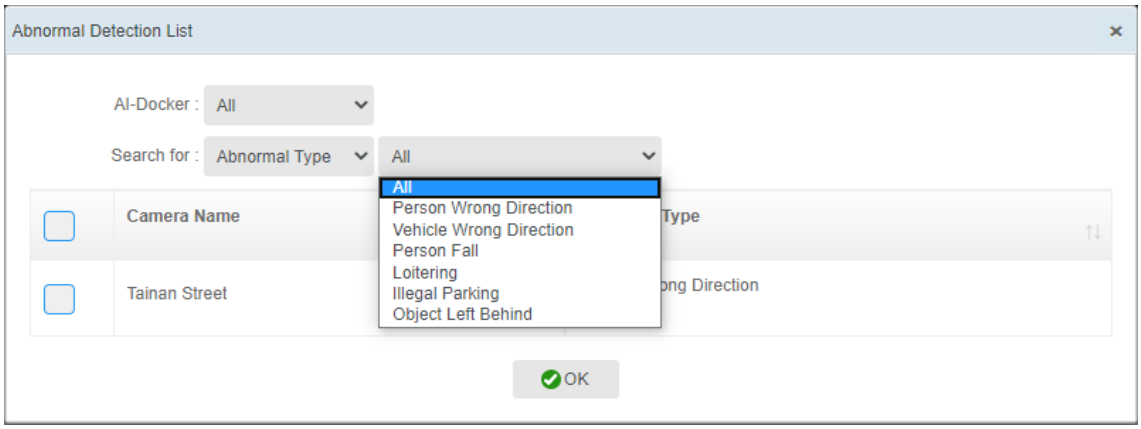
Abnormal Dashboard

No.	Name	Description
1	Query Selection	Abnormal Dashboard shows the runtime abnormal events; all abnormal events that occurred within 1 minute are highlighted in blue.  Click **Select Intrusion** button to define the query criteria by specifying the Intrusion.  Refresh is enabled by default; disable to stop the dashboard from refreshing event entries.  The user can select a show number for runtime abnormal entries displayed.
2	Abnormal Dashboard Result	Runtime display incorporates **Scene Result, Detected Time, Camera Name, Abnormal Type,** and **Delete button.**
3	Live camera view	To activate a live camera: Click the drop-down menu for the camera(s) available for selection. Select and click on one of the **Camera Names** in the Intrusion History Result to see the live view on the left.



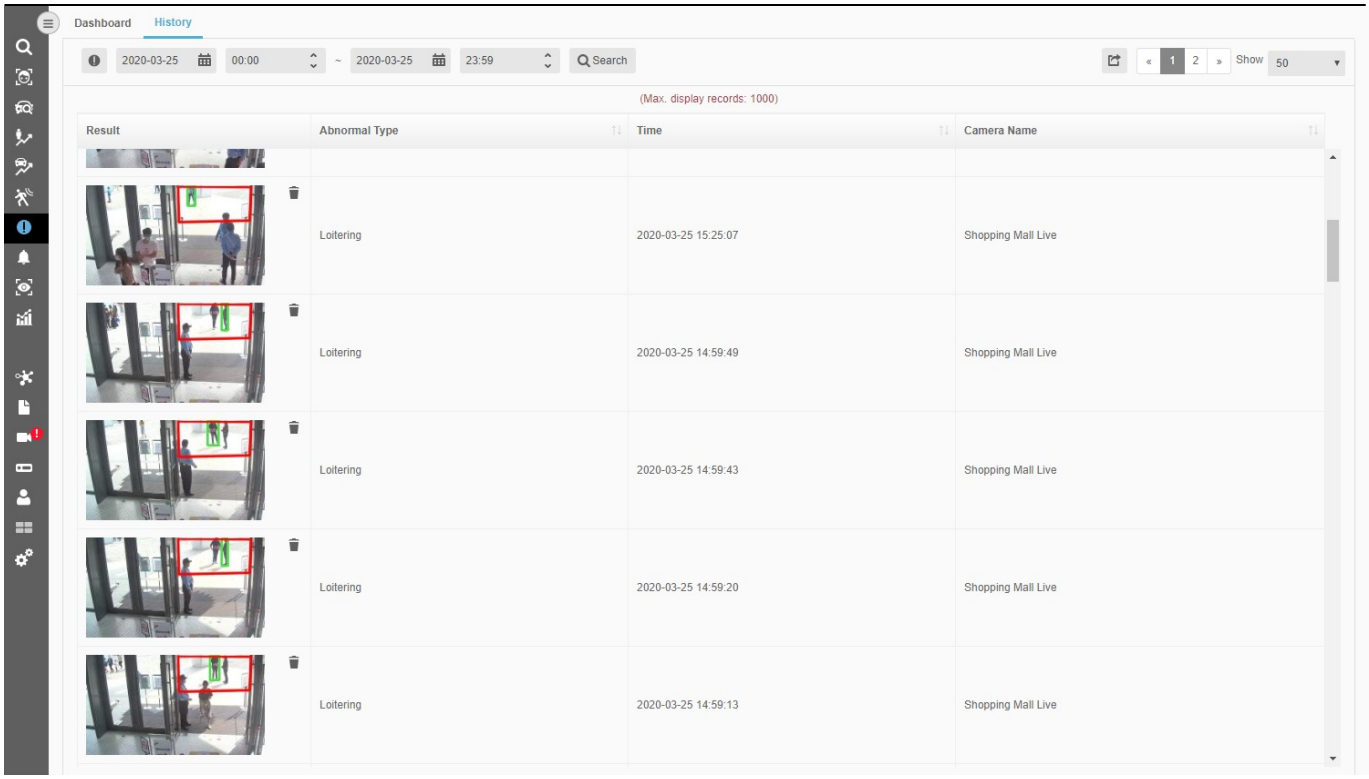
Abnormal List

When an **Abnormal Type** is selected in the Search drop-down menu, a new menu bar will appear and display 6 Abnormal Types for selection: **Person Wrong Direction**, **Vehicle Wrong Direction**, **Person Fall**, **Loitering, Illegal Parking** and **Object Left Behind.**



14.2 History

Click on the History sub-tab to see the window to search the **Abnormal** history



Abnormal History

Click to define the query criteria by specifying the Abnormal behavior.

2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time.

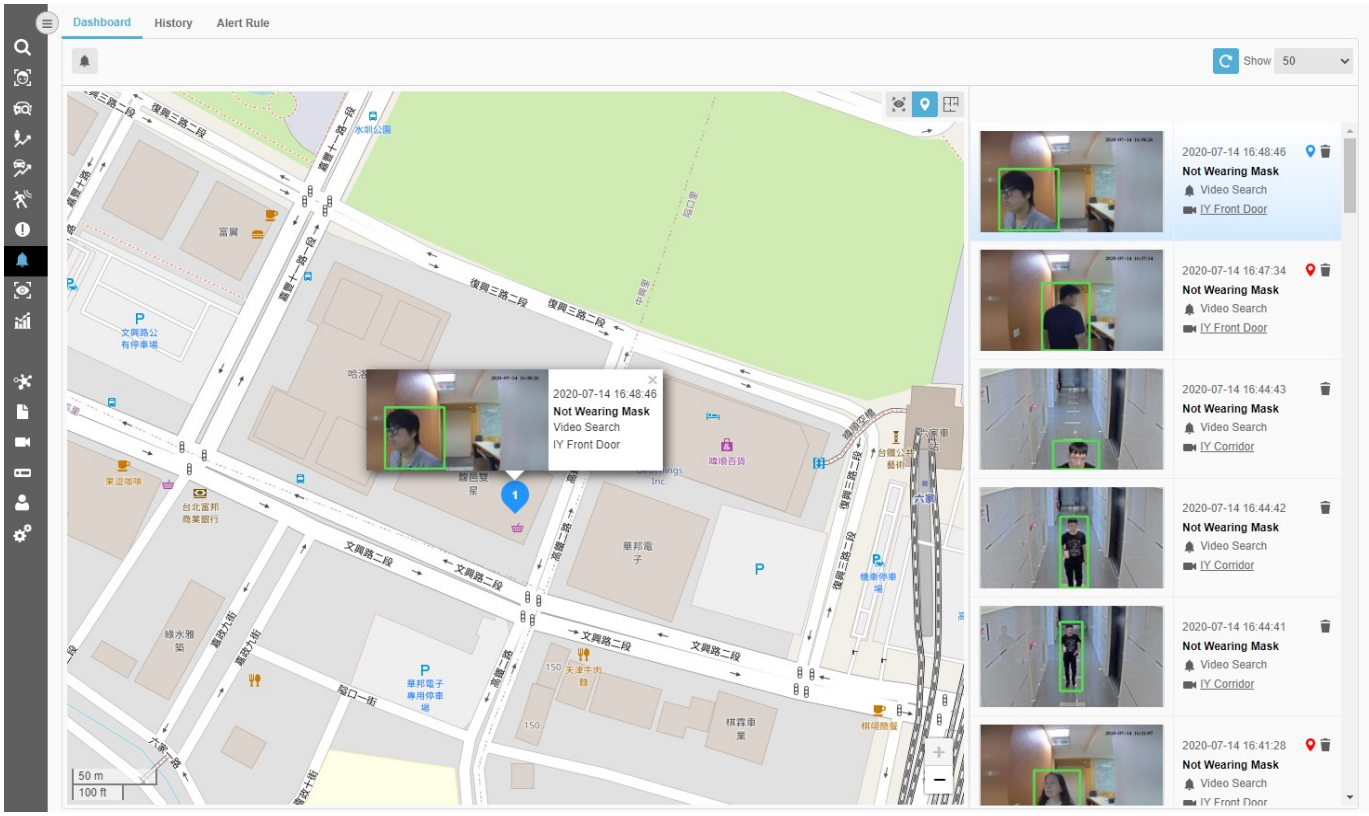
Click **Search** to see the result

Once the user has completed the query criteria and clicks **Search**, the Abnormal history of the given criteria is displayed. Similar to the dashboard, the result incorporates Result, Camera Name, Abnormal Detected, and Event Time.

Click to export the results to an Excel file.

15. Alert

Click on the **Alert** tab to see the window below, which is Map View by default.



Alert Window

In the Alert tab, there are three sub-tabs: **Dashboard, History,** and **Alert Rule.**

Item	Description
Dashboard	**Alert** default page, allowing the user to see the runtime of Alert.
History	Allow the user to search for and track specific alerts using the timeframe.
Alert Rule	Set the alert rule and trigger action

15.1 Dashboard

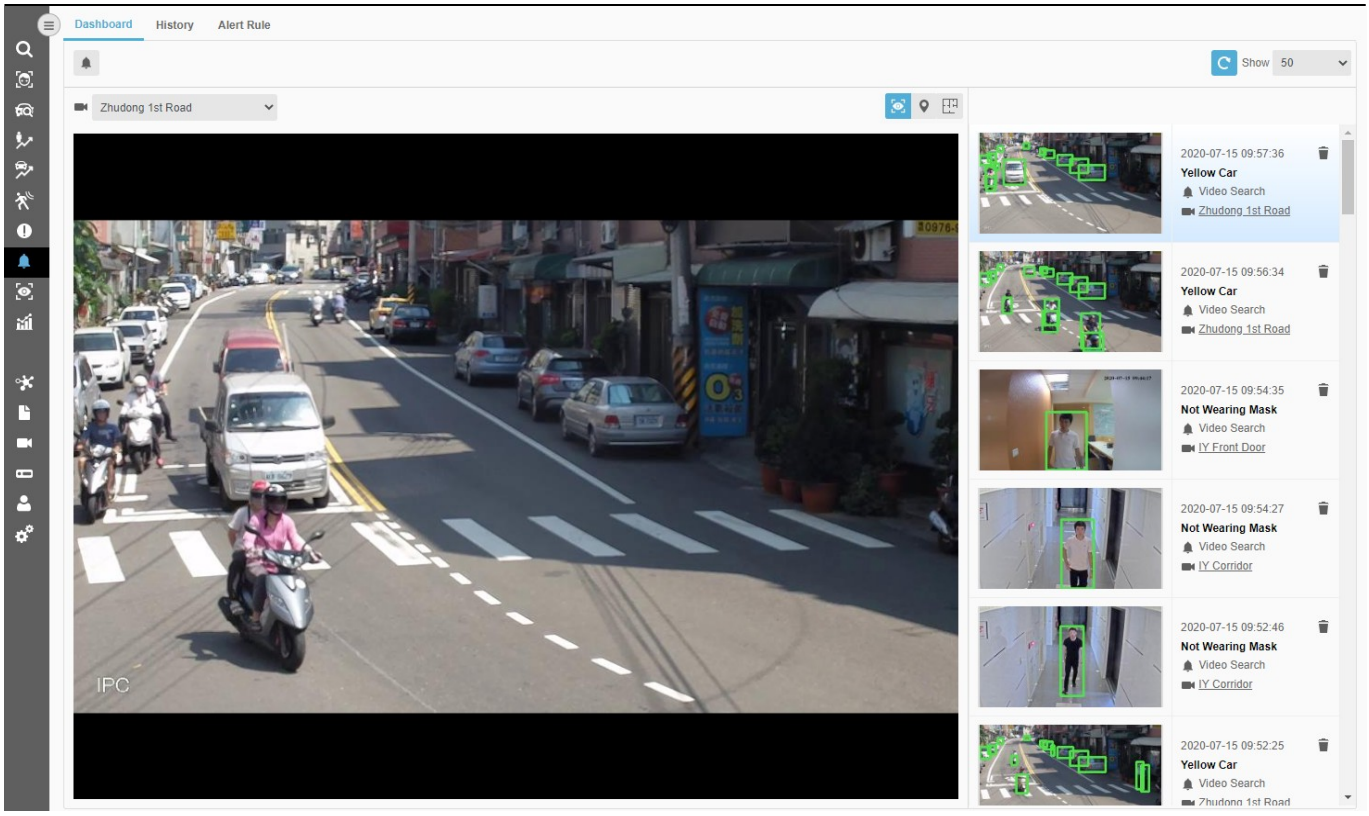
Alert Dashboard is the default page for Alert, showing the runtime alert. All alert events that occurred in the latest 1 minute are highlighted in blue.

Alert Dashboard Map

No.	Name	Description
1	Query Selection	Intrusion Dashboard shows the runtime Alert, and the Alert event that occurred within 1 minute is highlighted in blue. Click **Select Alert** button to define the query criteria by specifying the alert. Refresh is enabled by default; disable to stop the dashboard from refreshing event entries. Show: 50 The user can select to decide the number of runtime alert entries
2	Alert Dashboard Result	Dashboard display incorporates **Scene Thumbnail, Time, Alert Name, Alert Type, Camera Name, Drop Pin and Delete.**
3	Live View/ Map/Indoor Map	Click to switch the view type, Alert Dashboard is in Map View by default. Use the switch tab to change to Live View or click camera names from the scene event to see Live View of the selected camera.

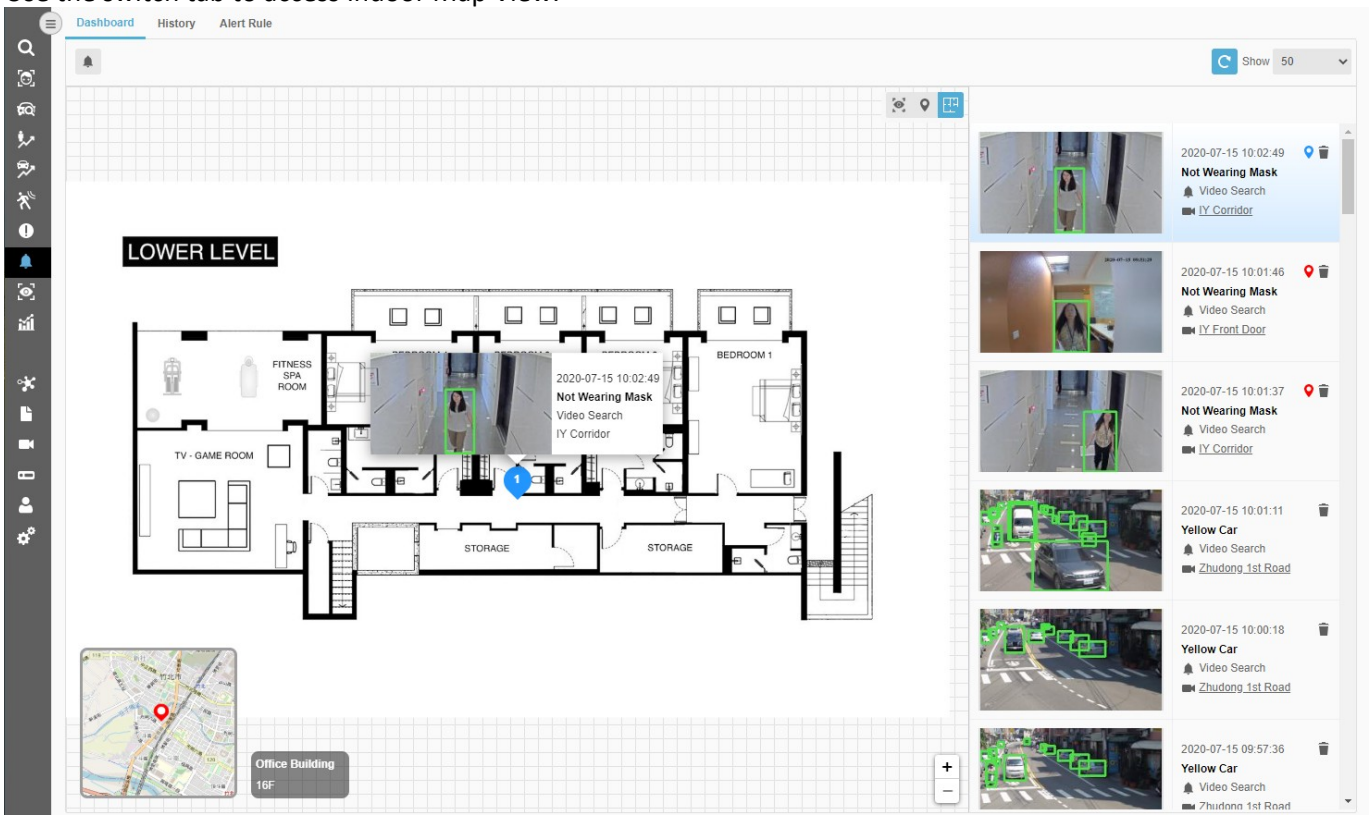
In the Alert Dashboard, the map will automatically move based on incoming events, so that the newest Alert is displayed at the central focus of the map. The map will display the popup within only 1 minute with a blue pinpoint locator. The user can turn off Refresh to stop the map from moving if needed.

Use the switch tab to get to Live View or click on one of the underlined camera names from the scene to activate the Live View of the Alert camera.



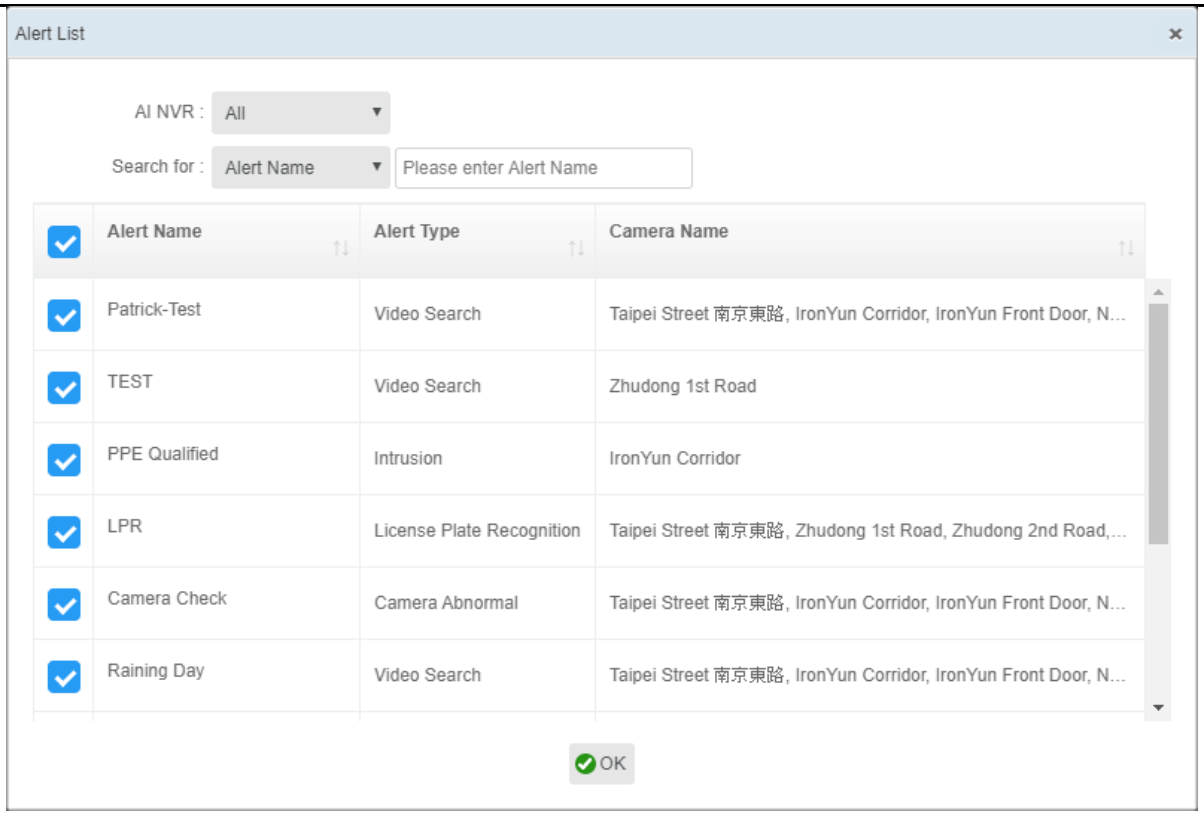
Alert Dashboard Live View

Use the switch tab to access Indoor Map View.



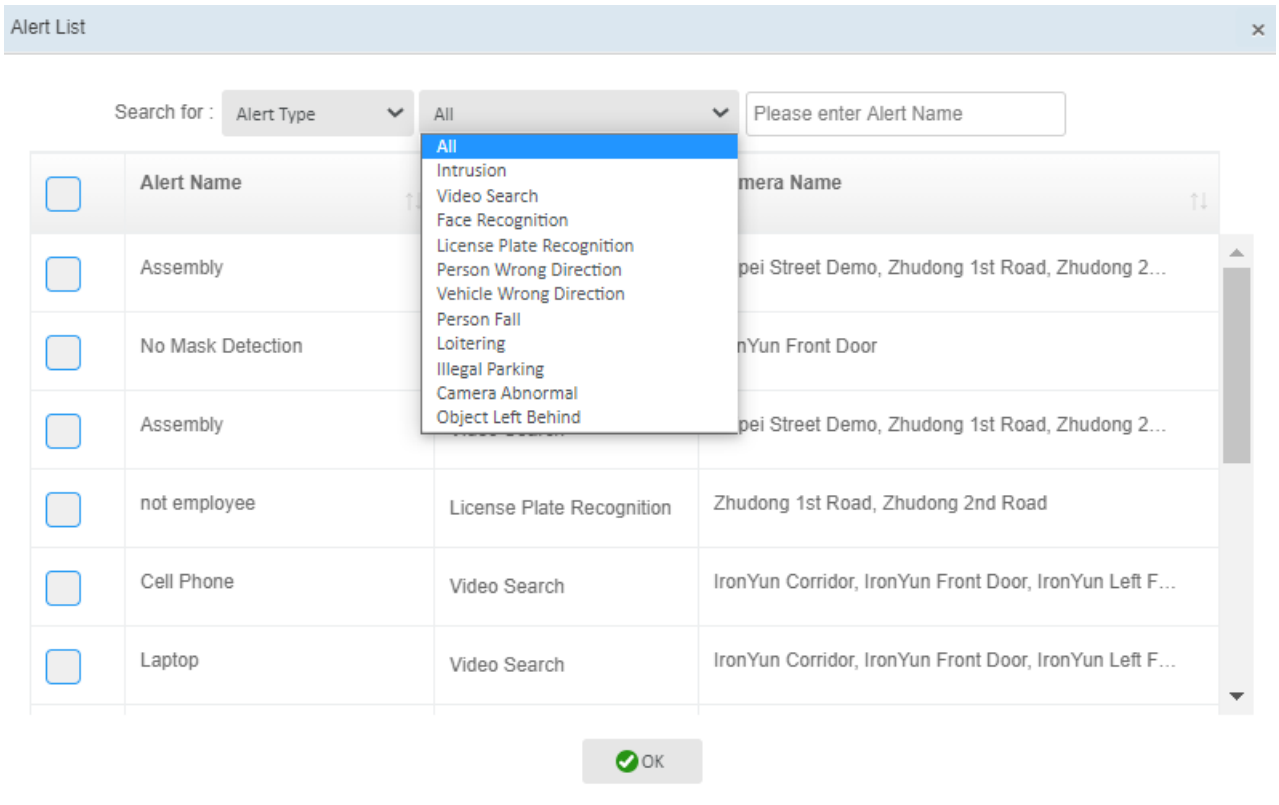
Alert Dashboard Indoor Map

Click to open the **Alert List** window; the user can specify the alert search by **Alert Type** or **Alert Name.**



Alert List

When the user selects the **Alert Type** in the Search drop-down menu, a new menu bar will display the Alert Types for selection.

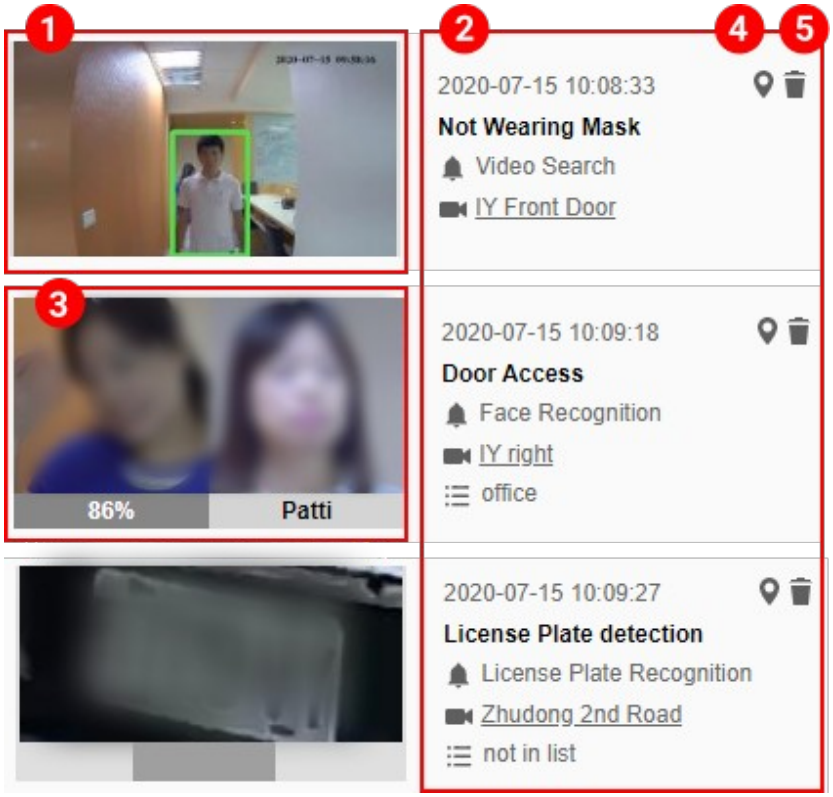


Alert List

All configured alerts are in the Alert List for the user to enable/disable by selecting the checkboxes (Uncheck all indicates select all).

Alert Dashboard Results

The dashboard card on the right shows **Scene Thumbnail, Time, Alert Name, Alert Type, Camera Name, and List (FR** and **LPR).**

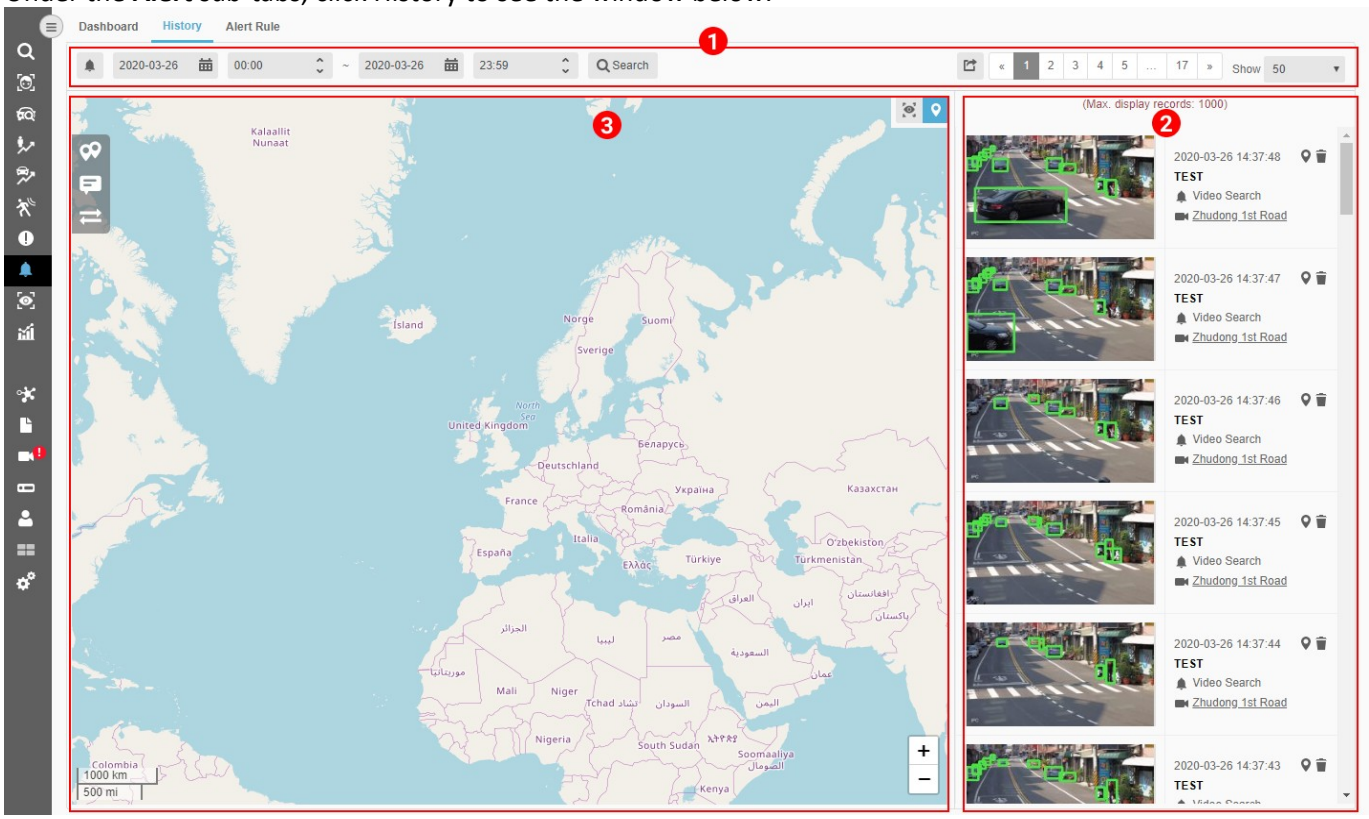


Alert Dashboard Card

No.	Item	Description
1	Result	Thumbnail of the detected alert event(s); the user can click on the thumbnail and link to a new window of Detailed information of the detected Alert event.
2	Alert Info	**Time**: The time when the alert event is detected. **Alert Name:** The name of the alert given by the user in **Alert Rule** **Alert Type:** There are 11 types of alerts available. **Camera Name:** The camera that captured the alert event; click to activate the camera screen on the left. **List:** The list information is only available for FR and LPR alerts.
3	FR Result	FR result of the detected Alert; the image on the left is the detected face with a similarity value, and the right image is the matched face with the name. Click on the detected face on the left and link to a new window of Detailed information of the detected alert event. Click on the matched face on the left to see the Face Target Info.
4	Pinpoint	**Dashboard –** the Pin is blue for newly detected events and changes to red after 1 minute. **History** - Click to drop the pin on the map to see the alert location on both Map View and Indoor Map View. The icon will change to red when clicked.
5	Delete	The user can delete the result in case of inaccurate or false data.

15.2 History

Under the **Alert** sub-tabs, click History to see the window below.

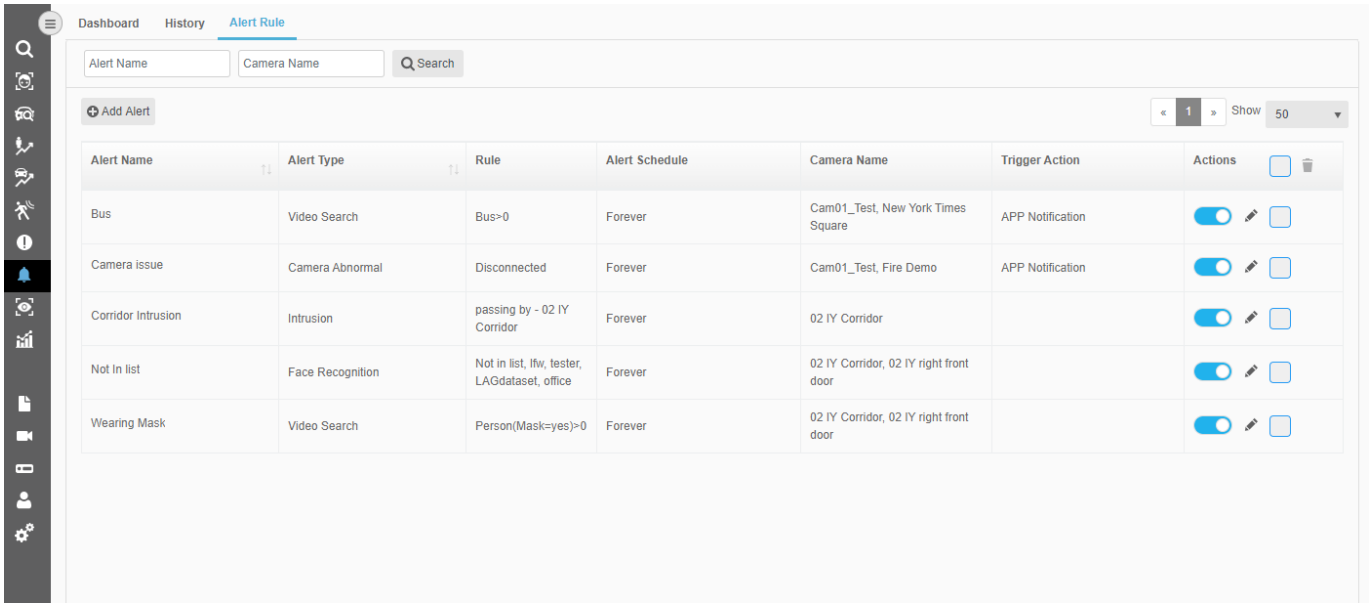


Alert History

No.	Name	Description
1	Query Selection	Display the selections of query criteria for a search Click to define the query criteria by specifying the alert. 2020-01-01 00:00 ~ 2020-01-01 23:59 Select and define the query criteria by specifying the date and time. Click **Search** to see the result Click to export the results as an Excel file.
2	Alert History Result	After the user completes the query criteria and clicks **search**, the Alert history of the given criteria is displayed. Similar to the dashboard, the results include **Scene Thumbnail, Time, Alert Name, Alert Type, Camera Name, Drop Pin,** and **Delete.**
3	Live View/ Map/Indoor Map	Click to switch the view type, Alert History is in Map View by default. Use the switch tab to change to Live View or click camera names from the scene event to see Live View of the selected camera.

15.3 Alert Rule

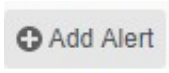
Under the **Alert** sub-tabs**,** click **Alert Rule** to see the window below, which allows the user to add, edit or delete alert rules.



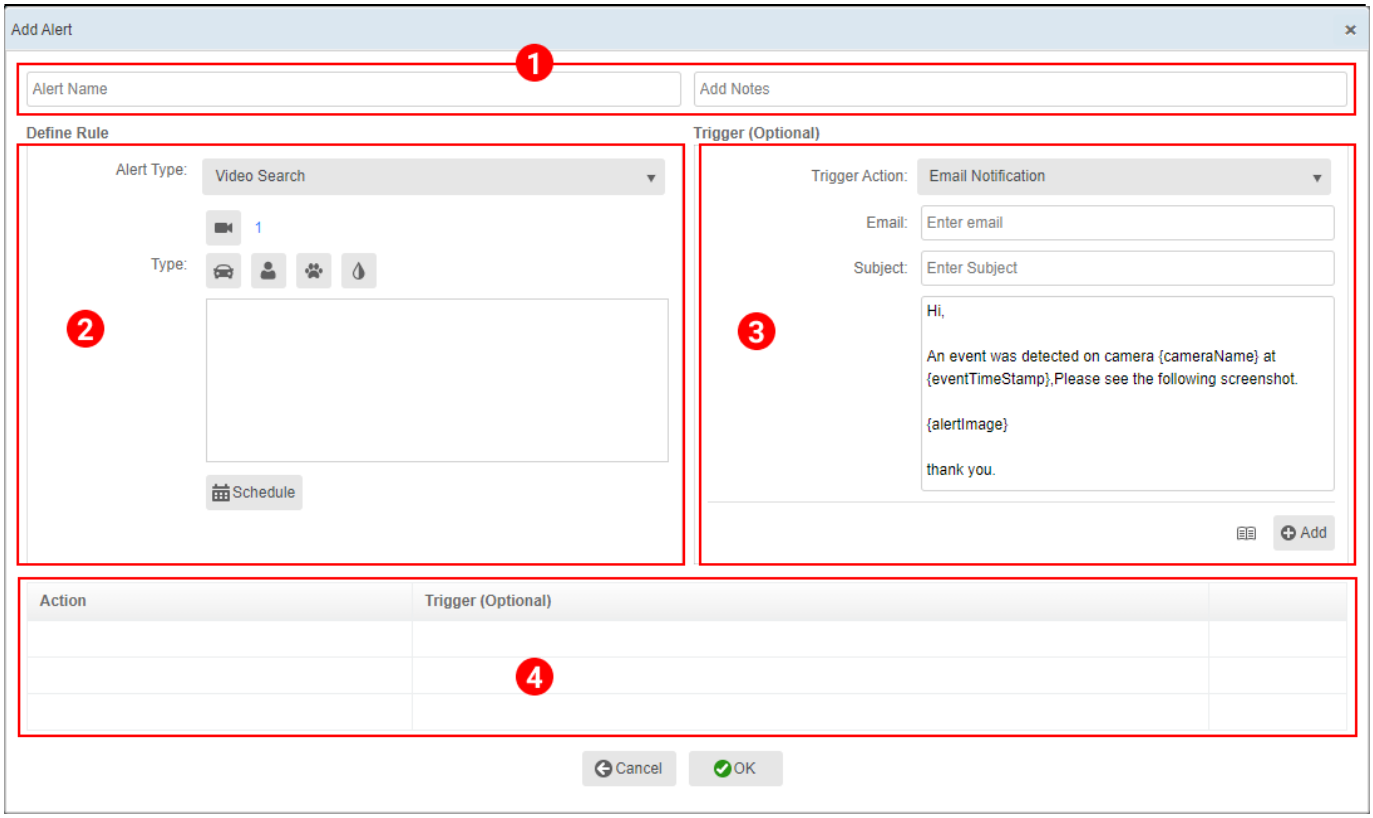
Alert Rule

The search section contains filters for Alert Name and Camera Name.

In the **Alert Rule** page, the table shows the Alert rule set by the user with detailed information for each Alert rule and condition. The user can also enable email subscription using the checkbox in the subscription column.



Click to add an alert in the New Alert window, and set an alert in the New Alert window based on the given criteria.

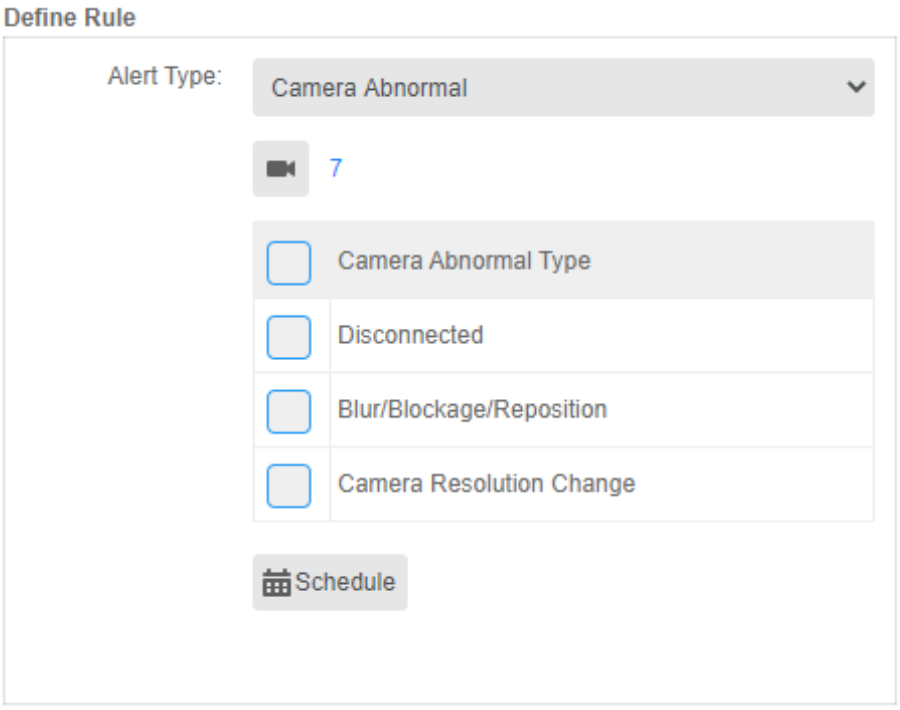


New Alert Window

No.	Name	Description
1	Alert Name & Notes	Name the Alert and add notes for further reference.
2	Define Alert Rule	Define the alert rule by selecting the Alert Type; there are 11 types to choose from: **Camera Abnormal, Face Recognition, Identity Recognition, Illegal Parking, Intrusion, License Plate Recognition, Loitering, Object Left Behind, People Counting, Person Fall, Person Wrong Direction, Vehicle Counting, Vehicle Wrong Direction** and **Video Search.**
3	Alert Trigger (Optional)	Select the trigger action type in the drop-down menu; there are 7 types of alert trigger actions: **Email Notification, HTTP, BTX Bridge to Milestone XProtect, APP Notification, Genetec, Network Optix** and **Digital Watchdog.**
4	Alert Record	Alert trigger actions will be recorded in this section; the user can edit and delete the prerecorded trigger action(s).

15.3.1 Camera Abnormal

Select **Camera Abnormal** to select Camera and Abnormal type**.**

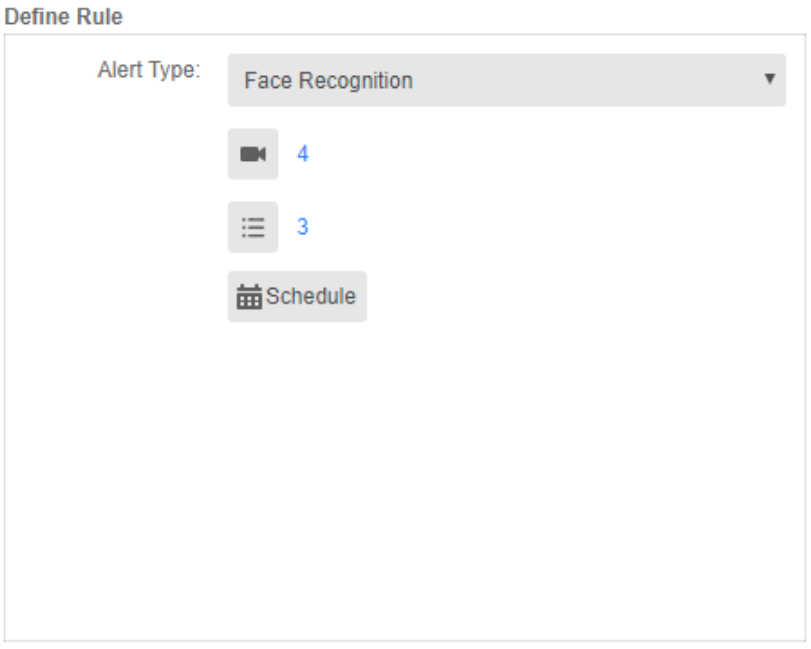


Click to select a camera in the camera list; the blue number next to the camera button indicates the number of cameras selected.
Select the Camera Abnormal type for which you like to be notified and set the schedule.

For Camera Abnormal, refer to Chapter 18 Camera for more details.

15.3.2 Face Recognition

Select **Face Recognition** to select Camera and FR List**.**



Click to select a camera in the camera list; the blue number next to the camera button indicates the number of cameras selected.

Click to select the list(s) in the Face Recognition list; the blue number next to the button indicates the number of lists selected.

Refer to Chapter 7.3 List for more details about FR List.

15.3.3 Identity Recognition

Select **Identity Recognition** to select Camera and Access type**.**

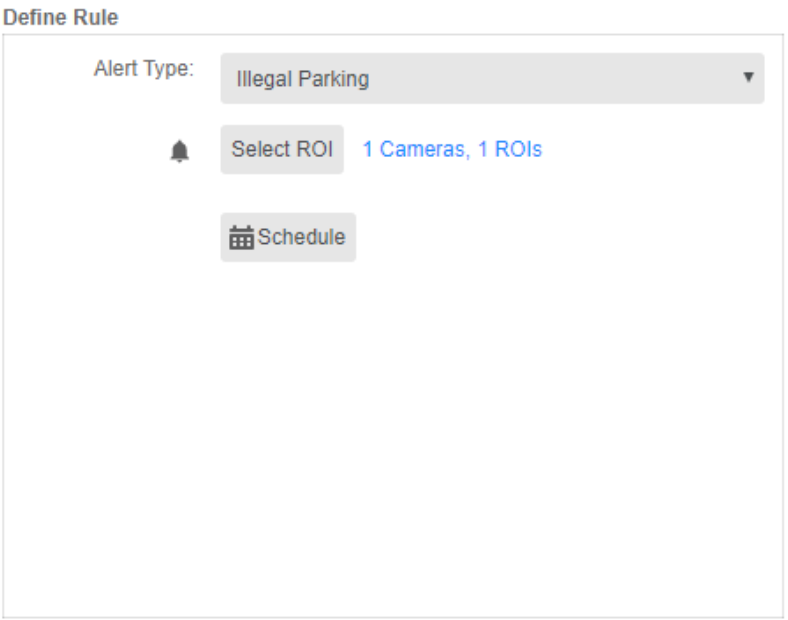
Click to select a camera in the camera list; the blue number next to the camera button indicates the number of cameras selected.

In the Access dropdown menu, select the type of access to be notified in the alert rule.

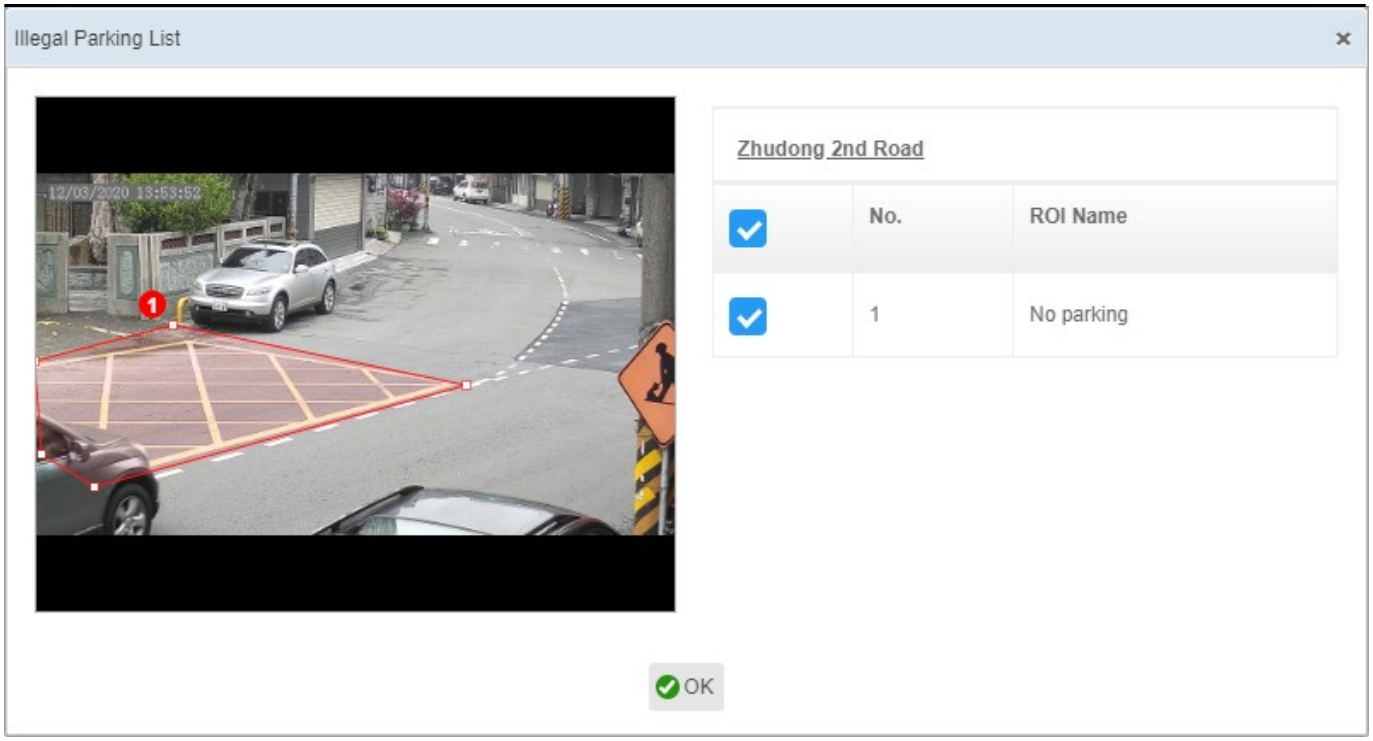
List button is only available when access type is All or Granted.
Click to select the list(s) in the Face Recognition list; the blue number next to the button indicates the number of lists selected.

15.3.4 Illegal Parking

Select **Illegal Parking** to see the setting tab for **Select ROI.**



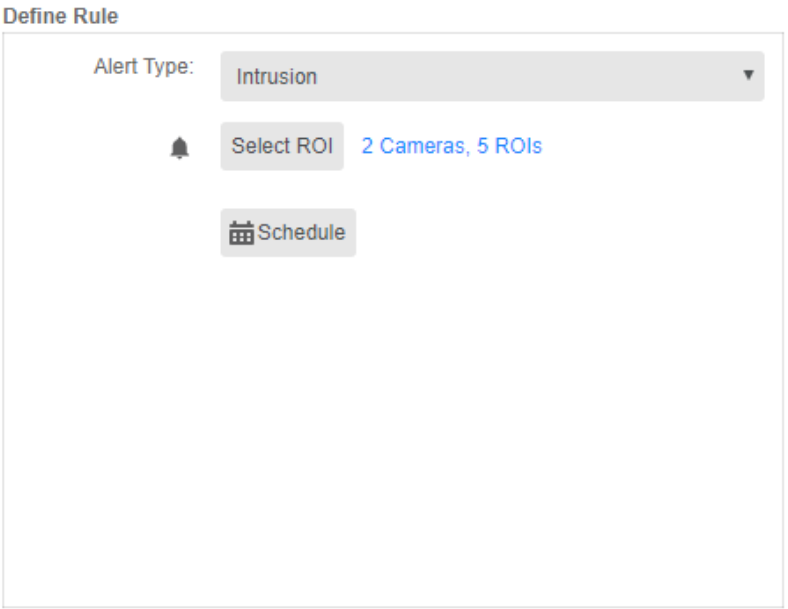
Select ROI Click to select an ROI with the assigned camera; the blue number next to the button indicates the number of cameras and ROIs selected.



Click the checkbox to enable the ROI for Illegal Parking Alert.
For the Illegal Parking configuration, refer to Chapter 18.1.1 Advanced for more details.

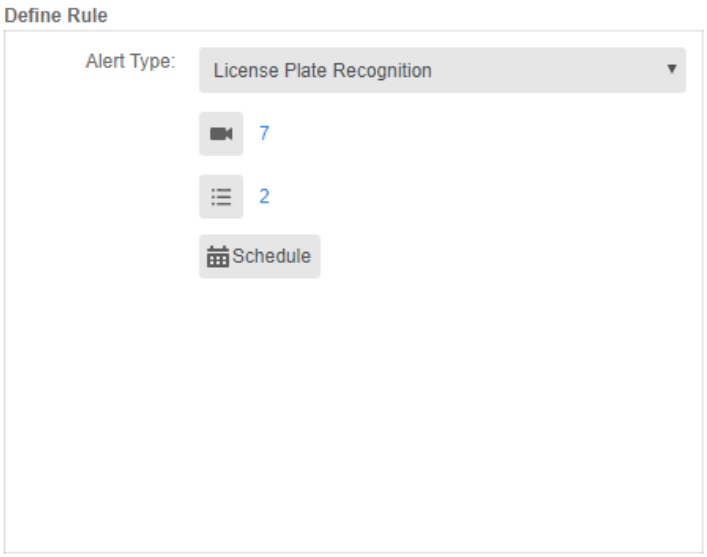
15.3.5 Intrusion

In Alert Type, by default, **Intrusion** is selected with the ROI and Camera menu bar. The user can choose the ROI and camera in the dropped down menu to set new alerts.
For the Intrusion ROI configuration, refer to Chapter 18.1.2 Advanced for more details.



15.3.6 License Plate Recognition

Select **License Plate Recognition** to see the setting tabs for the camera, **LPR** List, and schedule.

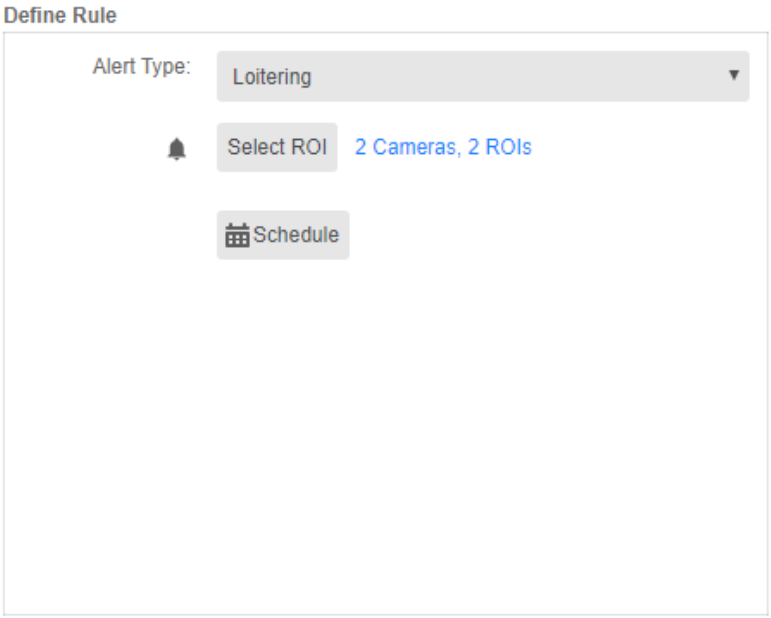


Click to select a camera in the camera list; the blue number next to the camera button indicates the number of cameras selected.

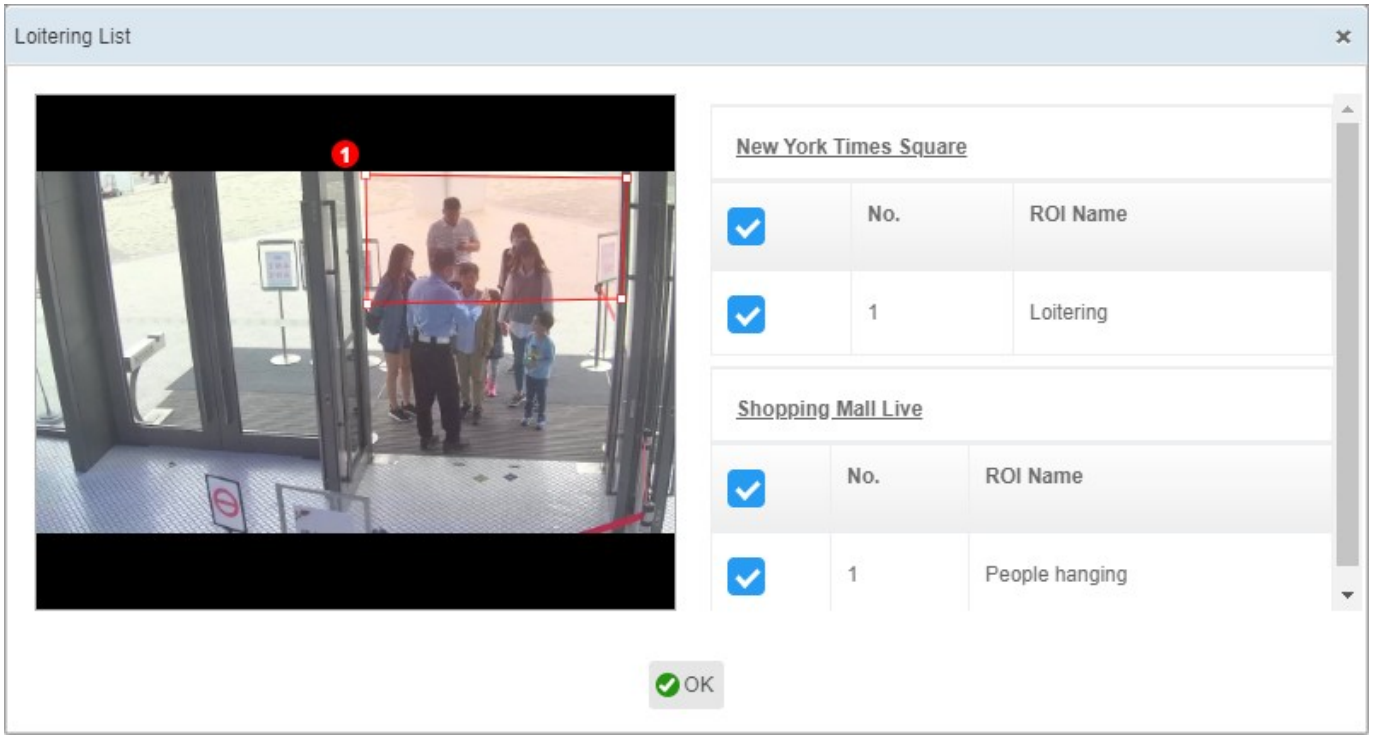
Click to select the list in the LPR list, the blue number next to the button indicates the number of lists selected.
Refer to Chapter 8.3 List for more details about LPR List.

15.3.7 Loitering

Select **Loitering** to see the setting tab for **Select ROI.**



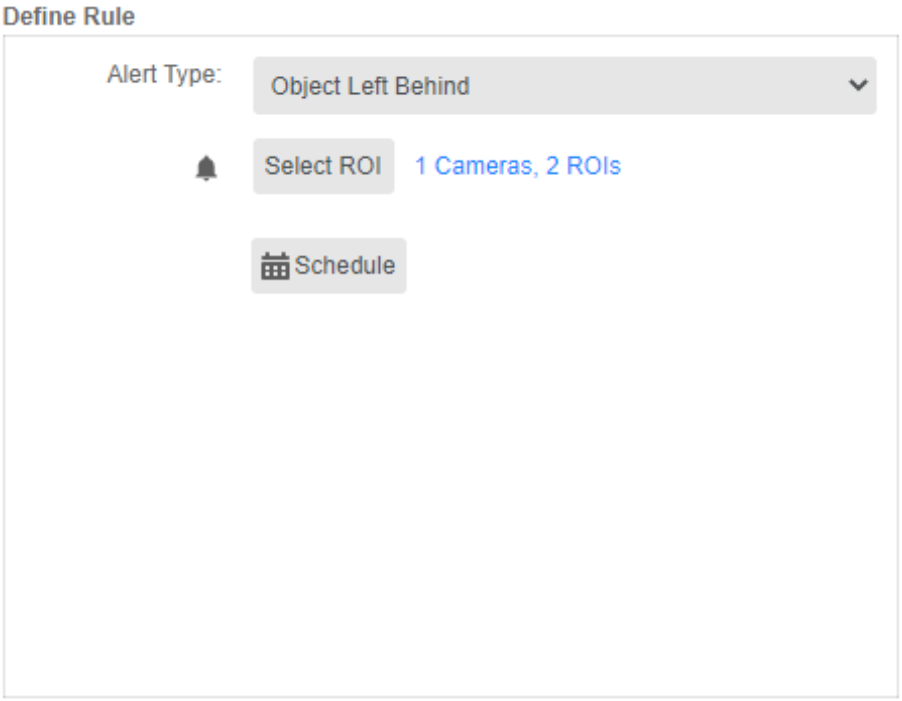
Select ROI Click to select an ROI with the assigned camera; the blue number next to the button indicates the number of cameras and ROIs selected.



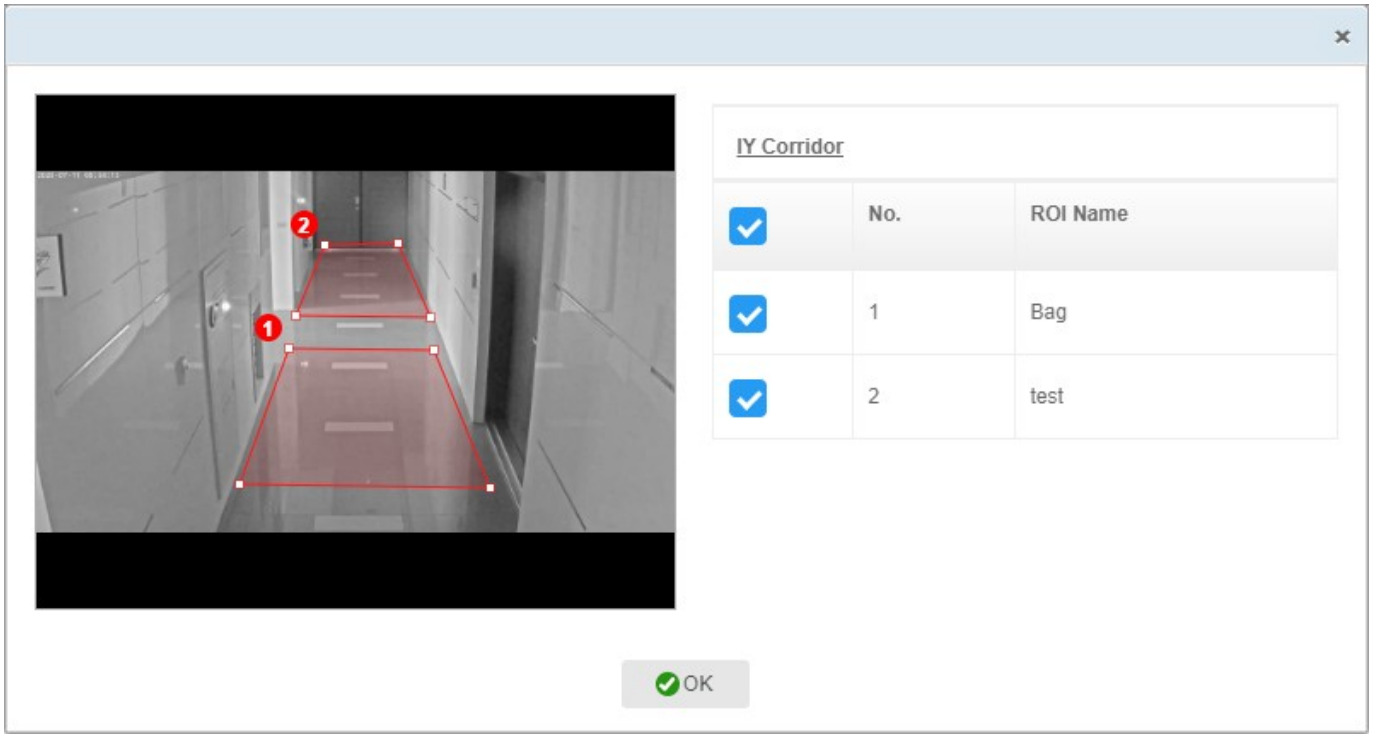
Click the checkbox to enable the ROI for Loitering Alert.
For the Loitering configuration, refer to Chapter 18.1.1 Advanced for more details.

15.3.8 Object Left Behind

Select **Object Left Behind** to see the setting tab to **Select ROI.**



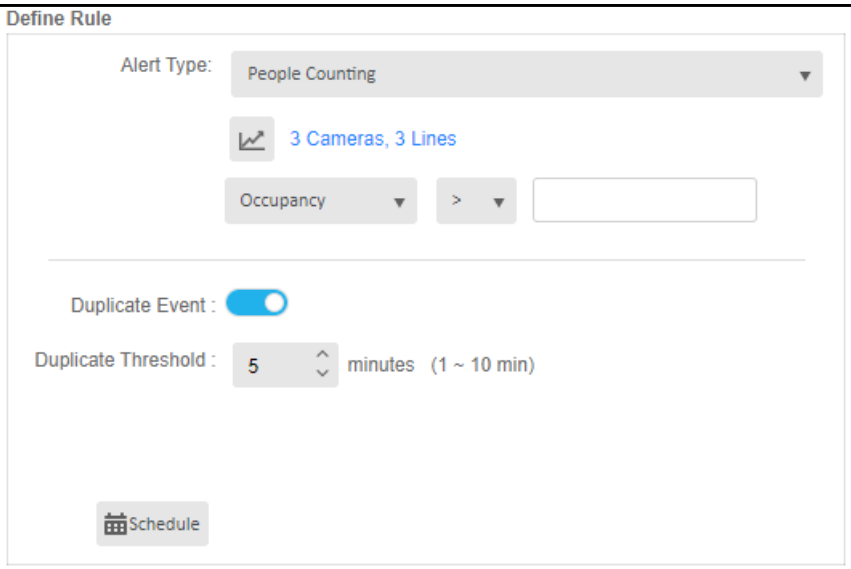
Select ROI Click to select ROI with the assigned camera; the blue number next to the button indicates the number of cameras and ROIs selected.



Click the checkbox to enable the ROI for Object Left Behind Alert.
For the Object left behind configuration, refer to Chapter 18.1.1 Advanced for more details.

15.3.9 People Counting

Select **People Counting** to see the setting tabs**.**



Click to select the line for Vehicle Counting.

Select Counting type and count value to trigger Alert notification

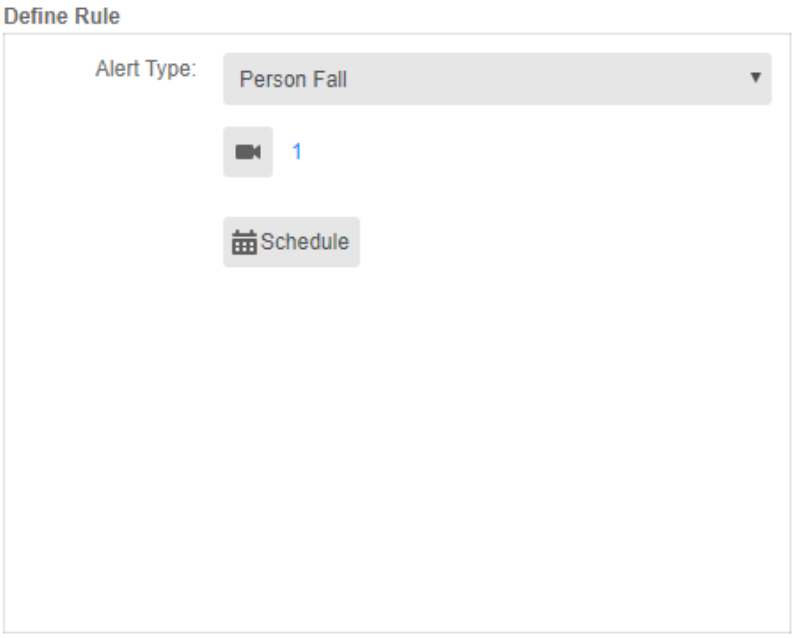
Enable Duplicate Event and Duplicate Threshold for alert to continue after the defined rule is reached.

Note:
If duplication is enabled with 5 min, then alert will trigger 5 min after the previous alert when another person is counted, and again after another 5 min. Note alert will not trigger within the 5 min, no matter how many people are counted during the time period.

Disable Event to notify only once when the defined rule is reached.

15.3.10 Person Fall

Select **Person Fall** to see the setting tab for **Camera.**

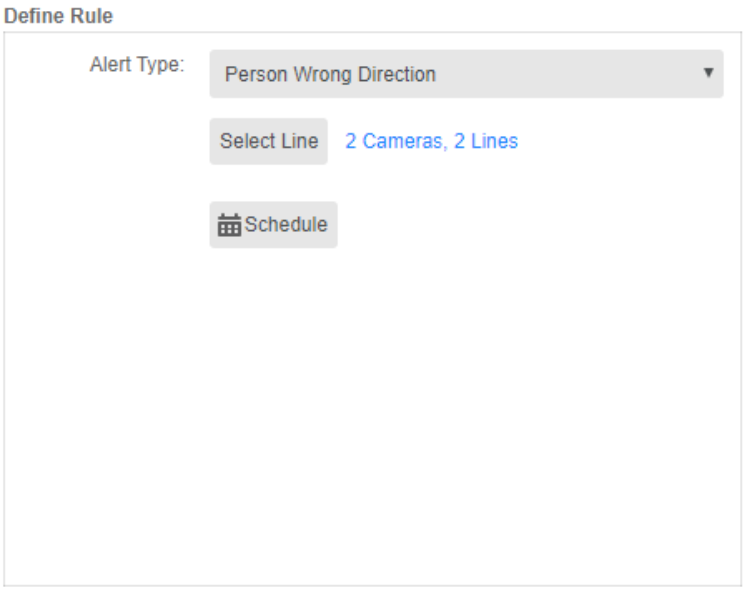


Click to select a camera in the camera list; the blue number next to the camera button indicates the number of cameras selected.

For the Person Fall configuration, refer to Chapter 19.1.2 Advanced for more details.

15.3.11 Person Wrong Direction

Select **Person Wrong Direction** to see the setting tab for **Select Line.**



Select Line Click to open a new window for line list selection; the window lists out all camera(s) with the configured line set and number label.

Line List Window

Click the checkbox to enable the line set for Person Wrong Direction in Alert.

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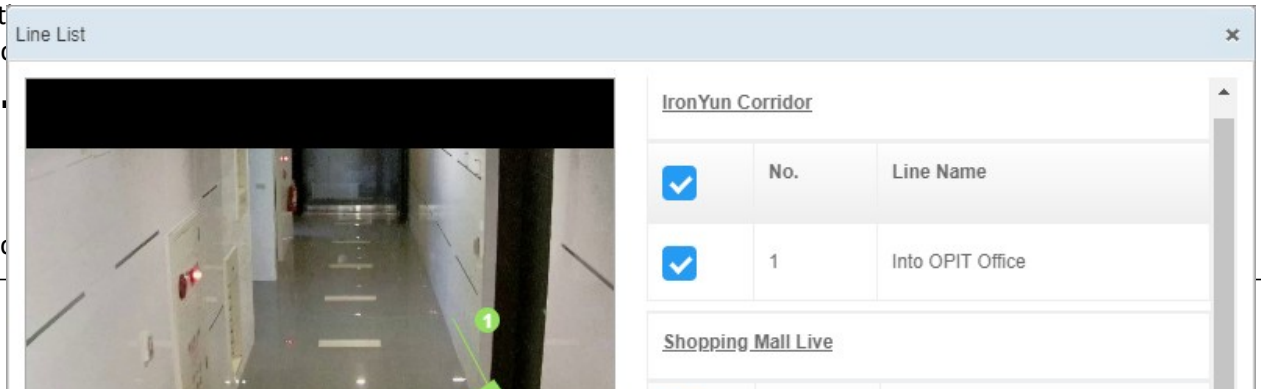
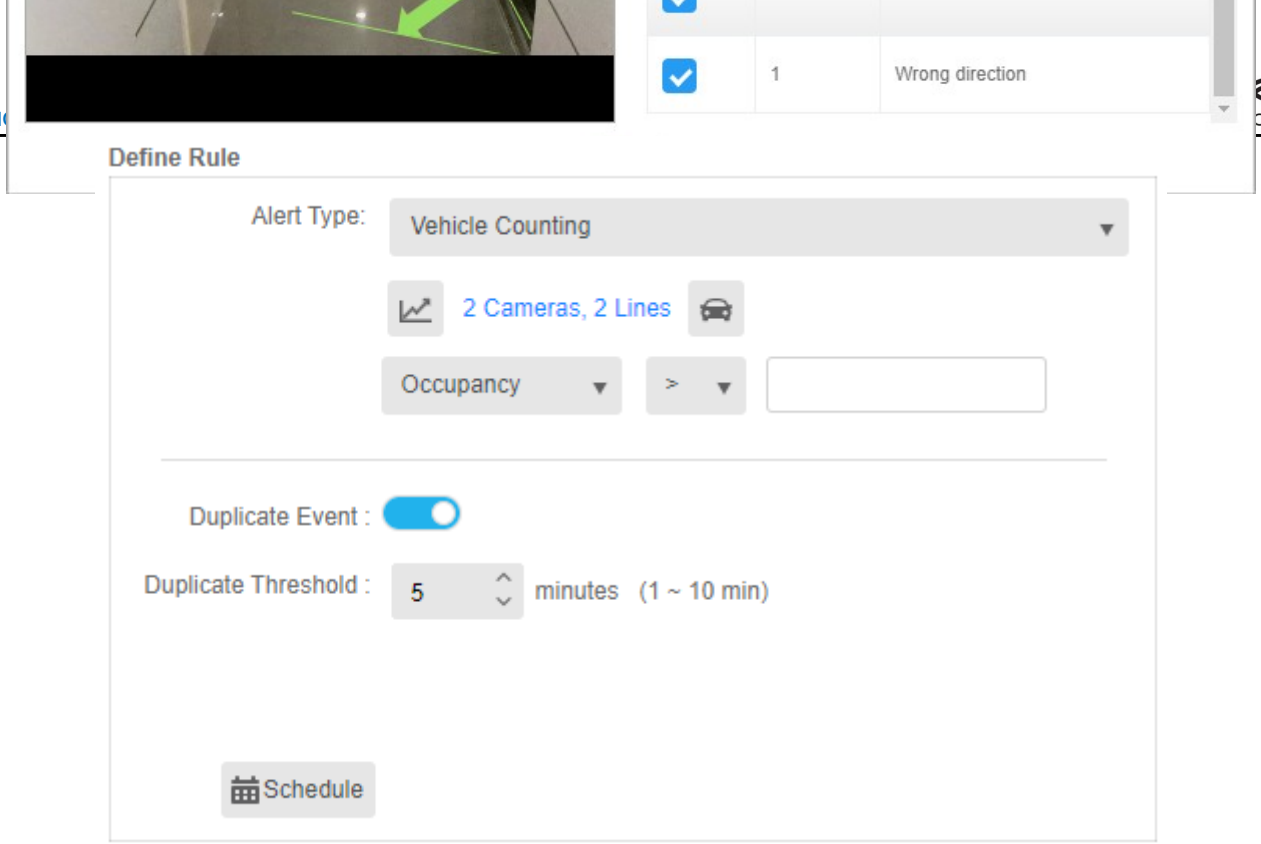
Direc



15.

Selec



Click to select the line for Vehicle Counting.

Click to select the vehicle type.

Select Counting type and count value to trigger Alert notification

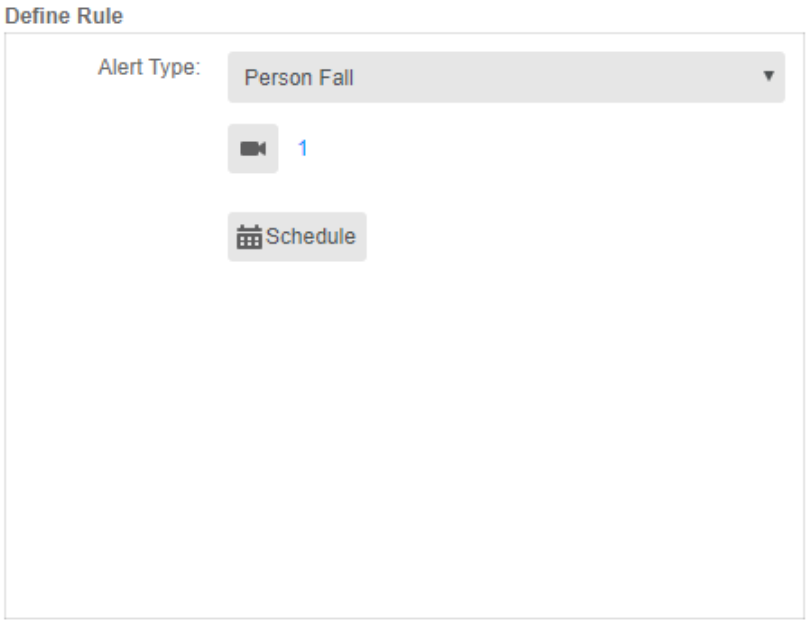
Enable Duplicate Event and Duplicate Threshold for alert to continue after the defined rule is reached.

Note:
If duplication is enabled with 5 min, then alert will trigger 5 min after the previous alert when another person is counted, and again after another 5 min. Note alert will not trigger within the 5 min, no matter how many people are counted during the time period.

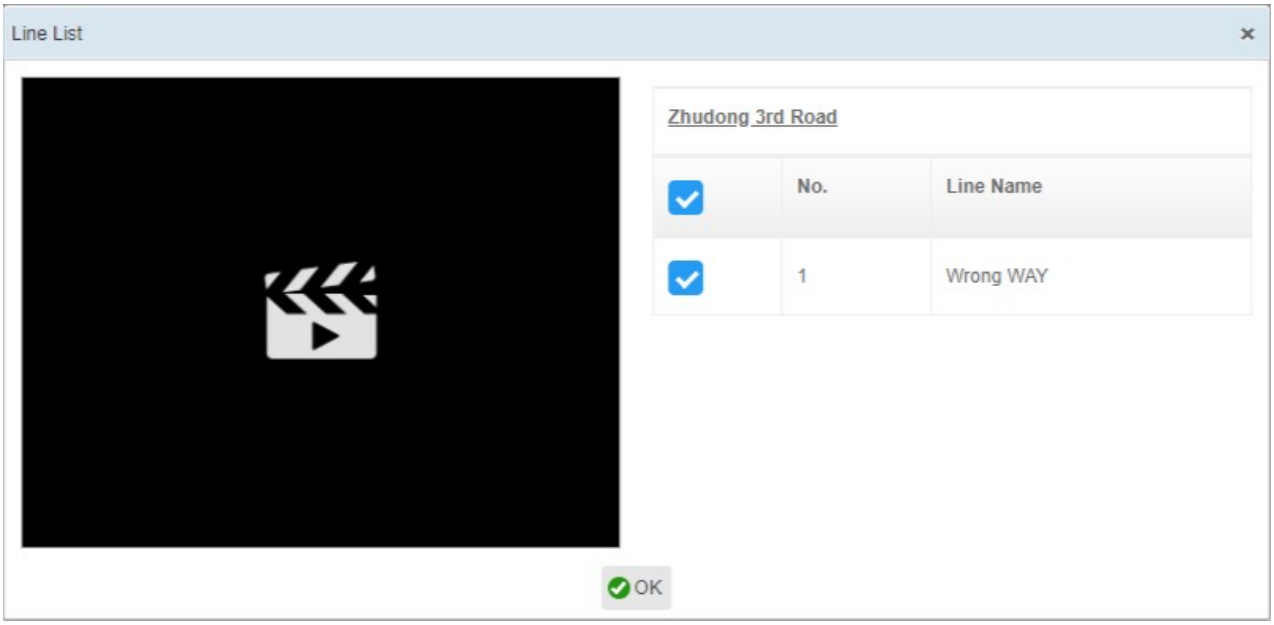
Disable Event to notify only once when the defined rule is reached.

15.3.13 Vehicle Wrong Direction

Select **Vehicle Wrong Direction** to see the setting tab to **Select Line.**



Select Line Click to open a new window for the line set selection; the Select Line window lists all camera(s) with the configured line set and number label.

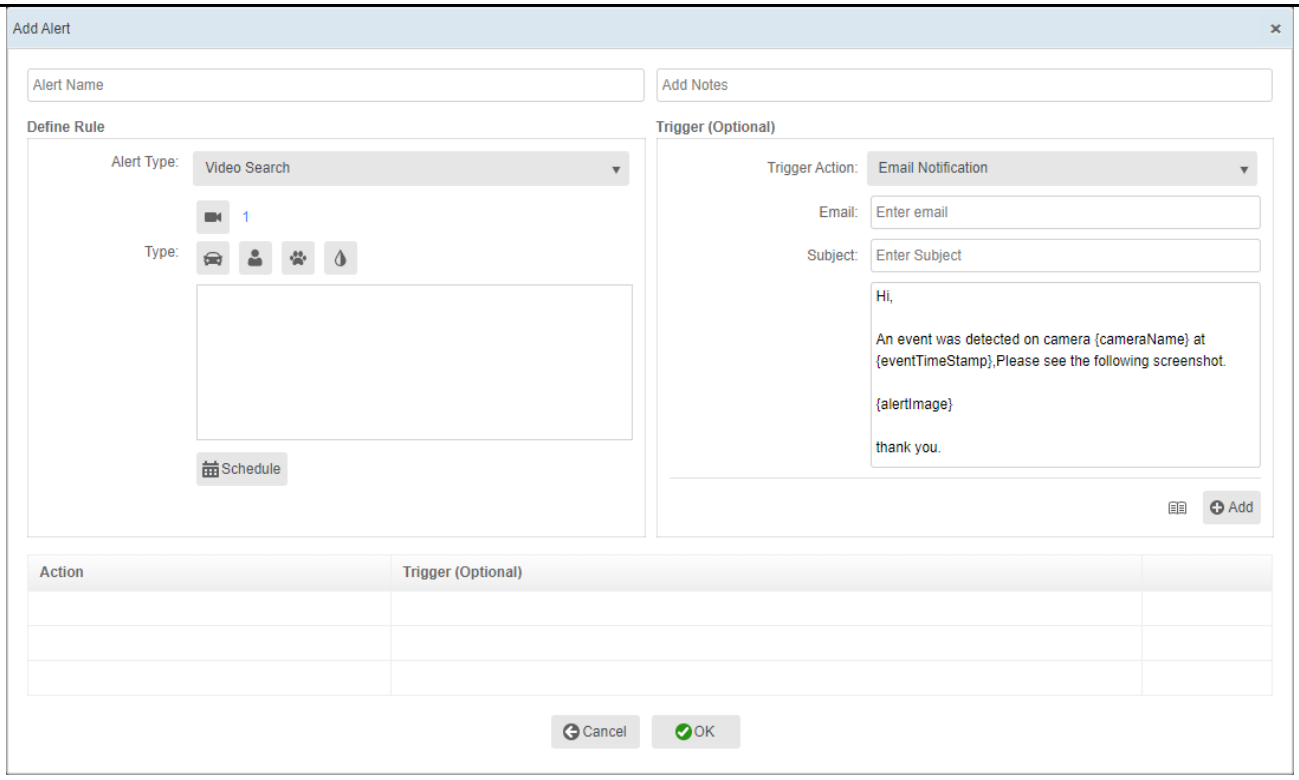


Select Line Window

Click the checkbox to enable the line set for Vehicle Wrong Direction Alert.
For the Vehicle Wrong Direction configuration, refer to Chapter 18.1.1 Advanced for more details.

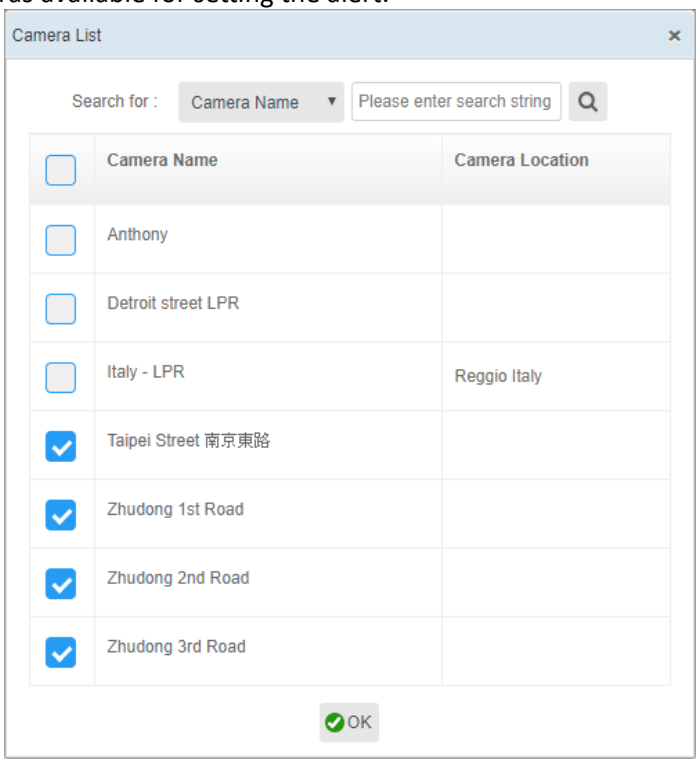
15.3.14 Video Search

The default Alert Type is **Video Search**, where one can use Define Rule to configure the camera, object type, and schedule.



Video Search Alert

Click to see the cameras available for setting the alert.

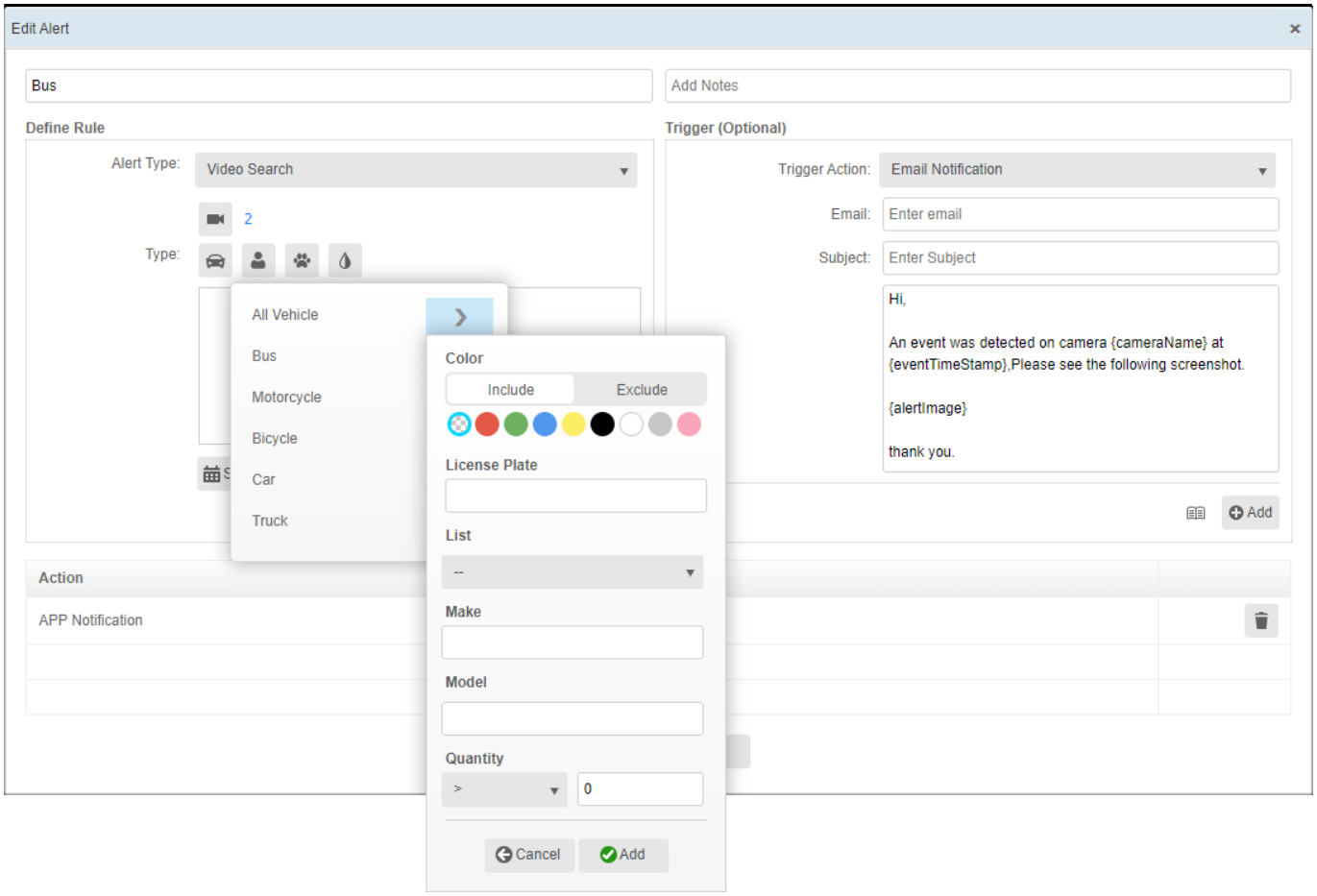


Camera list window

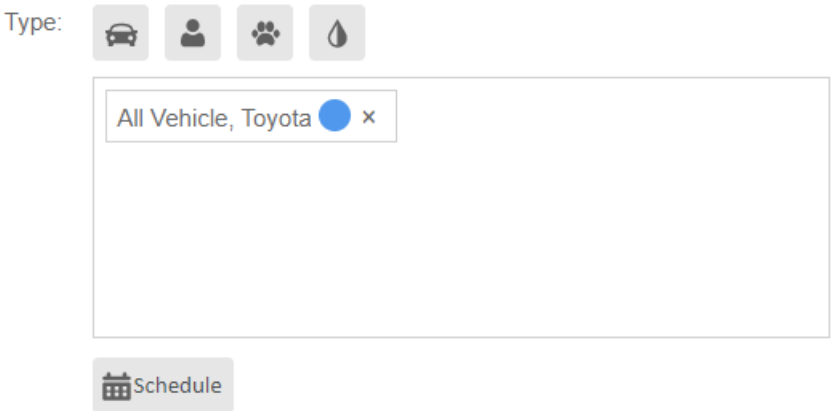
The blue number next to the camera button indicates the number of cameras selected.

Object type selection follows the same behavior as defined in Video Search.

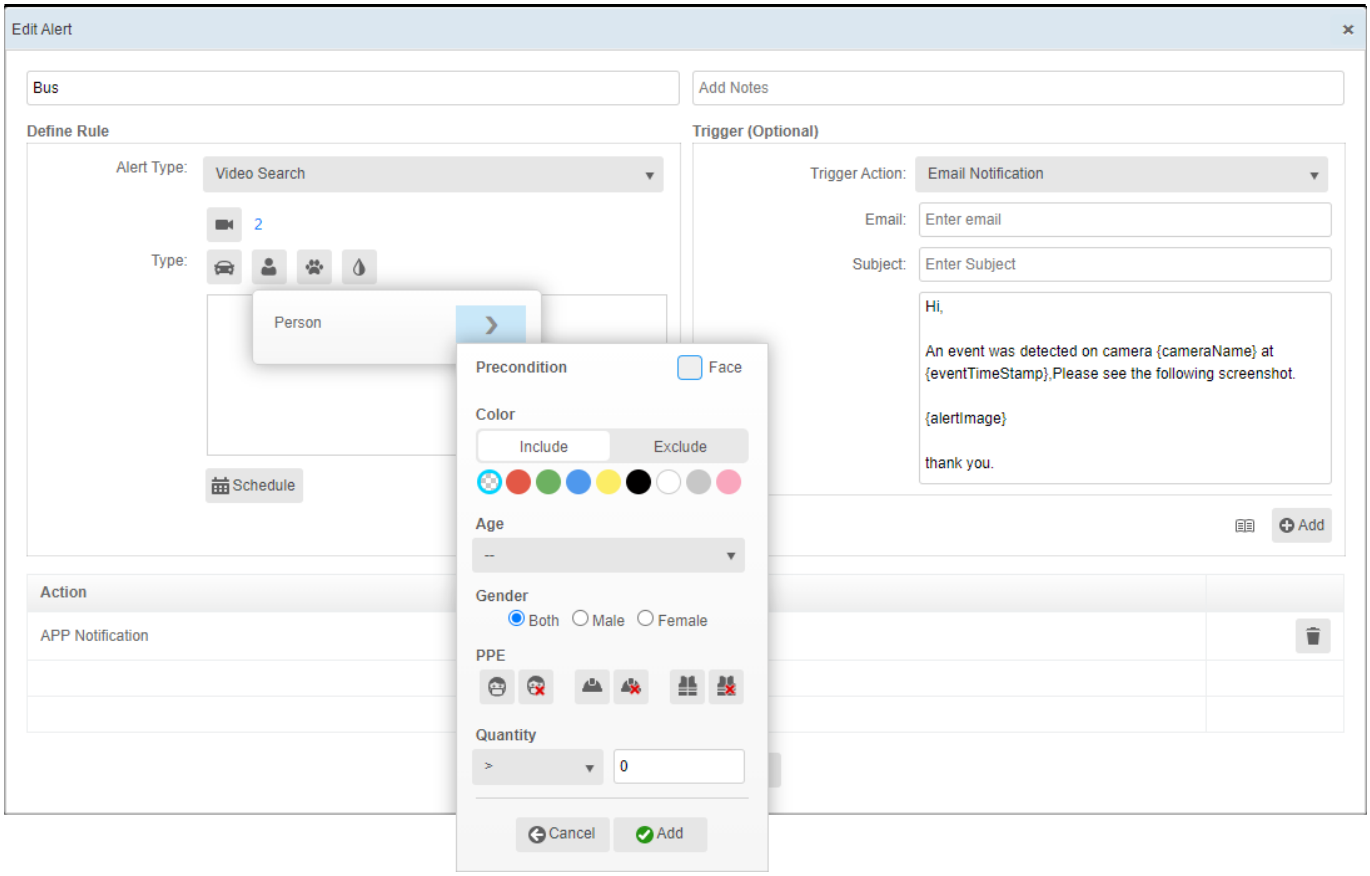
Click to set the vehicle-type alert rule.



To search for a vehicle type with a certain color(s), quantity, and more, click › to see the selection panel.
For the Vehicle-type search criteria, refer to Chapter 7.1 Basic Search for more details.
When the search criteria are complete, they will appear in the space below. The following image is an example of the search criteria for Vehicle.



Click to set the human-type alert rule.

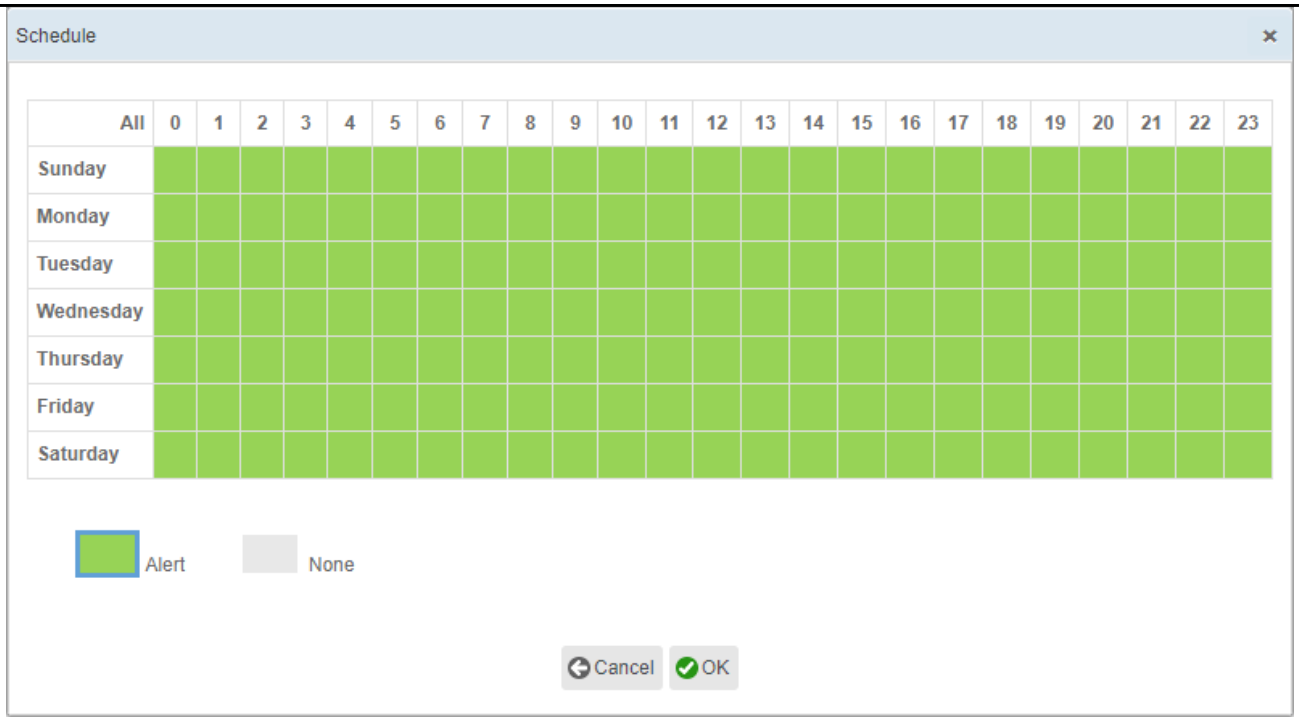


To search for a person with certain clothing color(s), quantity, and more, click › to see the selection panel.
For the human-type search criteria, refer to Chapter 7.1 Basic Search for more details.
When the search criteria are complete, they will appear in the space below. The following image is an example of the search criteria for humans.

Click to set the Animal-type alert rule.
For the Animal-type search criteria, refer to Chapter 6.1 Basic Search for more details.

Click to set the Object-type alert rule.
For the Object-type search criteria, refer to Chapter 6.1 Basic Search for more details.

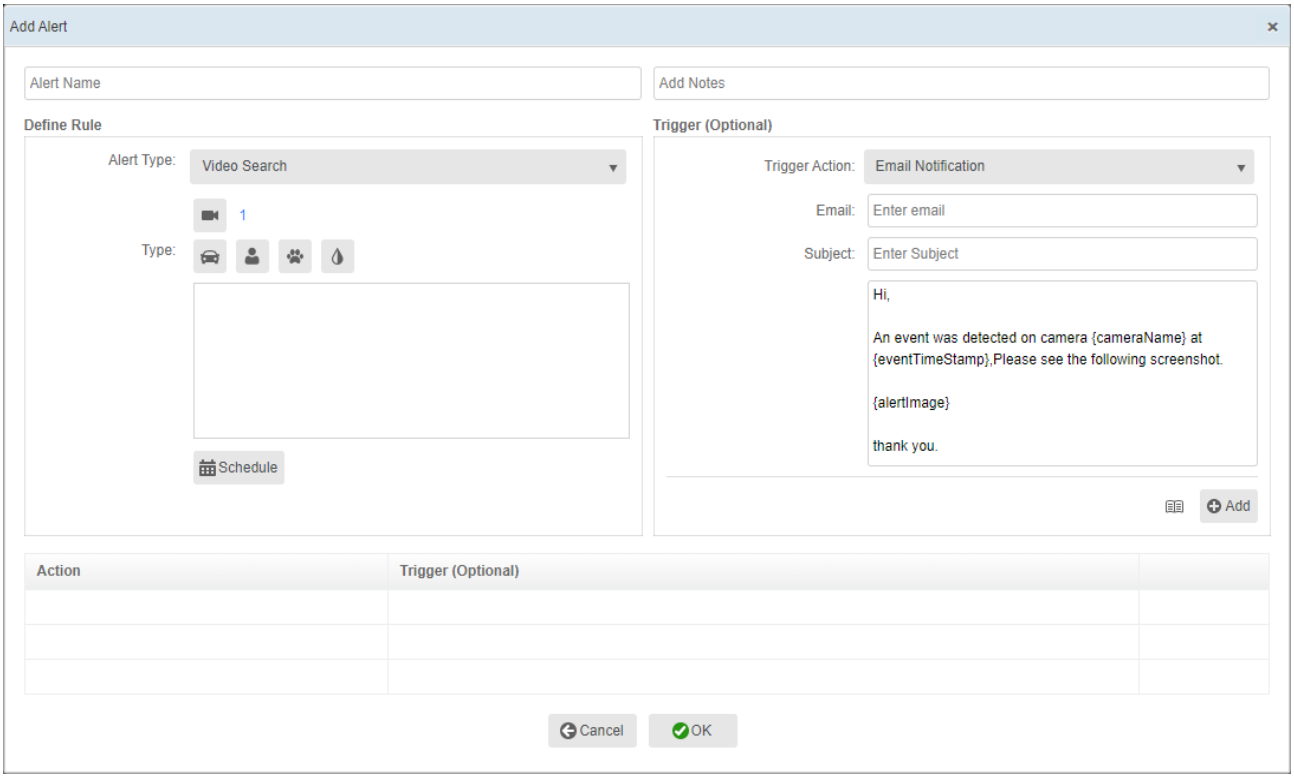
Schedule Click to set the Alert schedule in the window below.



Schedule Window

By default, the Alert schedule table is all green, which indicates that the alert is enabled at all times, Specify the **Alert** schedule by highlighting the wanted time in green and unwanted time in gray.

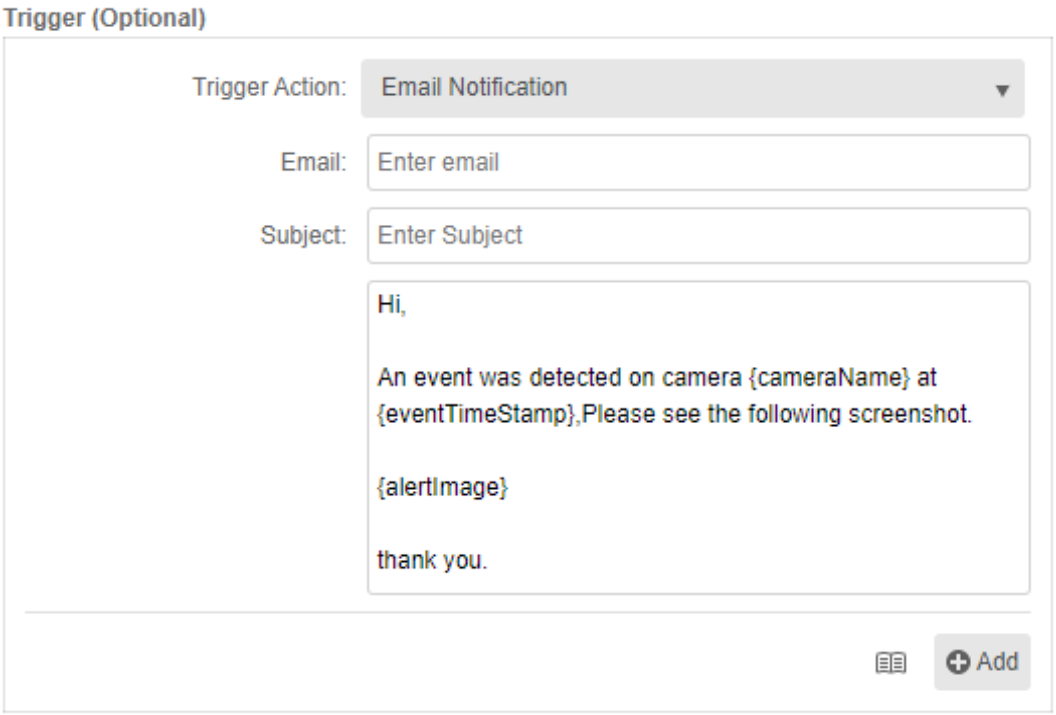
15.3.15 Alert Trigger



Alert Trigger

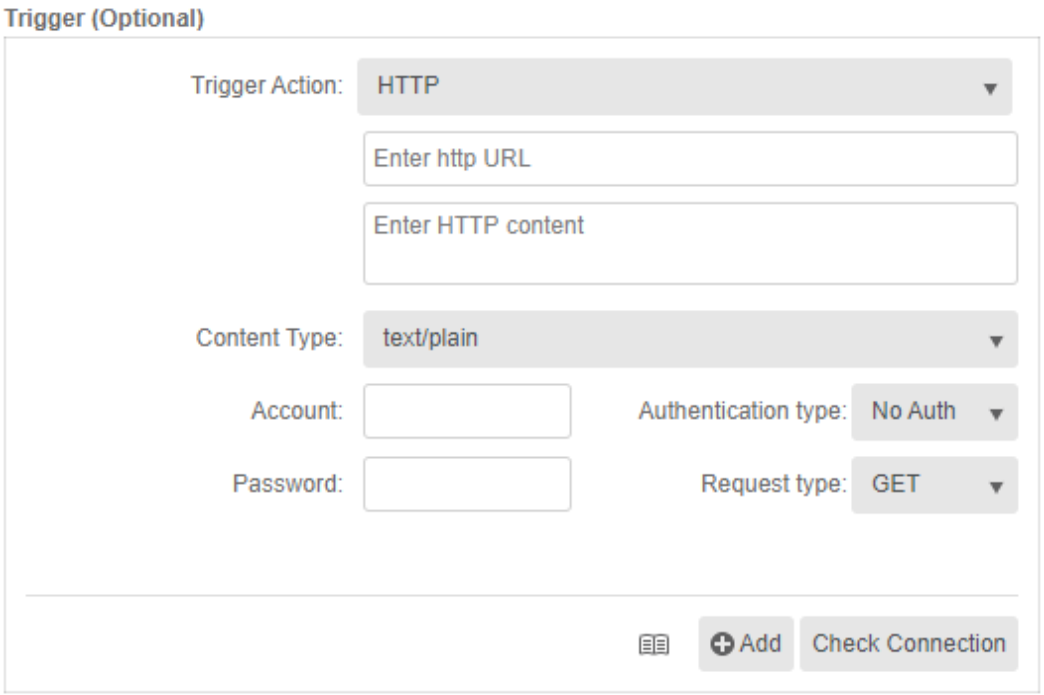
The Alert Trigger (Optional) contains 6 types of Trigger Actions: **Email Notification, HTTP, BTX Bridge to Milestone XProtect, APP Notification, Genetec,** and **Network Optix.**
The user can assign a trigger action once an alert rule has been defined; the input trigger action information is

used to get the notification results as expected.
By default, Email Notification is selected in the Trigger Action menu bar; insert a valid email address and click the Add button to see the trigger action in the record table below.



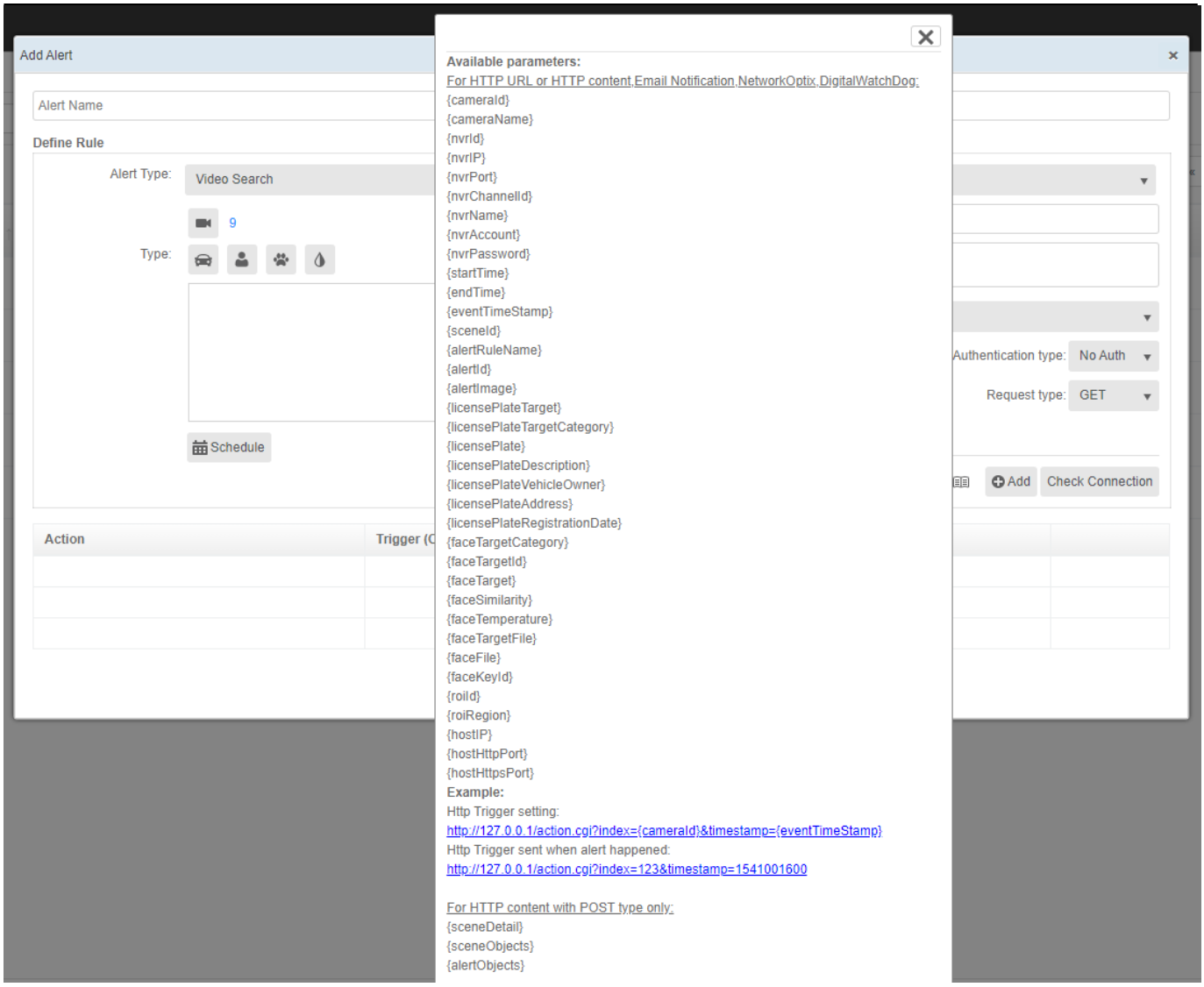
Email Alert Trigger

For **HTTP**, input information to invoke a function with an HTTP request.



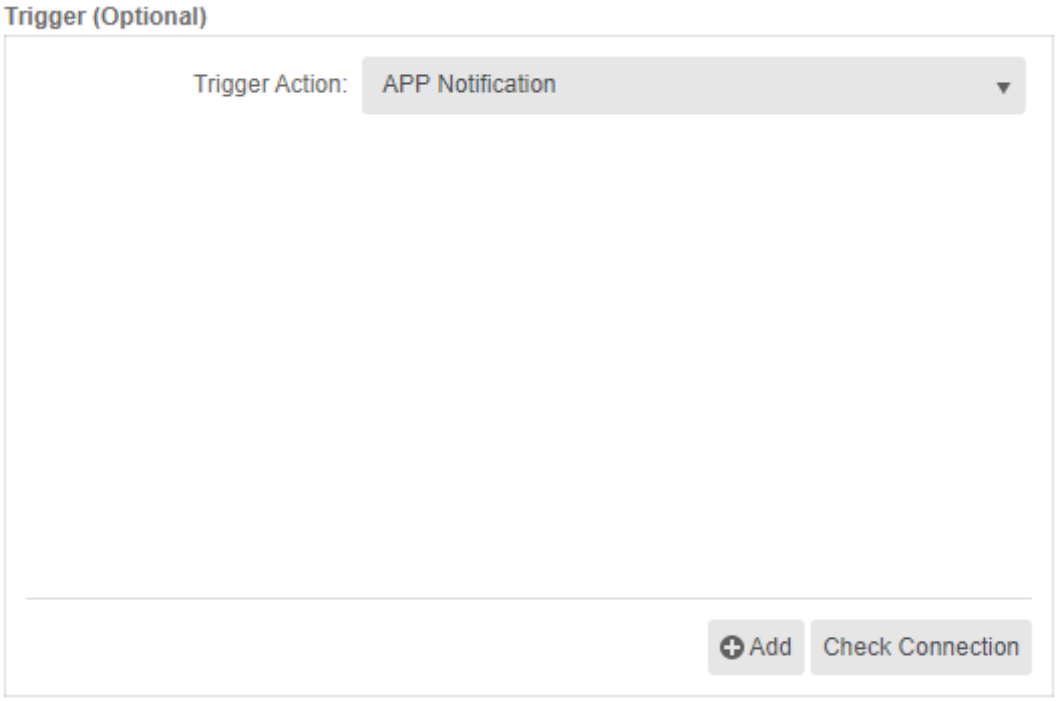
HTTP Trigger Action

The user can click on to view the HTTP pattern available for URL requests.
HTTP Content is only valid when a POST request type is used.



By using a specified keyword in the URL, the trigger action will convert the event to a designated server.

For **APP Notification**, simply select in the Trigger Action menu bar and click on the Add button to receive app notification.



APP Notification Trigger Action

Once the App Notification is added, the user can receive Alert notifications on their mobile device with the downloaded Vaidio App.

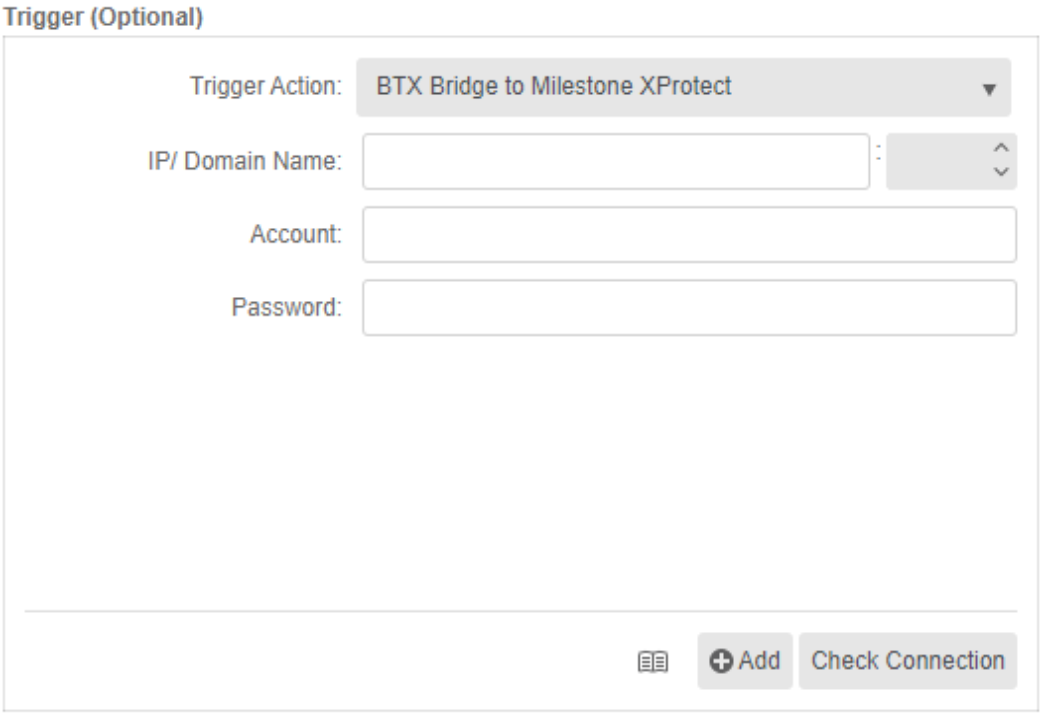
15.3.12.1 Alert Trigger to Milestone Bridge

Event synchronization from Vaidio

In Vaidio

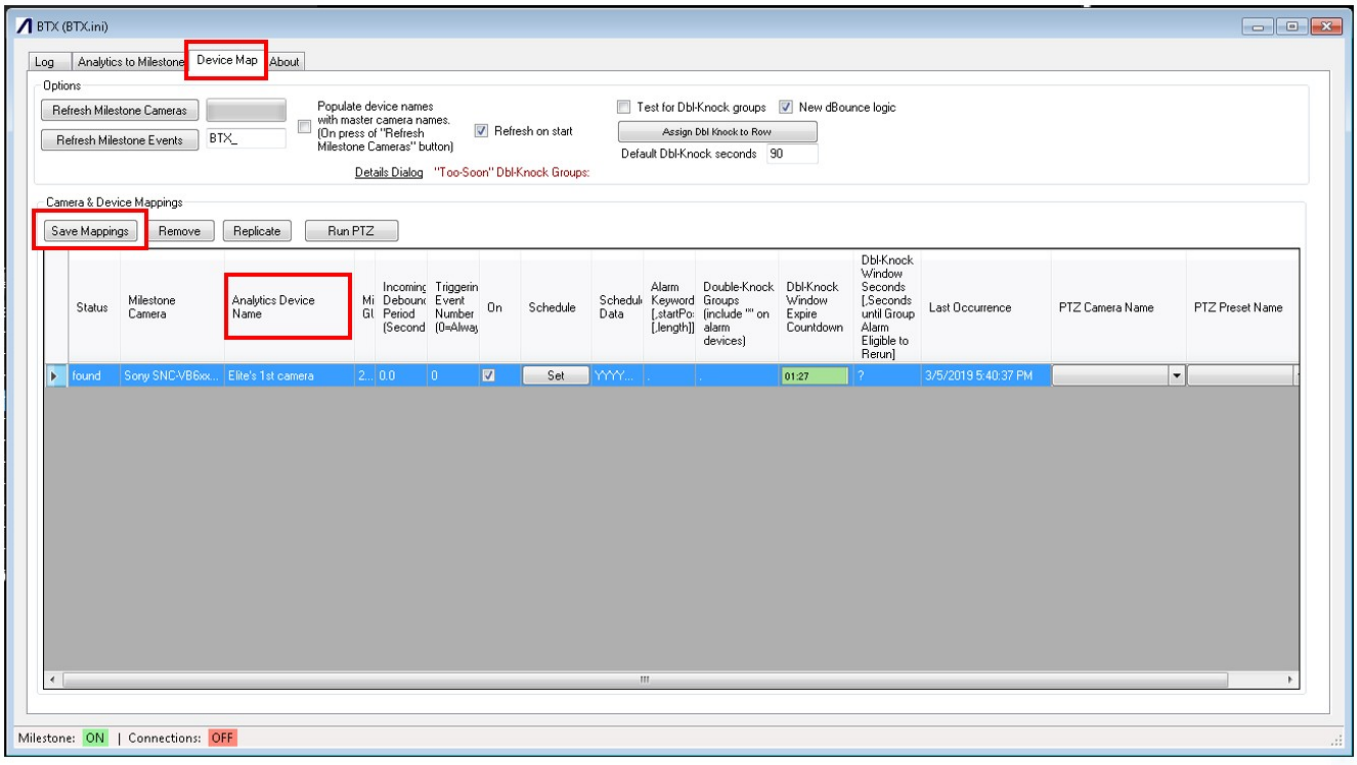
To add an alert and trigger an event to **Milestone XProtect:**
In the **Trigger Action** panel, enter the required information for **BTX Bridge to Milestone XProtect**.
Click **Check Connection** to make sure that the connection works.
Click **OK** to confirm the Alert trigger action.

For more information about BTX-bridge, please check the link:
https://www.milestonesys.com/marketplace/app-techs-corp/bridge-to-xprotect/



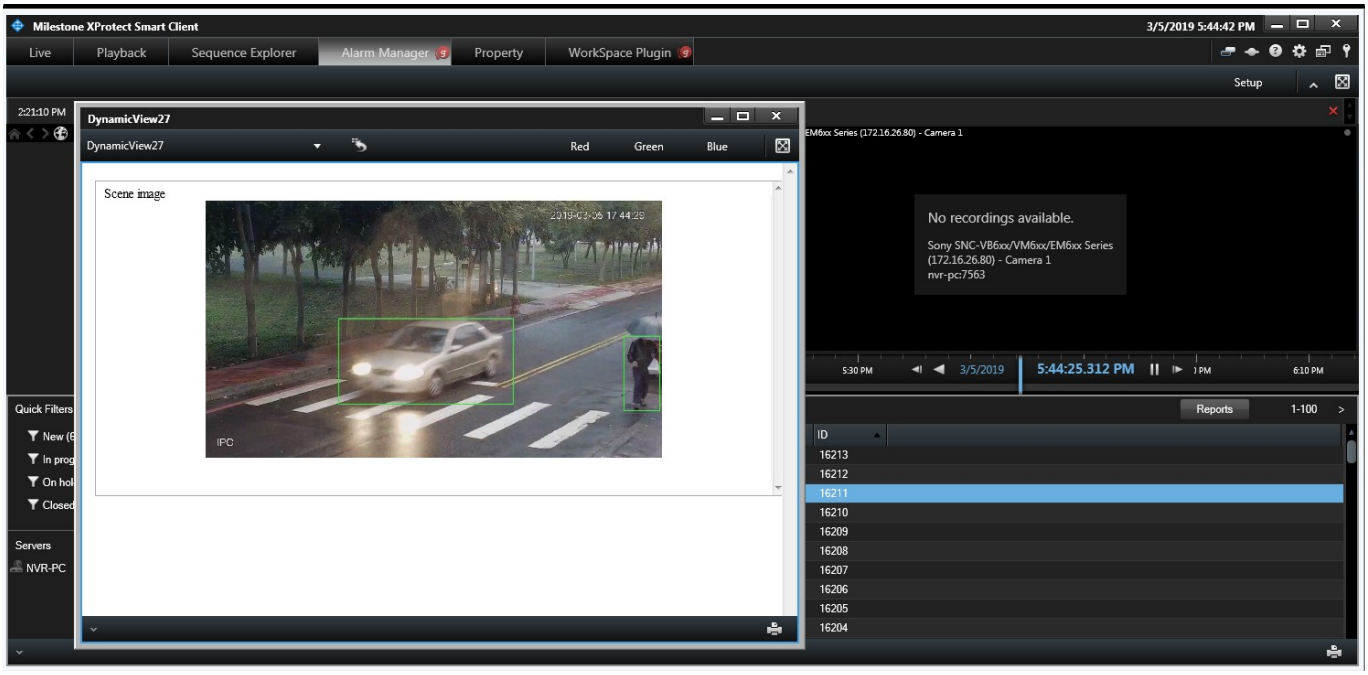
In BTX Bridge

To integrate an Vaidio event into Milestone XProtect



Click on the **Device Map** Tab to see the data table of Camera & Device Mappings; change the **Analytics Device Name** to the camera name of the assigned Trigger Action.

Click Save Mappings to apply the action and check the results in Milestone XProtect Smart Client.



15.3.12.2 Alert Trigger to NetWork Optix

Event synchronization from Vaidio

In Vaidio

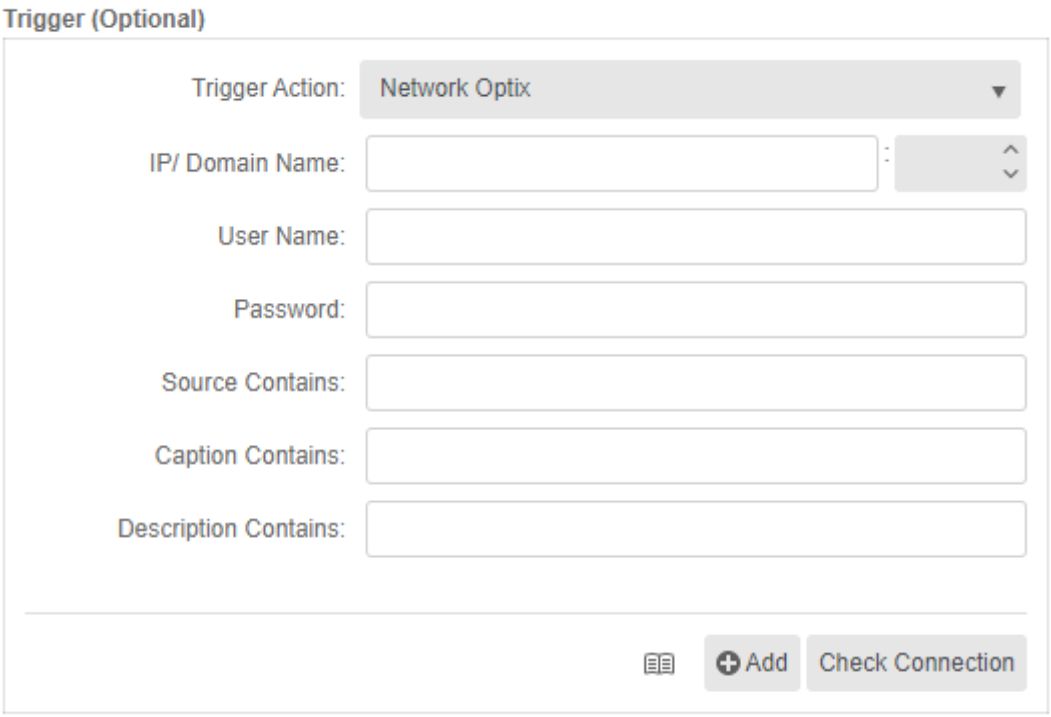
Click on the **Add Alert** button in **Alert Rule** under the **Alert** menu tab. The **Add Alert** panel pops up.
In the Add Alert panel, add an **FR** Alert by selecting a camera and an FR list in the **Define Rule** section.
Add an HTTP trigger in the **Trigger Action** section.
Select **HTTP** in the **Trigger Action** pulldown list.

Enter the below URL in the Enter HTTP URL field.
(xxxx is the IP of the Nx machine)

http://xxx.xxx.xxx.xxx/api/createEvent?caption=FREvent&source=media&description=Staff

Click **OK** to apply HTTP in this alert rule.

Enter the Account and Password if NX requires the login access. The account and password should be provided by the Nx system administrator.

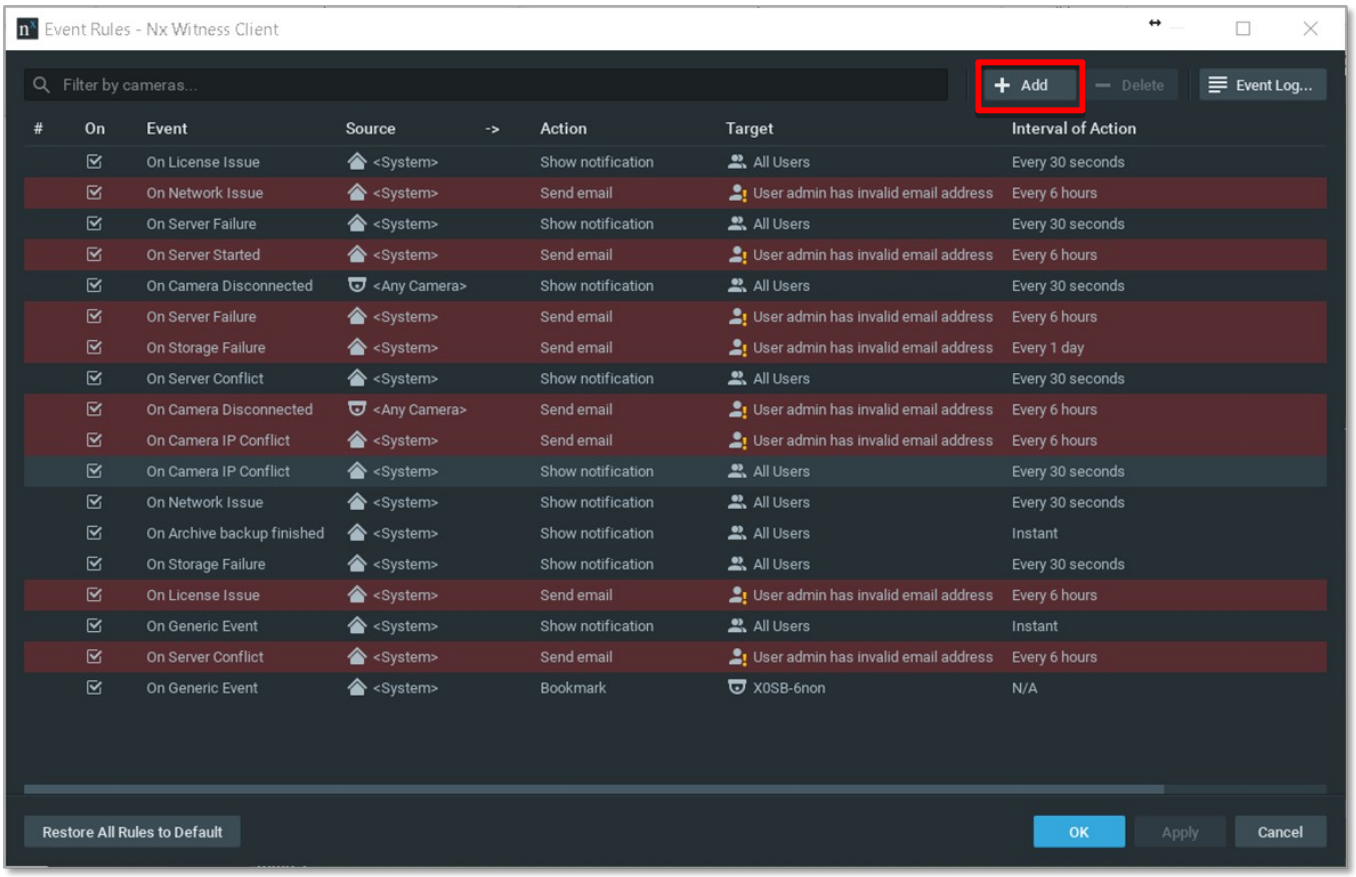


In NX Witness

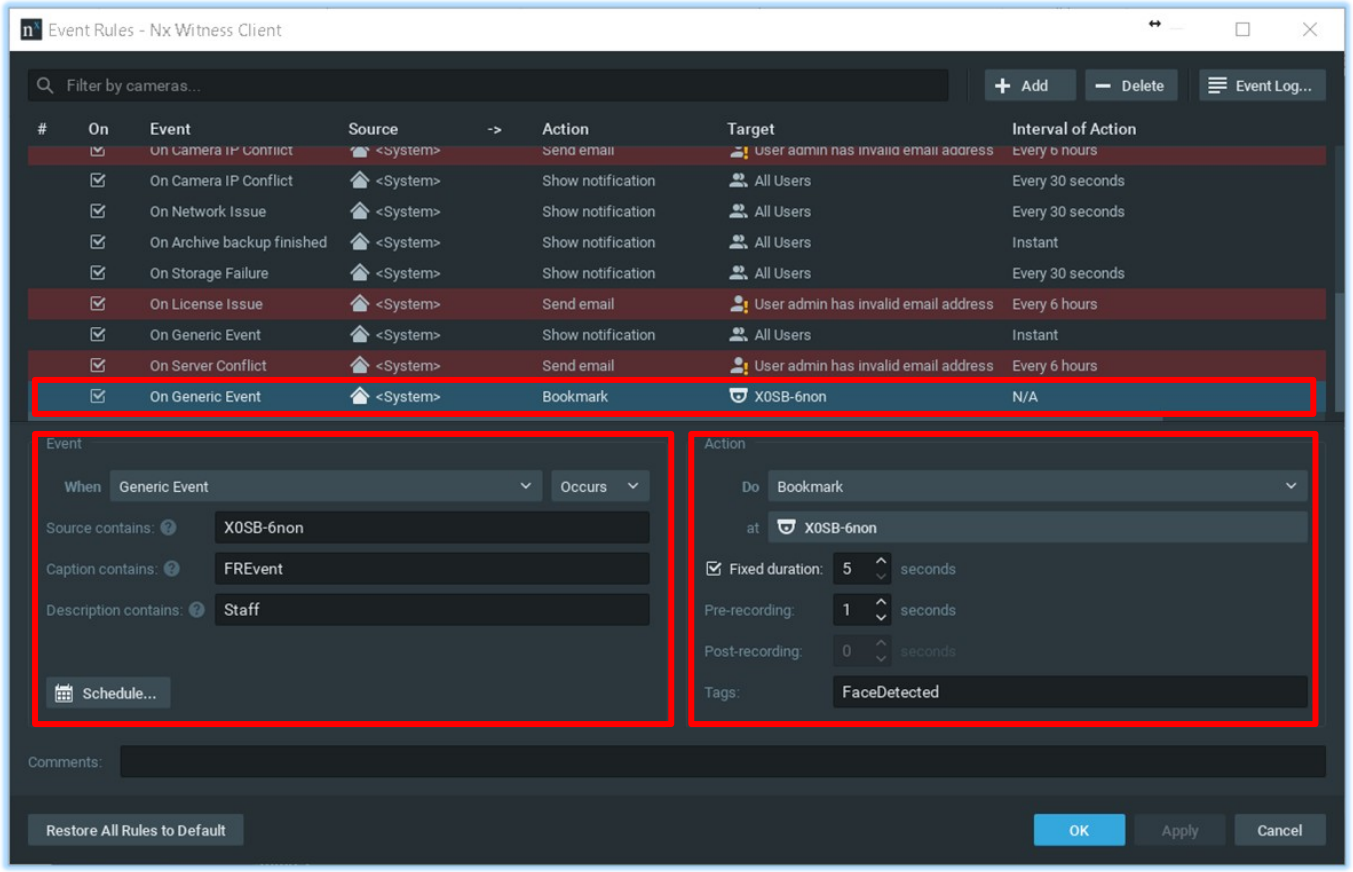
To sync the event from Vaidio:

Right-click a **camera** from the camera tree on the left side and see the context menu.
In the context menu, select **Camera Rule** to add a camera event.

In the **Event Rule** panel, click **Add** to add a new event.



The **Event** and **Action** option boxes will expand.



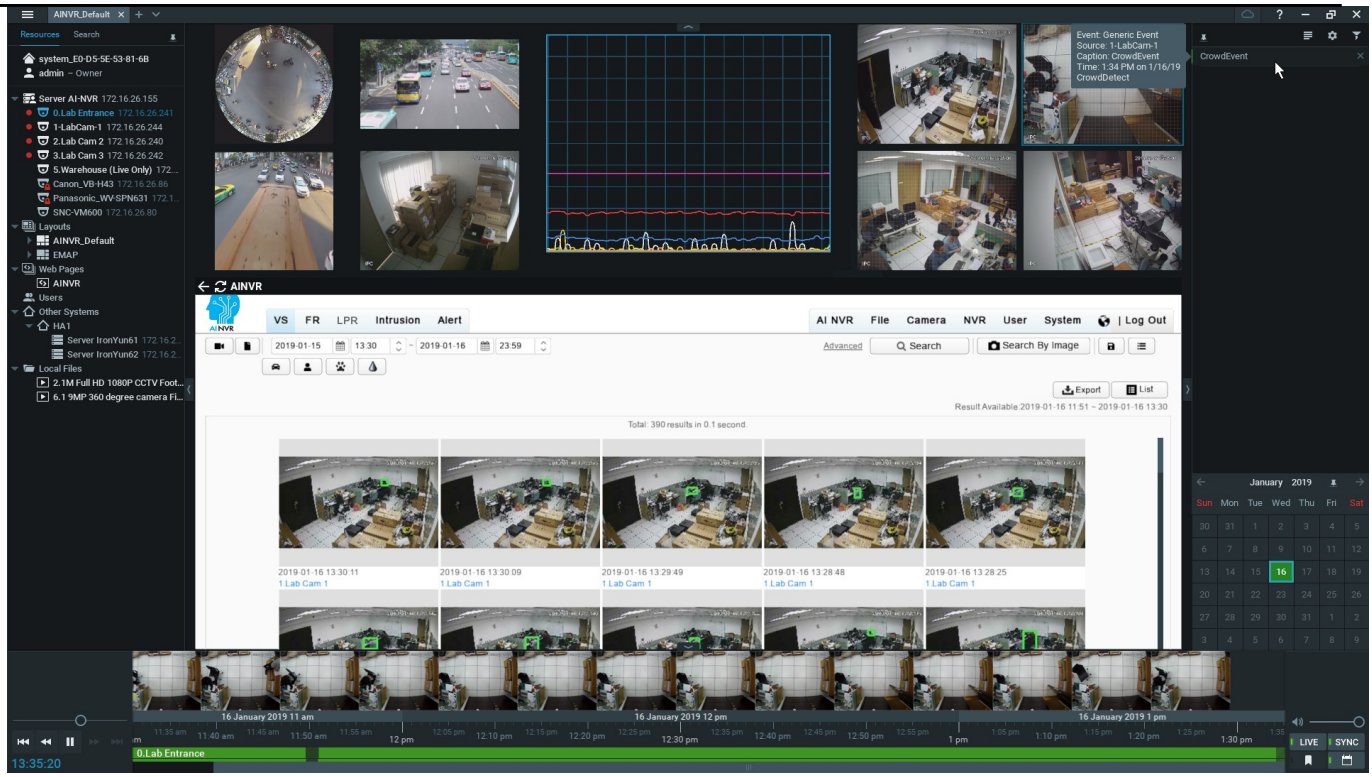
In **Event**, select **Generic Event** in the **Event** box to synchronize the Vaidio alert to the Nx server.
Make sure that the **Source contains, Caption contains and Descriptions** have the correct entries according to the content defined in the HTTP trigger in Vaidio Alert.

> http://xxxx:xxxx@169.254.200.201:7001/api/createEvent?**caption=FREvent**&**source=X0SB-6non**&**description=Staff**
>
> Enter [X0SB-6non] for **Source contains**
> Enter [FREvent] for **Caption contains**
> Enter [Staff] for **Description contains**

In **Action,** select an Action from the Action drop-down menu to perform when an event happens.
In this example, select **Bookmark** and **at** to add a bookmark at a camera (the camera can be identical to or different from the alert camera in Vaidio) when the event happens.

Click **OK** to confirm the Event and Action in the Event Rule setting.
Return to the main page.

Vaidio alerts will be shown as events in Nx when the events occur.



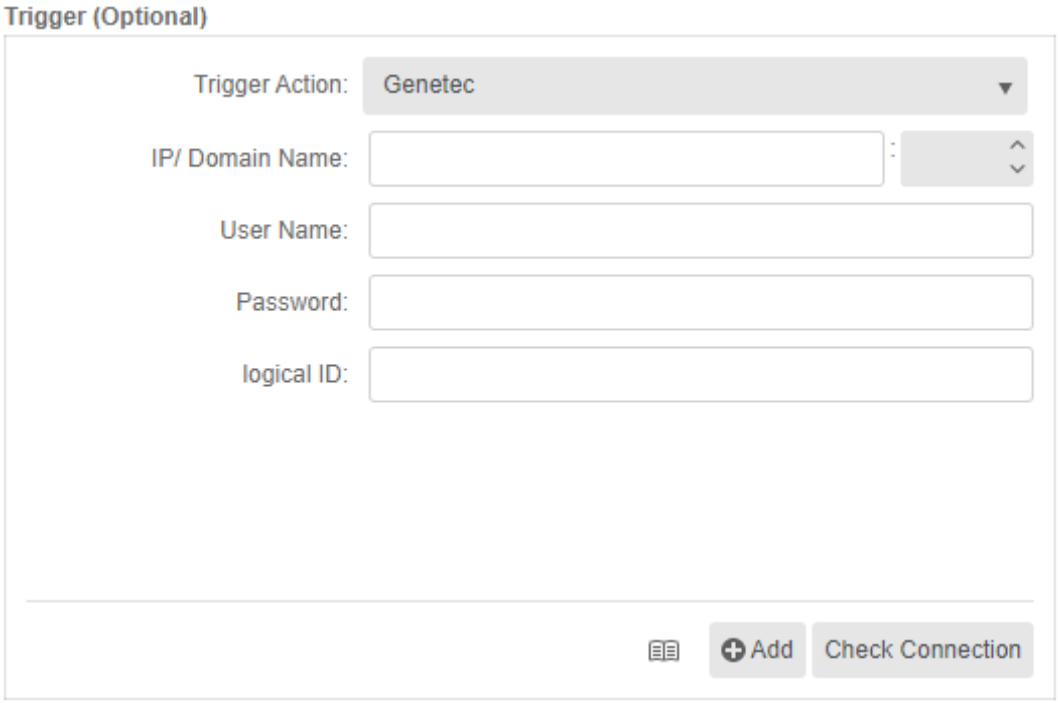
Note: Refer to the **Alert Trigger Guide** for more details on the HTTP trigger syntax.

15.3.12.3 Alert Trigger to Genetec

Make sure that Vaidio is well integrated with Genetec to enable the alert trigger. Contact your technical support for more information on how to integrate Vaidio with Genetec.

[In Vaidio]
Click the **New Alert** button in **Alert Rule** under **the Alert** menu. The **New Alert** panel pops up.
In the New Alert panel, add an **Intrusion** Alert by selecting from the camera ROI list in the **Define Rule** section.
Add an HTTP trigger in the **Trigger Action** section.
Select **Genetec** in the **Trigger Action** pulldown list.

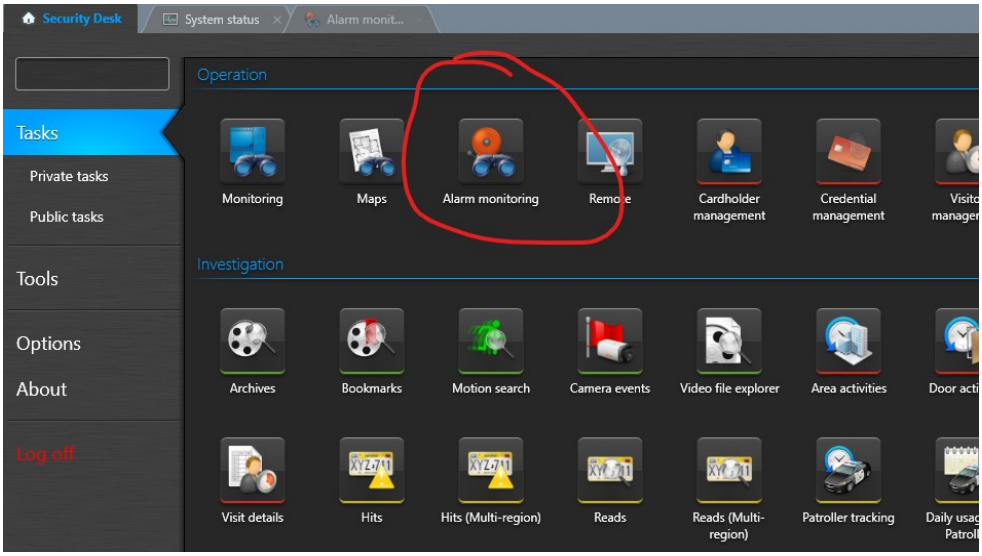
- Enter below URL in **Enter http URL field.**
  http://<GenetecIPaddress>:4590/WebSdk/alarm?q=TriggerAlarm(LogicalId(Alarm,2),{nvrChannelId},DynamicAlarmContent(http://<AINVRIPaddress>/extra/milestone?{alertImage}))



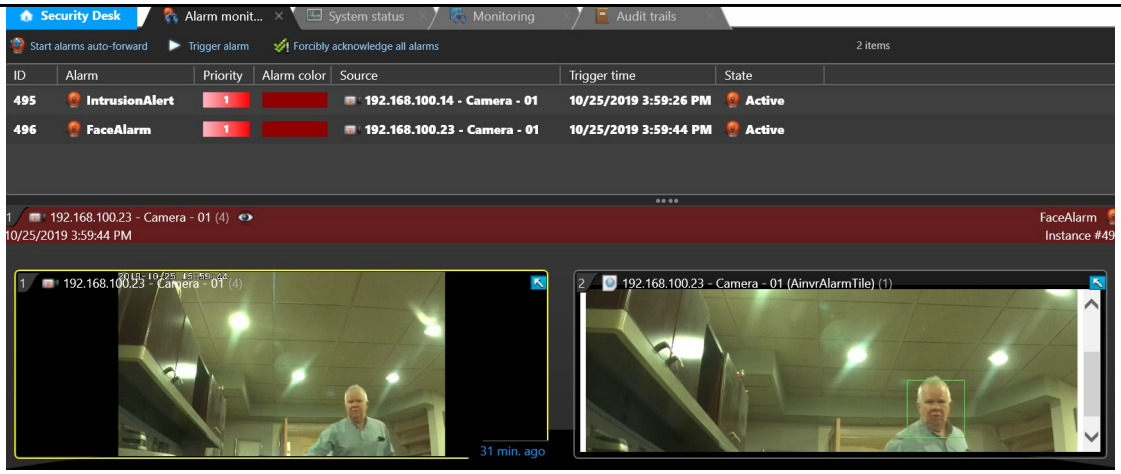
Click **OK** to apply to the alert rule.

[In Genetec]

In the readily integrated Genetec, open Security Desk, and go to Tasks > Alarm Monitoring

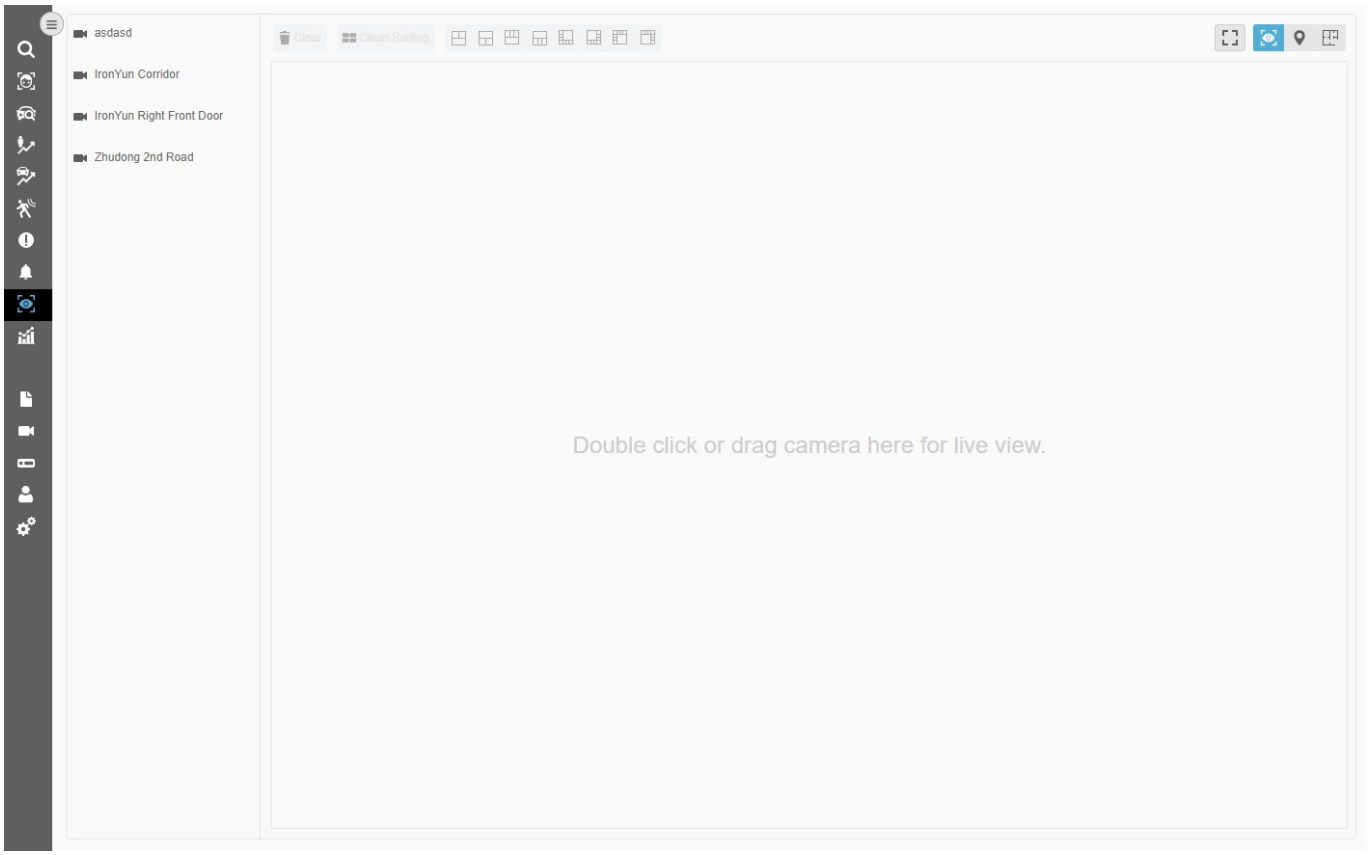


New alarms appear in the top panel.
Video playback appears in the bottom-left tile.
A scene image from Vaidio appears in the bottom-right panel.



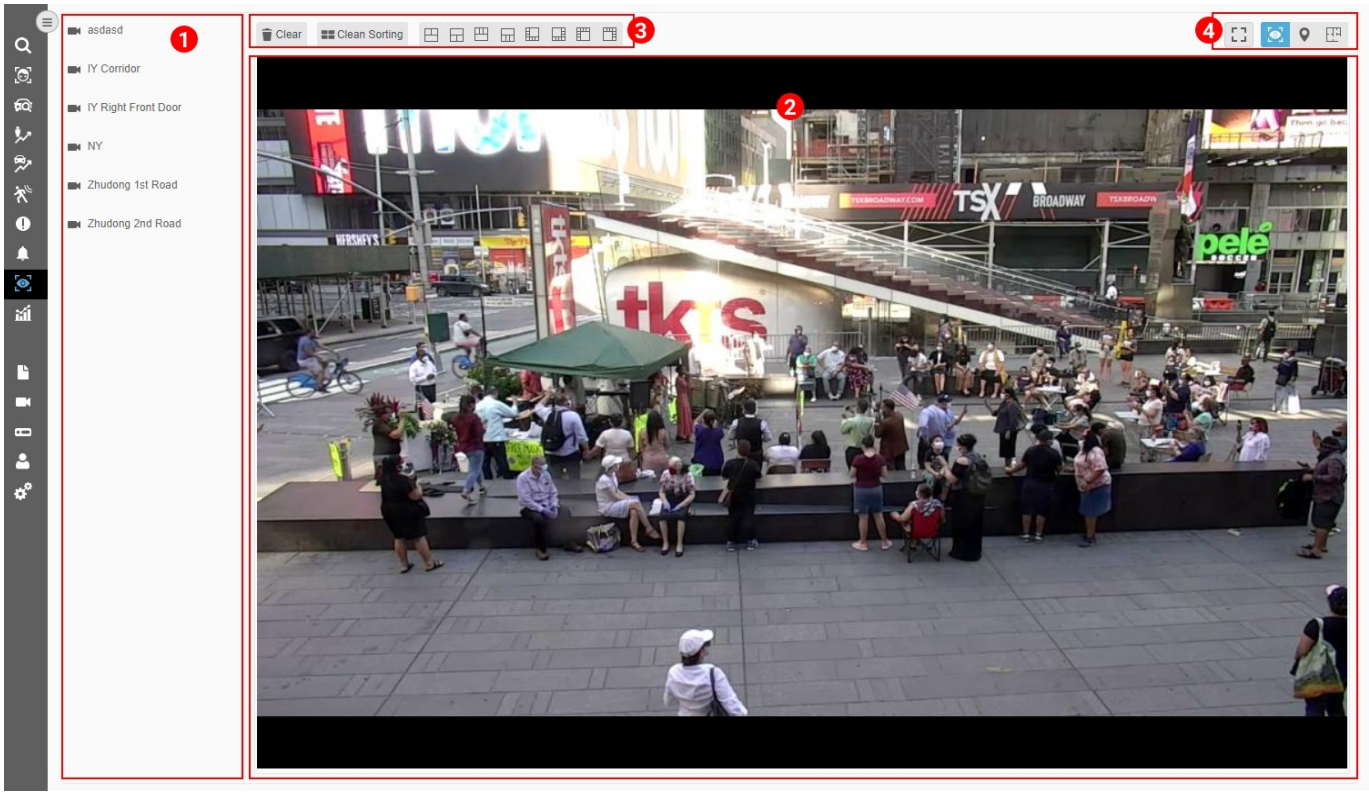
16. Live View

Click on the **Live View** tab to see the window below.

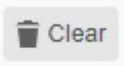
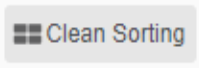
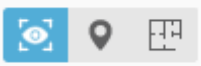


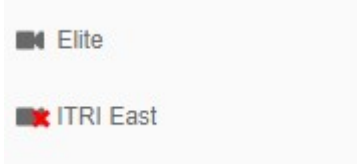
Live View Window

16.1 Multi Live View

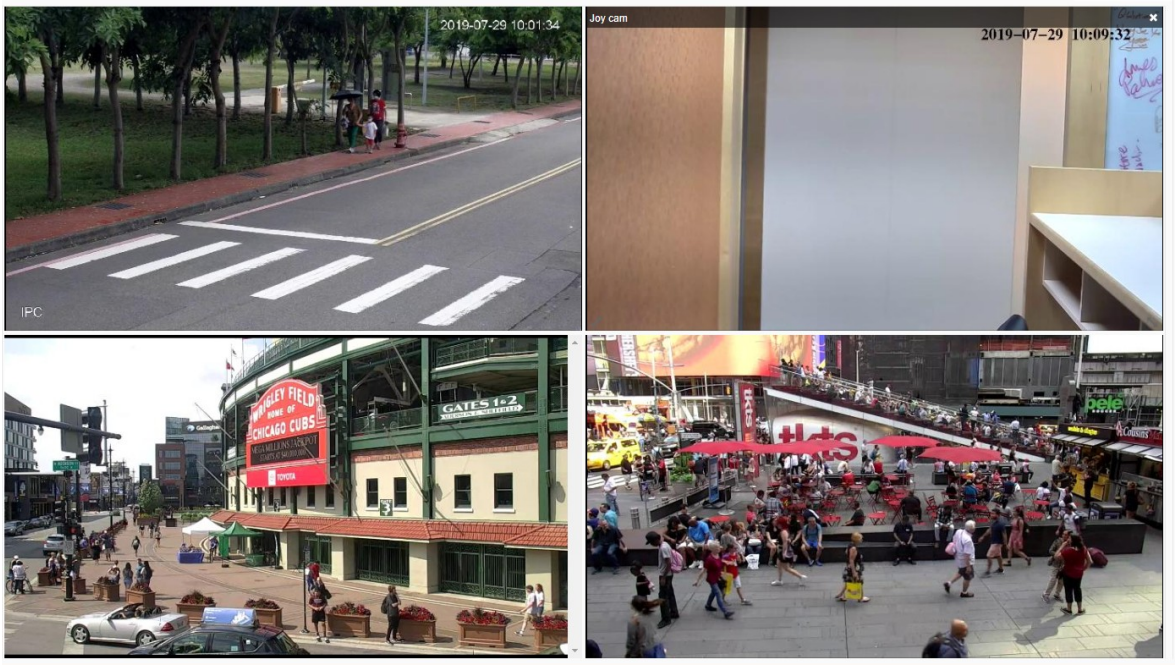


Live View Window

No.	Name	Description
1	Camera List	List all cameras available for live view; only activated cameras are listed. Use the drop-down menu to filter local or remote cameras.
2	Screen view	Play a live view of the selected camera; the user can activate a camera by double-clicking or dragging-and-dropping from the list on the left.
3	Live View Configuration	The configuration buttons can only be activated when the screen view is playing a live view.  Click to clear the screen view.  Click to sort the live view into a same-size grid display.  Click to use a pre-assigned view display.
4	Live View Display	 Click to access a live view in full screen  Click to switch between Multi Live View, Map View, and Floor Plane.

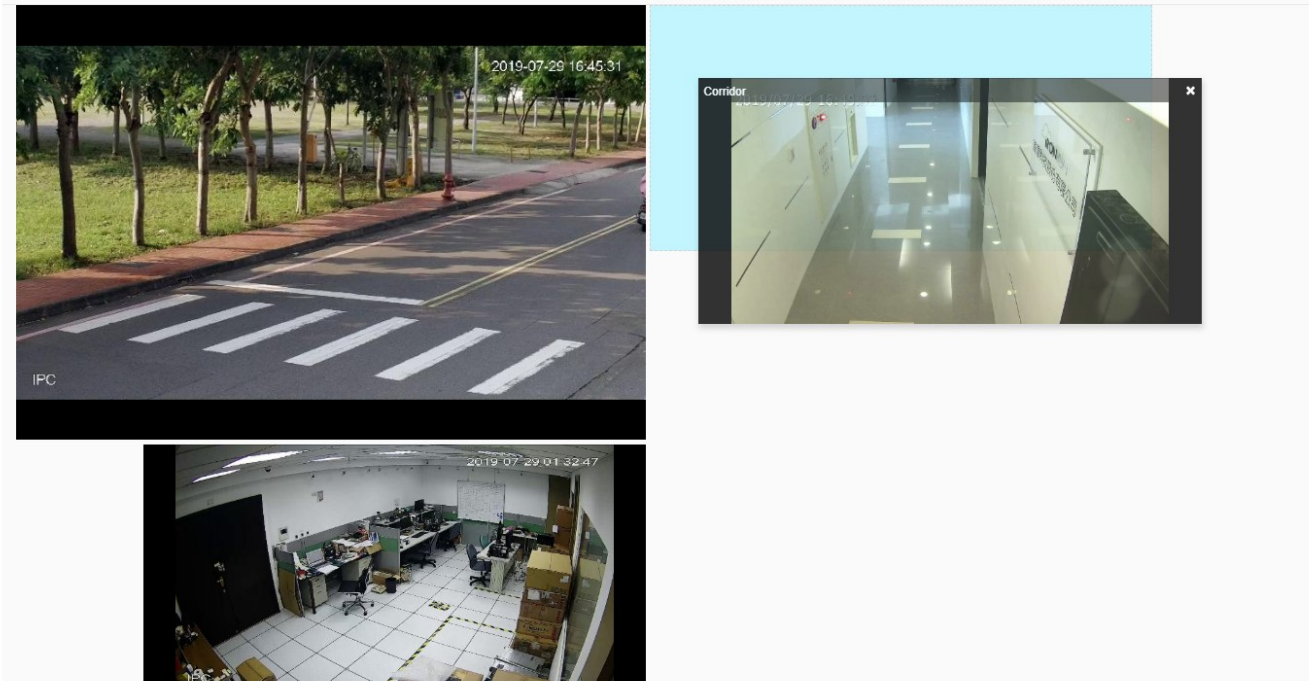


A camera with a connection problem or network issue will display a red X to indicate its error status. The live view screen will also show a **Failed Retry** message**.**



Live View Clean Sorting

When the live view is added by double-clicking the camera, the live view video will automatically be cleanly sorted, and the user can continue adding cameras to at most 16 cameras in total.
Mouse hover over the live view to see the top banner with the camera name and Delete button. The user can adjust the camera view size by dragging the bottom corner of the camera screen.

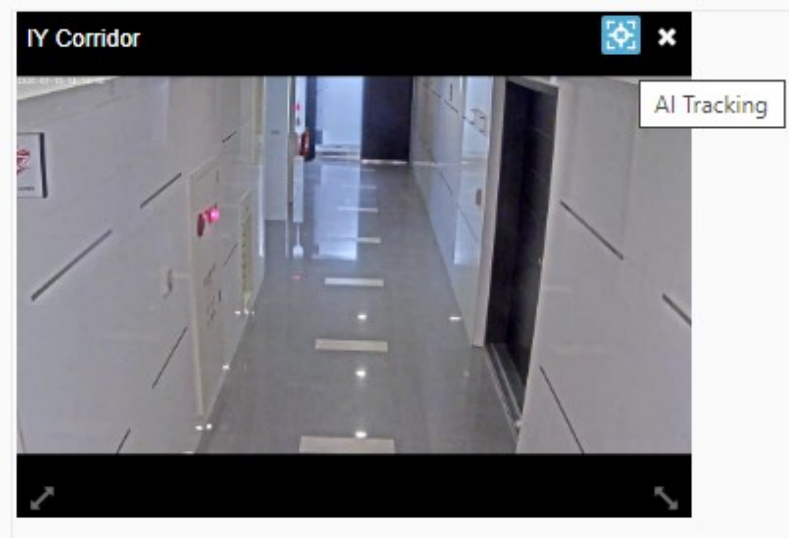


Live View Drag and Drop

To manually sort the live view, the user can drag and drop cameras from the camera list and place the live view at the desired position with adjustable sizes.

16.1.1 AI Tracking

To enable AI Tracking in Live View, the camera must enable Counting-related AI Engines.
To track a **Person**, enable at least one of the following: People Counting, Person Wrong Direction, Person Fall, and Loitering.
To track a **Vehicle**, enable at least one of the following: Vehicle Counting, Vehicle Wrong Direction, and Illegal Parking.
Once the camera is enabled with the proper AI Engine, turn on the AI Tracking icon at the top corner to get tracking results.



Enable AI Tracking

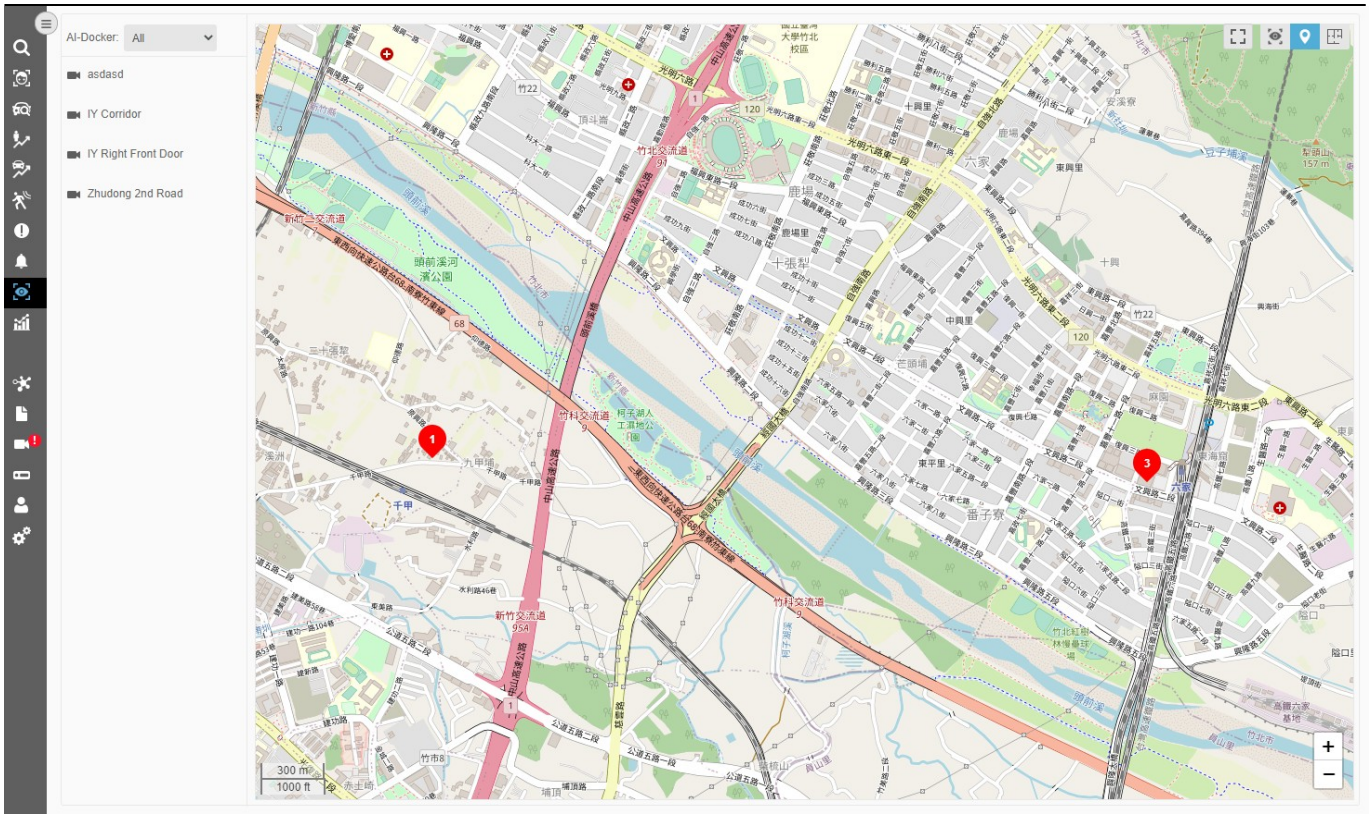
Live View with AI Tracking will provide a bounding box for the detected target, and the camera view is zoomed in and follow the moving target until the target is out of the camera frame. Then, the live view in the tracking mode will automatically switch to the next target (person/vehicle) that appears in the camera.

The image below shows the same camera in two different modes: normal live view (left) and Live View with AI Tracking mode (right).

AI Tracking Person

16.2 Map Live View

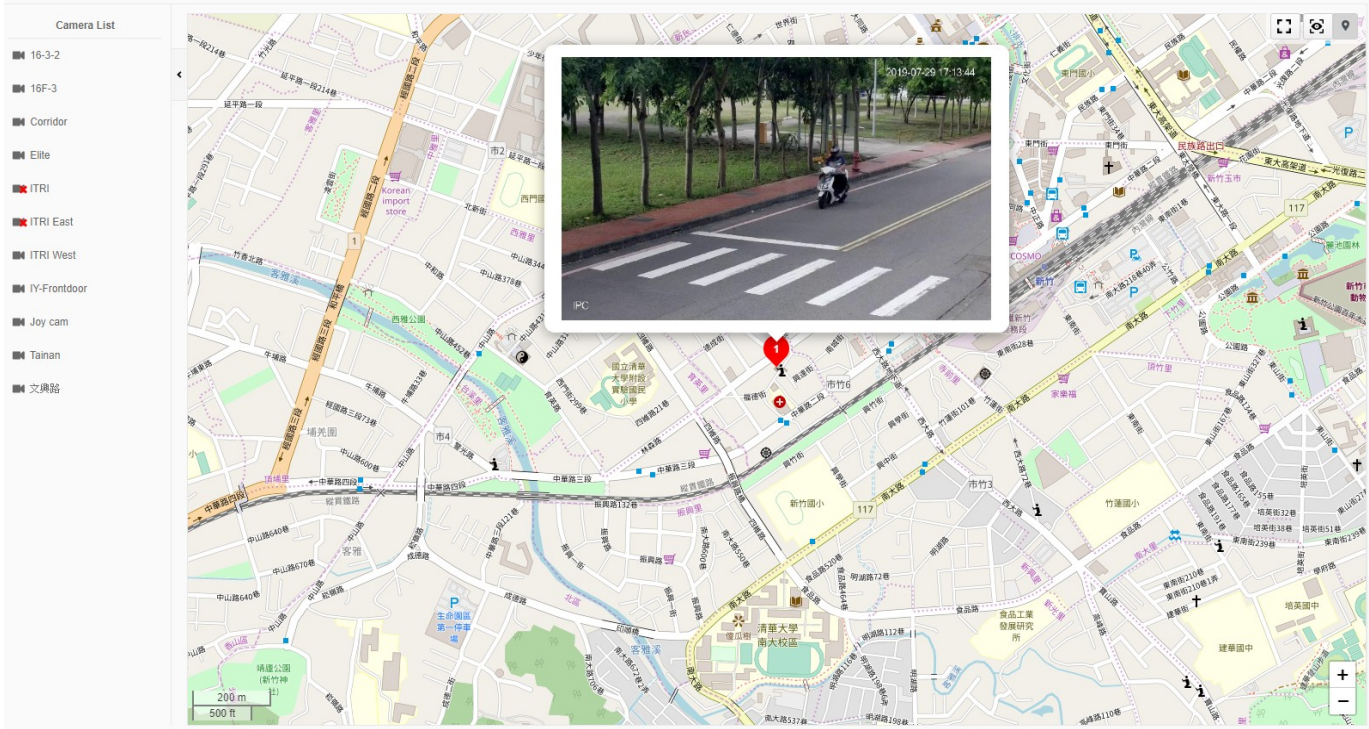
Switch to **Map Live View** to see the window below.



Map Live View

In the Map Live View setting, the map will display all cameras with available GPS coordinates. The pinpoint has a number to indicate the number of cameras assigned to the location. Red pinpoints are for cameras in healthy conditions, and black pinpoints are for cameras with a connection error.

Click on a camera from the camera list to see its live view on the map.

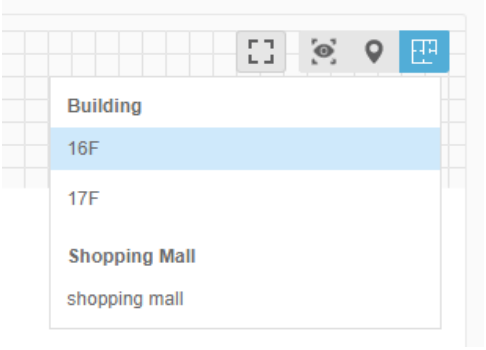


Map Live View Camera

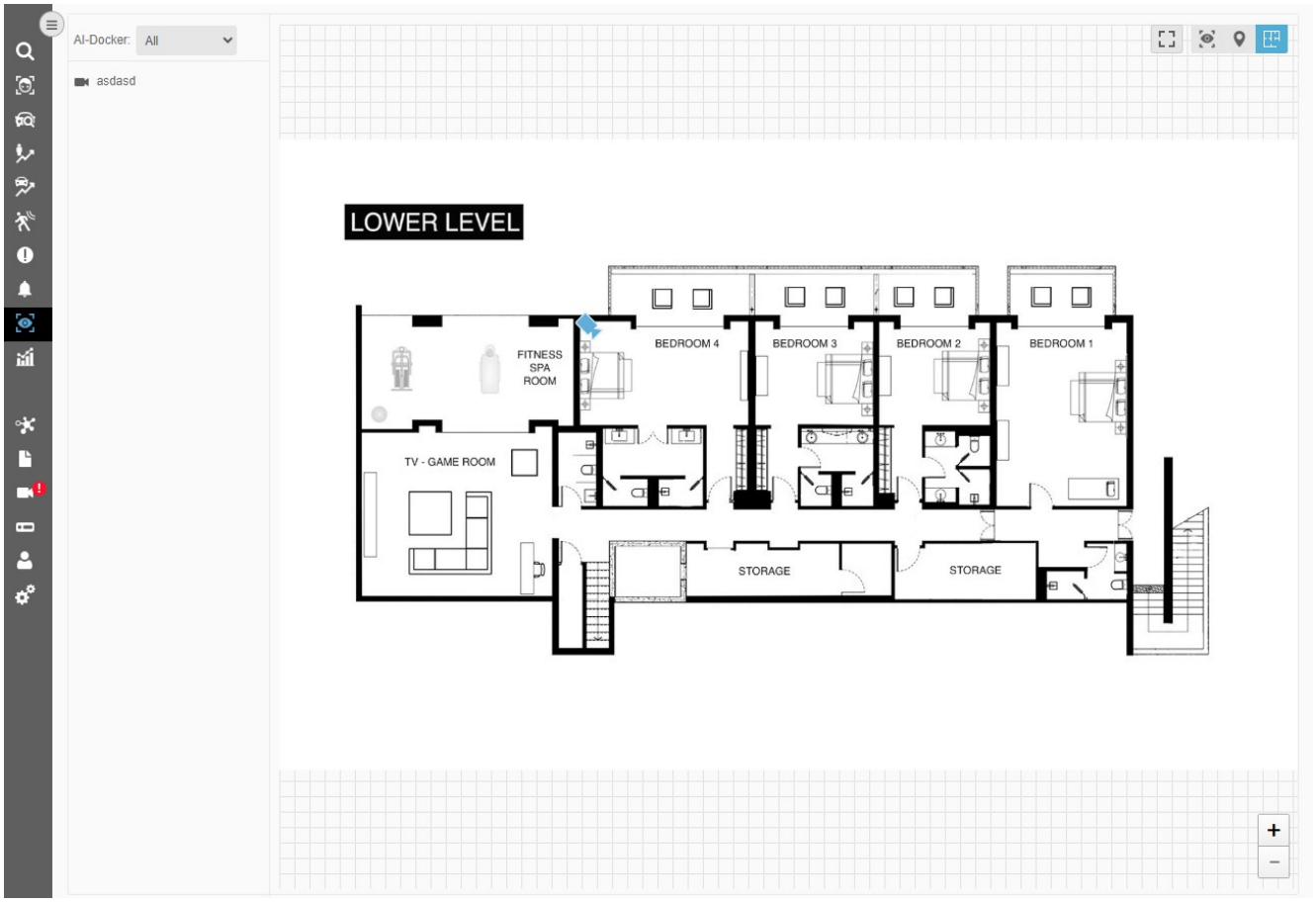
When a camera is selected for viewing, the map will zoom in to have a central focus on the camera location and provide a camera live view screen. Note that only one live view is available at a time in the map view; the user can click another camera from the camera list to see the map changing its coordinates and the live view.

16.3 Indoor Map Live View

Click the **Indoor Map Live View** to see the Floor Plan list for selection.

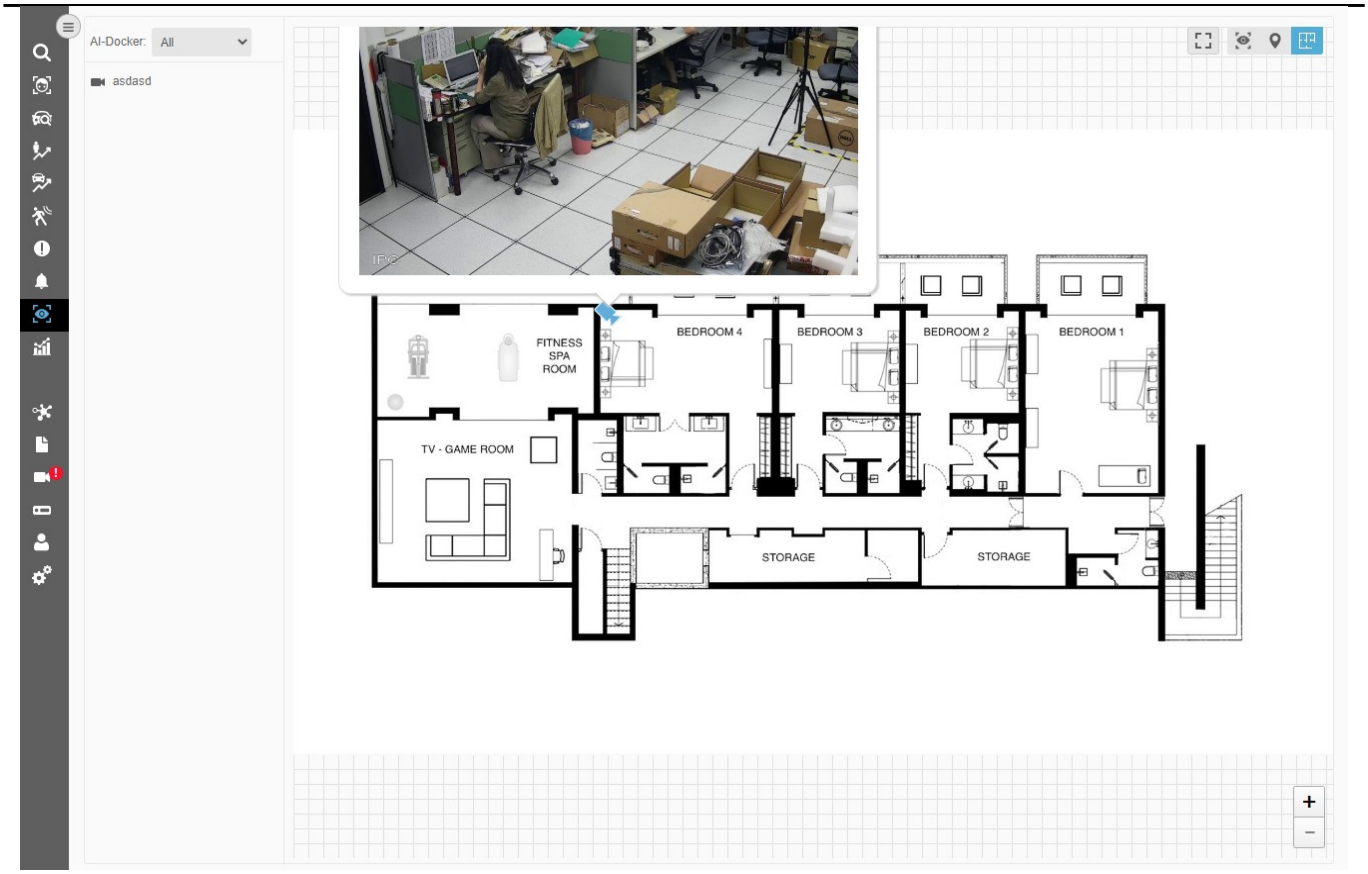


The selected Indoor Map will display the Floor Plan with the assigned camera(s) in a blue icon.



Indoor Map Live View

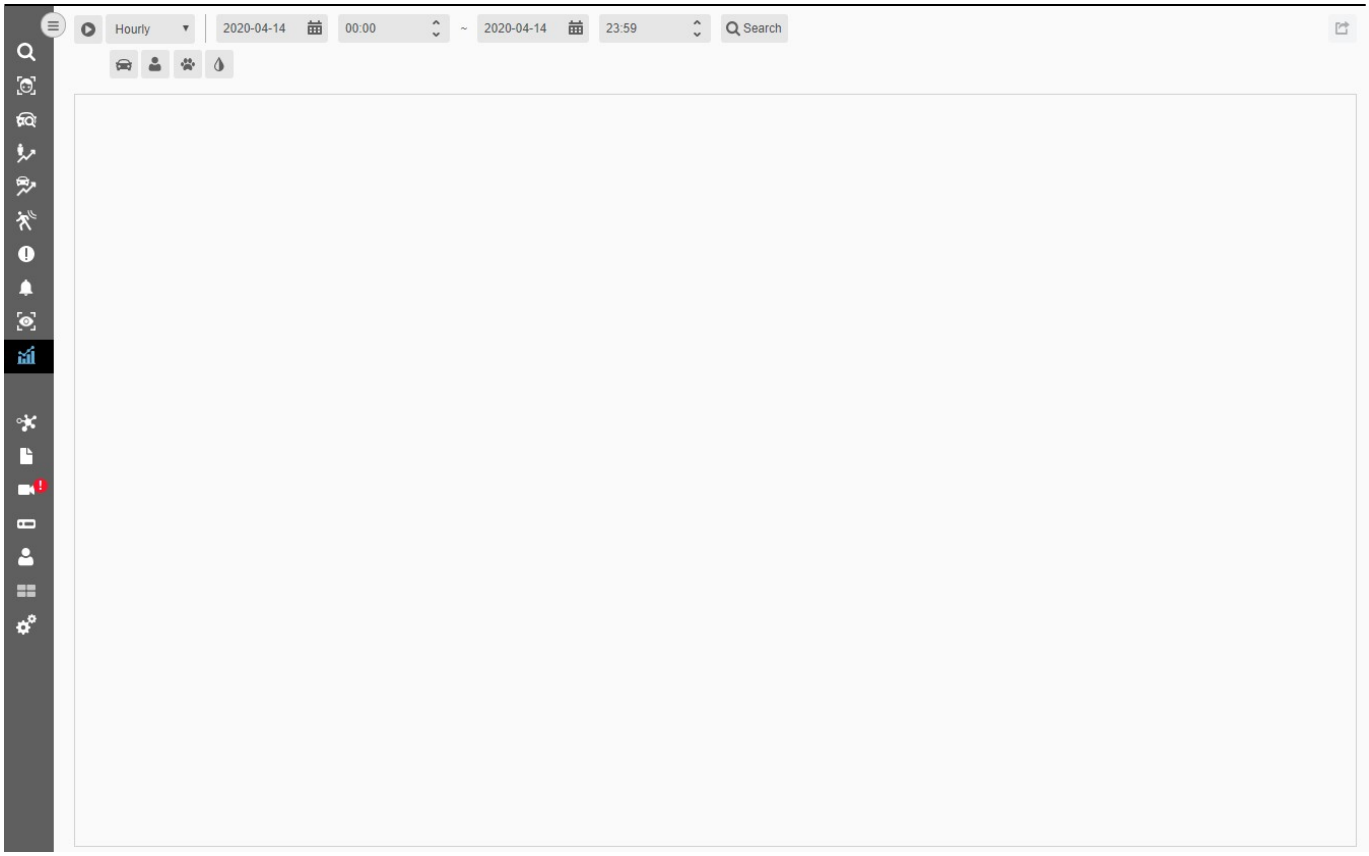
When the Indoor Map view is selected, the camera list on the left will only show cameras assigned with the Floor Plan.
Choose a camera from the list to get a live view on the indoor map.



Indoor Map Live View Camera

17. Statistics

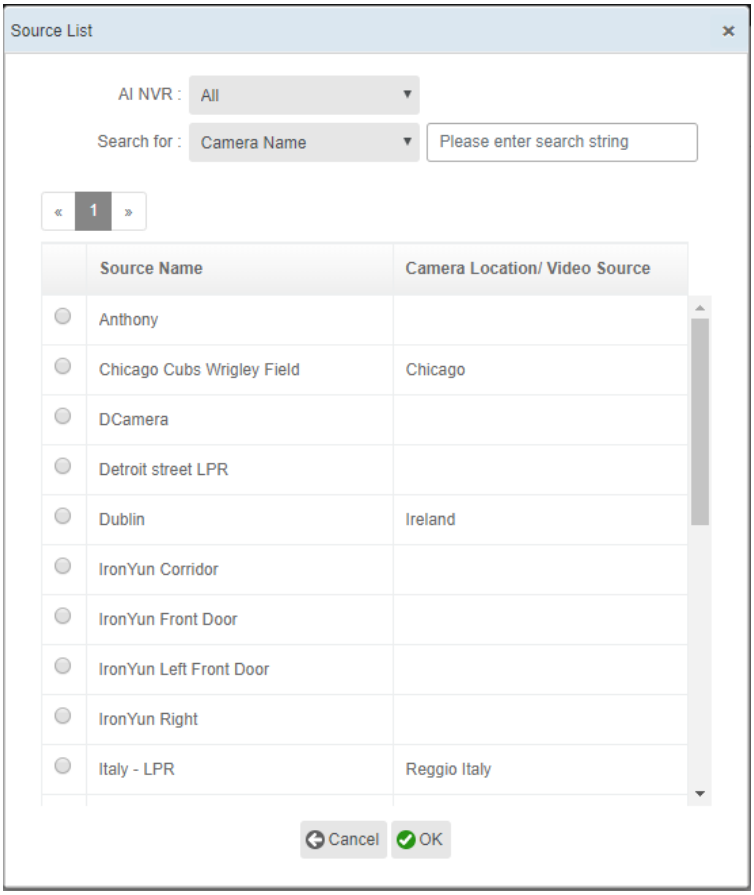
Click on the **Statistics** icon to see the window below.



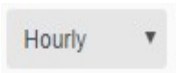
Statistics Page

The statistics page generates a heatmap based on object detection.

Click to search for a specific Camera or File name. A video must be selected to generate a Heatmap.

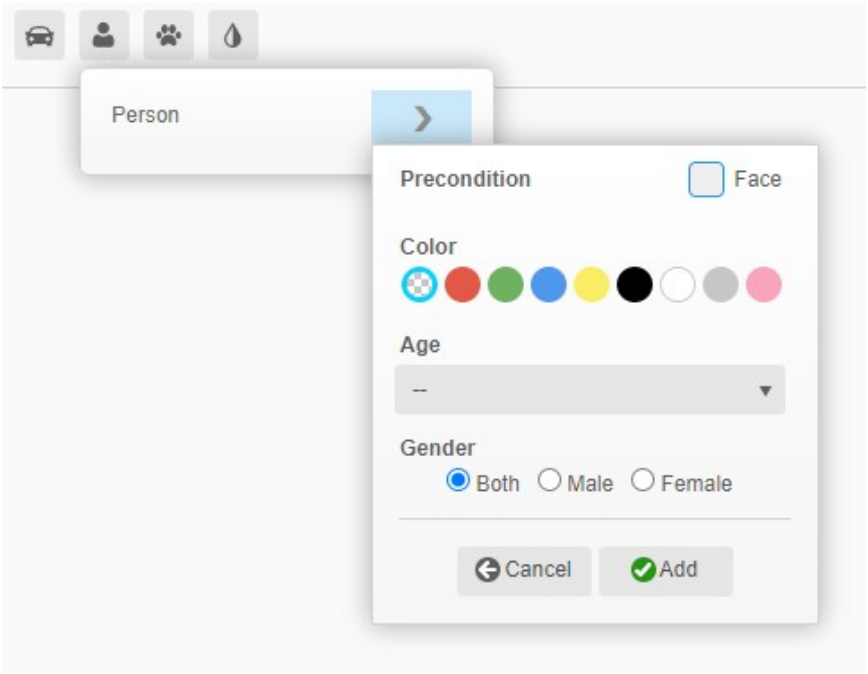


Only one video can be selected from the Source List.
Select a local or remote Vaidio from the Vaidio search drop-down menu.
In Search for, select **Camera Name** or **File Name** and enter the corresponding keyword string to search for a specific Video.

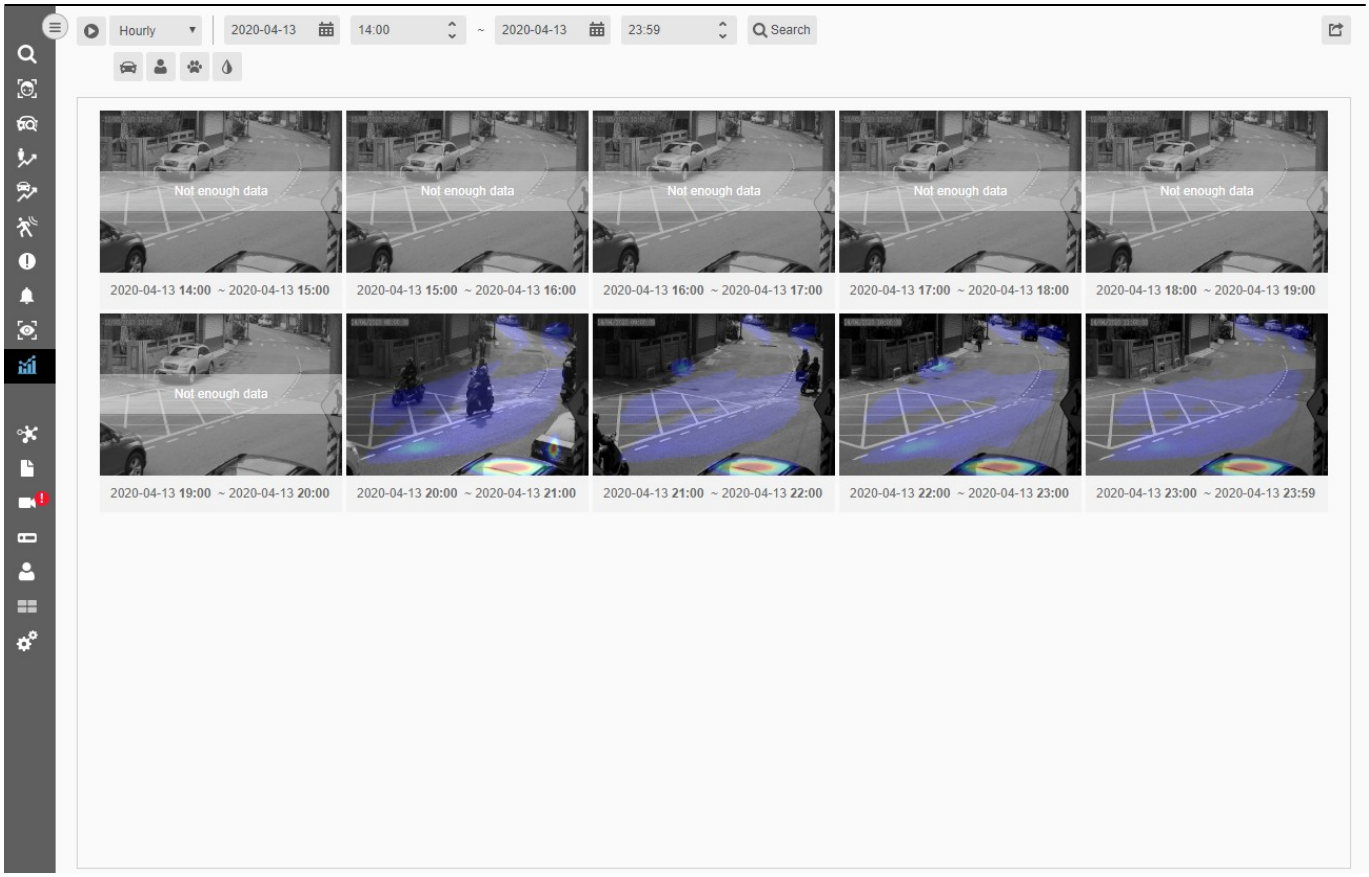


Click to define the timeframe of the query by **Hourly** or **Aggregate.**

Click to define the query criteria by specifying the time.
Click on the object type to find the object(s) of interest. Color selection is allowed in the search.
Age and gender are supported in the human-type search.

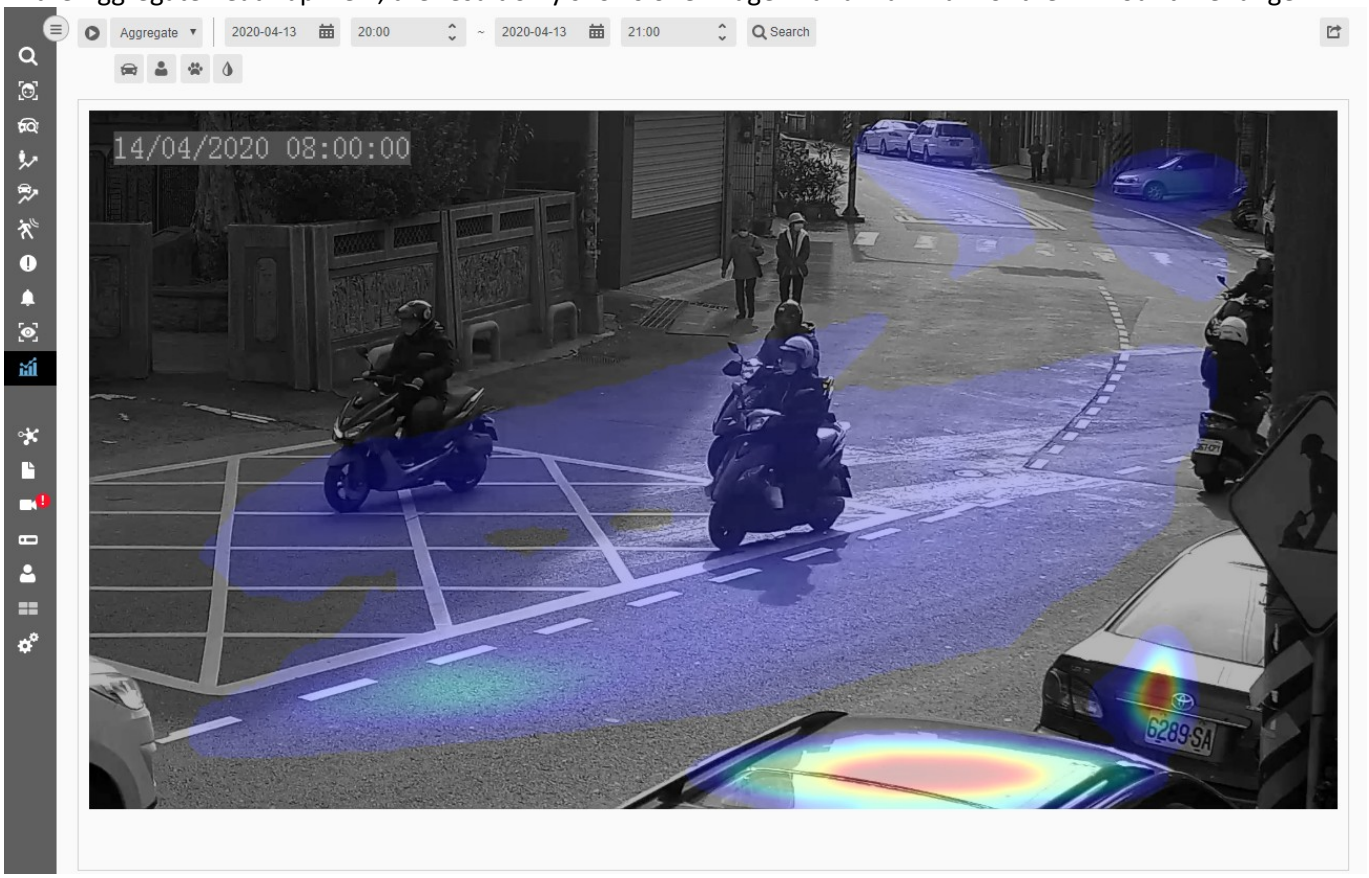


Click **Search** to see the result.
By default, the heatmap generates results in the hourly display.
The Hourly setting displays a maximum of 24 images, with one image per hour.
When no object or motion is detected, the image will display “Not enough data” for the user reference.



Heatmap Hourly Display

In the Aggregate heatmap view, the result only shows one image with a maximum of the 24-hour time range.



Heatmap Aggregate Display

 Click to export the search results as an Excel file.

18. Vaidio

Central Search
The user can perform Video Search from a remote Vaidio. The system is conceptually divided into a locally hosted Vaidio and remotely hosted Vaidios. Each local Vaidio can connect up to 15 remote Vaidio (display maximum of 16 Vaidios in total). Note that only the **Administrator** of **Main** Vaidio can access this page.
Refer to Chapter 21.12.1 Select Role for more information.

Click on the **Vaidio** tab to see the window below.

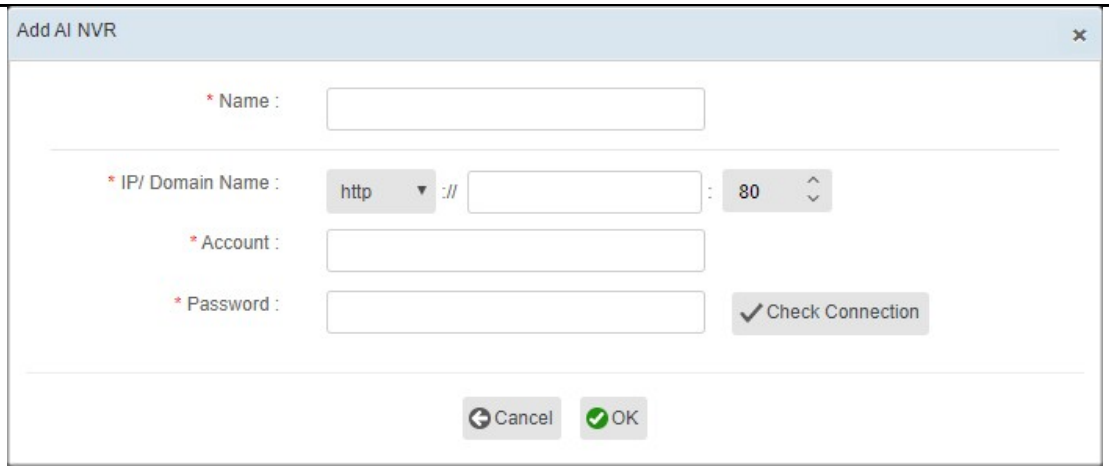
Vaidio window

Item	Description
Name	Name of the Vaidio device. The locally hosted Vaidio device is listed first.
Role	Show the role of the currently accessed Vaidio device: Main or Remote.
IP	Indicate the IP of the Vaidio device.
Warranty Date	Show the warranty date of the device.
Enabled AI Model	AI Model for this device
Status	Indicate the status of the Vaidio device. **Connected:** Vaidio is connected. **Disconnected:** Vaidio is disconnected.
Analytic Capacity	The capacity bar show how much source has been consumed based on amount of Analytic enabled. Click on the expand icon on the column to see channel consumption for each AI Engine.
Operation	**Sync:** Synchronize all cameras of the remote Vaidio. Click after adding a new Vaidio to gain access from the remote Vaidio. **Edit:** Edit the Vaidio device **Delete:** Delete the Vaidio device

Expanded Vaidio window

18.1 Adding Vaidio

Click the **Add** button in the Vaidio window to open the Add Vaidio window.



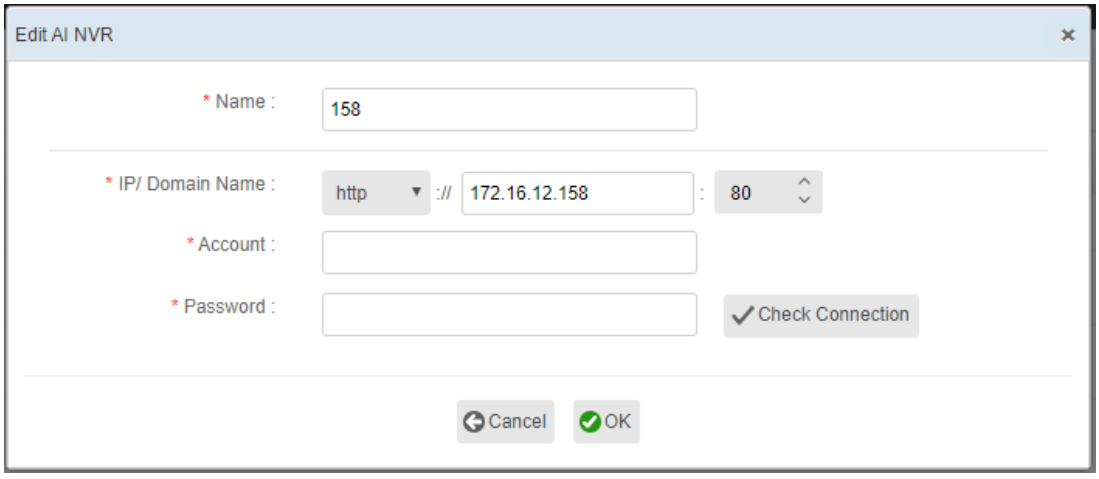
Add Vaidio window

Item	Description
Name	Enter the Vaidio name.
IP/Domain Name	Select http or https. Enter the IP address and port number.
Account	Enter the Account of the Vaidio
Password	Enter the Password of the Vaidio
Check Connection	Click the **Check Connection** button to check the connection of the Vaidio.

Click **OK** to save the settings and add the Vaidio in the Vaidio window.
Click **Cancel** to discard the settings and return to the Vaidio window.

18.2 Editing Vaidio

Click the **Edit** button of the corresponding Vaidio in the Vaidio window to open the Edit Vaidio window.



Edit Vaidio window

Item	Description
Name	Edit the Vaidio name.
IP/Domain Name	Select http or https. Edit the IP address and port number.
Account	Edit the Account of the Vaidio

Password	Edit the Password of the Vaidio
Check Connection	Click the **Check Connection** button to check the connection of the Vaidio.

Click **OK** to save the settings and edited Vaidio in the Vaidio window.
Click **Cancel** to discard the settings and return to the Vaidio window.

18.3 Deleting Vaidio

To delete a remote Vaidio means to break the connection of that remote Vaidio. Note that the locally hosted Vaidio cannot be deleted.

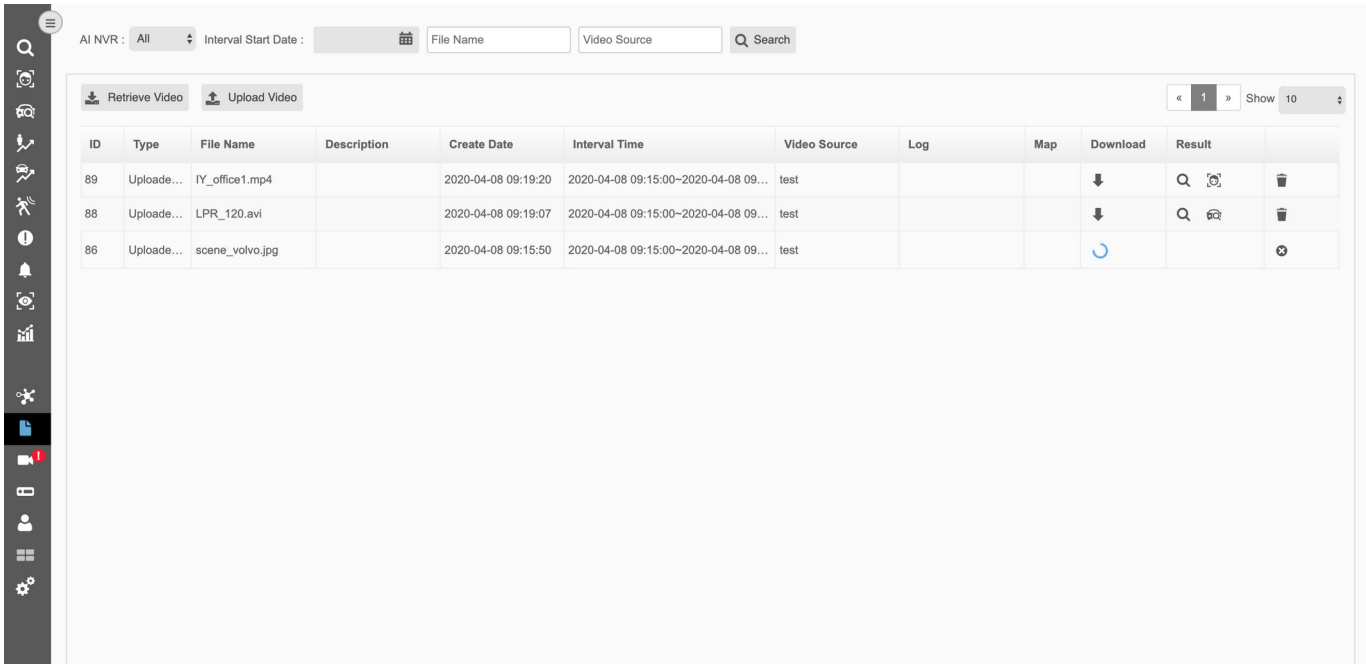
 Click the **Delete** button of the corresponding Vaidio. Note that all detected data and information about the cameras related to the deleted Vaidio will no longer be accessible from the Vaidio cluster.

18.4 Sync Camera

When the user adds a new Vaidio or a remote Vaidio has been changed, remember to click  to synchronize the camera from the connected Vaidio. A green message panel will appear to notify that the synchronization is successful.

19. File

Click on the **File** tab to see the window below. This window is used to retrieve, upload, and delete files.



File Window

File Download

There are 4 types of video downloaded files; click the icon(s) in the **Download** column to download the desired file type.

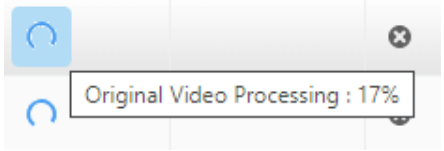
Click to download the **Original Video** file.

Click to download the **LPR Masking** video file.

Click to download the **Person Masking** video file.

Click to download the **Masking Video** with both Person masking and LPR masked.

Note: Downloading video files will be displayed with a loading icon, mouse over to see the file type, and downloading progress. Masking Video requires more time for rendering.



File Result

Click the buttons in the **Result** column to see the video file search results. Different result types are available based on the user inquiry when the user retrieves or uploads a video file. There are 3 distinct result buttons, which take the user to different feature pages.

Click to access the **Search** page with the designated video file selected in the File List. Video Search is always available by default.

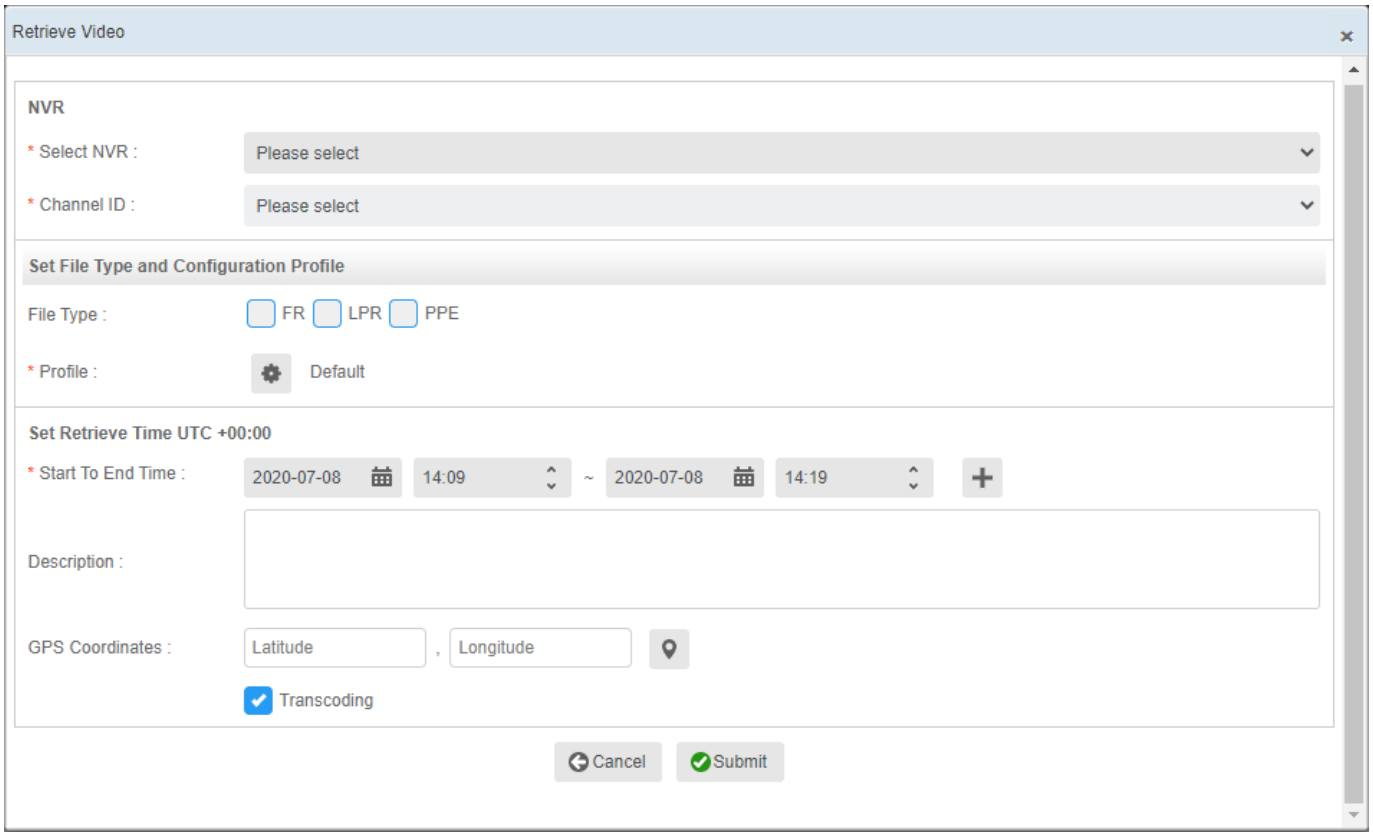
Click to access the **FR History** sub-tab with the designated video file selected in the File List.

Click to access the **LPR History** sub-tab with the designated video file selected in the File List.

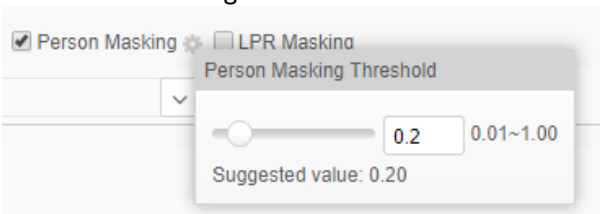
19.1 Retrieve Video

Click the **Retrieve Video** button to see the Retrieve Video window.

Note: The user can only retrieve video files from a local Vaidio.



Retrieve Video Window

Item	Description
NVR	**Select NVR:** Select the NVR available to retrieve the video. **Channel ID:** Select a Camera available based on the selected NVR.
File Type	Select the file type for the video upload**: FR, LPR, PPE, Person Masking,** and **LPR Masking.** When Person Masking is checked, an icon will appear for the user to click and adjust the Person Masking Threshold. 
Profile	Select the profile to apply for the video. Click the configuration button to create a new profile setting for the video.
Set Retrieve Time	**Start Time:** Type or select the start time of date and time.

	End Time: Type or select the end time of date and time.
Description	Enter the information to describe this configuration.
GPS Coordinates	Set the location for the map view. Latitude: Enter the latitude of the camera Longitude: Enter the longitude of the camera

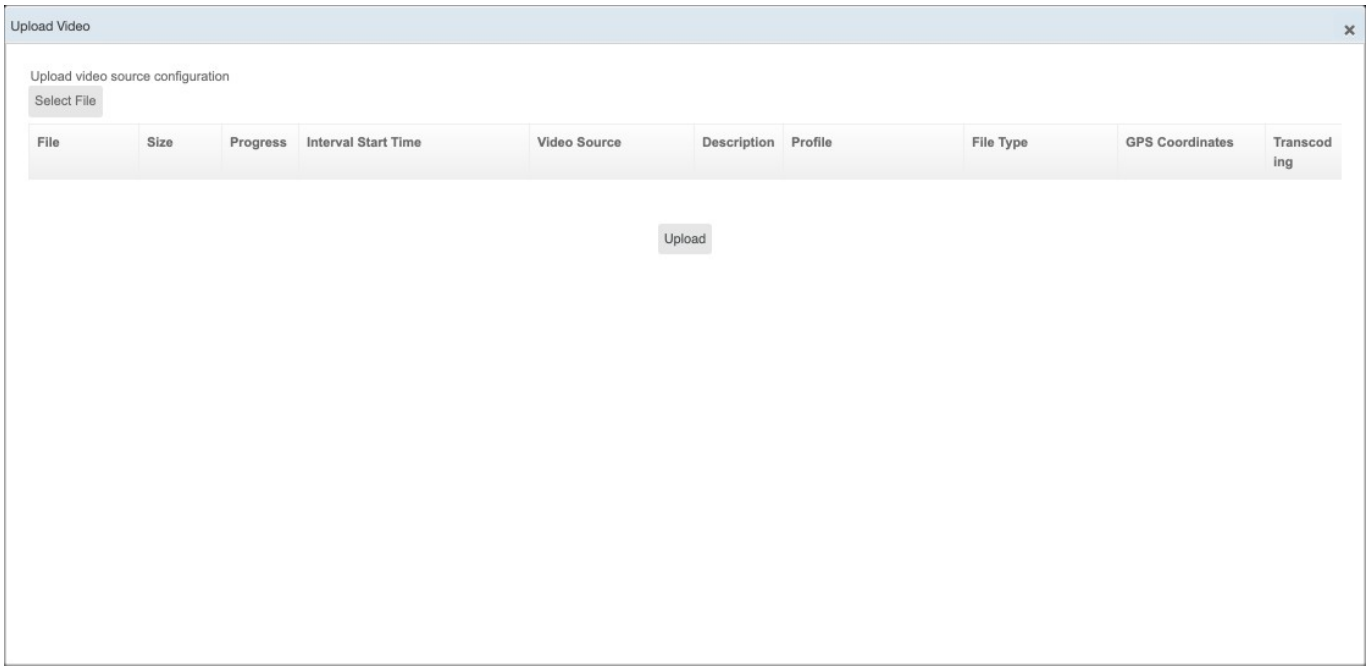
When no File Type is selected, by default, the video file is prescribed to **Video Search**, and the user will see the Video Search button in the Result column of the File List.

Click **Submit** to submit the retrieved/uploaded video.
Click **Cancel** to cancel the retrieved/uploaded video.

19.2 Upload Video

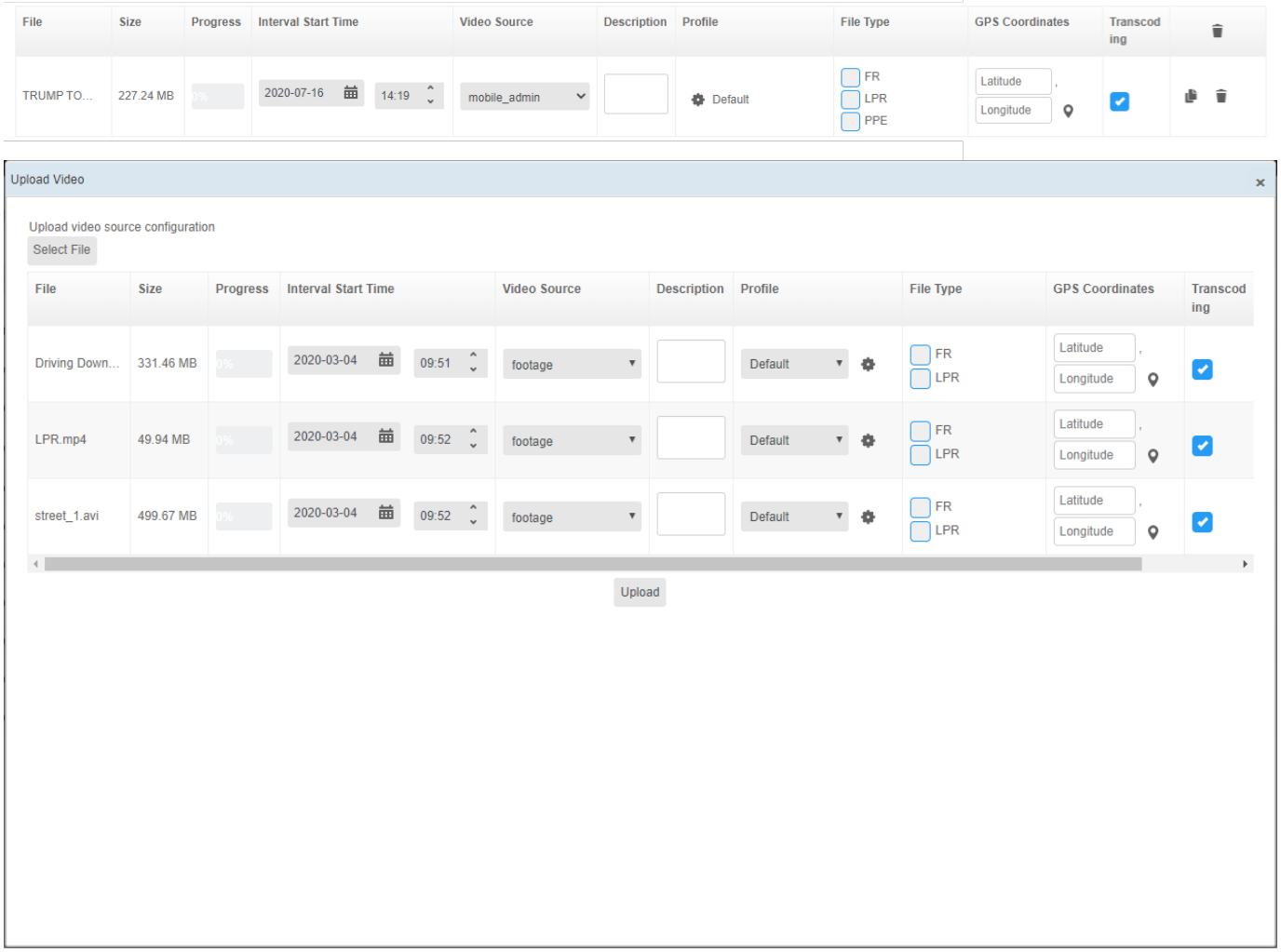
Click the **Uploaded Video** button to see the Upload Video window. In this window, the user can upload the videos from local directories. These videos will be included in the search function.
Vaidio supports H.264 video formats, which include MP4, WMV, AVI, MOV, and MPG.

Note:
Supported Video Codec
The system supports the following video codec based on the currently used GPU:
H.264, MJPEG, MPEG1, MPEG2, MPEG4, VC1, VP8, VP9



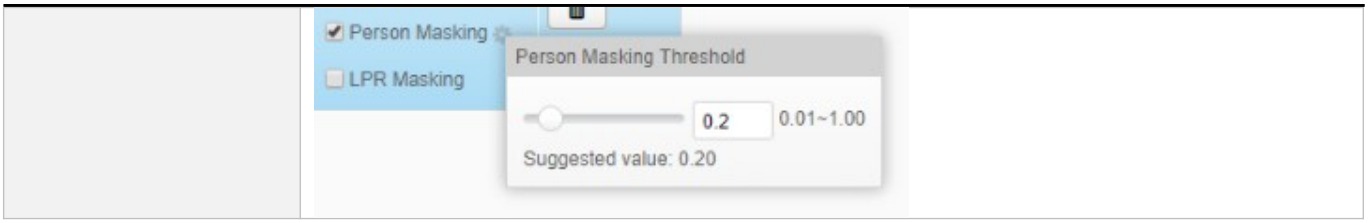
Upload Window

Click **Select File** to locate the video or image in the local directory.
The suggested maximum upload file size is 1GB per file. It is recommended not to upload more than 4GB simultaneously, but the actual upload size depends on the network bandwidth of the user's environment.



Upload Window with an Entry

Item	Description
Progress	Display the status of the upload.
Interval Start Time	Type or select the date and time of the file.
Video Source	Click to select a video source. When no video source is available, it is required to create a new video source here. **Video Source:** Enter the name of the video source. **Location:** Enter the location of the video source. Click **Save** to save the settings, and the virtual camera is displayed on the list. Note: The video source allows the admin user to grant other users file access when assigning camera privileges.
Description	Enter the information to describe this configuration.
Profile	Select the profile to apply for the video. Click the configuration button to create a new profile setting for the video.
File Type	Select the file type for the video upload**: FR, LPR, PPE, Person Masking,** and **LPR Masking.** When Person Masking is checked, an icon will appear for the user to click and adjust the Person Masking Threshold.



Click the corresponding delete button to remove the file.

Click Apply All button to apply the configuration of the first video file to all remaining files listed below.

Click the Upload button to upload videos in the window to Vaidio.

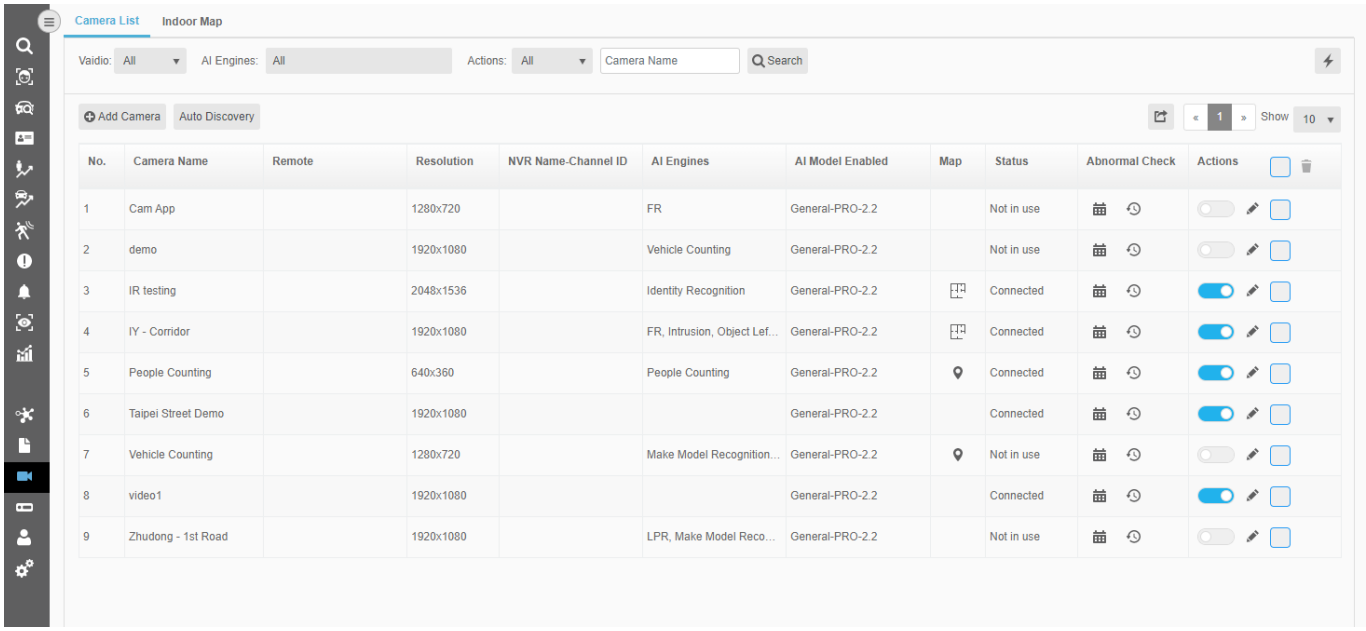
If the window is closed during uploading, the uploading process will be canceled.

Note: To upload a video file larger than 1GB, the user should use the **Video Uploader** tool.

The **Video Uploader** tool is included in the Vaidio release package; contact the administrator for more details.

20. Camera

Click the **Camera** tab to see the window below.



Camera Window

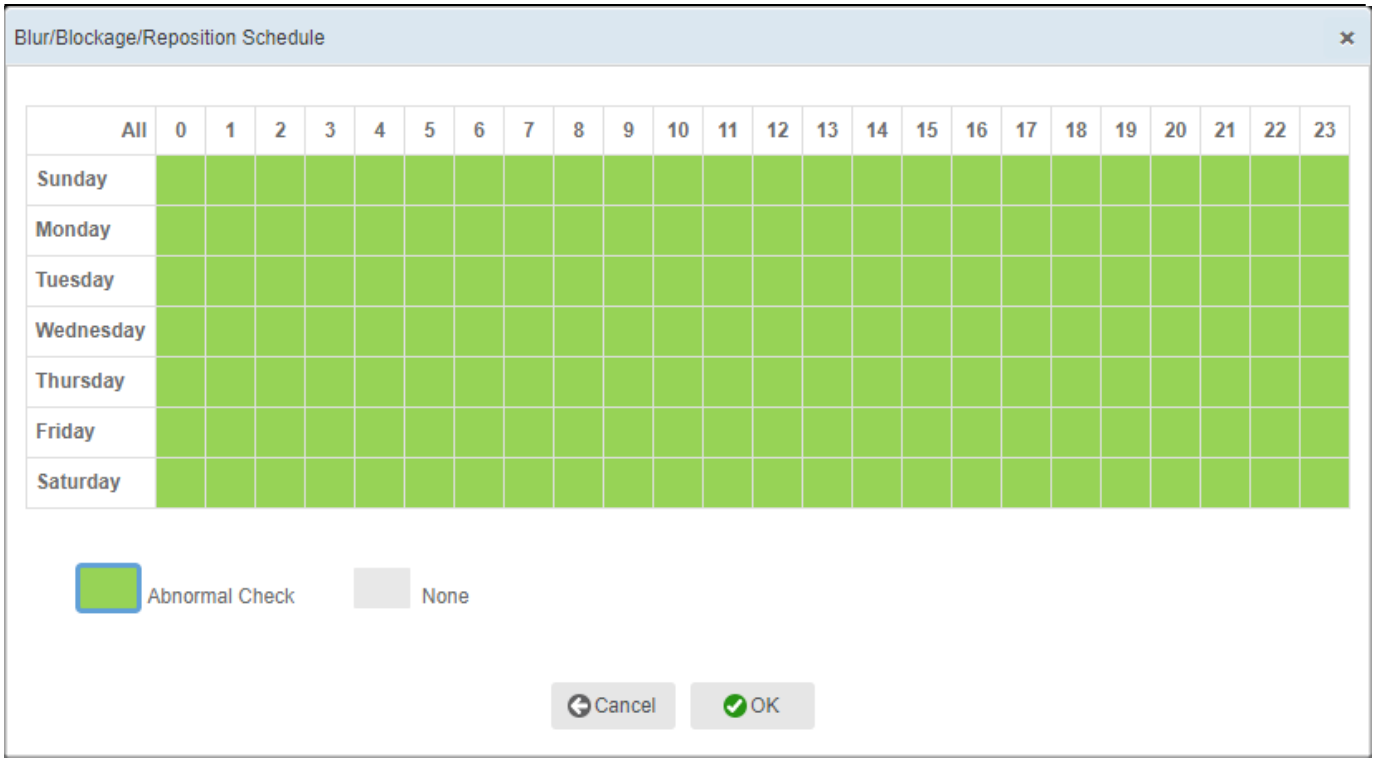
Item	Description
Vaidio (For Main only)	Click the Vaidio drop-down menu to see all Vaidios available; each remote Vaidio has a distinguishable name. In the camera table, the remote cameras are followed by its remote Vaidio name in brackets.
Add Camera	Click to add a new camera to Vaidio
Analytic Capacity	Click to check Vaidio analytic allocation and capacity. (would also show remote Vaidio data if available) AI Engine Allocation: Display the active and available Channel for each AI Engine.

	AI Engine channel in use / Maximum number of AI Engine channels allowed in Vaidio.
Camera Name	Name of the camera.
Remote	The remote cameras will display their associated Vaidio name in this column.
Resolution	Resolution of the camera.
NVR Name -Channel ID	NVR name of the camera and Channel ID of the camera.
AI Engines	Analytic functions applied to this camera.
AI Model Enabled	List of enabled AI Model for the camera
Map	Click on the available icon to check the camera location in the new window with GPS Coordinates or Floor Plan.
Status	Status of the camera. **Connected**- The camera is connected. **Not in use**- The integrated camera is not in use. **Failed. Retrying**- The camera is active but is having a connection issue.
Abnormal Check	Click the **Blur/Blockage/Reposition Schedule** button to set a specific time for an abnormal-status check of the camera. Click the **Camera History** button to check the camera status in the past 30 days. Click the **Abnormal Camera** button to check the current abnormal camera status.
Actions	Switch the toggle to **Activate/Deactivate** the camera Toggle on to **Activate** the camera . When activated, the camera is available for event detection. Toggle off to **Deactivate** the camera to release When deactivated, the camera is unavailable for detection, and the user cannot see any new event. In this mode, the configuration and camera setting is still adjustable. Note: When the activated cameras have reached the capacity limitation, no other camera can be activated unless the user deactivates some cameras to free up capacity. Refer to Chapter 17 Vaidio. Refer to Chapter 22.8 License.

Abnormal Check

Abnormal Camera column always consists of two buttons: **Blur/Blockage/Reposition Schedule** and **Camera History.**

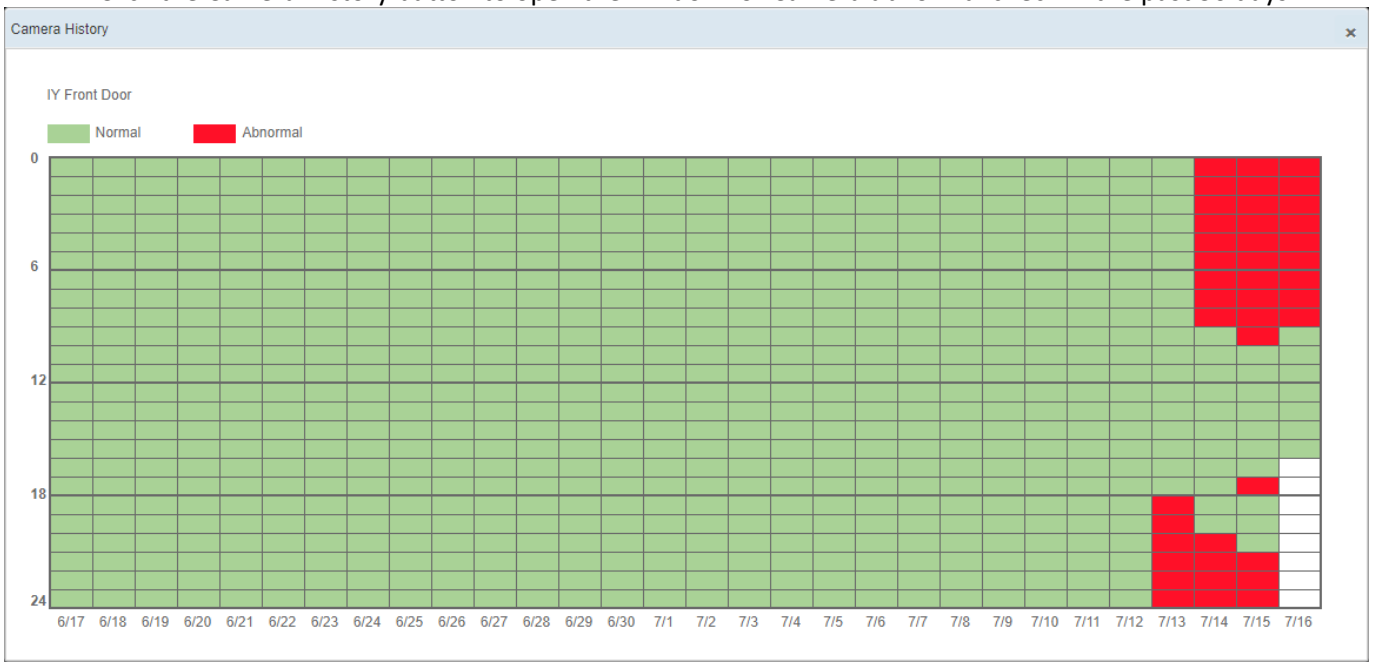
Click this button to open Blur/Blockage/Reposition window,



Blur/Blockage/Reposition Schedule Window

When the schedule is set to None, Abnormal Check will not trigger during those hours. The schedule only applies to Blur/Blockage/Reposition Abnormal.

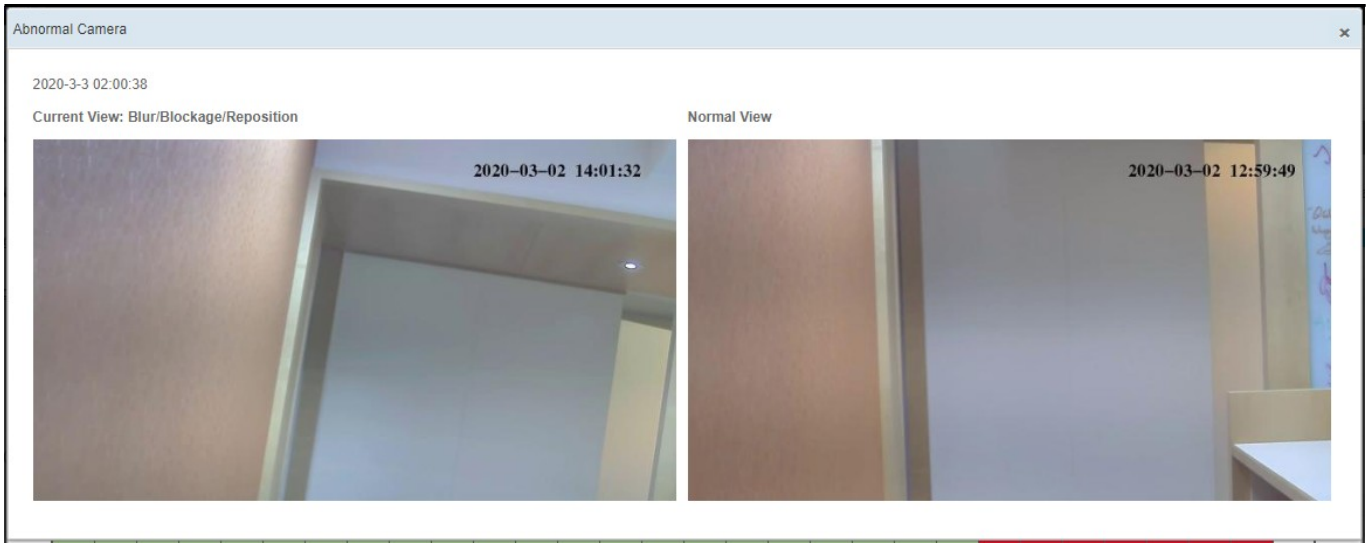
Click the Camera History button to open the window for Camera abnormal check in the past 30 days.



Camera History Window

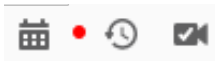
The window displays the camera status in the past 30 days; the red blocks show the periods when the camera status was detected as Abnormal.

Click the red block to see the detail for Abnormal status.
The new window has two scenes for comparison: **Current view** and **Normal view**.



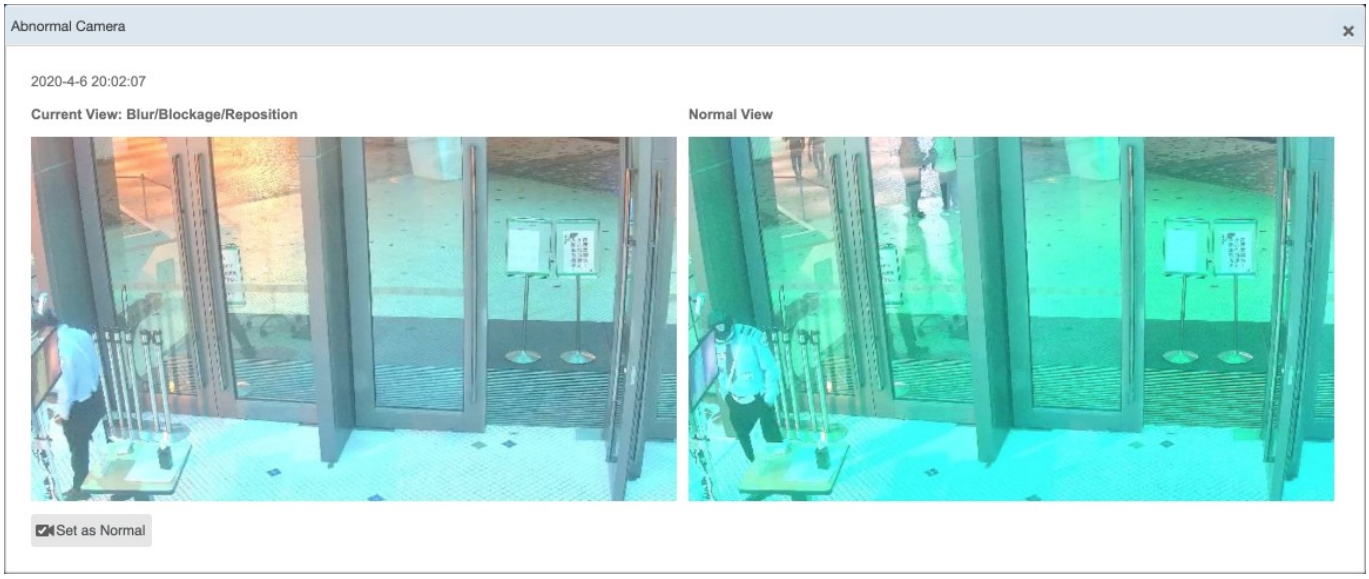
Abnormal Camera

The Current View is the view with abnormal status, while the Normal View shows the scene that is considered as normal. There are 3 kinds of Abnormal Camera status: **Disconnected, Resolution Change,** and **Blur/Blockage/Reposition.**



A camera with Abnormal status is displayed with a red dot and an extra Abnormal Camera button.

Click the Abnormal Camera button to get the window with Current View and Abnormal View comparison. Note that the Abnormal Camera button is only available when the camera is in an abnormal state.

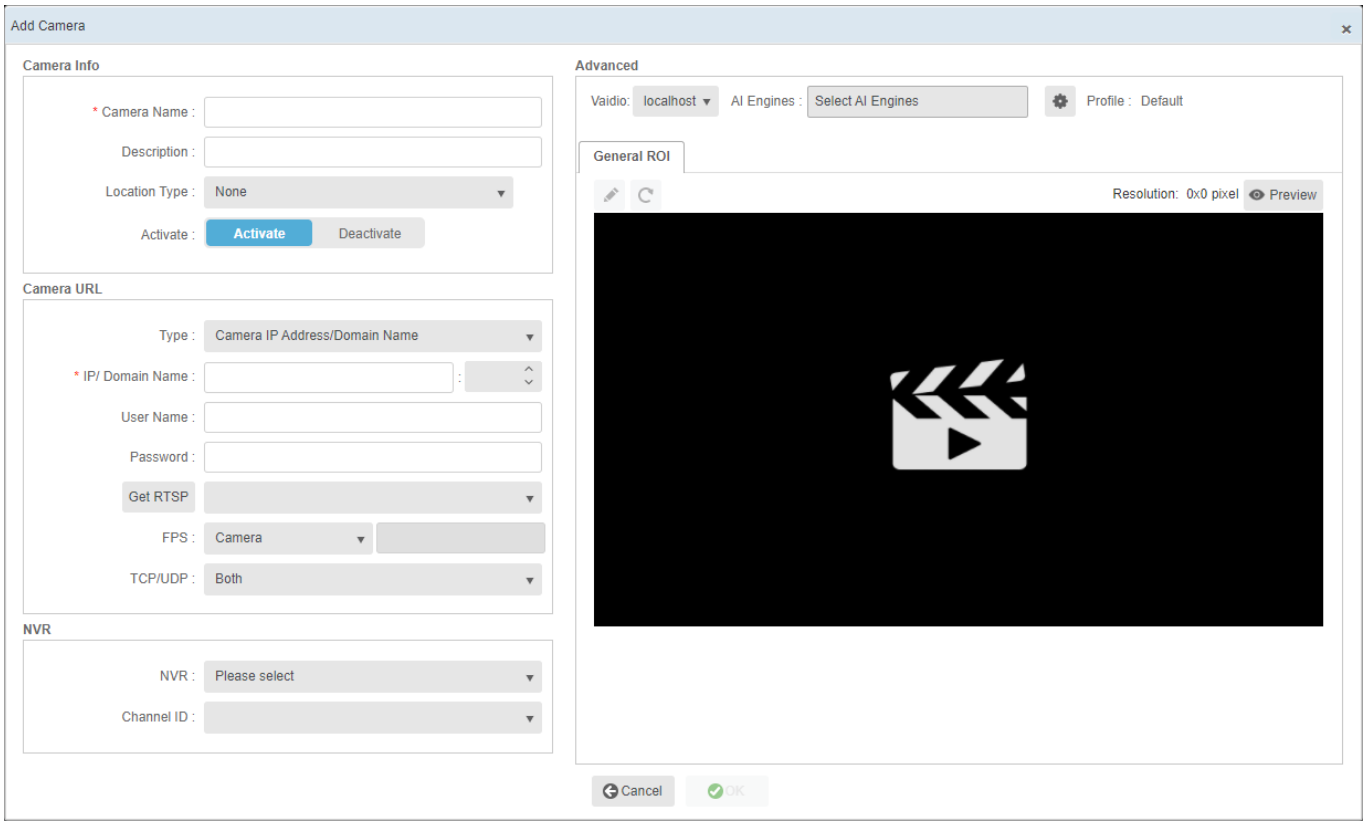


Blur/Blockage/Reposition Window

For Abnormal Status with Blur/Blockage/Reposition, the users can click the **Set as Normal** button at the bottom left below the Current View to mark that the current abnormal status can be considered normal.

20.1 Camera List

In the Camera List subtab, click the **Add Camera** button in the Camera Management window to add a new camera.



Add Camera Window

Item	Description
Camera Name	Enter the name of the new camera.
Description	Add a description for the new camera.
Location Type	Use the drop-down menu to choose the **GPS Map** or **Indoor Map**. In the GPS Map, enter the latitude and longitude of the camera location. In the Indoor Map, select the Floor Plan preassigned to the system.
Activate	Enable toggle to activate a camera; the analytic capacity taken will be displayed when a camera is activated based on the AI Engines in use.
Camera URL Type	In the drop-down menu, select the camera connection to use **Camera IP Address/Domain Name**, **RTSP**, **Camera APP**, **External Video** or **File.** For **External** camera type, only AI Engines below are available: FR, LPR, Intrusion, OLB, and PPE For **Camera APP** type, only the following AI Engines are available: FR, LPR. Note for Camera App: -Each camera can only have one mapping ID of camera app. -A main or standalone Vaidio allows to have multiple camera app but they need to be in different camera with different mapping ID. -User can select Camera App as one of the camera type for analytic. There may be different App name for camera app type. -Use the same mapping ID when login to camera app -Camera App should not allow multiple mobile devices active recording on the same Vaidio Camera.

IP / Domain Name	Enter the IP address or domain name of the camera.
User Name	Enter the user name of the camera
Password	Enter the password of the camera
Get RTSP	Click on the **Get RTSP** button to get the RTSP after entering the above information.
RTSP	Select the available RTSP profile or enter the RTSP URL to add a new camera.
FPS	FPS consists 3 types for selection: **Camera FPS** is the value reported by the camera. **Estimated FPS** is the value estimated by the system (may take longer to obtain, since the system needs time (~ 5 s) to estimate) **Manual FPS** enables users to manually set FPS 1~ 60. Users can compare the camera FPS and estimated FPS values to decide what to input for Manual FPS.
TCP/UDP	Select TCP, UDP, or Both for the best camera connection result.
Video File	Click the File button to select a video file to use for the camera. The selected video file will display the file name beside the file button. Users can select to have the file play on loop or only once. **Note:** User cannot delete Files that are already simulated as a camera until the simulated camera has been removed.
Mapping ID	A required field for **External** and **Camera APP** types, must match the Mapping ID from the added device to connect to the camera.
Play	Selection type for **Video File** type camera. Select Once for the video file to play once and stop to deactivate the camera, or select Loop for the file to play repeatedly.
NVR	Select the NVR that integrates with the camera.
Channel ID	Select the channel ID of the camera. The **Channel ID** list provides the channel IDs with their channel names. The channel name is pre-defined when the camera is integrated with the NVR.
Cluster	Only available on the Main machine, choose local or remote to add the camera to. The camera will take channel resources from the selected machine.
AI Engines	Click on the drop-down menu and select checkbox(es) to activate the AI Engine(s).
Profile	Click on the Profile button  to select or create a new profile. The currently selected Profile name is also displayed on the right of the profile button. Refer to chapter 18.1.2 Profile for more details.
ROI	Determine the Region of Interest. Refer to chapter 18.1.1 Advanced for more details.
Preview	Click on the **Preview** button to see a snapshot of the camera, which can be retrieved when an RTSP is set.
Resolution	Display the image size of the camera.

Click **OK** to save the settings and add the camera in the Camera Management window.
Click **Cancel** to discard the settings and return to the Camera Management window.

Note that the user can also use https://sourceforge.net/projects/onvifdm/ to discover ONVIF-supported camera(s) to input the IP camera RTSP.

20.1.1 Plugin

Vaidio supports external camera(s) from third-party VMS or NVR platform. The external camera is considered another source type for Vaidio to conduct analytics.
Note that for External camera type, only AI Engines below are available: FR, LPR, Intrusion, OLB, and PPE

Digital Watchdog is the supported system in Vaidio 5.0.0. Below is the procedure to add a plugin for DW and

make the external camera work in Vaidio.

Plugin Installation

Unzip the "vaidio_analytics_plugin.rar" and copy the "vaidio_analytics_plugin" folder to the dedicated folder in the VMS Server.

Make sure that you have Digital Watchdog already integrated and connected before Unzip.

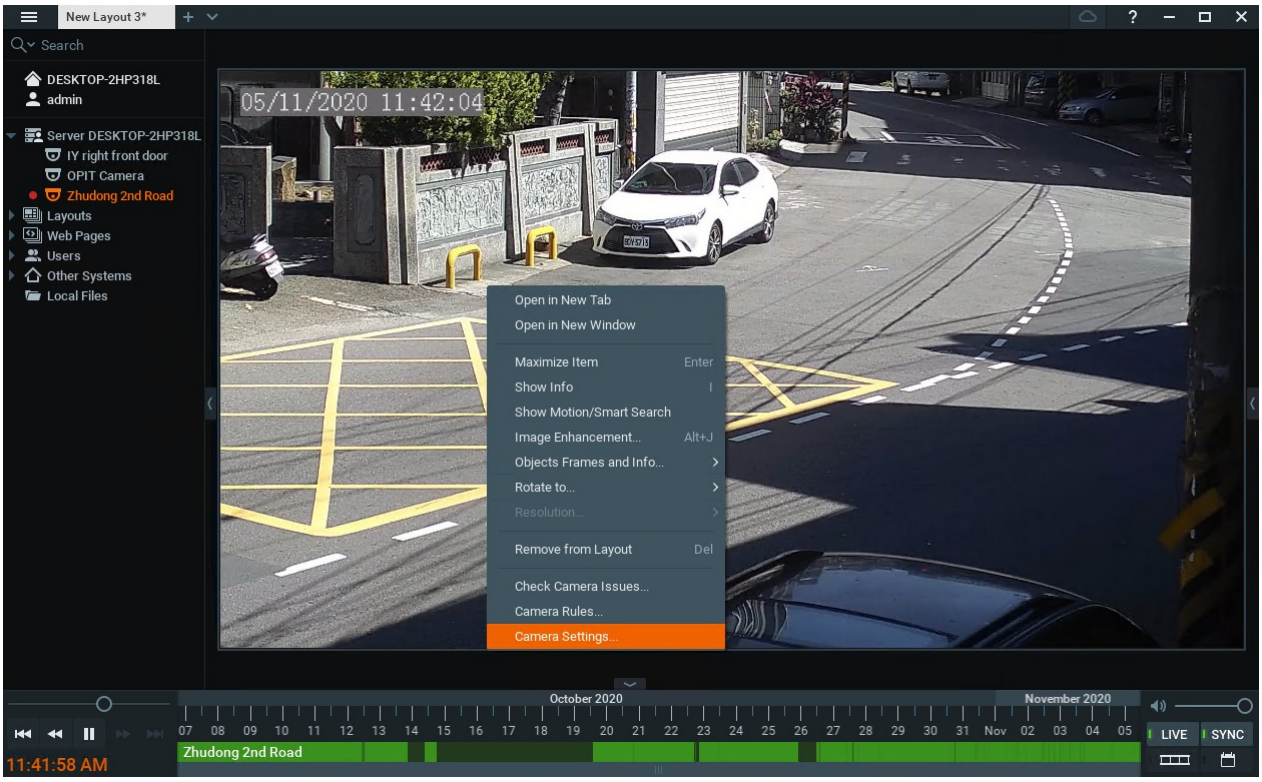
Windows:

C:\Program Files\<vms-installation-dir>\MediaServer\plugins\

ATTENTION: After copying a plugin library, the Server has to be restarted.

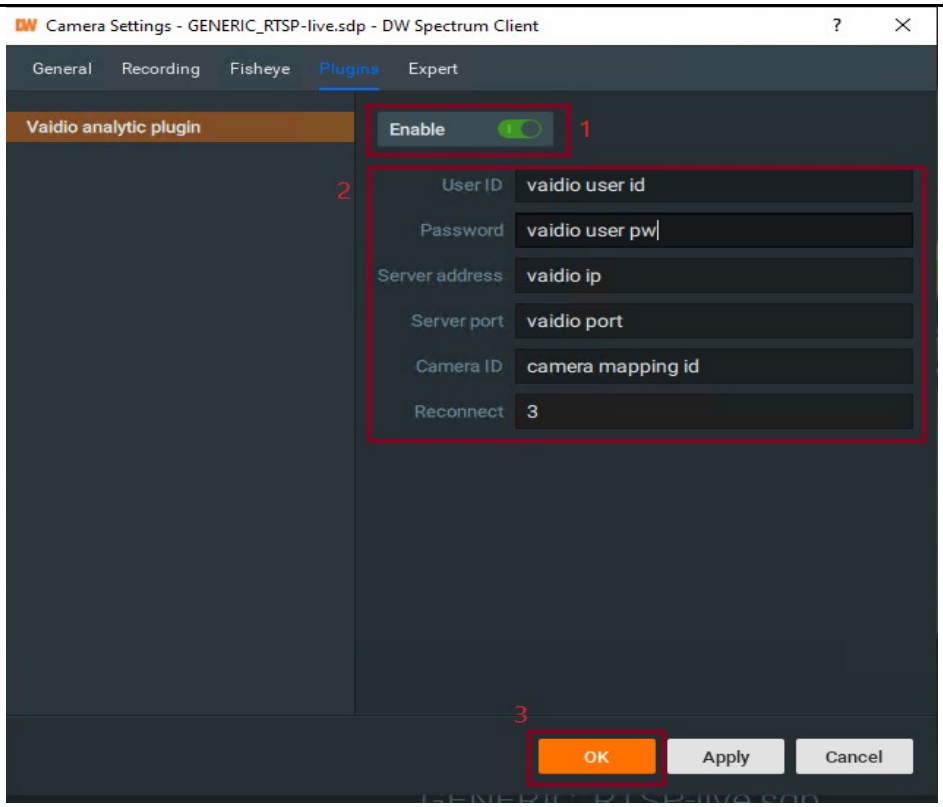
Enable plugin

1. Right-click the camera and choose the “Camera Setting” tab.

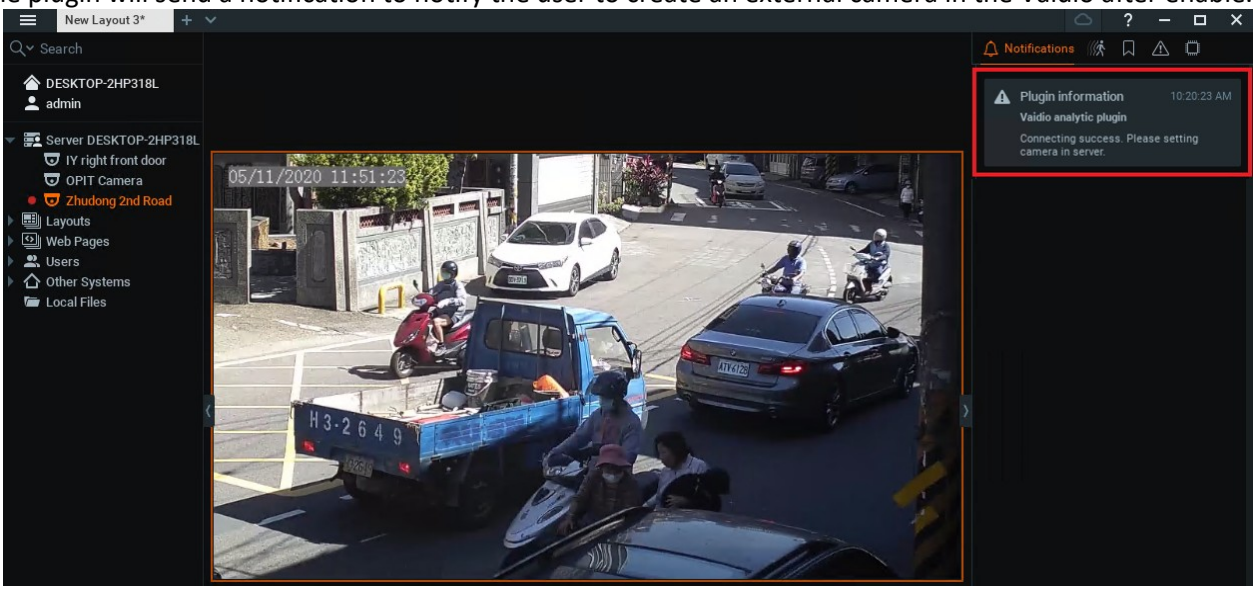


2. Go to the “Plugins” page and chose the ”Vaidio analytics plugin” to configure the Vaidio server to be connected.

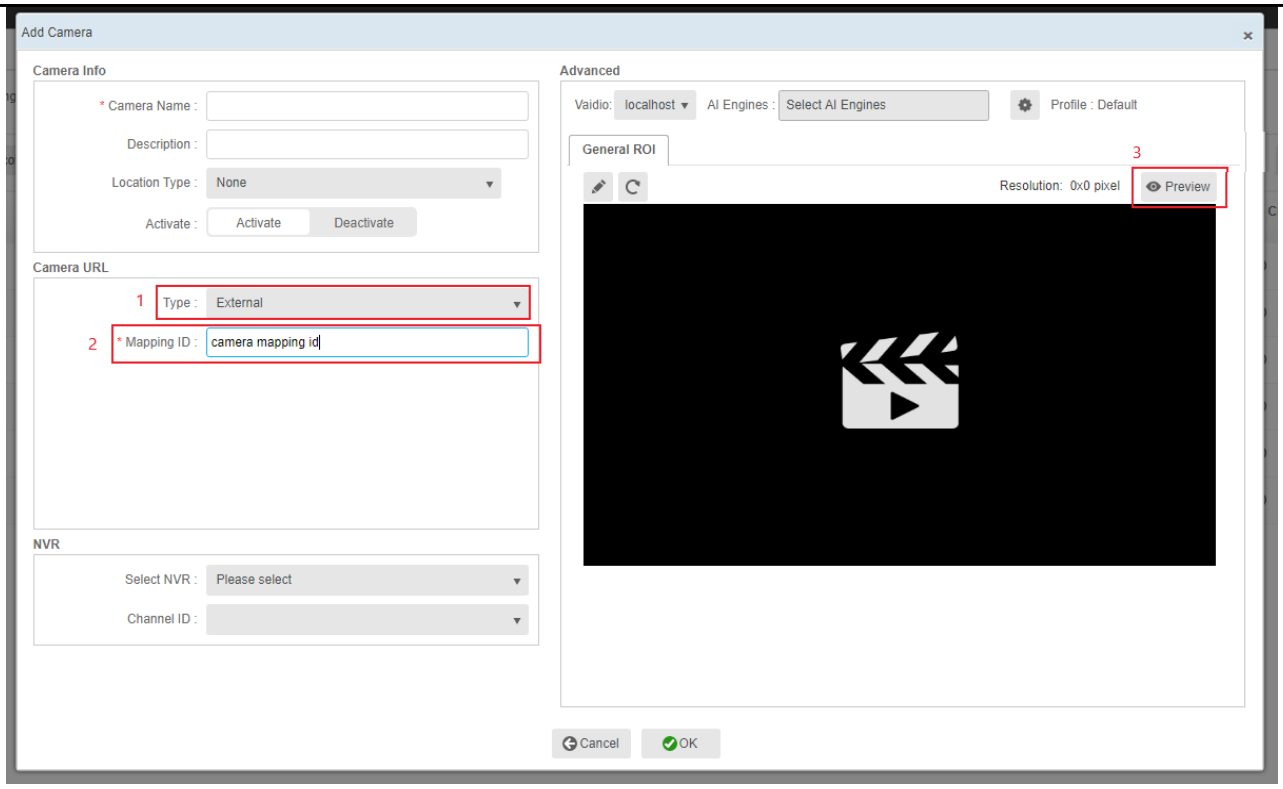
- Configuration description:
  - User ID: Vaidio user account.
  - Password: Vaidio user password.
  - Server address: Vaidio server IP.
  - Server port: Vaidio server port number.
  - Camera ID: The camera ID property sets the mapping ID to map an external camera on Vaidio.
  - Reconnect: The reconnect property sets the number of times to try to reconnect to a server after a connection stops.



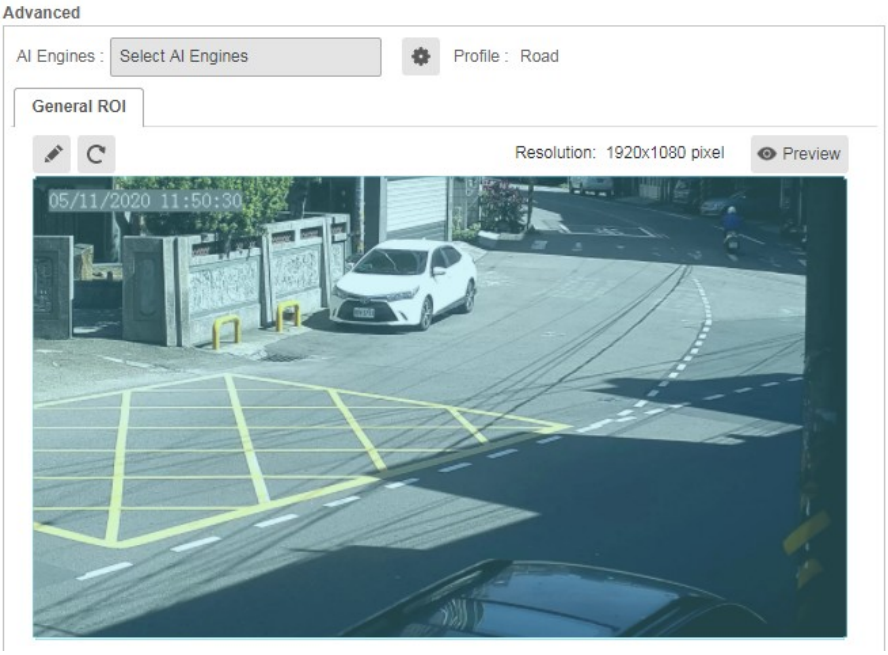
3. The plugin will send a notification to notify the user to create an external camera in the Vaidio after enable.



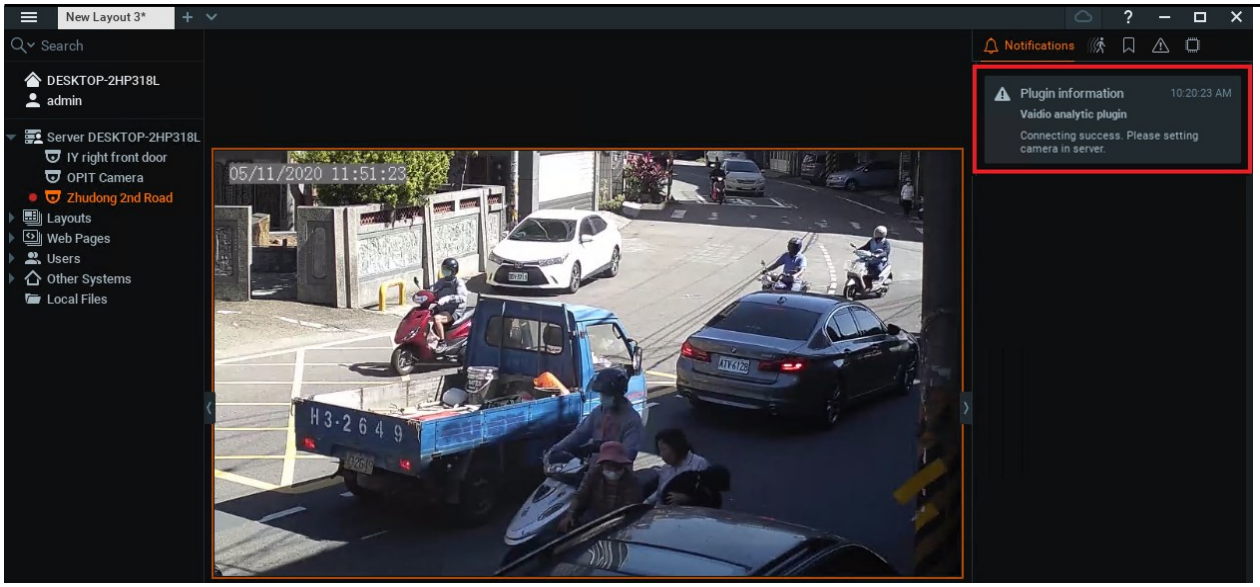
4. Create an external camera in the Vaidio, set the camera type as “External” and enter the mapping id set in the plugin before then press the “Preview” button to test the connection between plugin and camera.



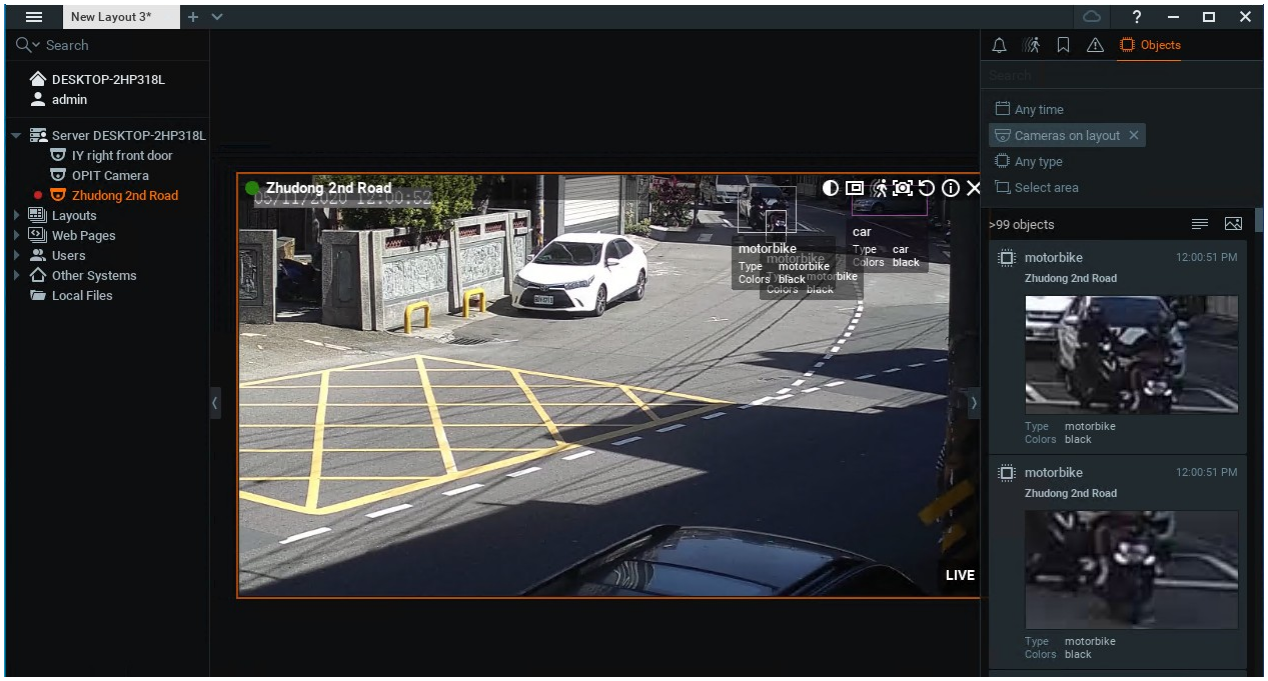
5. If connected successfully, the camera snapshot will show on the UI.



6. If the external camera is successfully created, the plugin will show a notification to notify the user that the plugin is working.

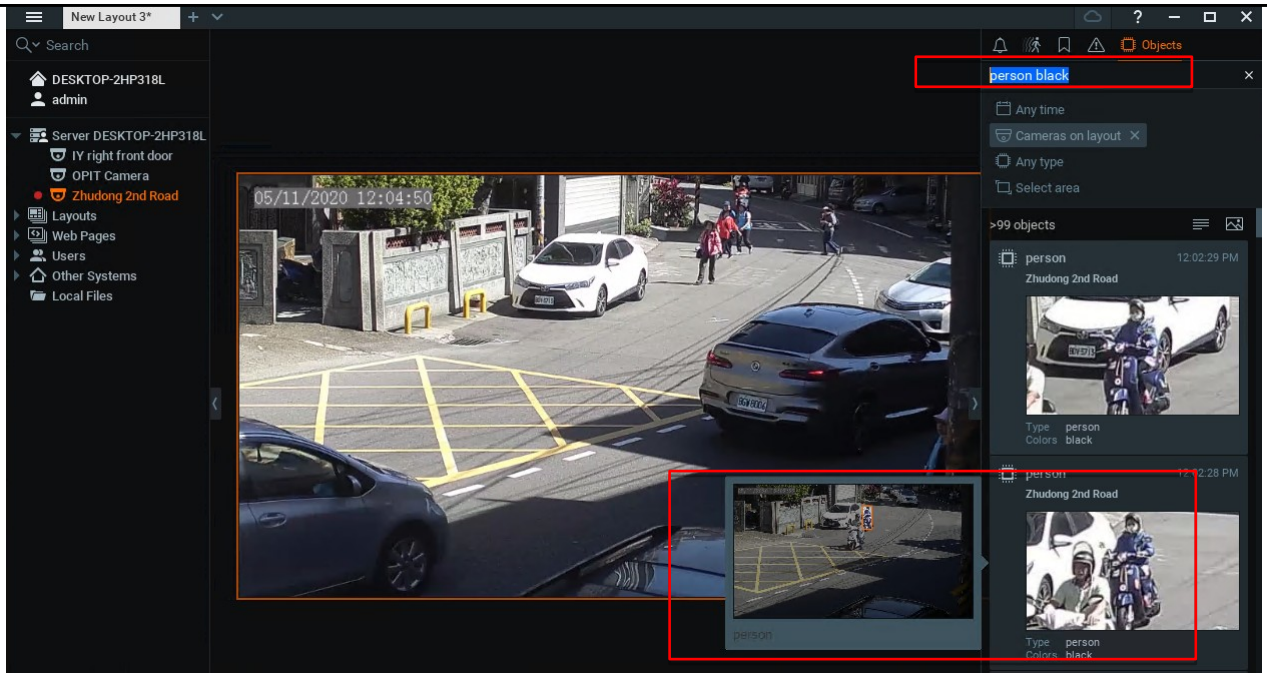


7. Select the “Object” tab on the upper right corner, the detected object (bounding box and object descriptions) will show in the live view window.



8. If the recording function is enabled, you can input the object which wants to search to the search bar then the result will show in the right panel.

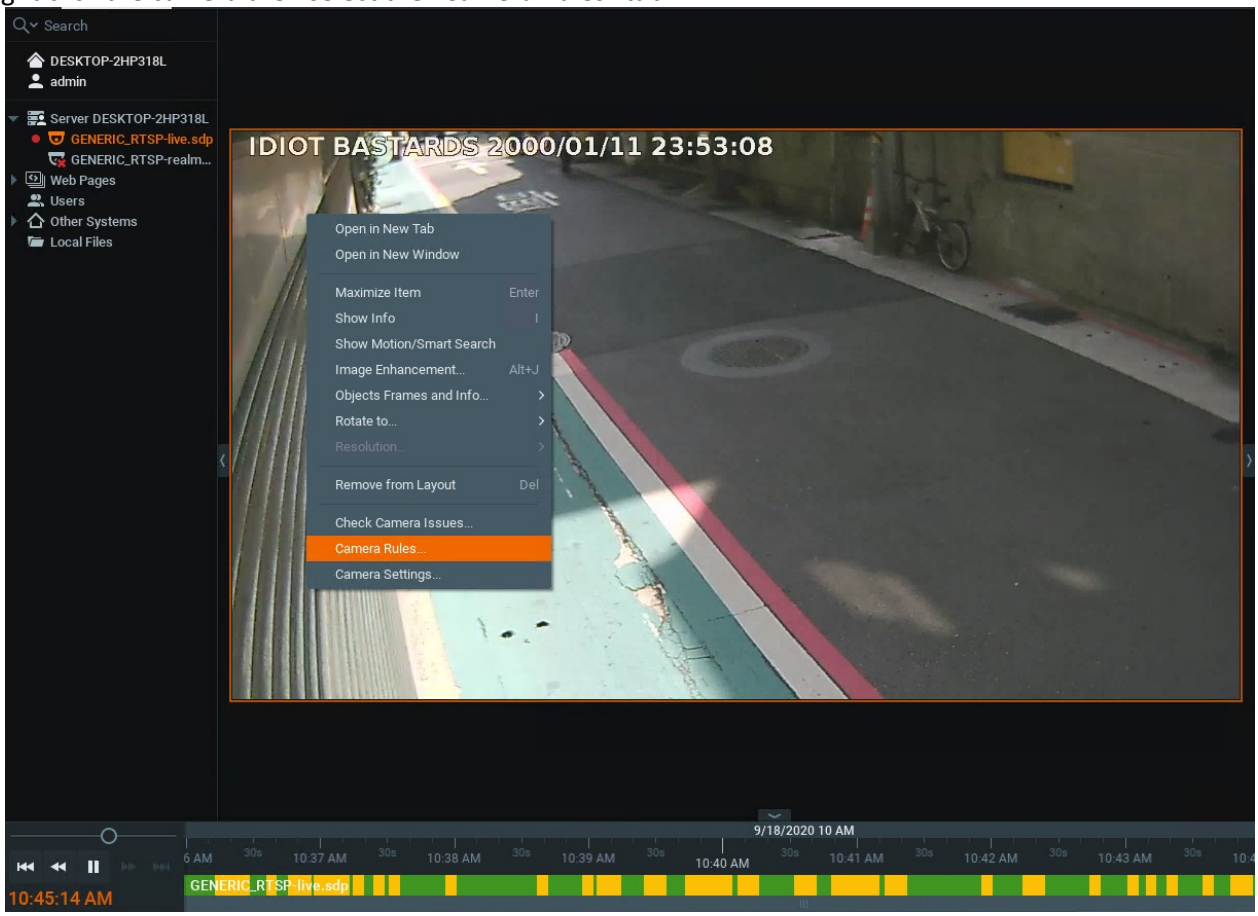
- Support properties:
    - Color, Make, Model, License plate (if engine support), Age (if engine support), Gender (if engine support). Search object type with properties or filter the object want to detect.



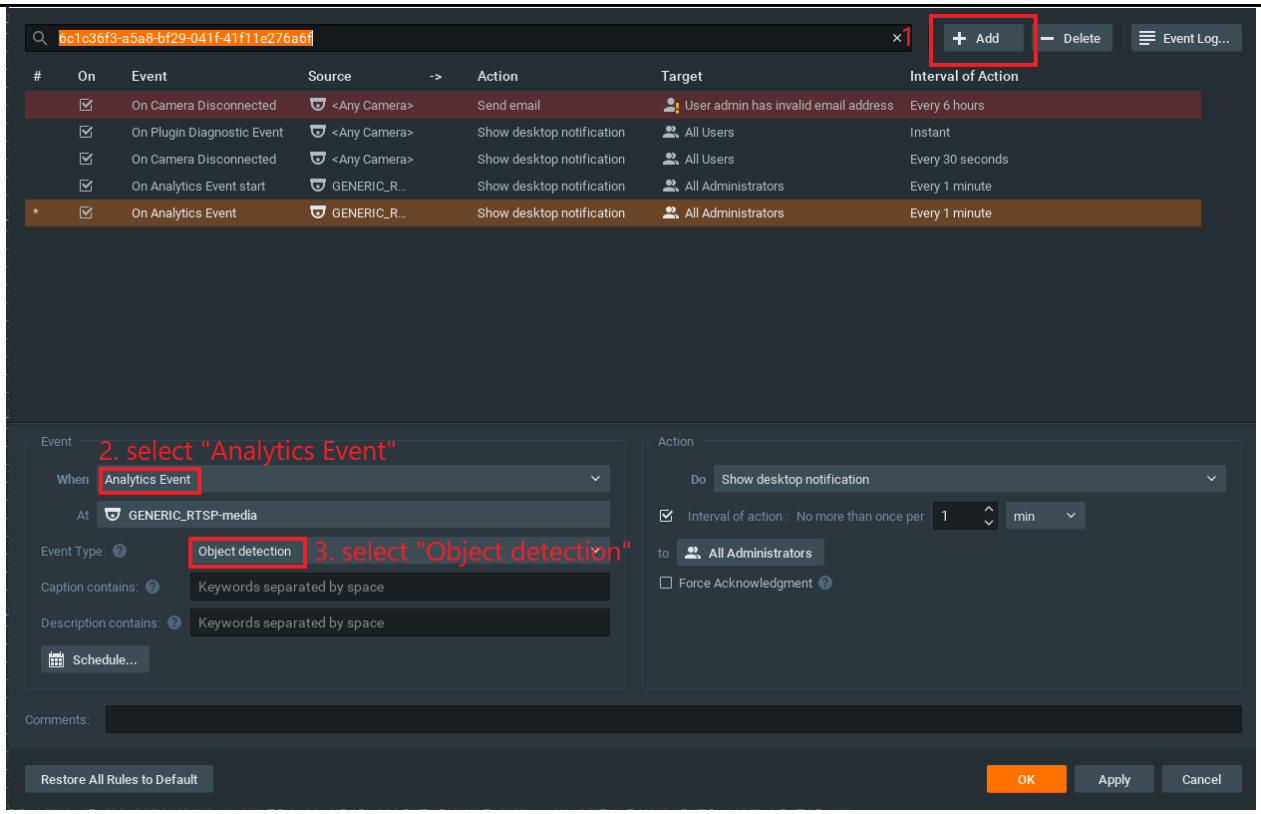
Event rule

User can create the rule for the specified object, the plugin will send a notification when the object has been detected.

1. Right click the camera then select the “Camera Rules” tab.

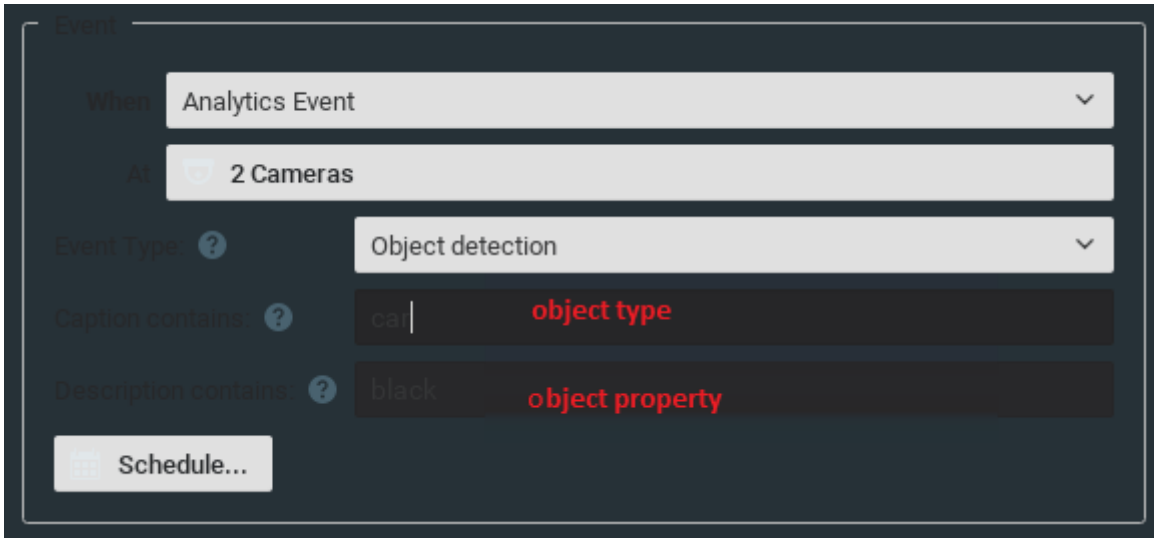


2. Click the “Add” button to create a new event rule, then select “Analytics Event” on the drop-down menu and set event type as “Object detection”.

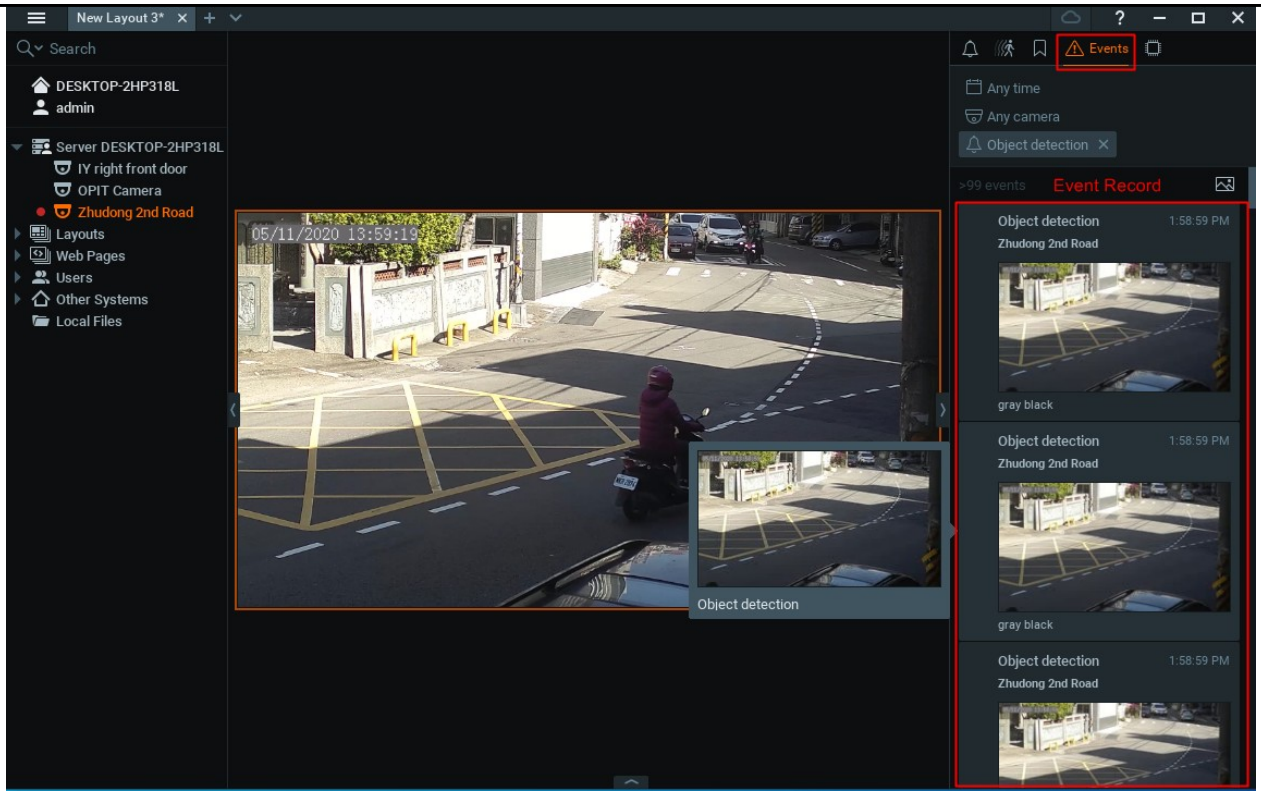


3. Setting the event rule condition.

- Caption contains: Object type.
- Description contains: Object's properties.

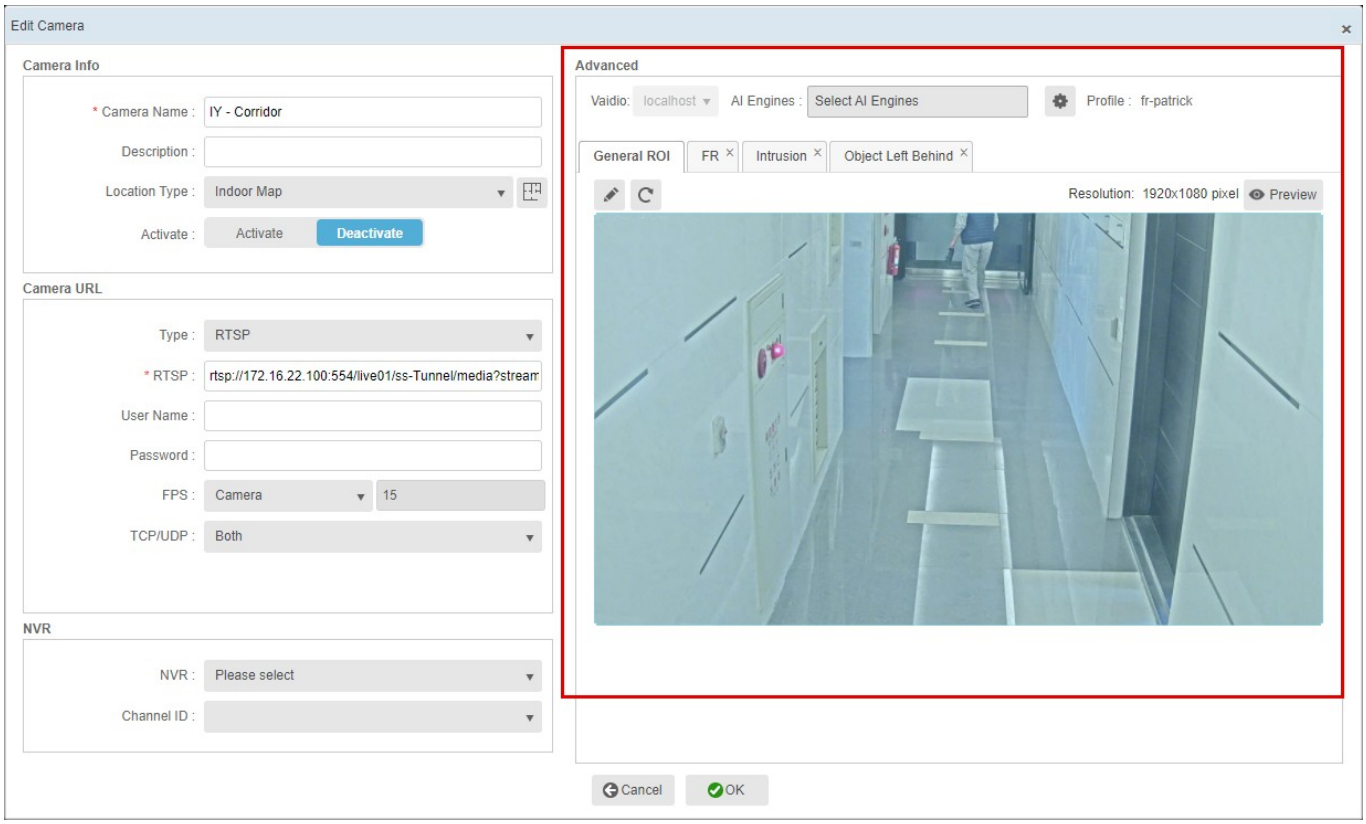


4. If the event occurs the event notification will show in the event tab.



20.1.2 Advanced

On the right side of the camera window, under the **Advanced** section, the user can see a snapshot of the activated camera. The view allows the user to configure the area(s) of interest in the camera based on the selected AI Engine(s).



Camera Advanced Panel

By default, the General ROI is available for editing.

In the General ROI tab, the user can draw an ROI in various shapes to define the detection area. By default, the whole field of view is selected with a blue outline and a transparent base.

Draw tools:

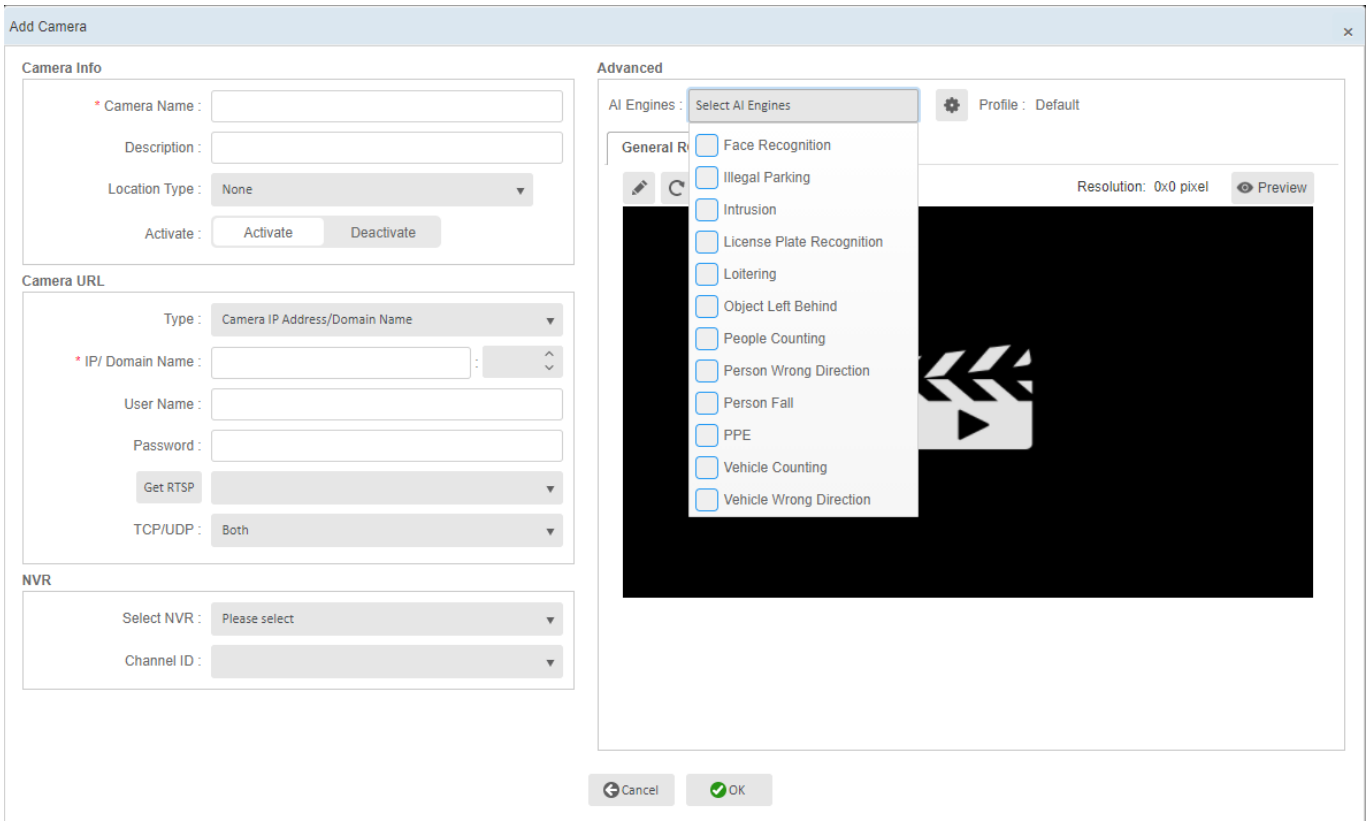
 Click to draw a new ROI (this button will change when the user starts to draw).

 Click to refresh and return to the default view (this button is locked during drawing and only clickable when an ROI is complete).

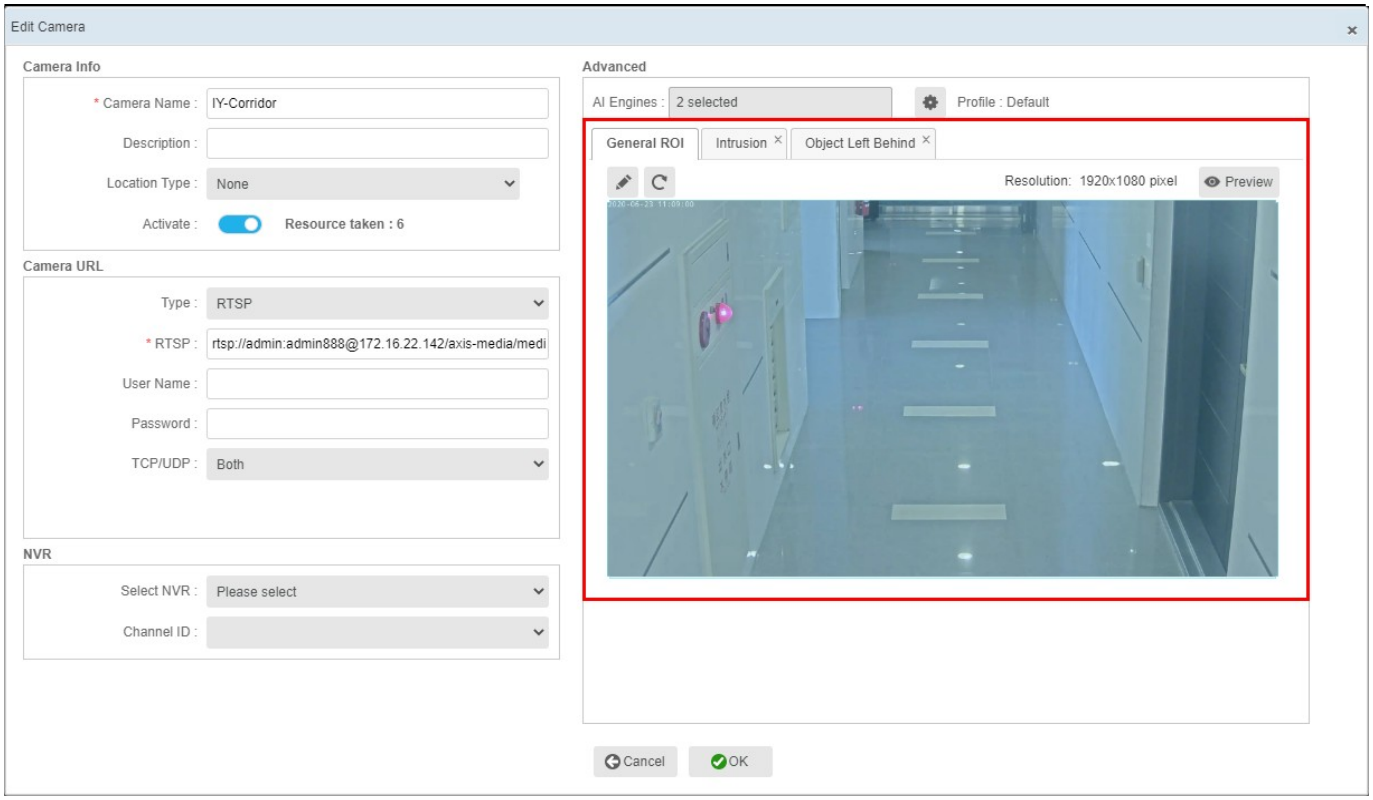
 Click to cancel drawing (this button only appears when the user starts drawing).

 Click to confirm that the user has finished drawing (this button only appears when the user starts drawing and will disappear after the user has clicked on it).

Click on the AI Engines menu bar to see the drop-down menu of all AI Engines available and select the checkbox(es) to activate them.
Note that the AI Engines are categorized to indicate shared capacity. For example, **Vehicle Counting, Vehicle Wrong Direction,** and **Illegal Parking** are all placed in the same section because the same amount of capacity is taken regardless of which engine is selected among those three types.



Once the AI Engines have been selected, a new tab will appear for the selected AI Engine(s) to be configured in the snapshot view. AI Engines must be checked for the camera to conduct analytic detection. Most AI Engines require additional drawing configuration (ROI, line) in the preview section, except for **Face Recognition** and **PPE**.

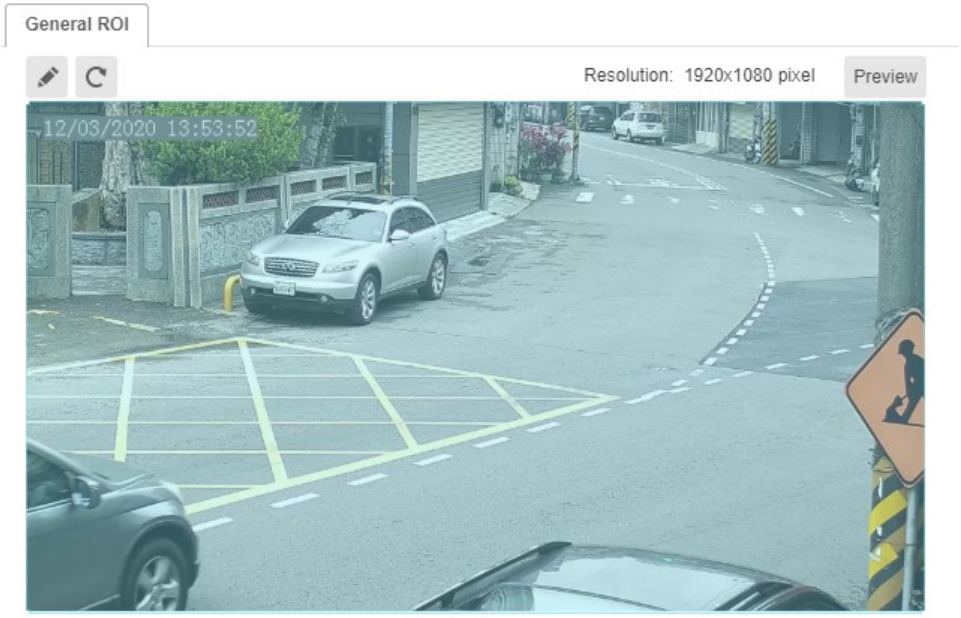


AI Engines Drawing Area

20.1.2.1 General ROI

The camera's General ROI (region of interest) allows the user to define the area for object detection in the camera's field of view.

Use the preview image to define the ROI. General ROI is the base of camera configuration and will affect the areas of interest of all other AI Engines. Once General ROI is defined, all other AI Engines can only detect objects within the defined area.

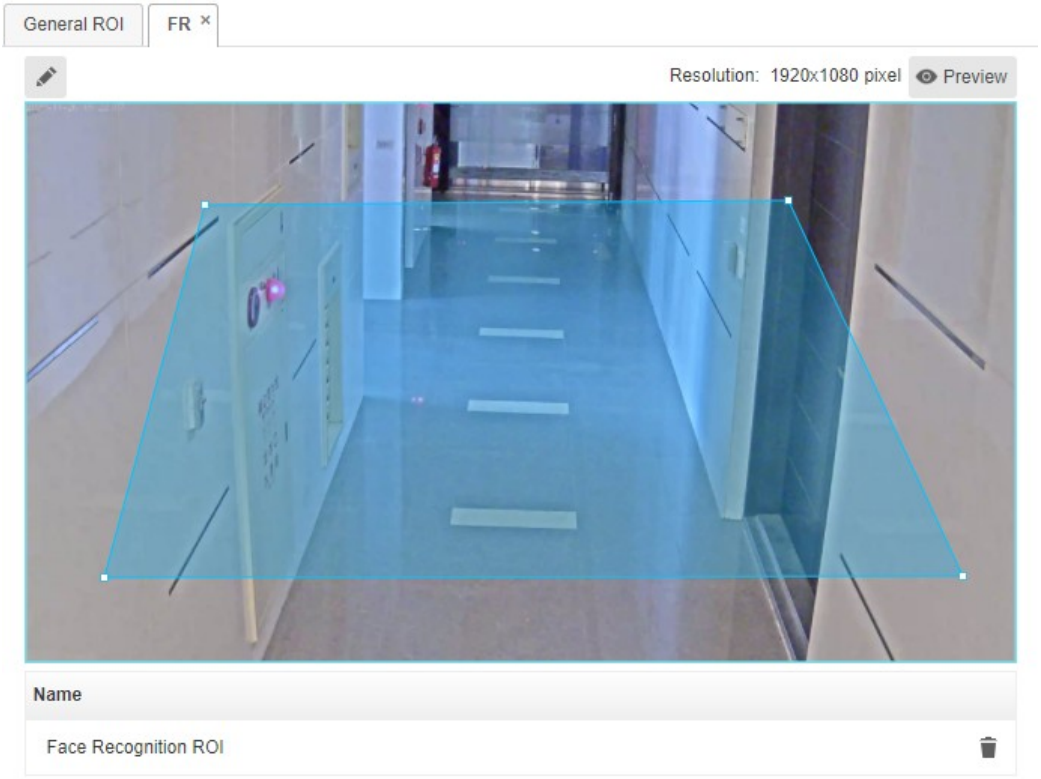


General ROI

20.1.2.1 Face Recognition

Click Face Recognition in the AI Engines checkbox to see the FR tab in the preview window.

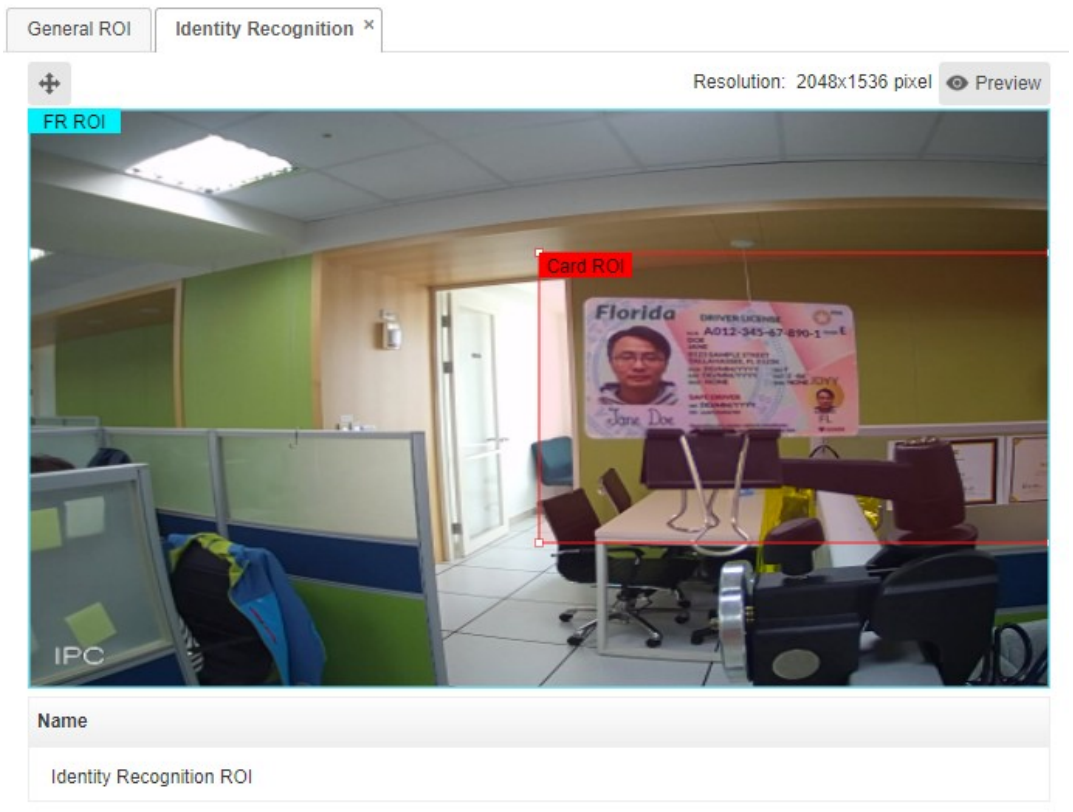
Use the drawing tool to define an FR ROI and make sure that the defined LPR area is within the General ROI.



20.1.2.1 Identity Recognition

Click Identity Recognition in the AI Engines checkbox to see the Identity Recognition tab in the preview window. Click the move icon to reposition Card ROI and define the position for card display. Note that the Card ROI is to detect the ID number on the driver license.

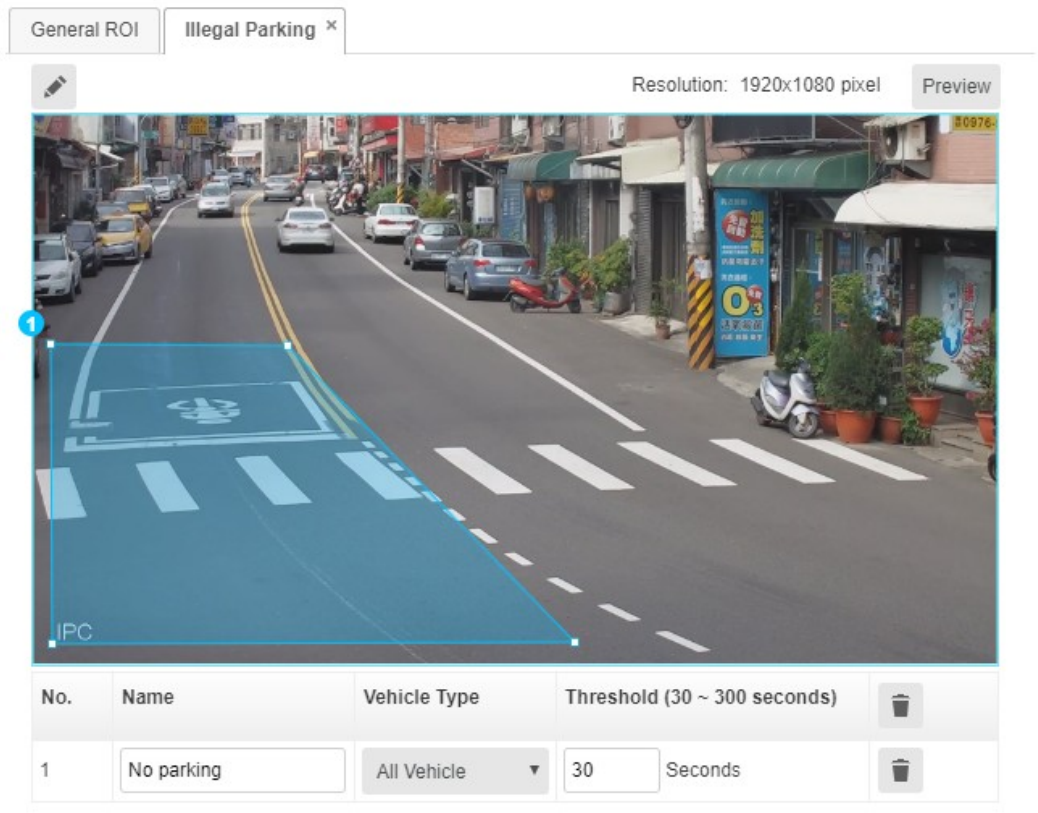
The FR ROI is for face detection of the cardholder. The FR ROI cannot be adjusted in this tab and is adjustable by the General ROI.



20.1.2.2 Illegal Parking

Click Illegal Parking in the AI Engines checkbox to see the Illegal Parking tab in the preview window.
Use the drawing tool to define an Illegal Parking ROI and make sure that the defined Illegal Parking area is within the General ROI.
The camera can draw up to 8 Illegal Parking ROIs with the corresponding names and numbers.

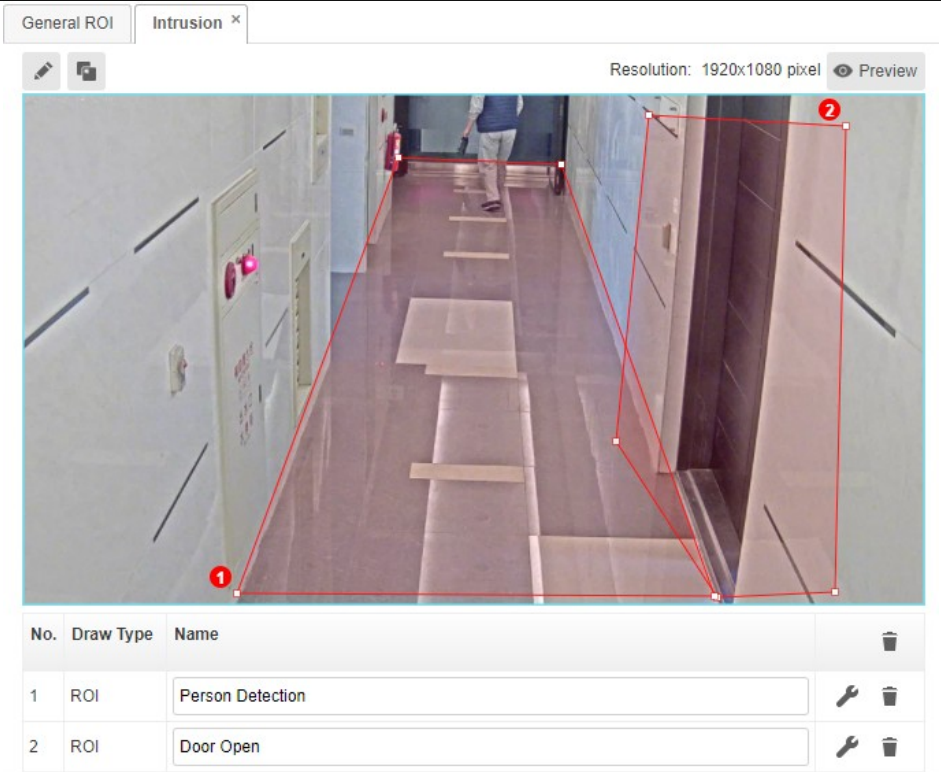
Illegal Parking allows the user to draw an area to detect vehicles that remain in that area for longer than the defined time range.
Once an ROI is drawn, the user can adjust the Illegal Parking setting by selecting the vehicle type and time threshold to trigger the alert.



Illegal Parking

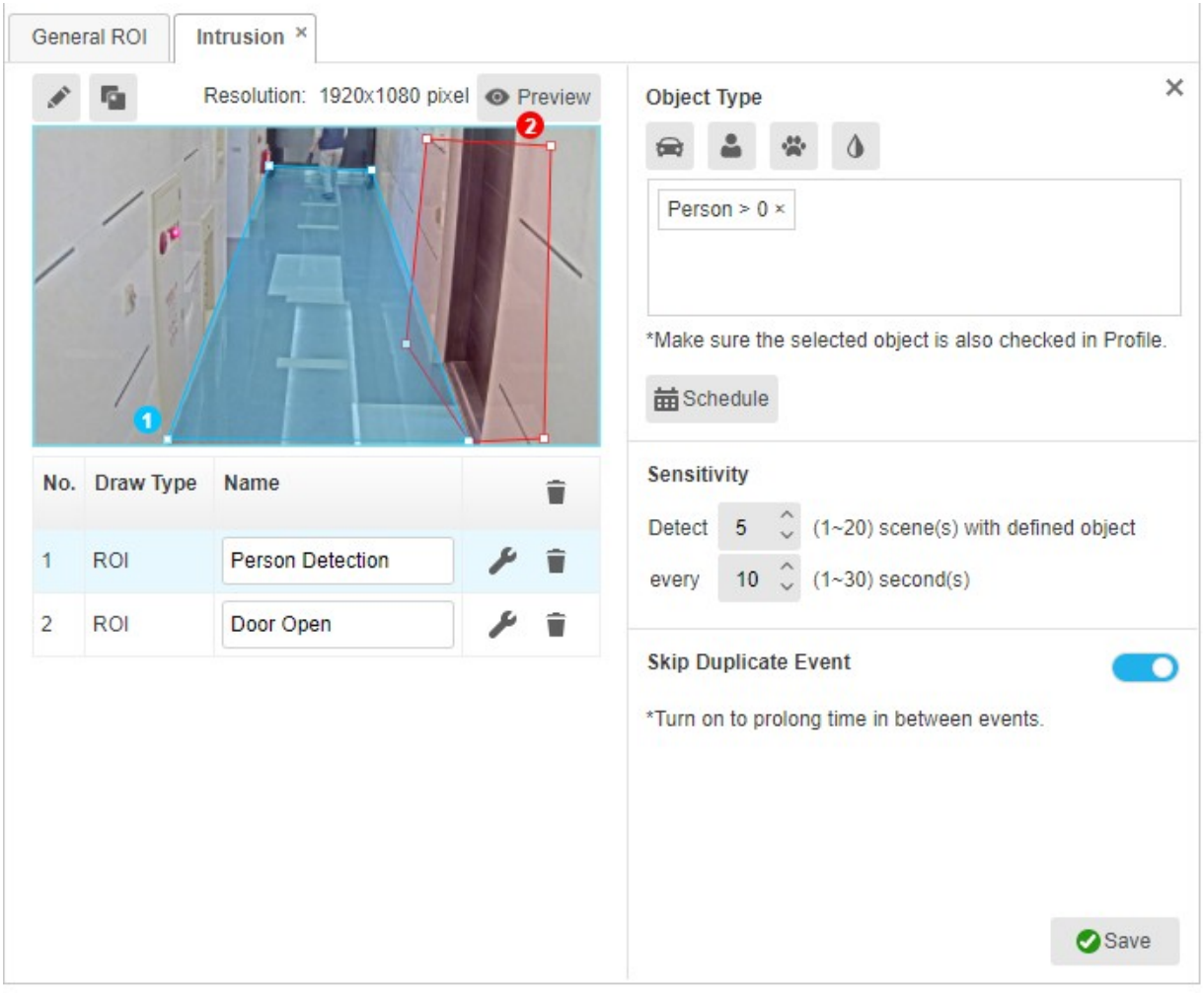
20.1.2.3 Intrusion

Click Intrusion in the AI Engines checkbox to see the Intrusion tab in the preview window.
Use the drawing tool to define an Intrusion ROI and make sure that the Intrusion area is within the General ROI.
For each camera, the user can draw up to 4 intrusion ROIs with the corresponding naming convention and number indication.



Intrusion ROI

Click the wrench icon to open a new section for Intrusion configuration; select the object type and schedule of interest for intrusion detection.



Intrusion ROI setting

Sensitivity
By default, sensitivity is detect 5 scenes with target object every 10 seconds.
Intrusion is defined with 2 FPS, meaning an intrusion is triggered when **5** target scenes is detected within **20** scenes.
The user can set a smaller scene number to make the system more sensitive for object detection. While shorter timeframe would lower the sensitivity.

Skip Duplicate Event
To avoid getting multiple alert events, enable Skip Duplicate Event to prolong the time between events.

Skip Duplication Event Off
When the Sensitivity condition is reached, intrusion would trigger continuously within same event.

Skip Duplication Event On
When the Sensitivity is reached, event will trigger once and not again unless another event occur.

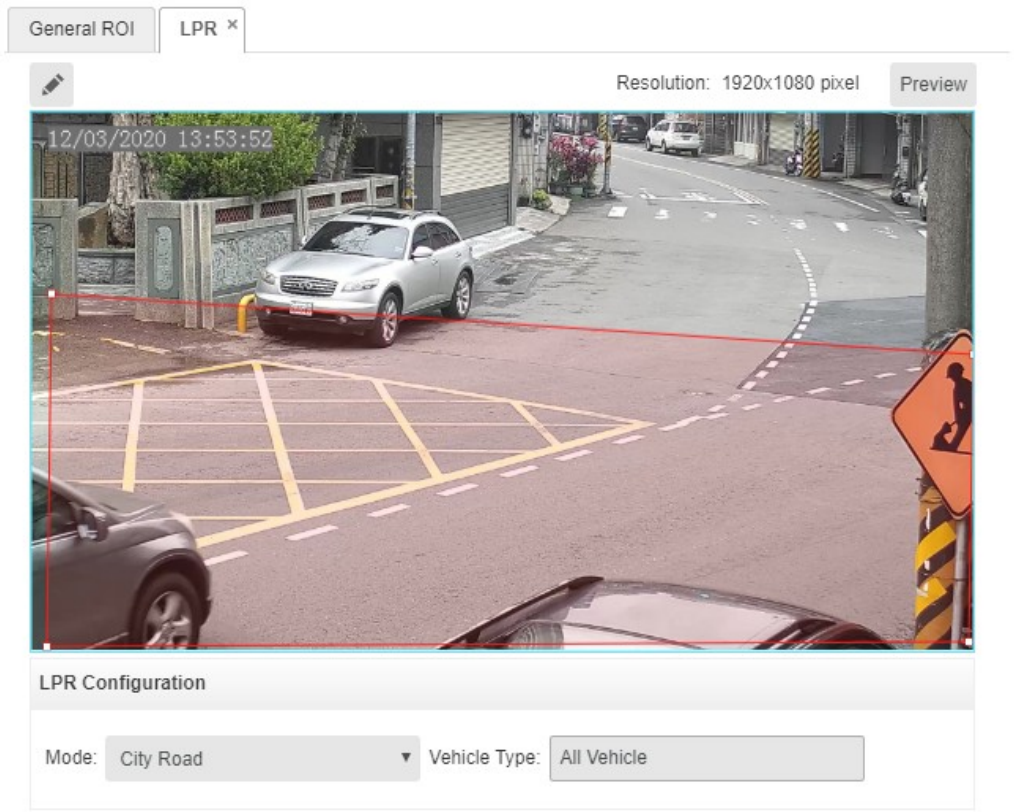
Exclude ROI

 Click the Exclude ROI button to draw the unwanted area inside the Intrusion ROI. Note that the Exclude ROI (in gray) should always be drawn inside the Intrusion ROI to serve its purpose.

Exclude ROI

20.1.2.4 License Plate Recognition

Click License Plate Recognition in the AI Engines checkbox to see the LPR tab in the preview window.
Use the drawing tool to define an LPR ROI and make sure that the defined LPR area is within the General ROI.
Once an LPR area is confirmed, the user can select the Road Type and Vehicle Type from the menu bar.

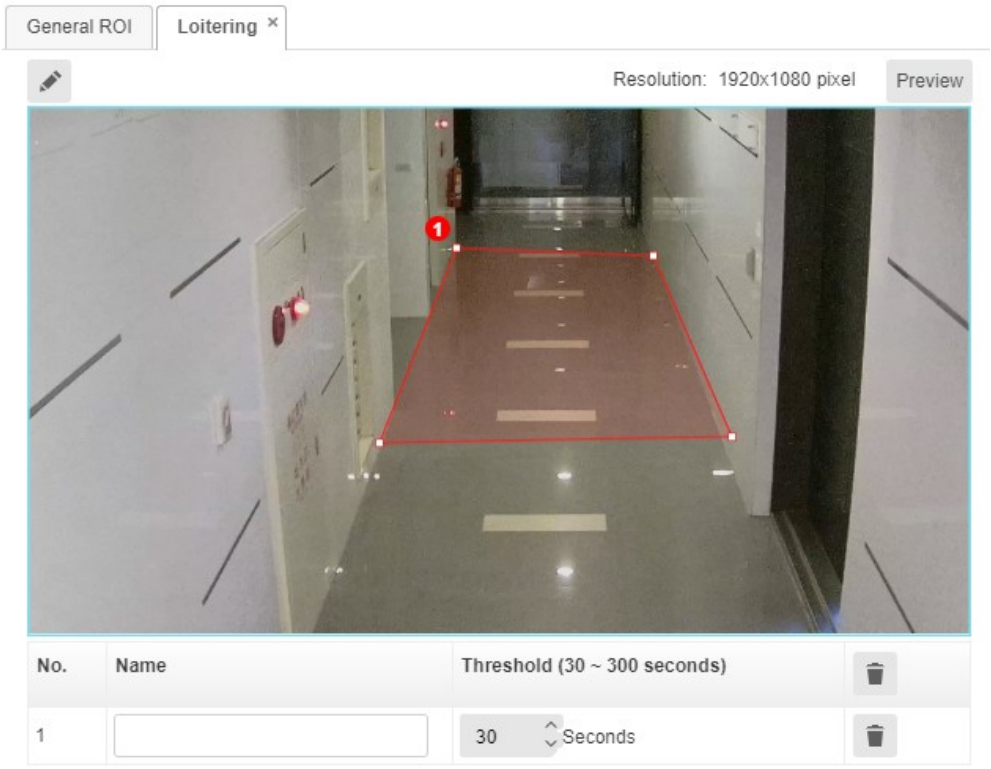


LPR ROI

20.1.2.5 Loitering

Click Loitering in the AI Engines checkbox to see the Loitering tab in the preview window.
Use the drawing tool to define the Loitering ROI and make sure that the defined Loitering area is within the General ROI.
Each Camera can support up to 8 Loitering ROIs with the corresponding naming convention and number indication.

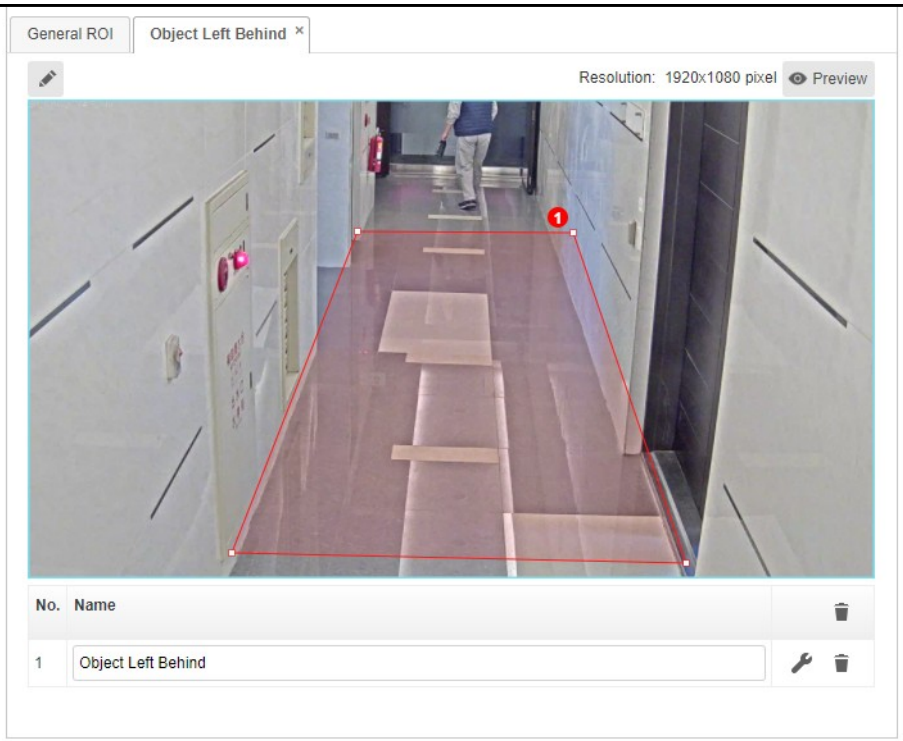
Loitering allows the user to draw an area for vehicle detection with a defined time range.
Once the ROI is drawn, the user can adjust the Loitering setting by setting the time threshold to trigger the detection.



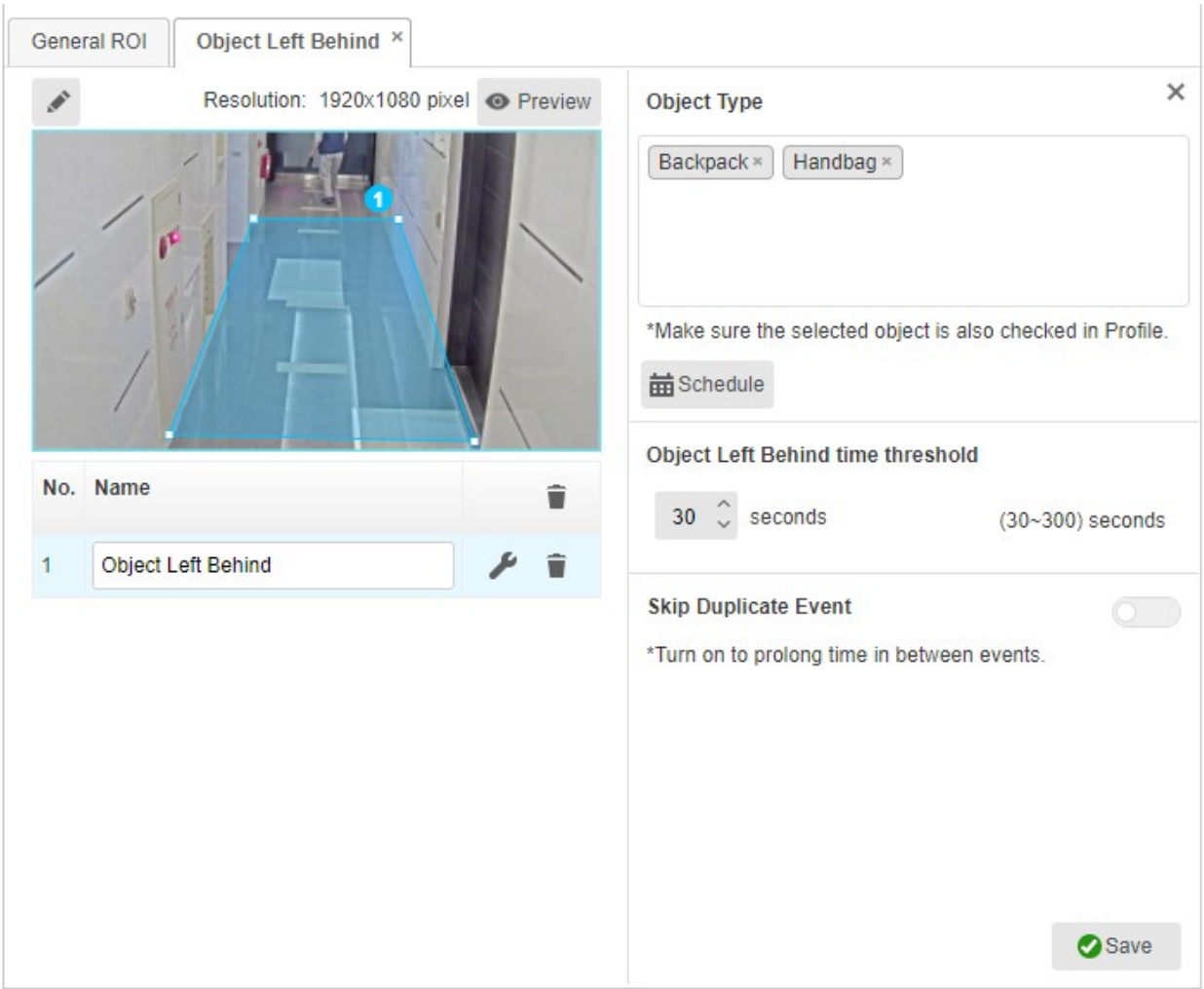
Loitering

20.1.2.6 Object Left Behind

Click Object Left Behind in the AI Engines checkbox to see a new tab in the preview window.
Use the drawing tool to define the Object Left Behind ROI and make sure that the defined ROI is within the General ROI.
For each camera, the user can draw up to 8 Object Left Behind ROIs with the corresponding naming convention and number indication.



Click to open a new window for the Object Left Behind configuration.



Object Left Behind Configuration

Object Type

Select the object type from the typeahead list; the user can input a maximum of 10 object types. Selected objects

are triggered under the OR rule, i.e., any object detected from the list of selected objects will trigger an alert.

Object Left Behind time threshold
Configure the time that it takes to trigger Object Left Behind alert, e.g., a 30-second time threshold indicates that the condition (the object is in the scene without a person) must be maintained for at least 30 seconds to trigger an alert event.

Skip Duplicate Event
To avoid getting multiple alert events, enable Skip Duplicate Event to prolong the time between events.

20.1.2.7 People Counting

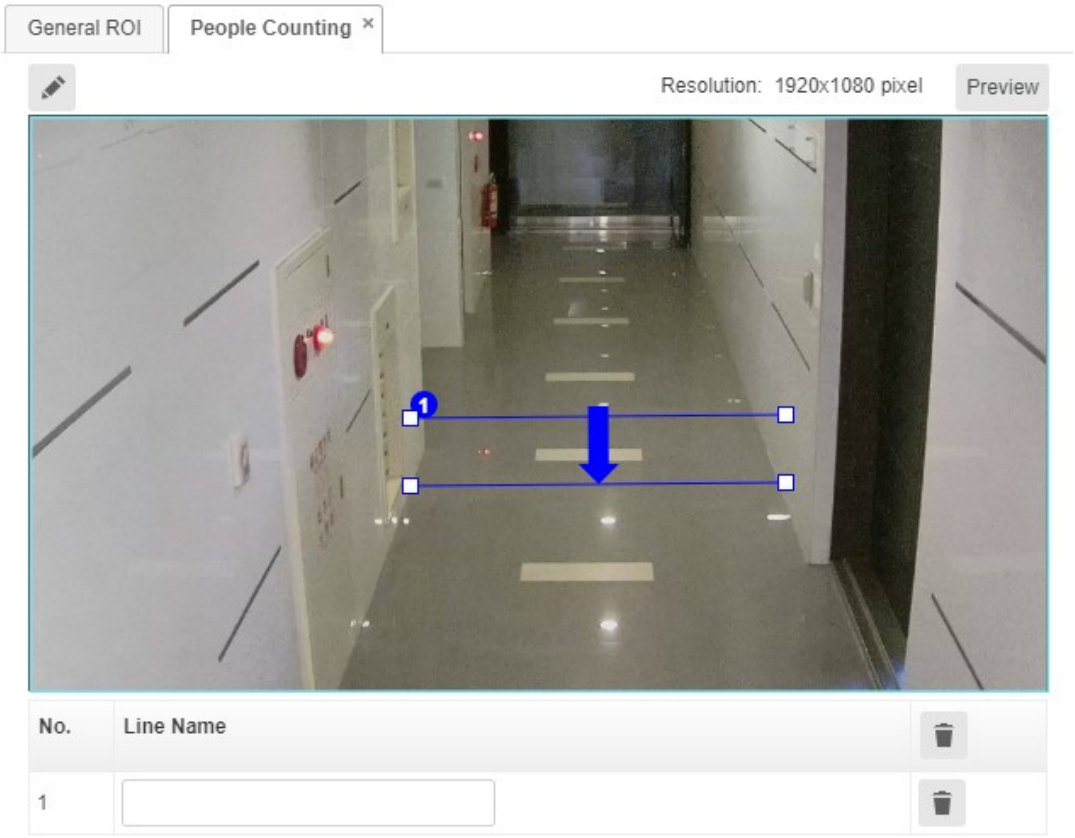
Click People Counting in the AI Engines checkbox to see the People Counting tab in the preview window.
Use the drawing tool to define the People Counting Lines and make sure that the lines are drawn within the General ROI.

People Counting lines allow the user to define the counting area and corresponding inward/outward directions. The user can draw up to 8 sets of counting lines for People Counting using the drawing tool.

 Click to create a new set of parallel lines in the snapshot view.
Once a line set is created, the user can switch the pointing direction by clicking on the arrow and alter the line position by adjusting the line anchor points.

People Counting, the direction of the arrow is considered **In**, and the opposite direction is considered **Out**.

 Click when the drawing is complete and name the configured line set in the table below.



People Counting

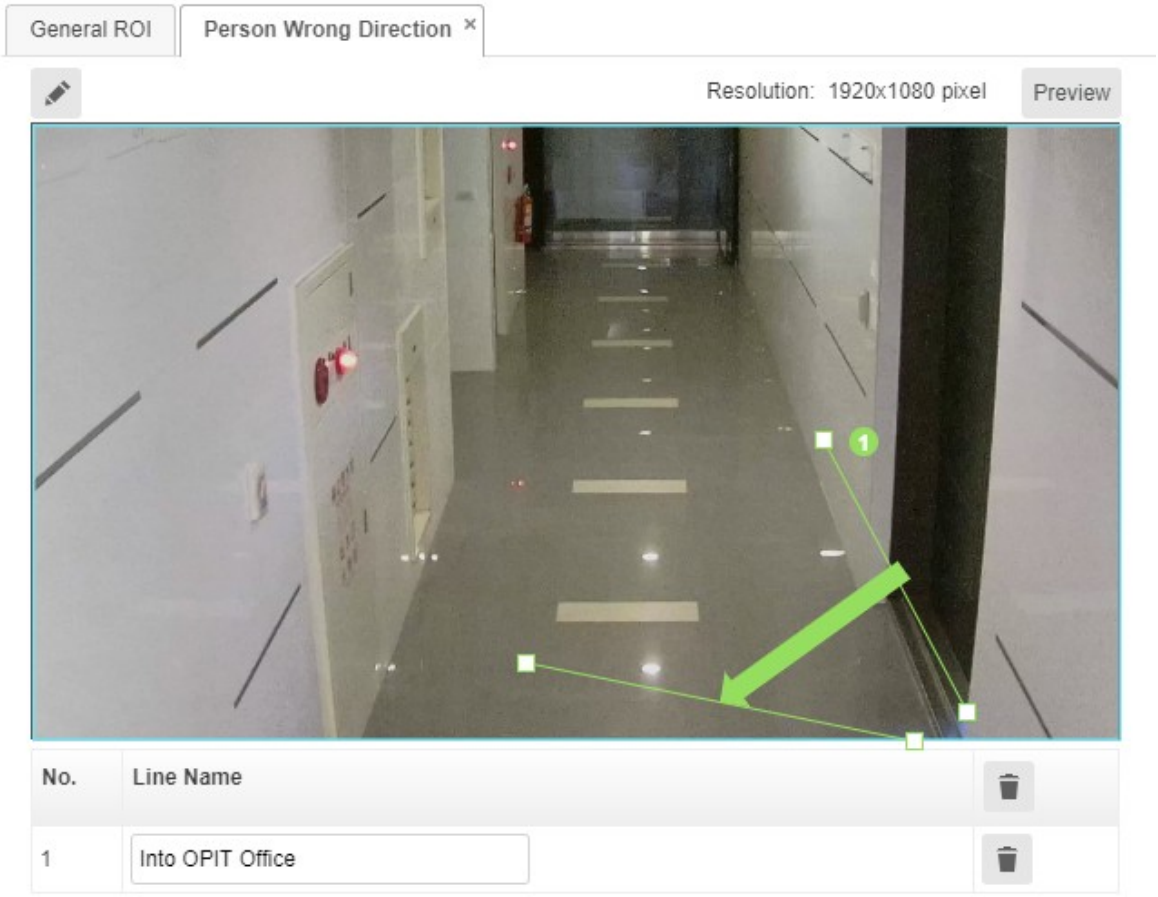
20.1.2.8 Person Wrong Direction

Click Person Wrong Direction in the AI Engines checkbox to see the Person Wrong Direction tab appear in the preview window. Use the drawing tool to define the Person Wrong Direction Lines and make sure that the lines are within the General ROI.

The Person Wrong Direction lines enable the user to define the detection area and its direction.
For each camera channel, the user can draw up to 8 pairs of lines for Person Wrong Direction using the drawing tools.

 Click to create a new set of parallel lines in the snapshot view.
Once a line set is created, the user can switch the pointing direction by clicking on the arrow and alter the line position by adjusting the line anchor points.
For Person Wrong Direction, the opposite direction of the arrow is considered the wrong direction.

 Click when the drawing is complete and name the configured line set in the table below.



Person Wrong Direction

20.1.2.9 Vehicle Counting

Click Vehicle Counting in the AI Engines checkbox to see the Vehicle Counting tab in the preview window.
Use the drawing tool to define Vehicle Counting lines and make sure that the lines are drawn within the General ROI.

The Vehicle Counting lines allow the user to define the counting area and the in/out directions of vehicles.
The user can draw up to 8 sets of counting lines for Vehicle Counting using the drawing tool.

 Click to create a new set of parallel lines in the snapshot view.
Once a line set is created, the user can switch the pointing direction by clicking on the arrow and alter the line

position by adjusting the line anchor points.
For Vehicle Counting, the direction of the arrow is considered **In**, and the opposite direction is considered **Out**.

Click when the drawing is complete and name the configured line set in the table below.

Vehicle Counting

20.1.2.10 Vehicle Wrong Direction

Click Vehicle Wrong Direction in the AI Engines checkbox to see the Vehicle Wrong Direction tab in the preview window. Use the drawing tool to define the Vehicle Wrong Direction lines and make sure that the lines are drawn within the General ROI.

The Vehicle Wrong Direction lines allow the user to define the area to detect the vehicles and their directions. The user can draw up to 8 sets of lines for Vehicle Wrong Direction using the drawing tool.

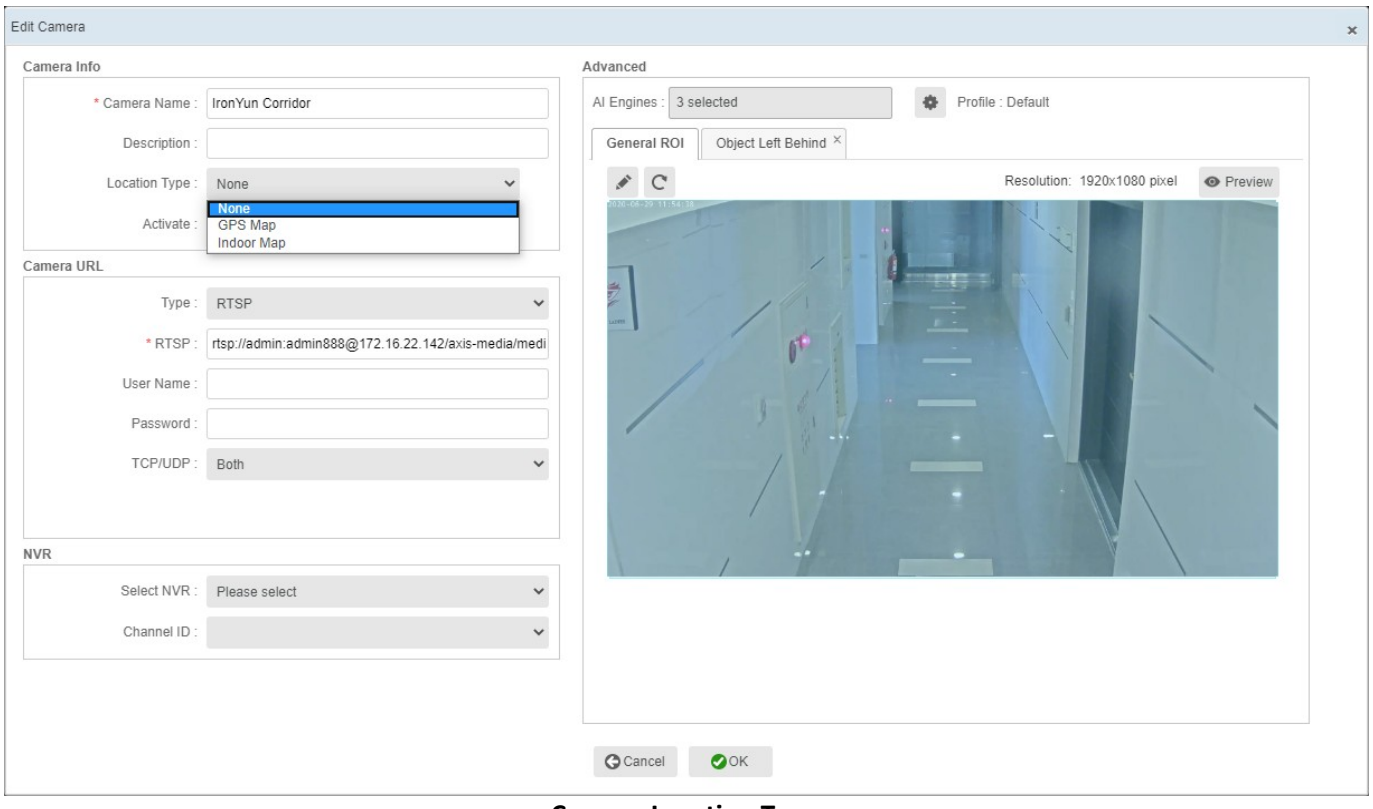
Click to create a new set of parallel lines in the snapshot view.
Once a line set is created, the user can switch the pointing direction by clicking on the arrow and alter the line position by adjusting the line anchor points.
For Vehicle Wrong Direction, the opposite direction of the arrow is considered the wrong direction.

Click when the drawing is complete and name the configured line set in the table below.

Vehicle Wrong Direction

20.1.3 Location Type

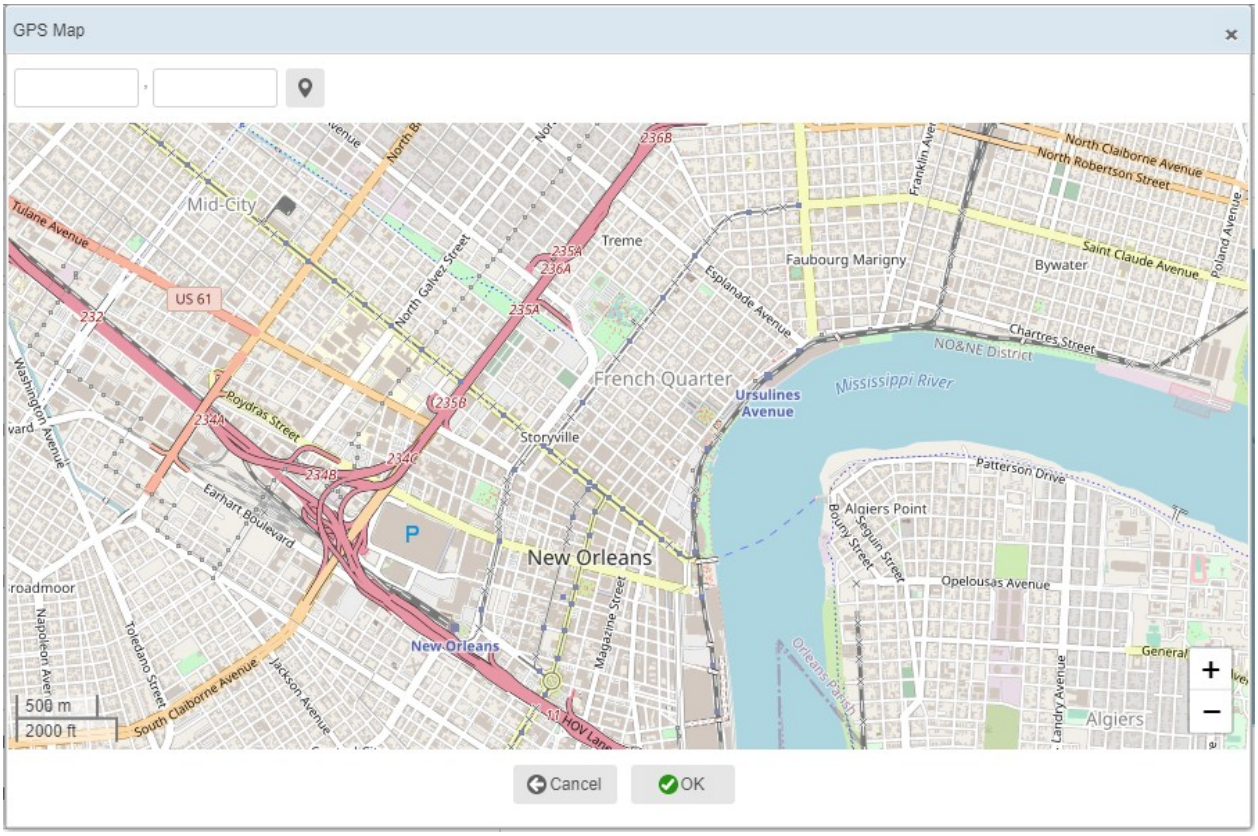
In the Camera window, click the Location Type dropdown menu to select the **GPS Map** or **Indoor Map**.



Camera Location Type

20.1.2.1 GPS Map

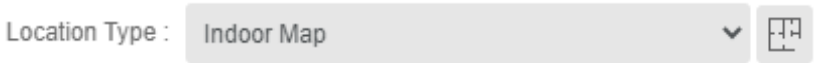
When GPS Map is selected in Location Type, a new button will appear on the right of the menu bar.
Click the GPS Map button to open a new window.



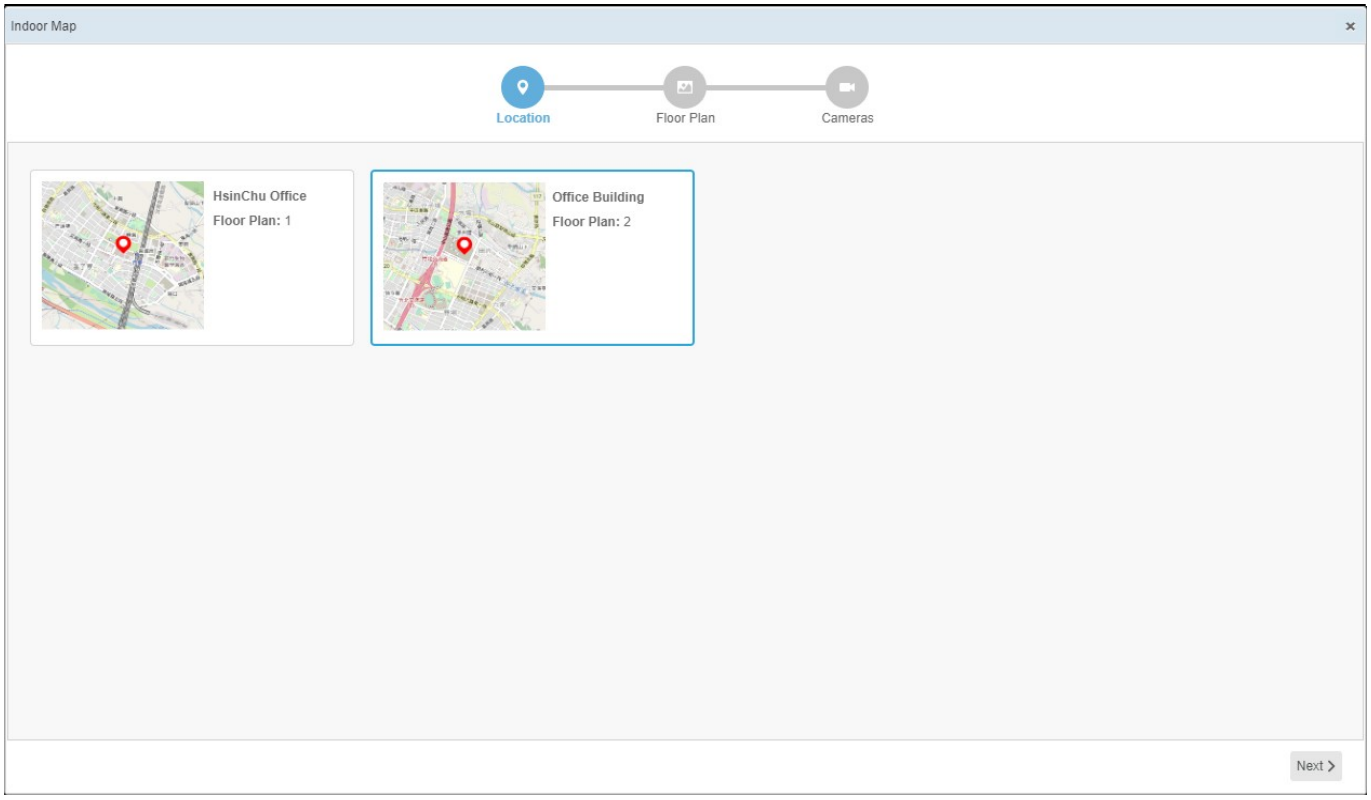
GPS Map Window

In the given text fields, input the Latitude and Longitude of the camera position. The given location can be later used for camera locating in Video Search/Alert/Live View.

20.1.2.2 Indoor Map



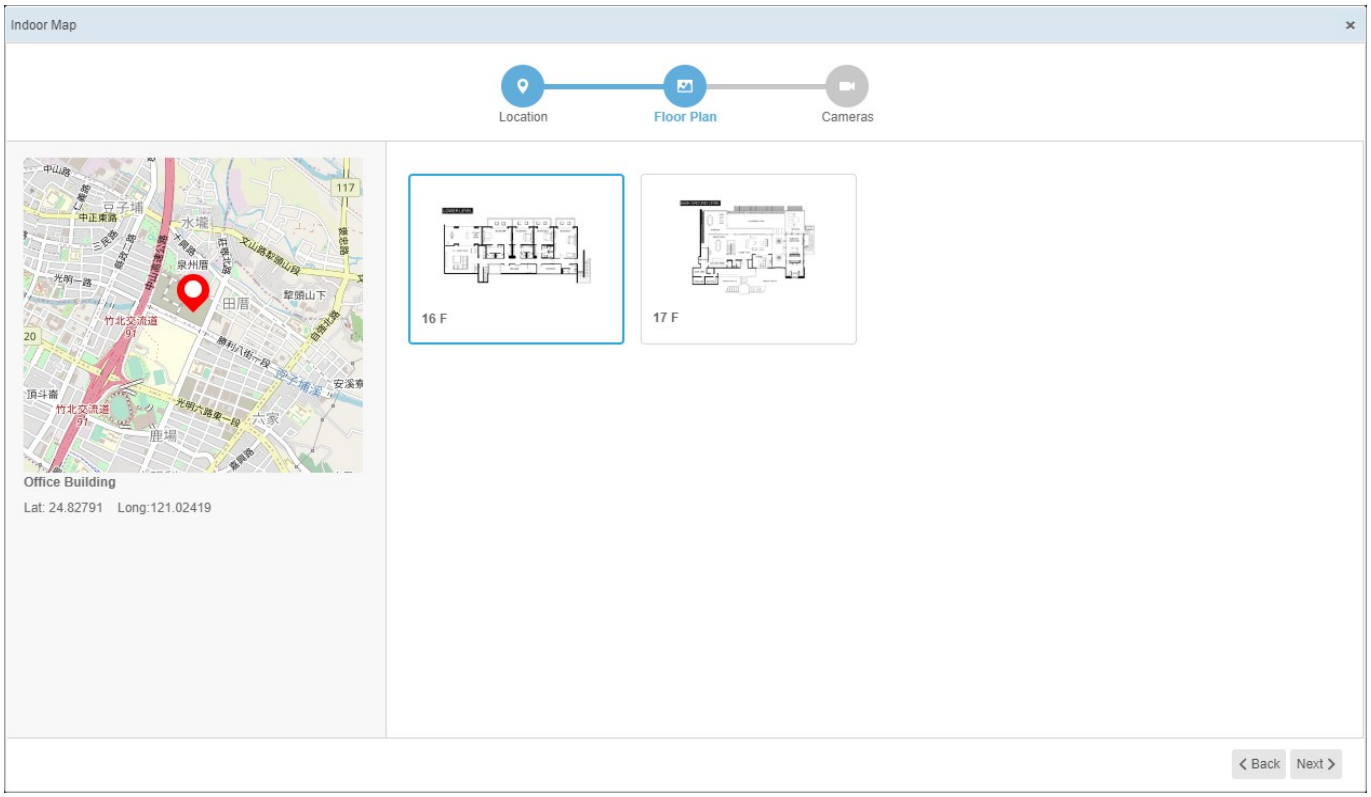
When Indoor Map is selected in the Location type, a new button will appear on the right of the menu bar.
Click the Indoor Map button to open a new window.



Indoor Map Location

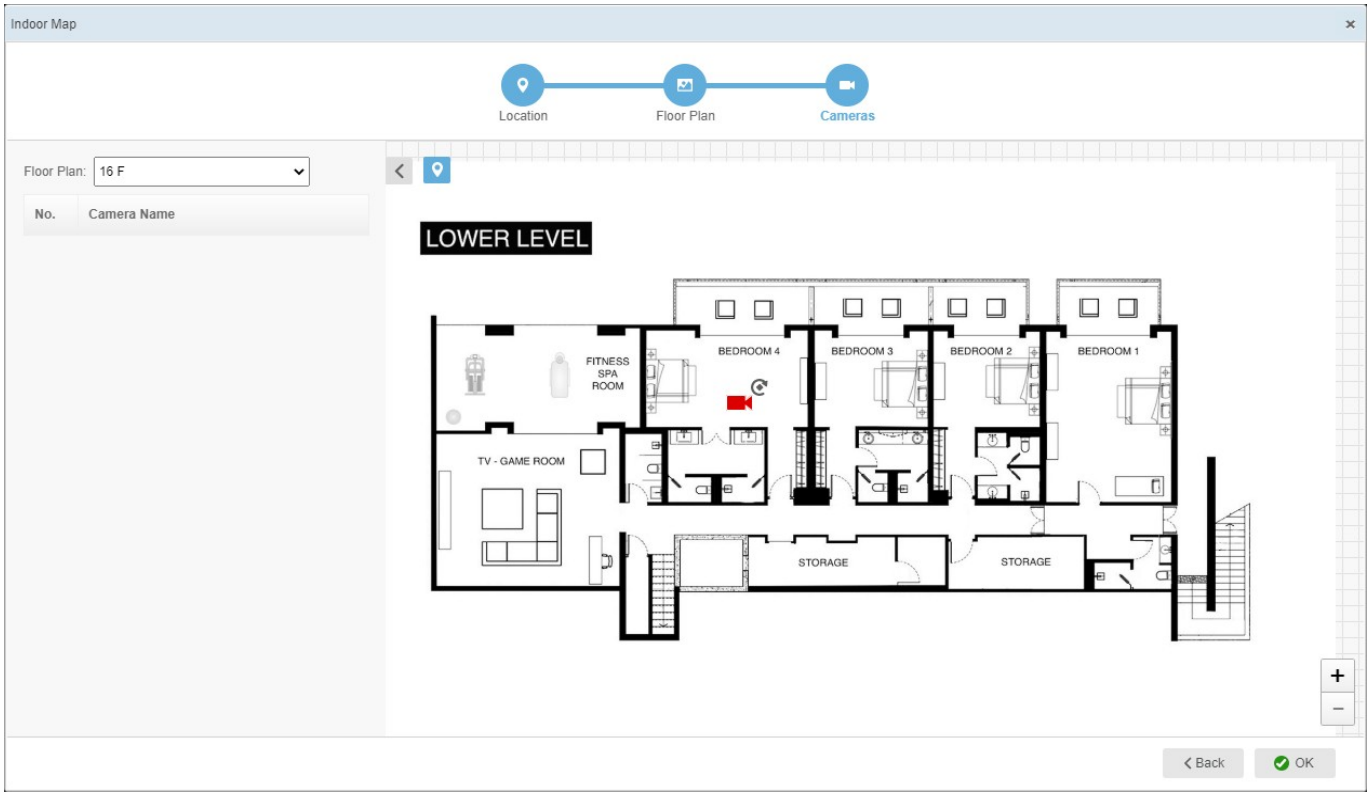
The Indoor Map window will display locations available for user selection. All Indoor Location and Floor Plan are preconfigured in the Indoor Map page.
Refer to Chapter 18.2 Indoor Map for more details.

Choose the location on the floor plan for the camera and click Next to see the Floor Plan(s) of the selected location.



Indoor Map Floor Plan

The page will display Floor Plan available for user selection, choose the Floor Plan you want to use for the camera and click Next to position the camera onto the selected floor plan.

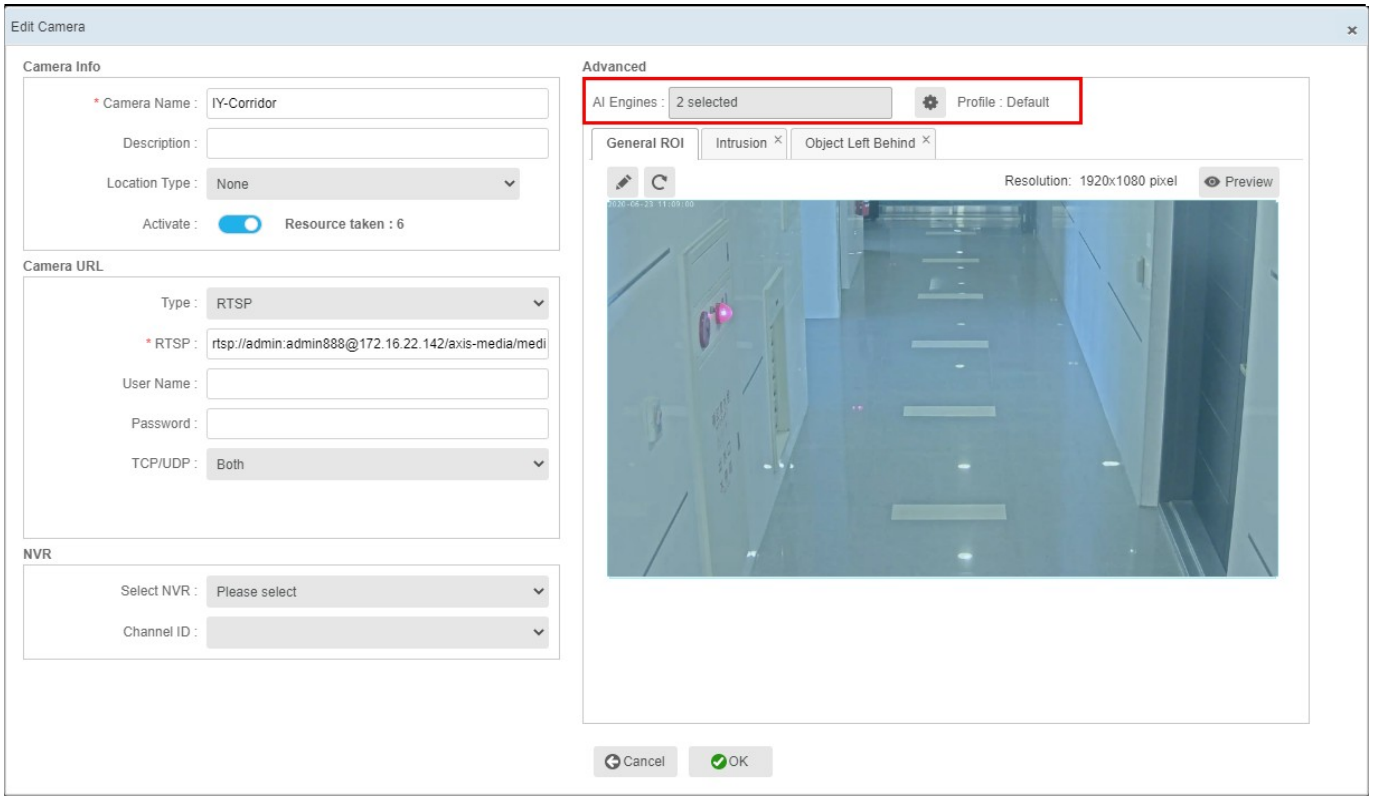


Indoor Map Camera

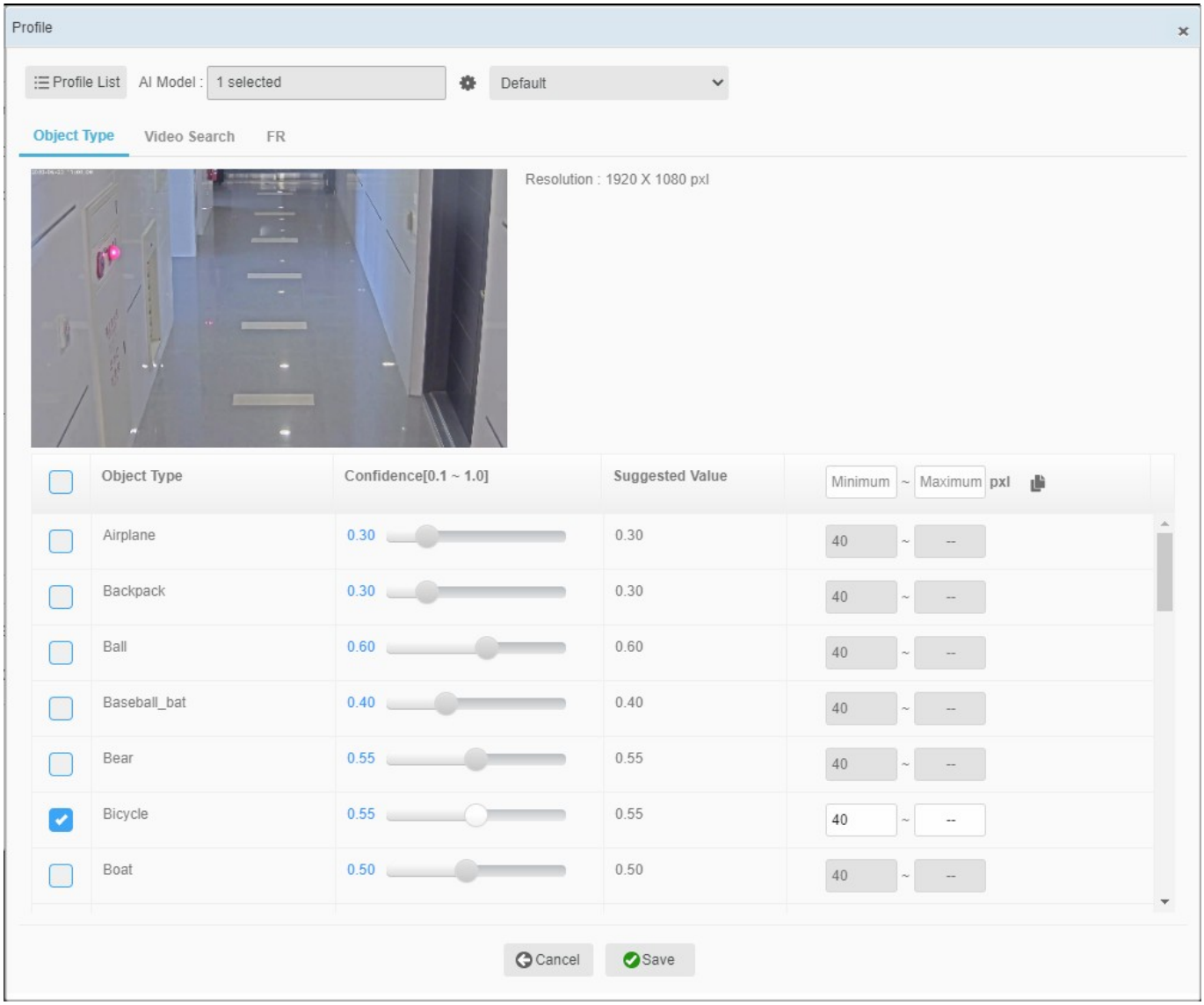
20.1.4 Profile

The Profile allows the user to save the Object Type settings in a camera. The user can select the objects of interest and configure the object confidence, maximum size, and minimum size for detection. The saved profile will be available in the Profile list once the user has completed the configuration and named the profile.

Note: The user can create a maximum of 100 profiles per model set.

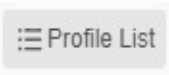


Click to open the Profile window; the default profile is selected when no new profile has been created.

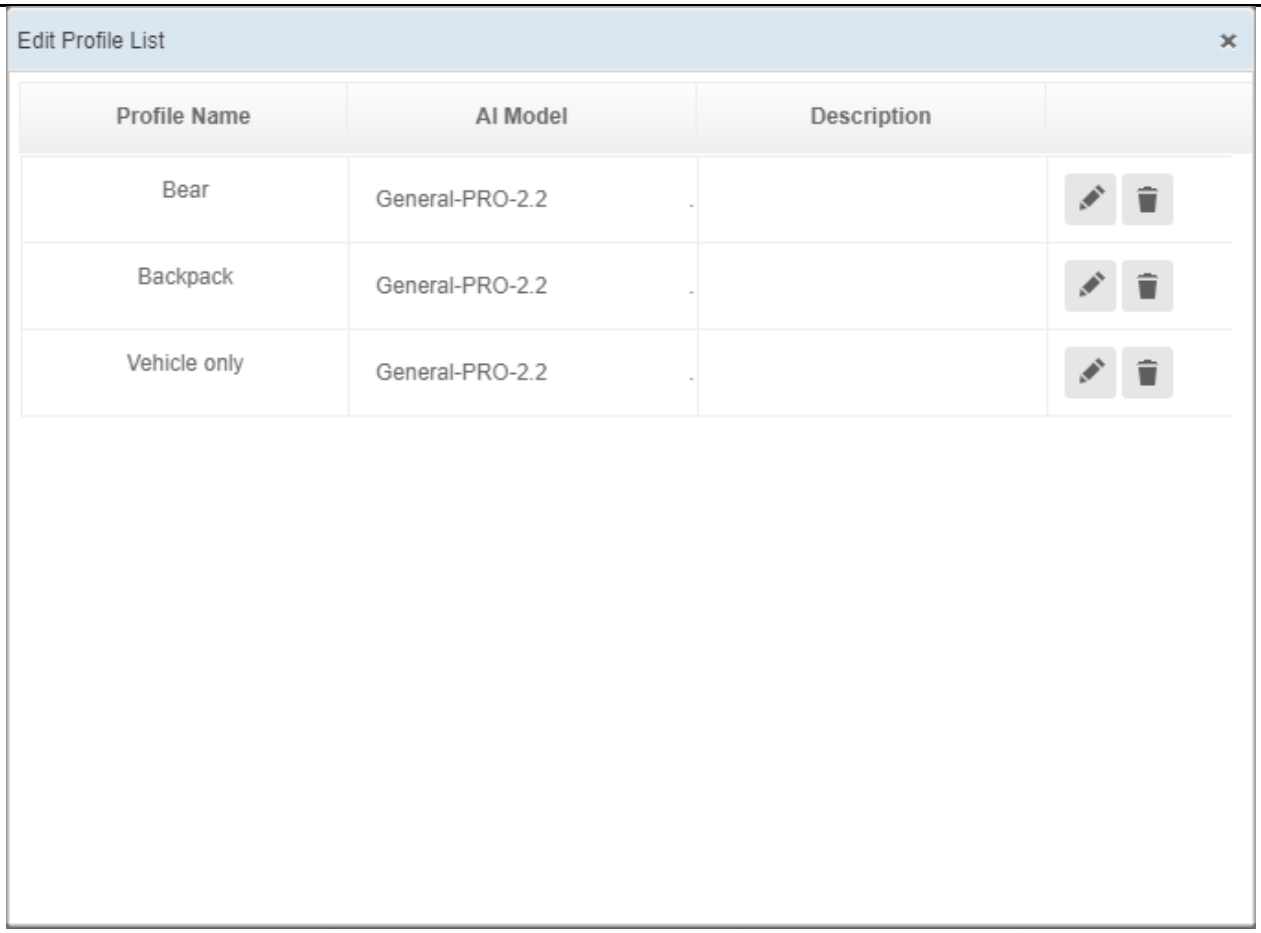


Profile Window

In the Profile window, the user can create a new profile or edit an existing profile by adjusting the configuration setting.



Click to open a new window to see the complete profile list with the created time and description.



Edit Profile List

Click **Edit** to rename the profile or change the description
Click **Delete** to discard the profile

Create a New Profile

To save the new profile, simply create the desired profile setting in the **Default** profile.
A profile saved in the Default mode will be automatically saved as a new profile. The default profile will always be available to create new profiles with different settings according to AI Model selected.

Click **Save** after the parameter adjustments in the **Default** profile; a new window will appear as shown below,

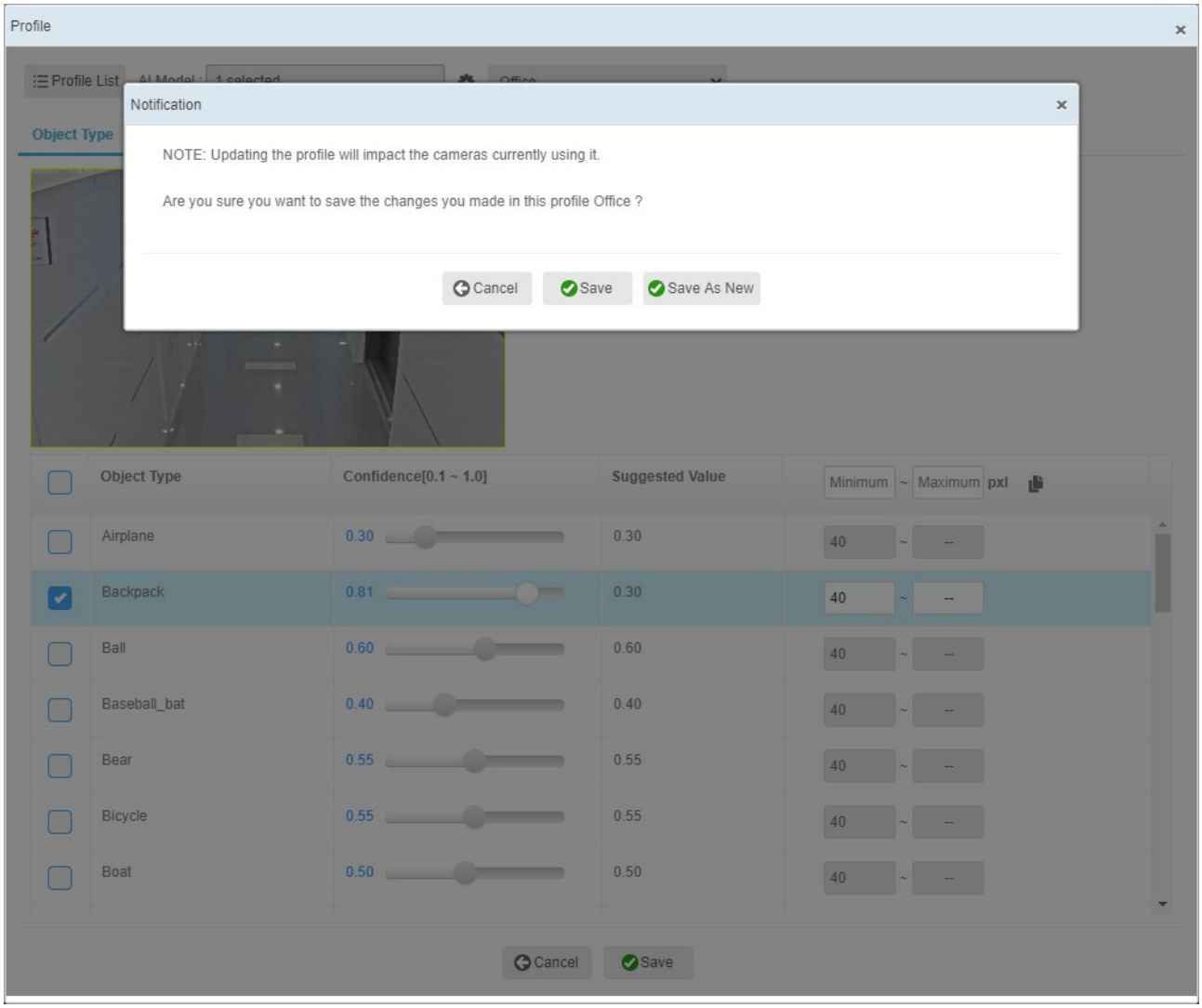
Save New Profile

Create a new name for the profile and add a description for reference.

Click **Save** to add the new profile to the profile list.
Click **Cancel** to discard the action.

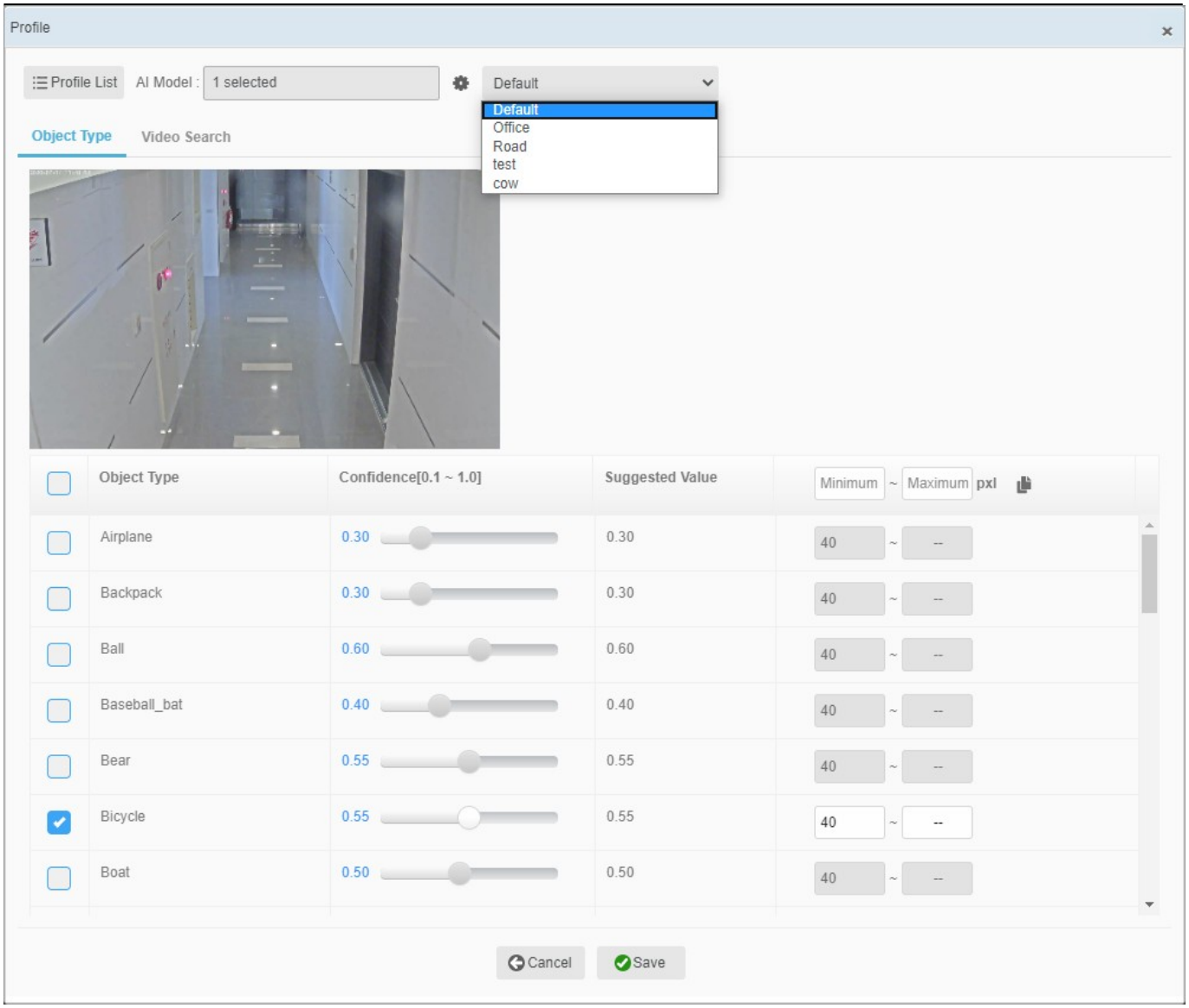
Edit Existing Profile

If the user wants to edit an existing profile, simply adjust the configuration setting in the existing profile and click **Save** to see the window below.



Edit Exiting Profile

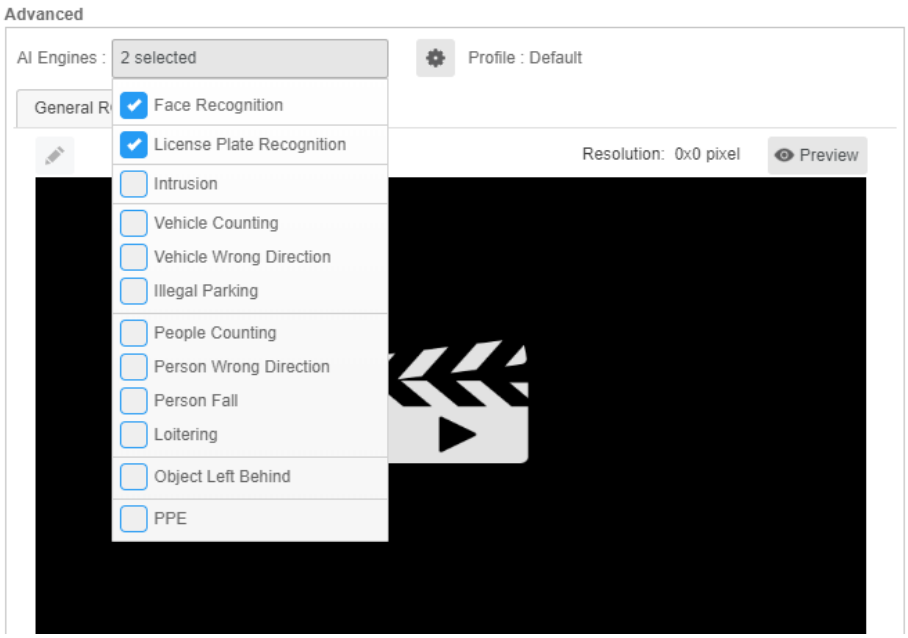
A notification window will pop up to advise the user that this change may affect other cameras that currently use the profile.
Click **Save** to save the changes to the existing profile.
Click **Save As New** to save this profile as a new profile List, and a pop up will appear for Profile name.
Click **Cancel** to discard all changes.



Profile List

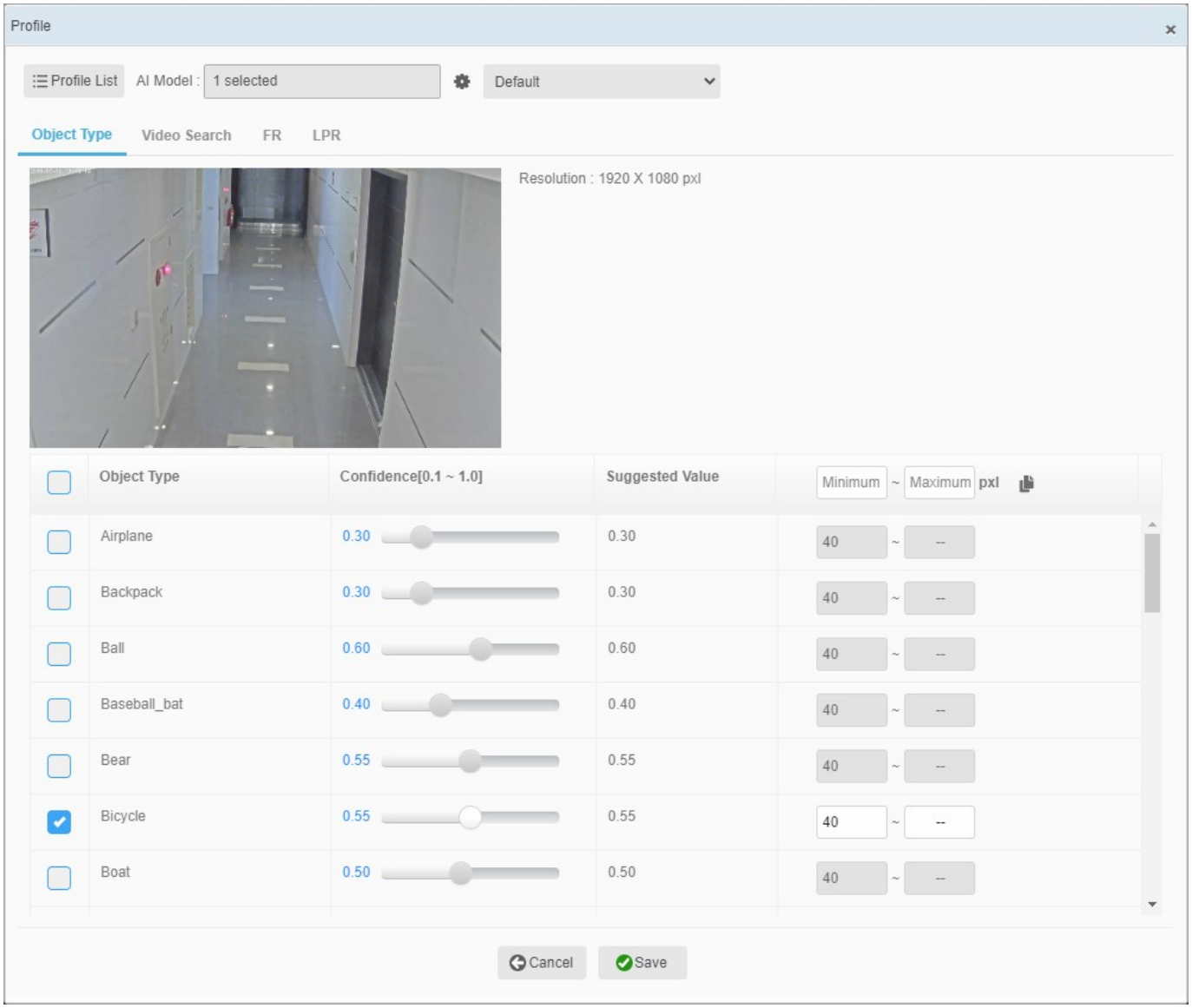
Saved Profiles can be found in the Profile menu bar; each profile consists of different configurations based on user preference.

In the Profile window, the user can select AI Models in the AI Model drop-down menu. AI Models in the System will be available for selection, and the listed Object types will change based on the selected AI Model.



Enable FR and LPR

In the Profile window, there are 2 tabs by default: **Object Type** and **Video Search.**
Users can get access to the **FR, LPR** and **Make and Model** configuration tab when they are enabled in the camera.



Profile Window

Object Type
Object Type is the default tab for the Profile window. This tab allows the user to modify the object's confidence and object size based on user preference.
The user first needs to assign the camera and click on Preview in the **Add camera** page to get the snapshot view.

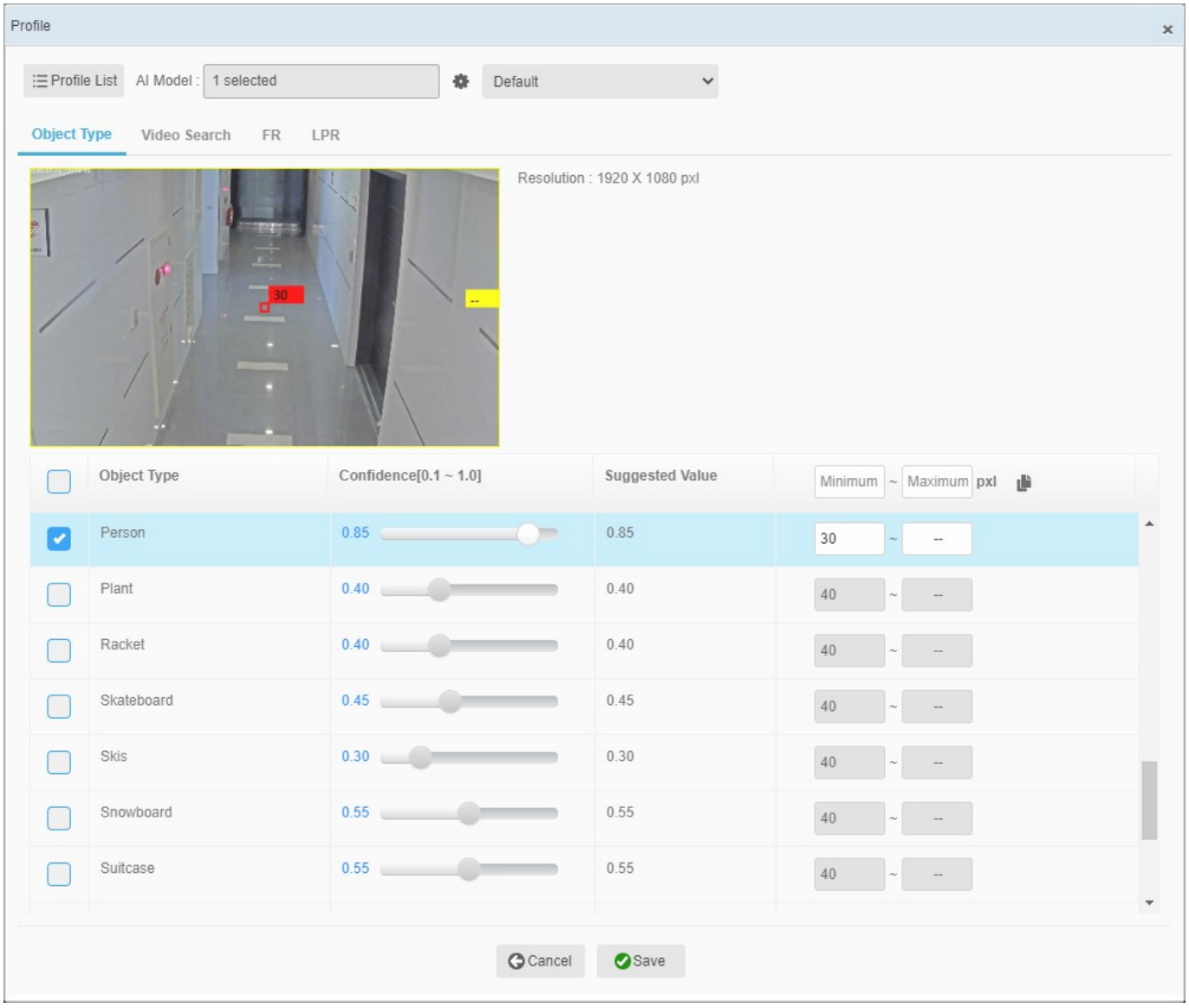
Check the object type(s) to apply object configuration for the camera.

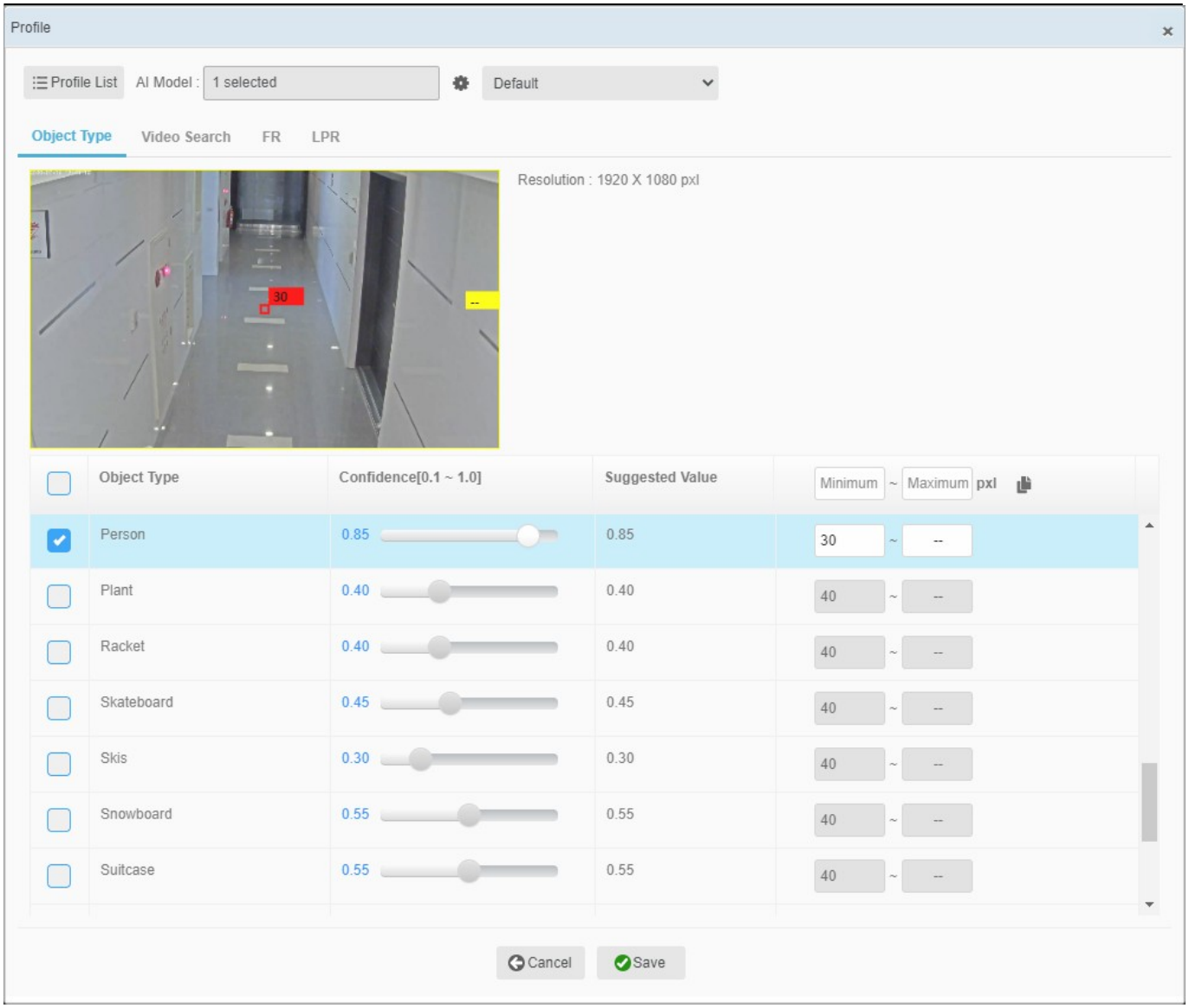
Confidence
Drag the slider to change the confidence of the AI Engine and Model. Higher confidence will make the detection more precise (the suggested value is next to the scroll bar for reference).

Min/Max
Object Size is in pixel, the user can enter the desired object size in minimum and maximum.
Default: (Min: 40 ~ Max: --).
The maximum object default size is set as "--", which signifies the maximum resolution frame size of the camera; the user can apply all objects with the same minimum and maximum sizes by inputting values in the first caption column and click the  **Apply All** icon.

The input size is the size of the object to be detected by the AI engine; objects larger than the assigned maximum or smaller than the assigned minimum will not be detected.

The user can also view the assigned object size on the screen for reference when entering the object size. Click on an object of interest, and the size board will appear with a minimum size in red and maximum size in yellow.

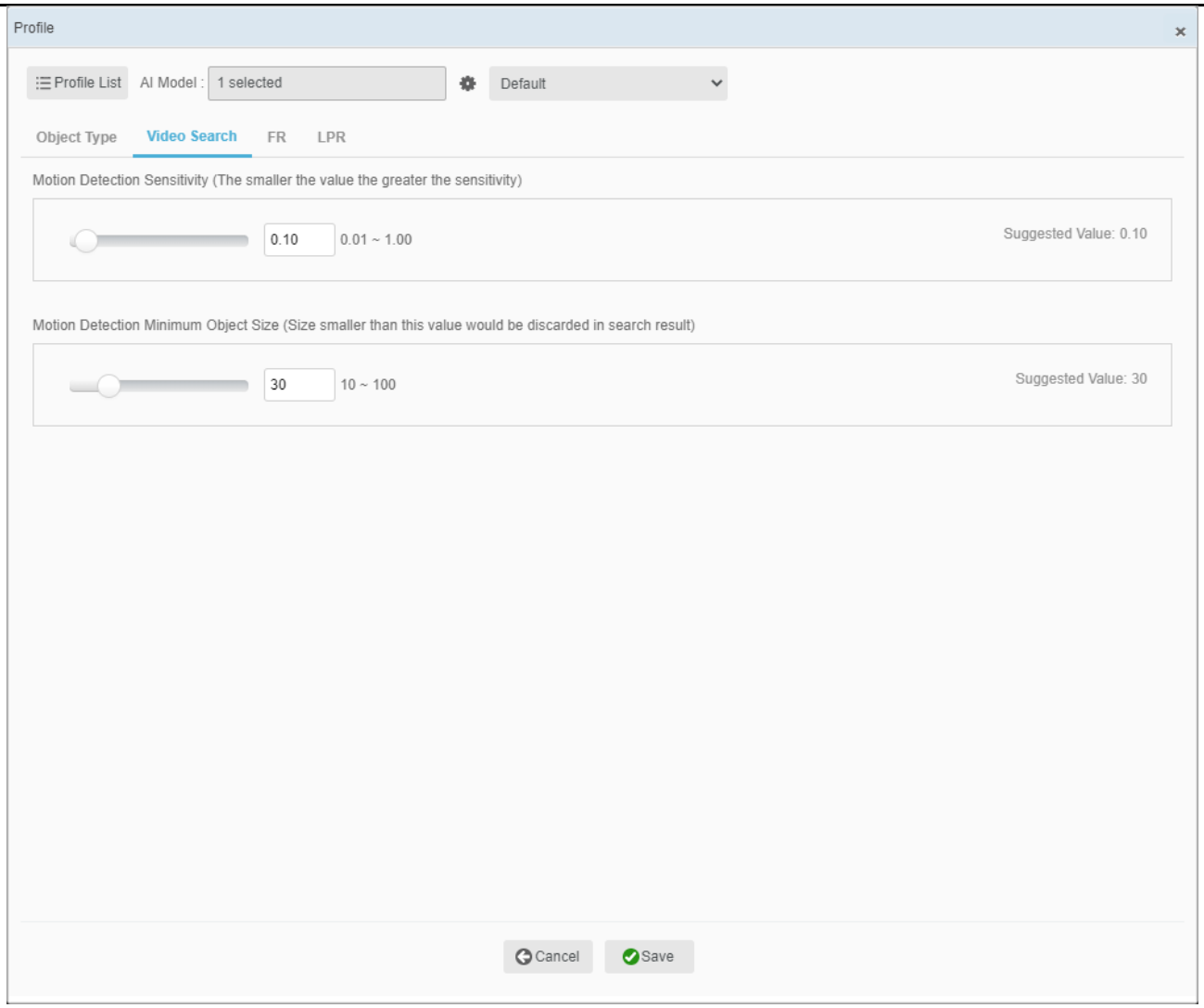




Camera Profile configuration window

Note:
The object size here should not be greater than the General ROI Resolution in the previous Add/Edit Camera window.

Video Search
Click on the **Video Search** tab to see the window below.



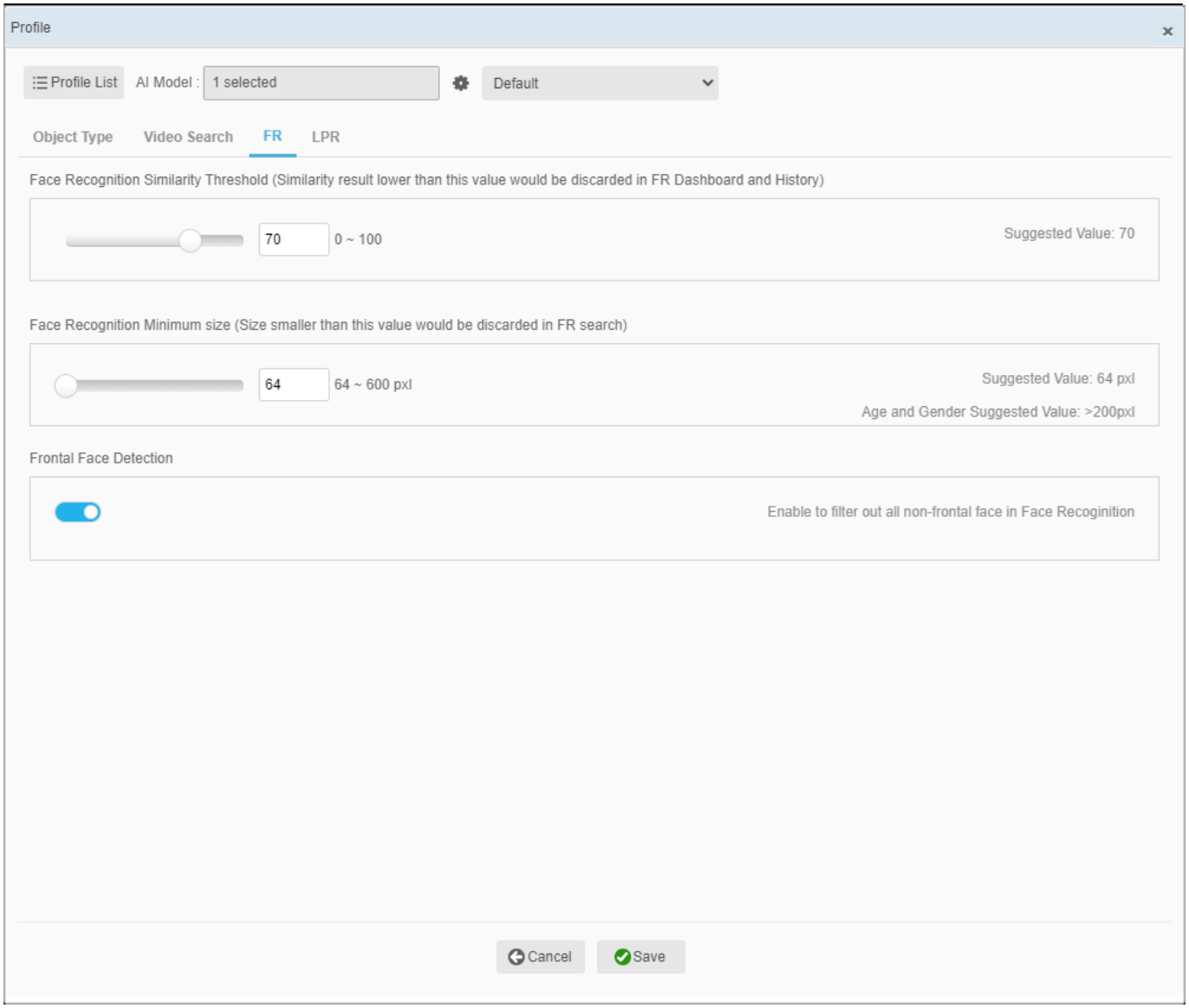
Search Window

In this window, the user can modify the **Motion Detection Sensitivity** and **Motion Detection Minimum Object Size**.

Motion Detection Sensitivity - The sensitivity detection for moving objects; a smaller value corresponds to greater sensitivity. For example, for a small value, a tiny movement can be easily detected by the camera.

Motion Detection Minimum Object Size - The smallest object size on camera that the AI engine will analyze; a smaller object than the adjusted value will not be detected and will be discarded from the search result.

To adjust each parameter, the user can either drag the sliders or input a precise value in the textbox. Each configuration has a suggested value on the side for the user reference.
Click **Save** to apply the setting to the profile.
Click **Cancel** to discard the settings



FR Window

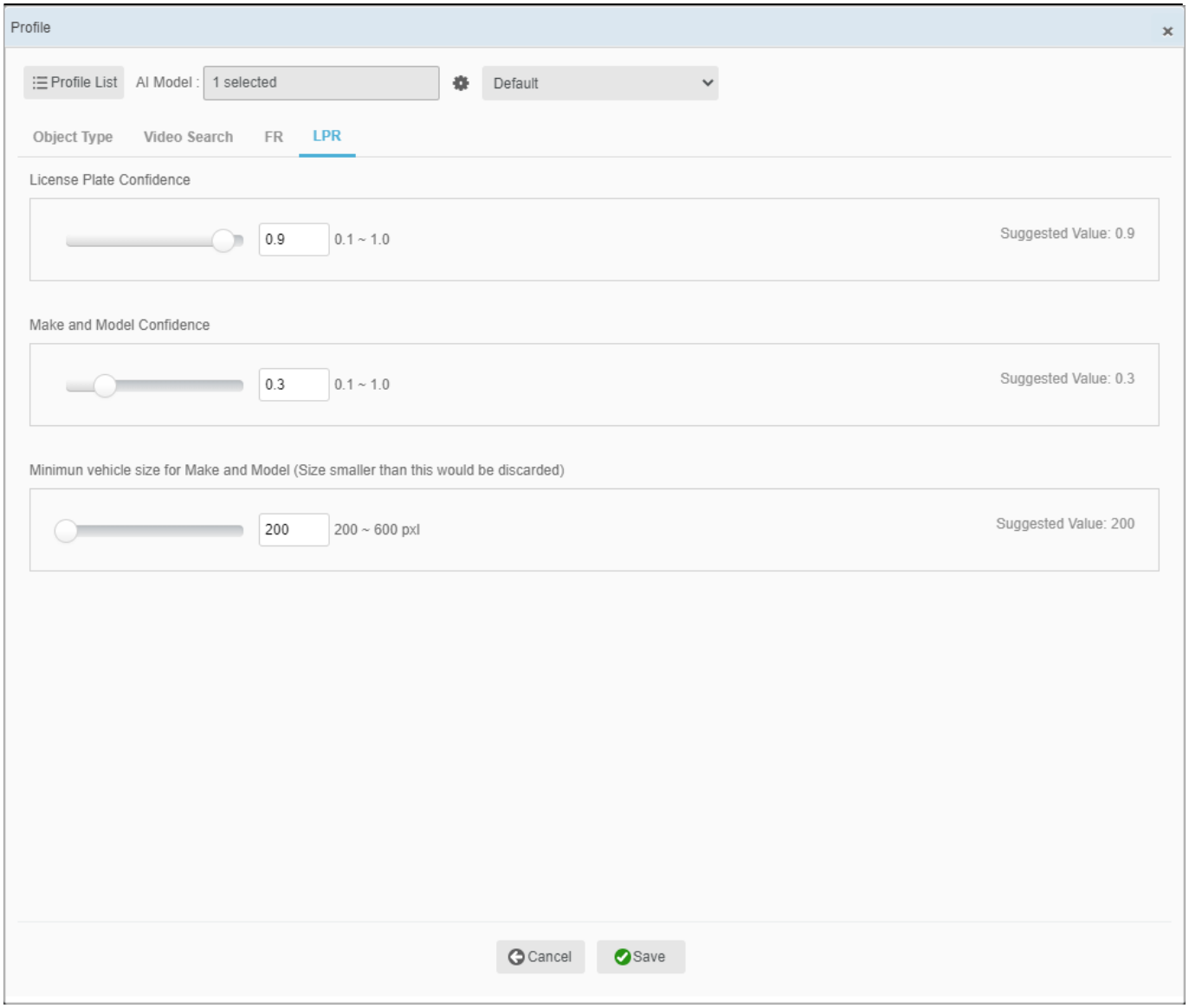
In this window, the user can modify the **Face Recognition Similarity Threshold, Face Recognition Minimum Size,** and **Frontal Face Detection**.

Face Recognition Similarity Threshold - The minimum threshold for FR similarity and the first similarity filter for face recognition. FR results with similarity below this value will be discarded in the FR Dashboard and History results.

Face Recognition Minimum Size - The smallest object recorded on a camera that the AI FR engine will use to determine facial features; objects smaller than this value will not be detected in FR and will be discarded from the Face Recognition result.
Note: For Age and Gender search, the recommended face image size is 200 pixels or above for more accurate results.

Frontal Face Detection – Enable Frontal Face Detection to filter out all non-frontal faces for Face Recognition.

To adjust each parameter, the user can either drag the sliders or input a precise value in the textbox. Each configuration has a suggested value on the side for the user reference.
Click **Save** to apply the setting to the profile.
Click **Cancel** to discard the settings



LPR Window

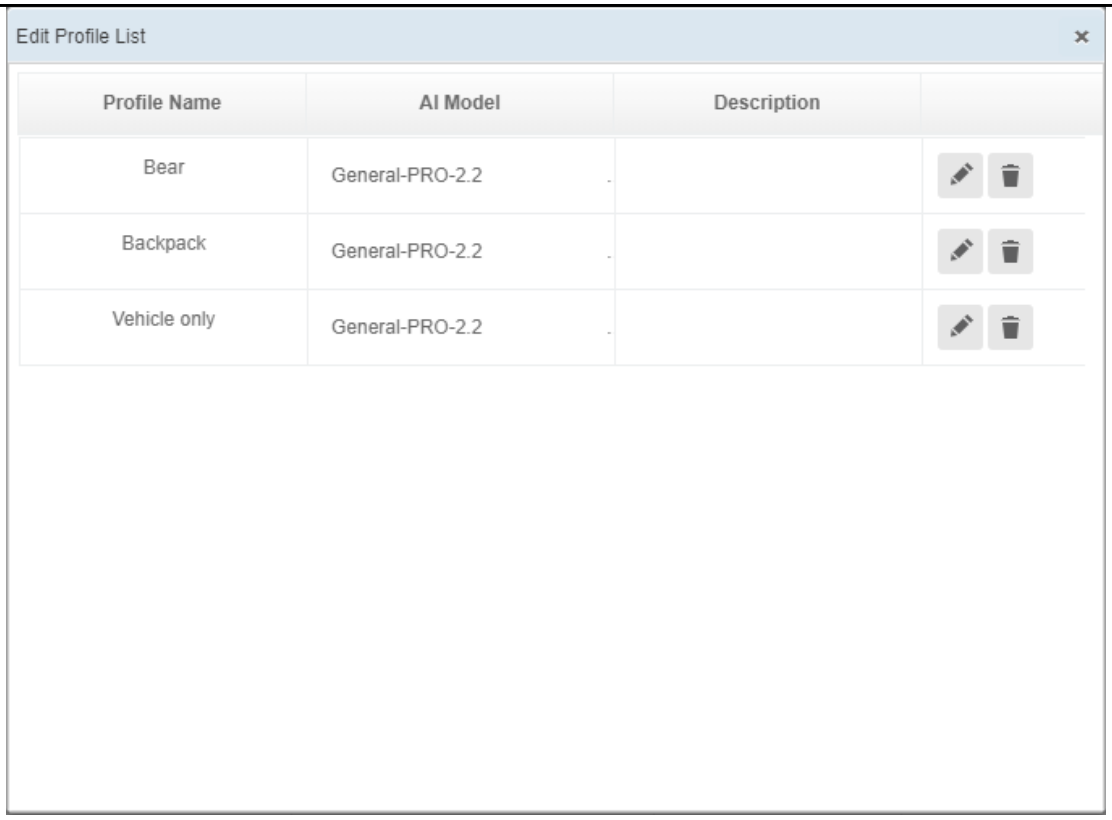
In this window, the user can modify the **License Plate Confidence, Make and Model Confidence,** and **Minimum vehicle size for Make and Model.**

License Plate Confidence - Adjust the sensitivity of License Plate detection.

Make and Model Confidence - Adjust the sensitivity of Make and Model.

Minimum vehicle size for Make and Model - Minimum size for Make and Model; vehicles that are smaller than this value will be discarded from the Make and Model recognition process.

To adjust each parameter, the user can either drag the sliders or input a precise value in the textbox. Each configuration has a suggested value on the side for the user reference.
Click **Save** to apply the setting to the profile.
Click **Cancel** to discard the settings



Profile List

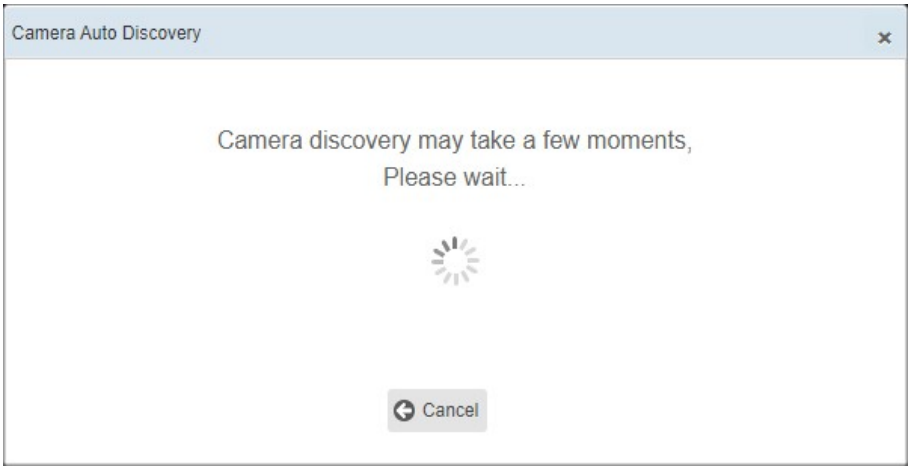
The profile limitation is 100 profiles per AI Model. The user can only view and select a suitable profile for the current AI model in use. To use a profile for a different AI Model, the user must switch to the desired AI Model. For example, when the Weapon Model is applied, the user cannot see the profiles saved in the General Model. Each model also has its default profile settings.

When a profile is deleted while in use by another camera, the camera will be automatically assigned to the default profile.

20.1.5 Auto Discovery

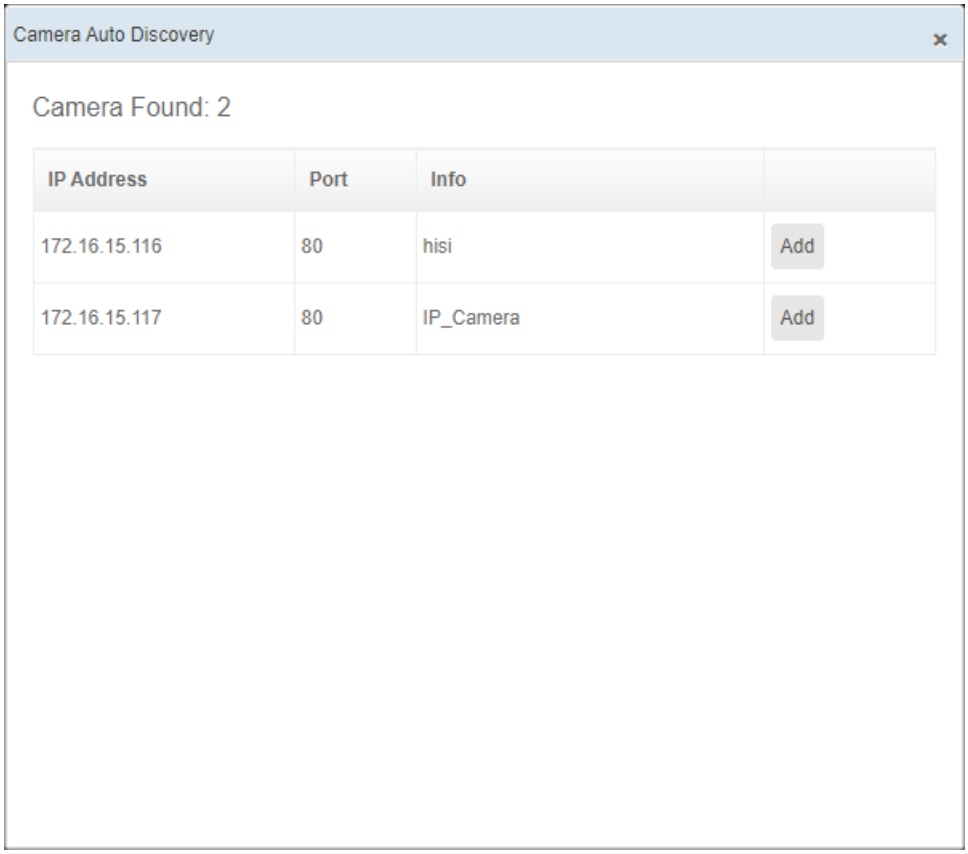
Click the **Auto Discovery** button in the Camera Management window to automatically discover ONVIF-supported cameras in the same network environment.

The Camera Auto Discovery window will pop up and start to scan available cameras in the same network.



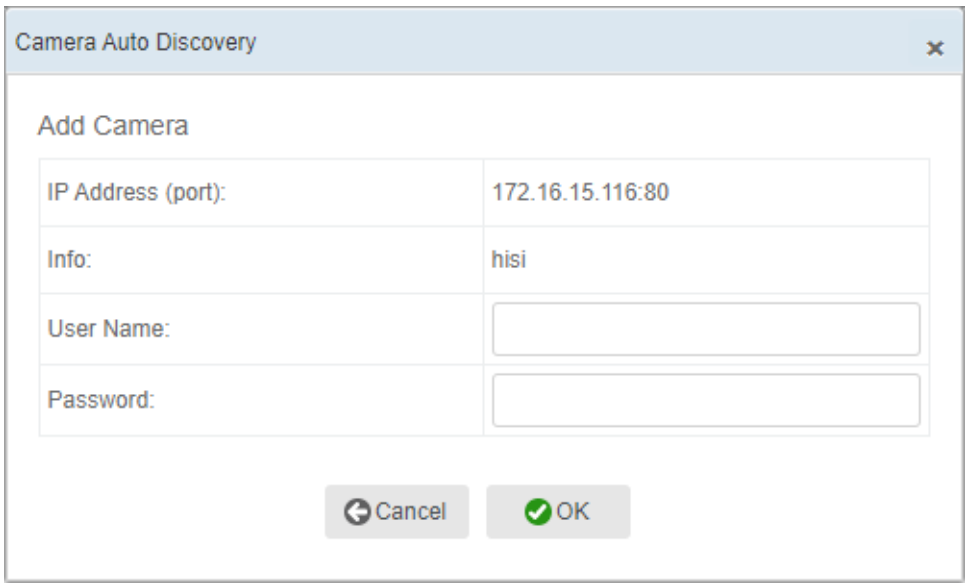
Auto Discovery scanning

In a few moments, a list of cameras available will appear in the window for the user to add.



Cameras found in Auto-Discovery

Click **Add** to add the camera to the camera list.
The Camera Auto Discovery account page appears; enter the User Name and Password of the camera, which is prepared in advance.
Click **OK** to add this camera.

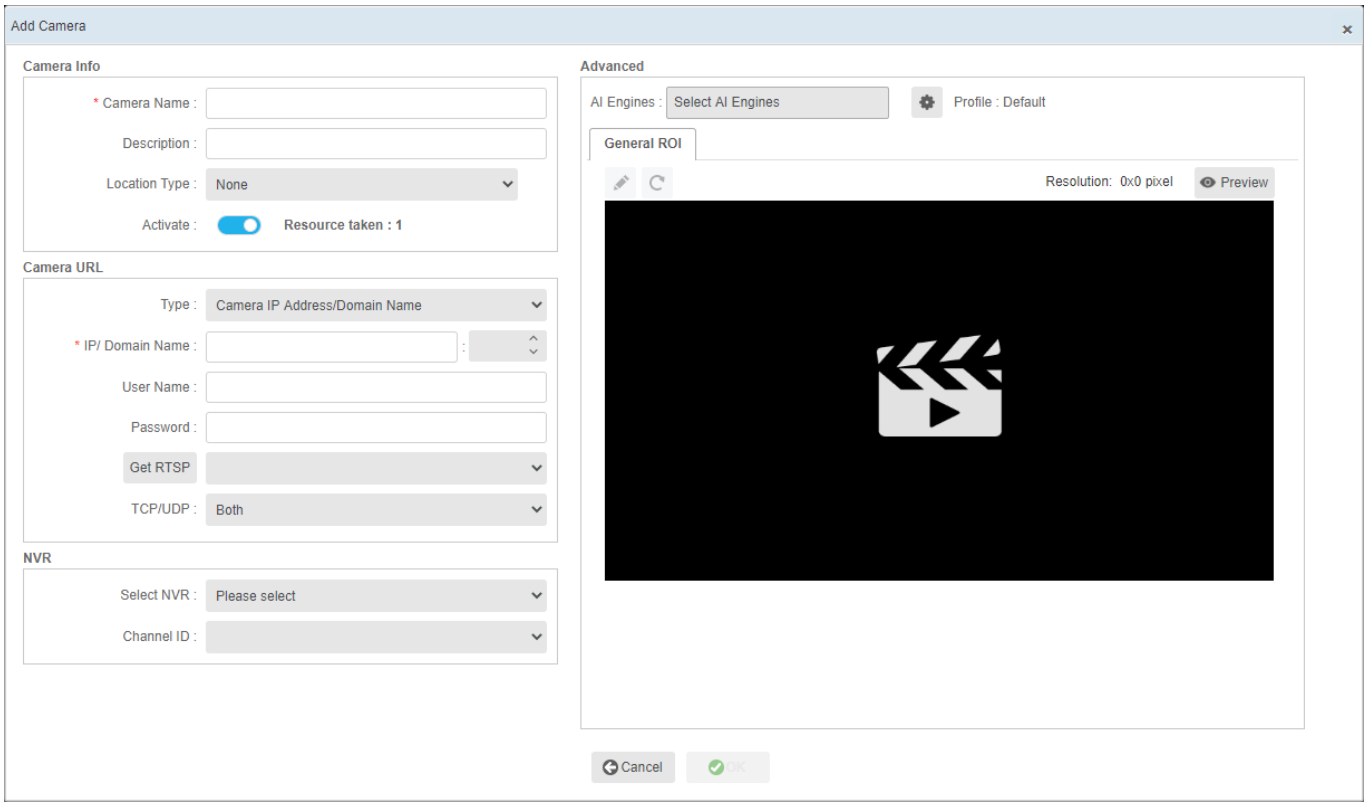


Enter User Name and Password

The camera configuration page appears with the pre-entered info of the auto-discovered camera.
Click the **Preview** button to get the camera snapshot and enter other information on this camera configuration page.
Select **Profile** and **AI Engine** and draw the ROI or lines accordingly.

Click **OK** to confirm the configuration and add this camera.

Note:
Refer to section 18.1 Camera List for each function and input field.



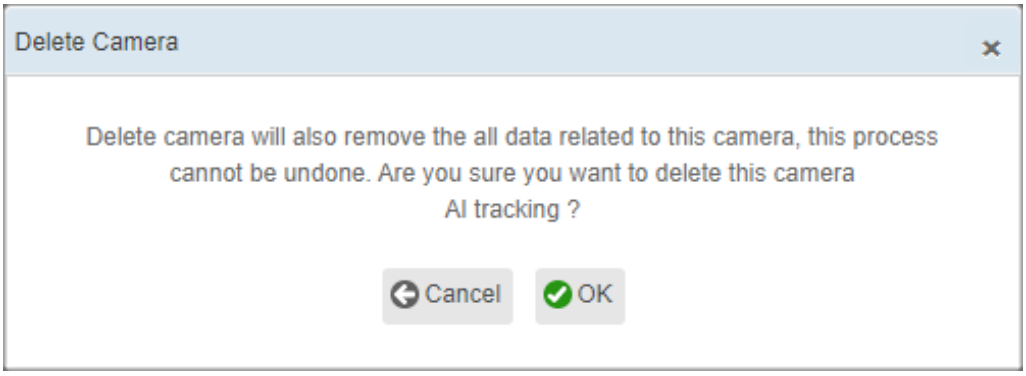
Edit Camera

Important Note:
Make sure that the time of the supported ONVIF camera synchronizes with the Vaidio server so that the camera can be successfully added to Vaidio by auto discovery.
The ONVIF protocol may protect the camera from time attack to manually turn off or disable the related setting on the camera that is added to Vaidio.

For example, some Axis cameras have the time sync checking feature, and we must manually turn off this feature on the camera to add to Vaidio. For the Axis camera, go to "General setting" > "Webservice" > Uncheck "Enable replay attack protection".
Different camera brands may have different settings. Consult with the camera vendor for more information.

20.1.6 Deleting Cameras

Click the **Delete** button of the corresponding camera to open the Delete Camera window.

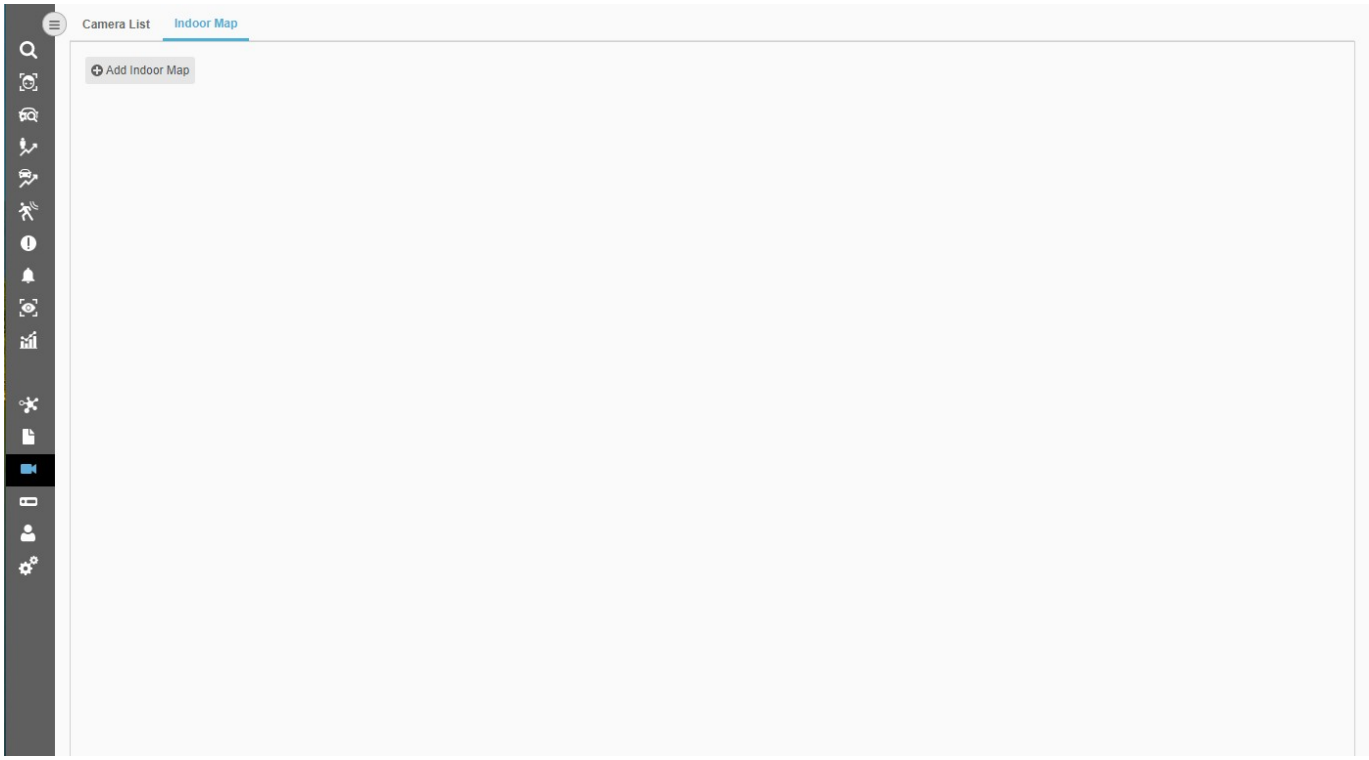


Delete Camera Window

Click **OK** to delete the camera. All detected data related to the camera will be deleted.
Click **Cancel** to discard the action.

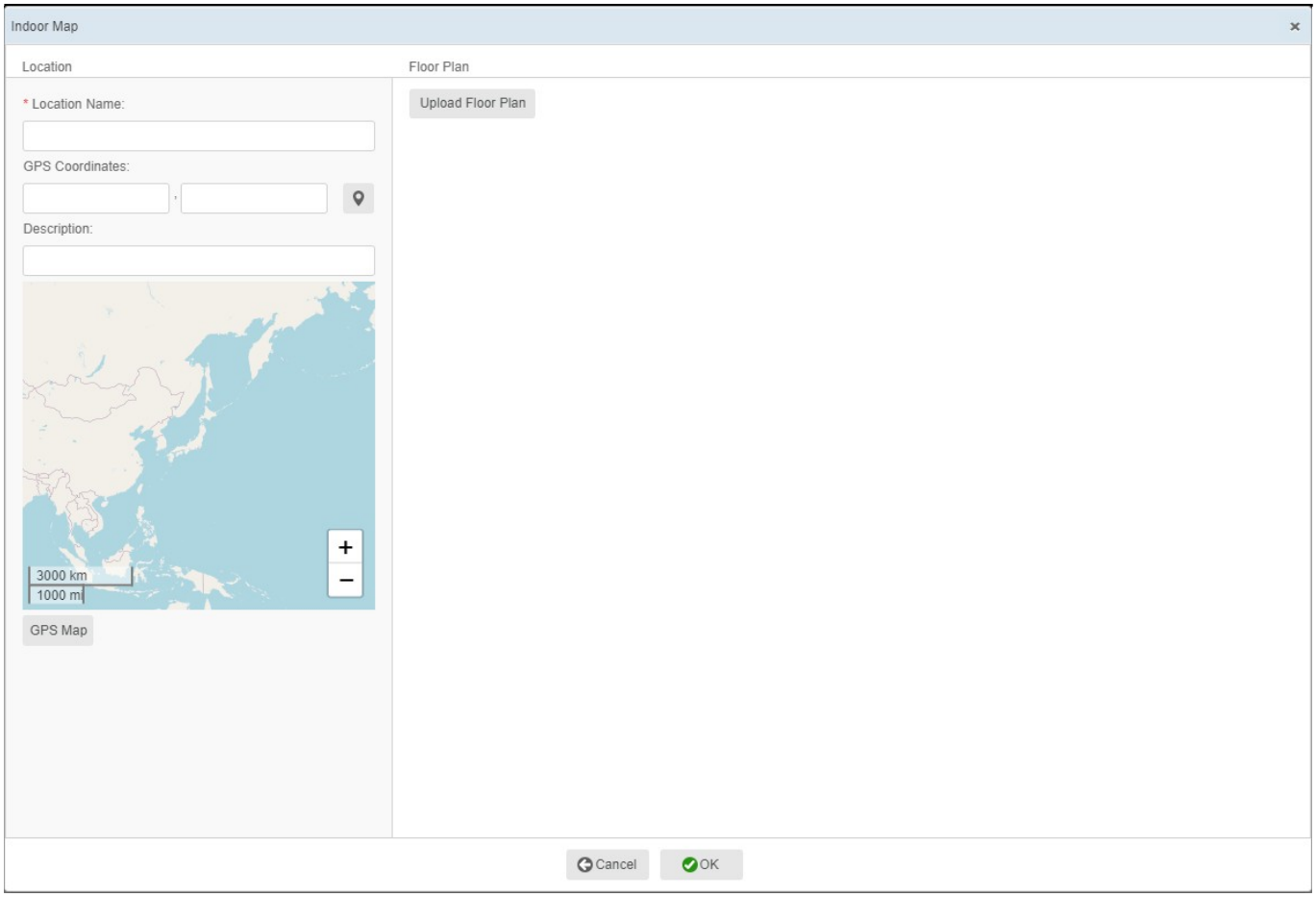
20.2 Indoor Map

Under the **Camera** sub-tabs, click Indoor Map to see the window below.



Indoor Map Page

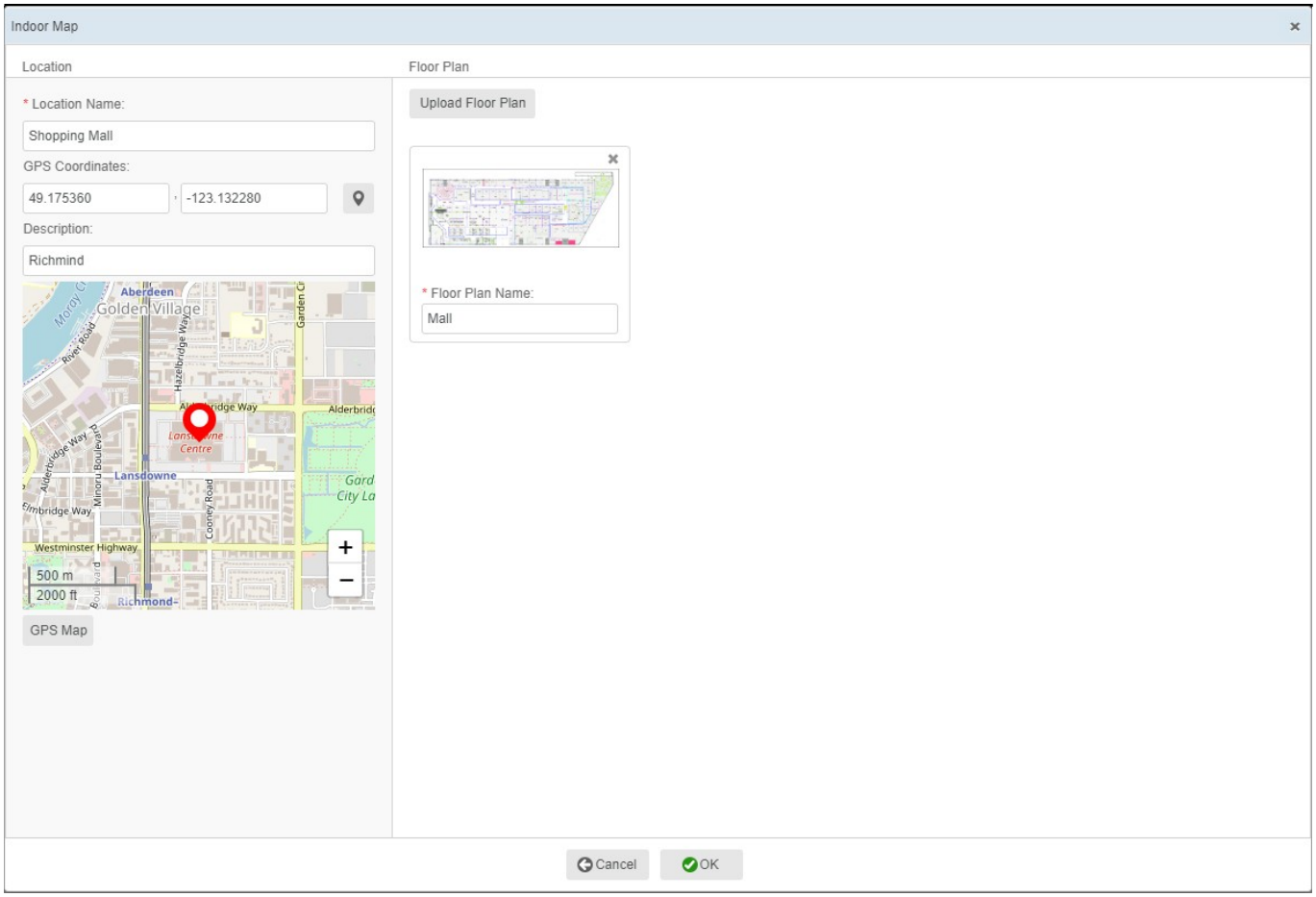
Click **Add Indoor Map** button to open a new window to set up a floor plan for the cameras.



Indoor Map default window

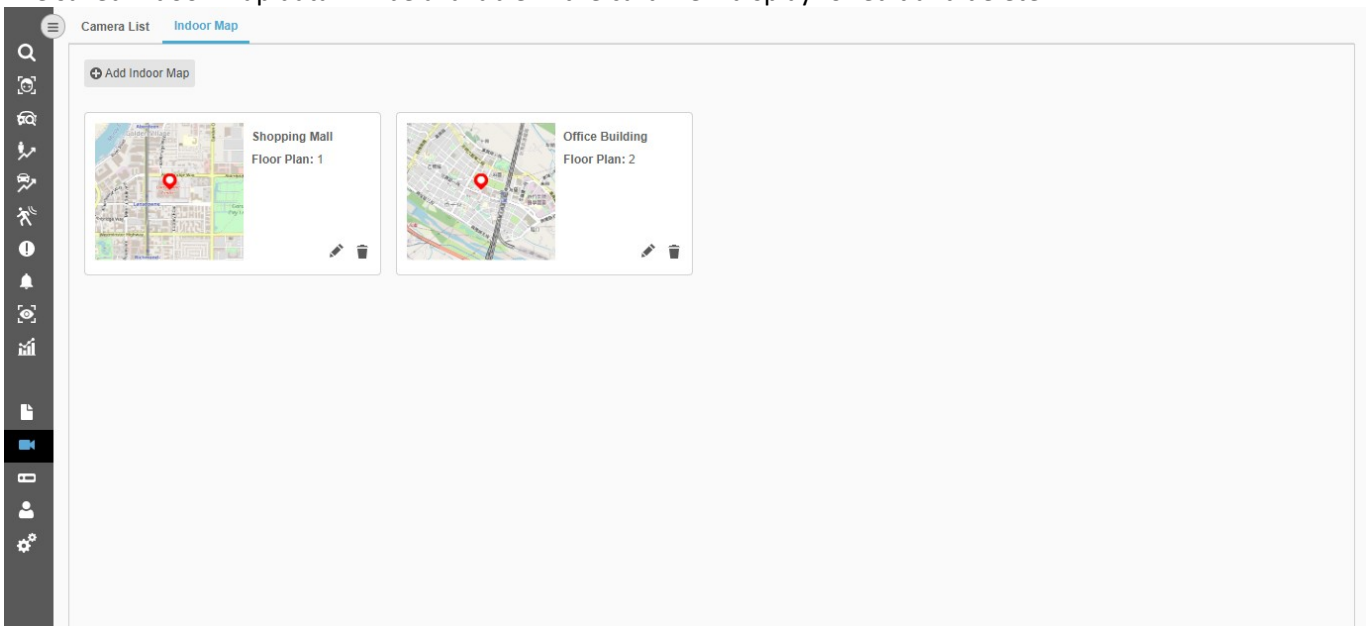
Item	Description
Location Name	Enter the Location Name; this is a required field to save data.
GPS Coordinates	Enter the Latitude and Longitude of the location and click the pinpoint button to see the map focus to the input GPS Coordinates. The user can also simply click on the map to set a location; for a better view, click the GPS Map button for a full map view
Description	Enter the description for better reference, which can be the address or notes.
Floor Plan	Click the Upload floor plan button to upload floor plan images from the local drive. The Floor Plan name is required to save the data.

When all given fields are set and the floor plan is uploaded, the window appears as below.



Indoor Map window

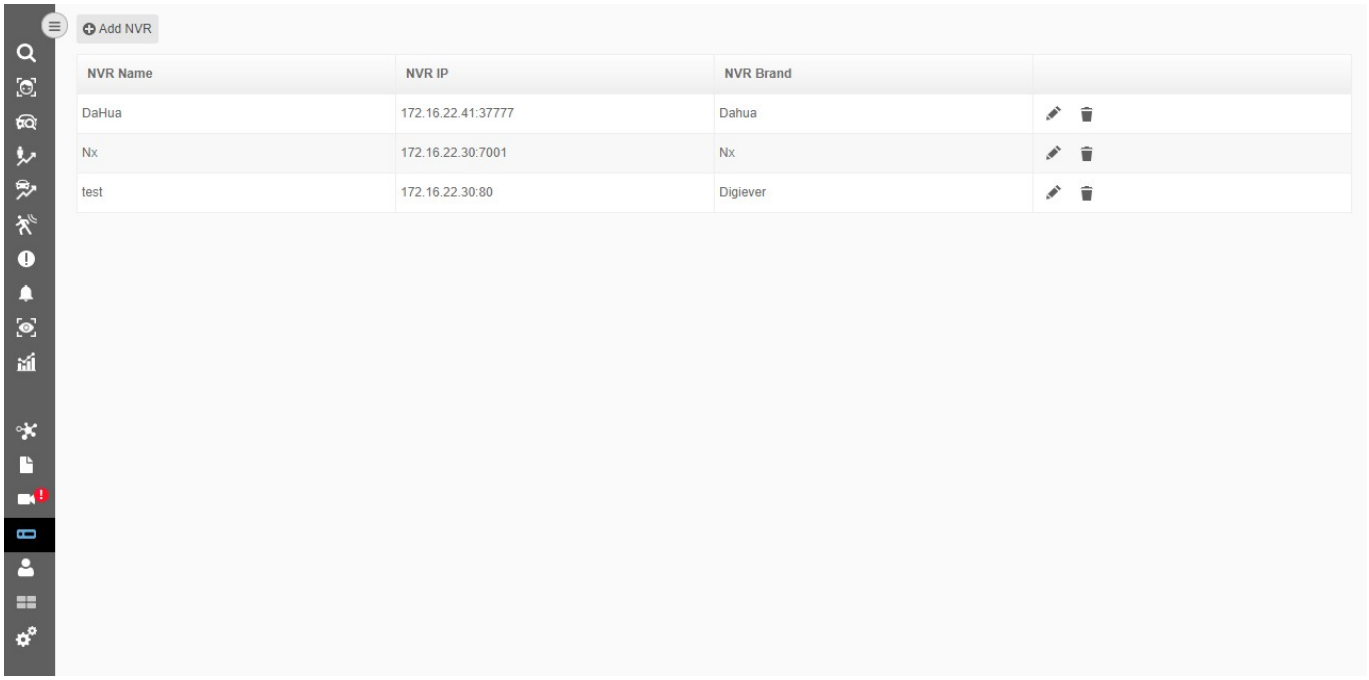
Once everything is set accordingly, click OK to save the data and close the window.
The saved Indoor Map data will be available in the card view display for edit and delete.



21. NVR

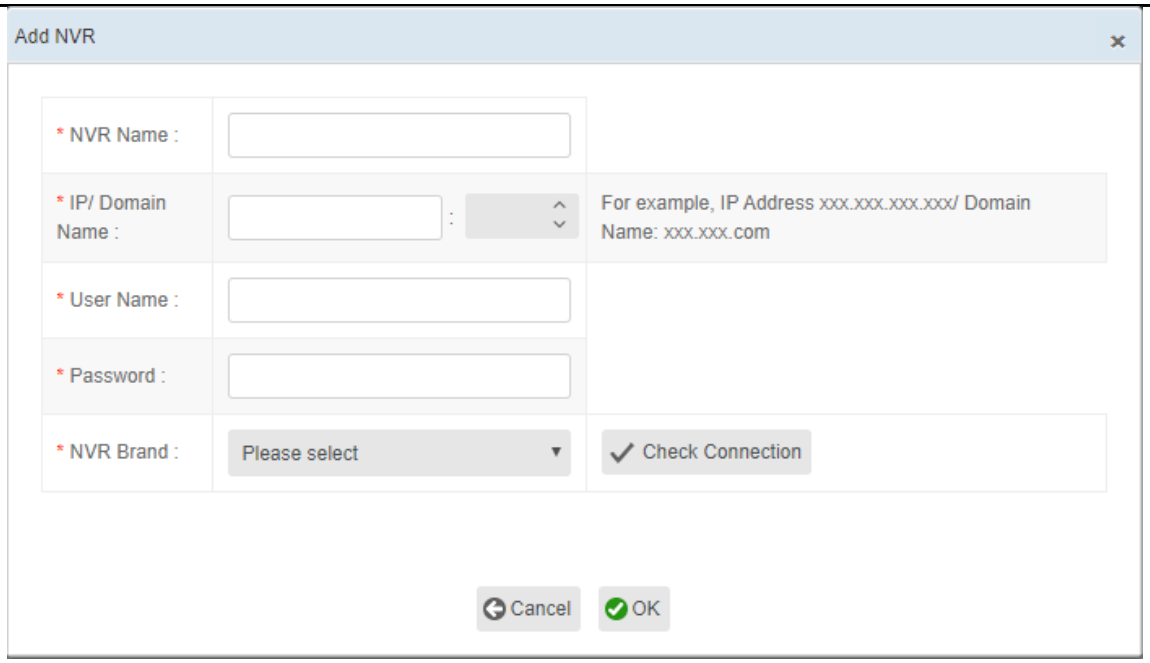
21.1 Adding NVR

Click the **NVR** tab to see the window below.



NVR Window

Click the **Add NVR** button to add an NVR. This window appears:



Add NVR Window

Item	Description
NVR Name	Enter the name of the NVR.
IP Address/Domain Name (port)	Enter the IP address or domain name with the port number of the NVR.
User Name	Enter the username of the NVR.
Password	Enter the password of the NVR.
NVR Brand	Select the NVR brand. Currently, Vaidio supports these brands of NVRs: Dahua, Digiever, DigitalWatchdog, Exacq, Genetec, Hanwha, Hikvision, Kedacom, Luxriot, Milestone, Nuuo, NetworkOptix, QNAP, Salient, Uniview, VideoInsight.

Port number for specific NVR brands:
Dahua: 37777
Milestone: 8081
VideoInsight: 9000
Network Optix: 7001

Click **Check Connection** to test whether Vaidio can connect to the NVR.
Click **OK** to save the settings and add the NVR in the NVR window.
Click **Cancel** to discard the settings and return to the NVR window.

Notice: the NVR downloader only supports **QNAP** and **Hanwha NVR** for the 45-day trial version. For NVR connection failure, check for a valid license on the license page and contact Aicuda Customer Support to issue the license.

Special Note:

Configuration of NVR brands

To make sure that Vaidio works well with the supported NVR brands, a native configuration of NVR brands may be required. Different NVRs have different native configurations.

Additional Configuration of NVR

Milestone

1. SYSTEM REQUIREMENTS

a) XPROTECT MOBILE CLIENT
b) XPROTECT MOBILE SERVER
c) XPROTECT MOBILE PLUG-IN

a) XProtect Mobile client

- Smartphone or tablet running Android 2.2+ or
- Smartphone, tablet, or portable music player running iOS 5+.

b) XProtect Mobile server

Name	Description
Operating system	• Microsoft® Windows® XP Professional (32-bit or 64-bit*) • Windows Server 2003 (32-bit or 64-bit*) • Windows Server 2008 R1/R2 (32-bit or 64-bit*) • Windows Vista™ Business (32-bit or 64-bit*) • Windows Vista Enterprise (32-bit or 64-bit*) • Windows Vista Ultimate (32-bit or 64-bit*) • Windows 7 Professional (32-bit or 64-bit*) • Windows 7 Enterprise (32-bit or 64-bit*) • Windows 7 Ultimate (32-bit or 64-bit*)
CPU	Minimum Intel® Pentium® 4, 2.4 GHz, or higher (CoreTM 2 recommended).
RAM	Minimum 2 GB (4 GB or more recommended).
Network	Ethernet (1 Gbit recommended).
Graphics	Adapter AGP or PCI-Express, minimum 1024 x 768, 16-bit colors.
Hard disk type	E-IDE, PATA, SATA, SCSI, SAS (7200 RPM or faster).
Hard disk space	Minimum 1 GB free hard disk space available, excluding space needed for recordings.
Software	• Microsoft .NET 3.5 and 4. • DirectX 9.0 or newer. • Windows Help (WinHlp32.exe).
Milestone XProtect® video management software	• XProtect® Corporate 4.0+. • XProtect® Enterprise 8.0+. • XProtect® Professional 8.0+. • XProtect® Express 1.0+. • XProtect® Essential 2.0+. • XProtect® Go 2.0+.

c) XProtect Mobile plug-in

Install the Milestone Mobile plug-in component on all computers that run the Management Application or Management Client:

a. Run the Milestone Mobile installer.
b. Choose a **Custom** installation and select the plug-in (32-bit or 64-bit). It is safe to install both.
c. Restart the Management Application or Management Client.

2. INSTALL CLIENTS

- **INSTALL XPROTECT SMART CLIENT SILENTLY**

The user can deploy XProtect Smart Client or user's surveillance software to the user computers using tools such as Microsoft Systems Management Server (SMS). Such tools let the user build databases of hardware and software on the local networks. Then, the databases can be used to distribute and install software applications such as XProtect Smart Client over the local networks.

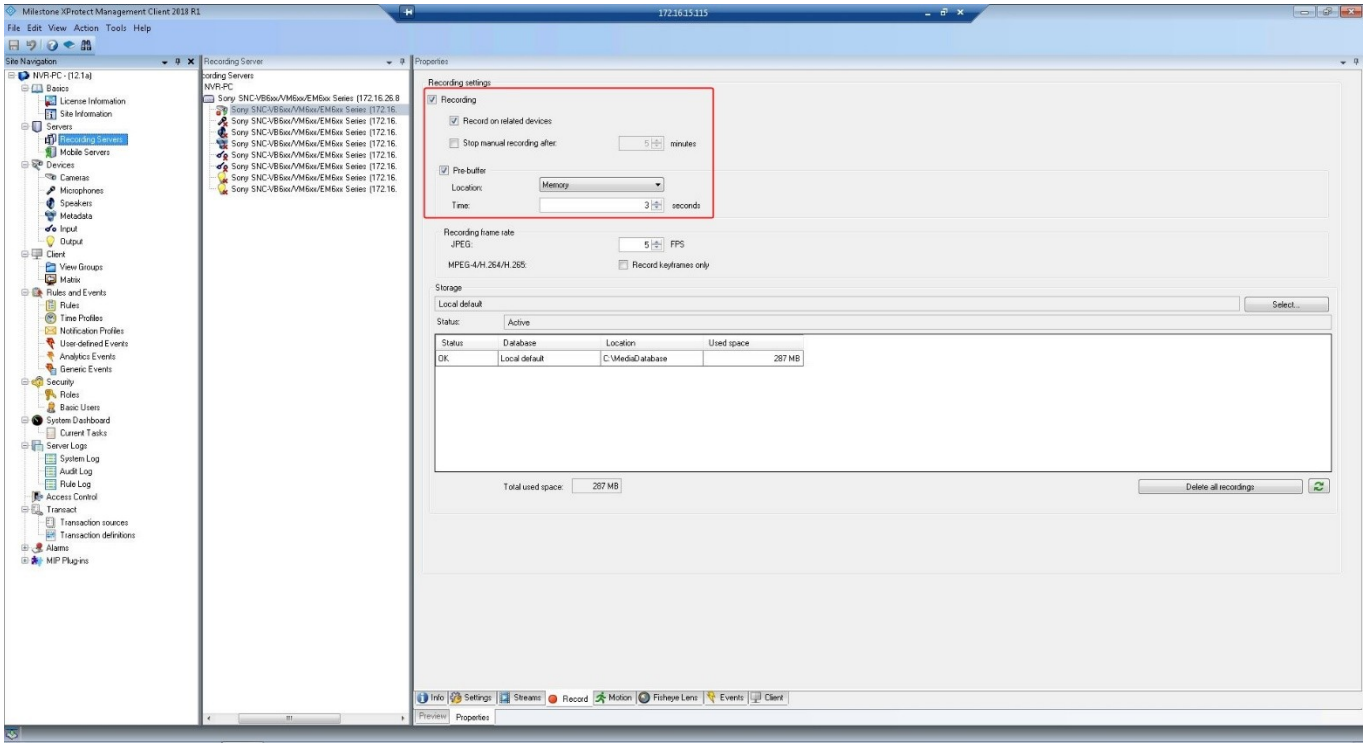
- **INSTALL MILESTONE MOBILE SERVER**

All XProtect system components, including the Milestone Mobile server, are available for separate download and installation from the management server's download web page (controlled by XProtect Download Manager):

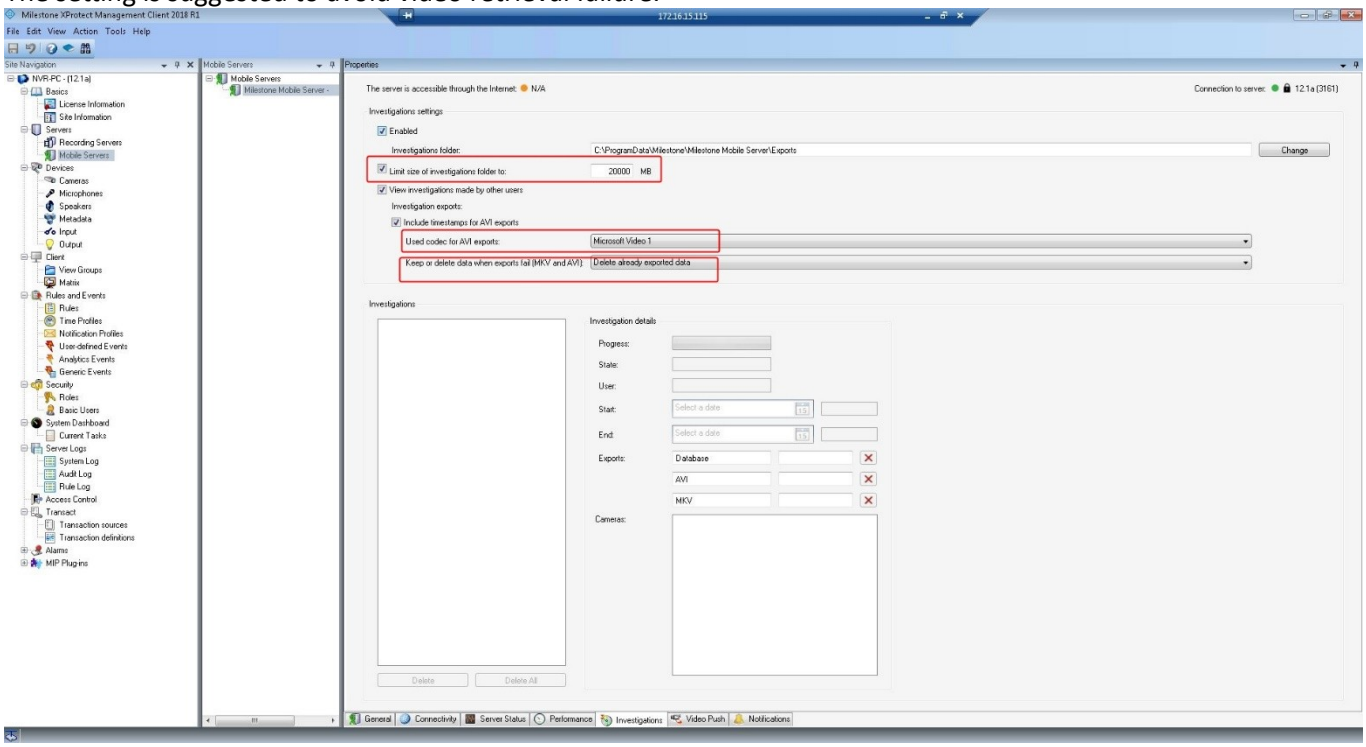
i. On the management server, go to the Management server's download web page from Windows' Start menu, select Programs, Milestone, and Administrative Installation Page.
ii. Select the Milestone Mobile server installer. Save the installer in an appropriate directory and run it from there or run it directly from the web page.
iii. Follow the on-screen instructions to install.

Once the user has installed the Milestone Mobile server, the user can use the Milestone Mobile client and XProtect Web Client with the user's system. To reduce the overall use of analytic capacity on the computer that runs the management server, install the Milestone Mobile server on a separate computer.

Follow the setting displayed below for Milestone Recording Servers.
The camera is always recording in this setting.

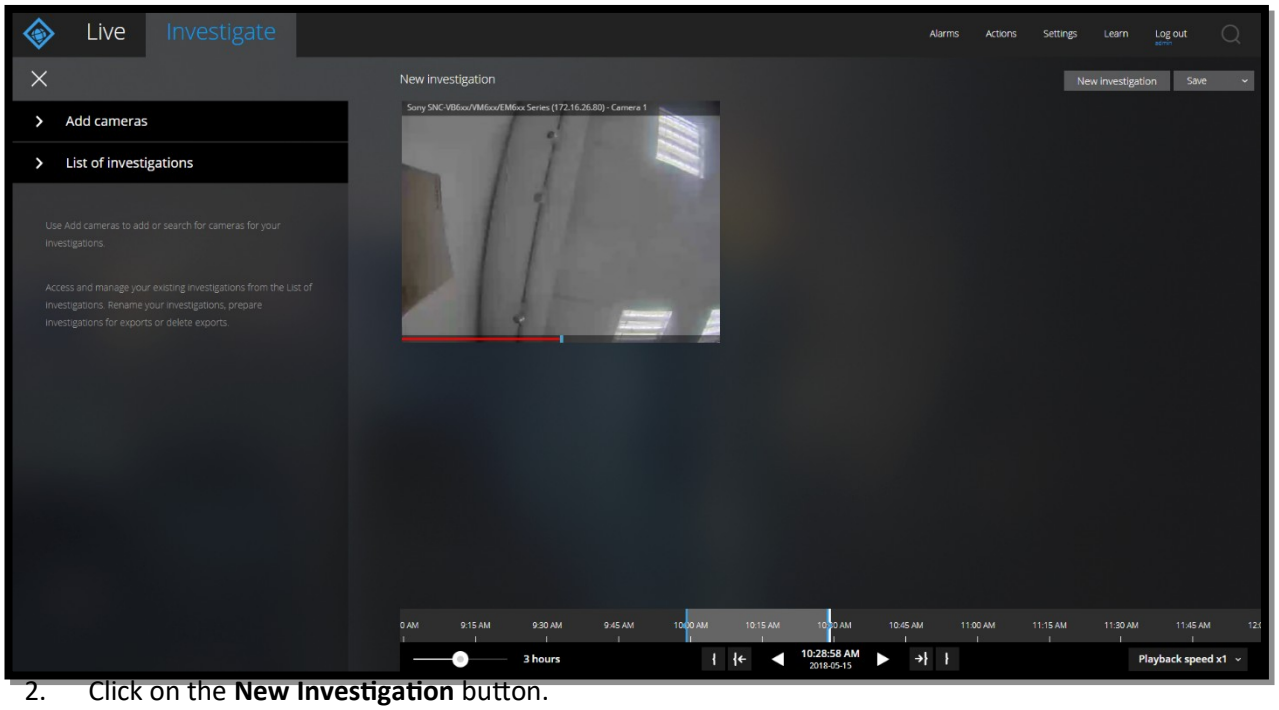


Follow the setting displayed below for Milestone Mobile Servers.
The setting is suggested to avoid video retrieval failure.

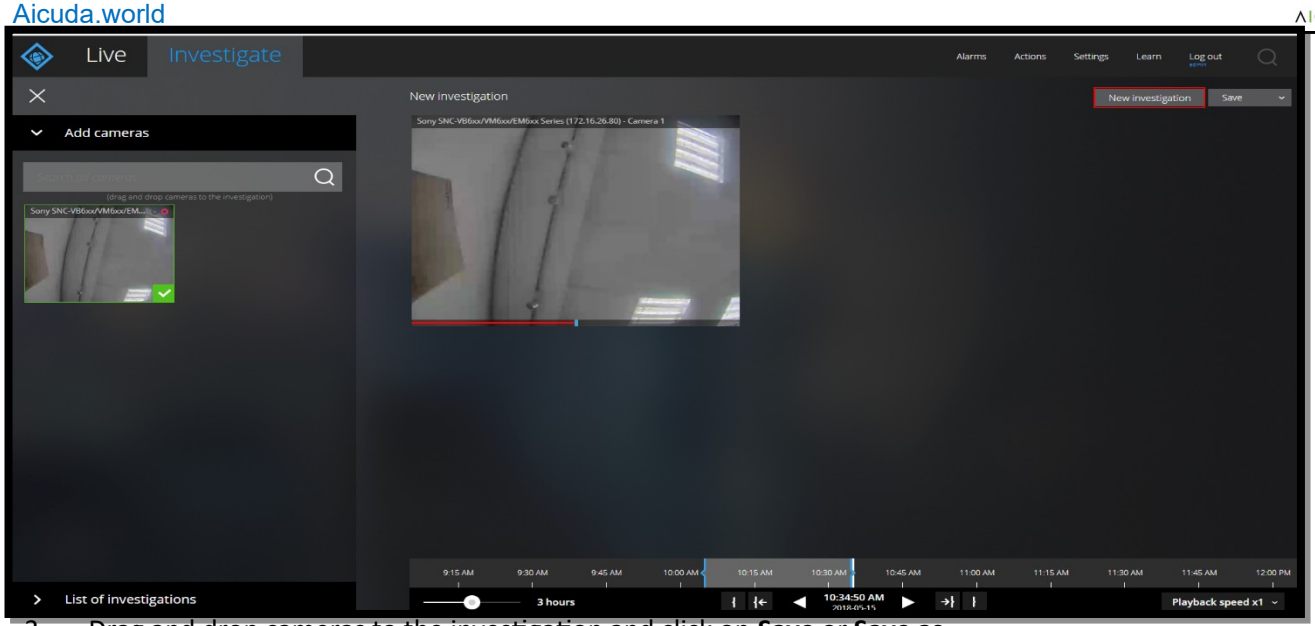


3. Add Camera

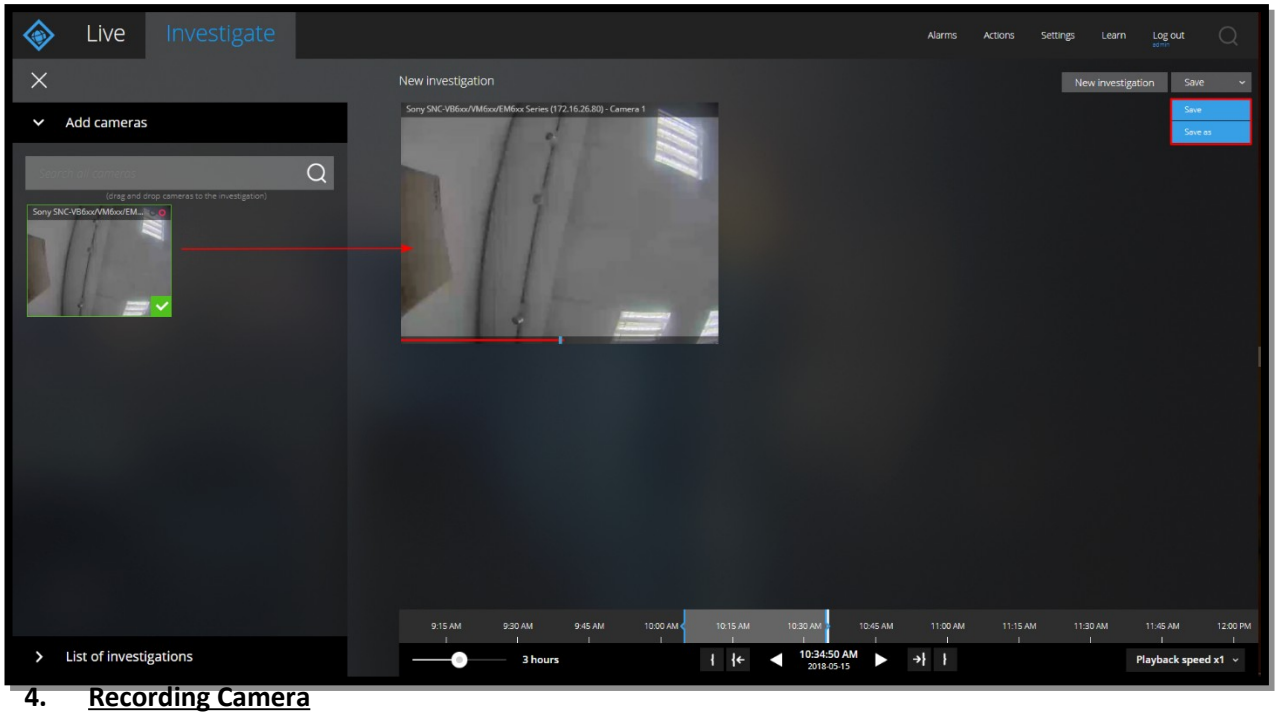
1. Click on Investigate > **Add cameras**.



2. Click on the **New Investigation** button.

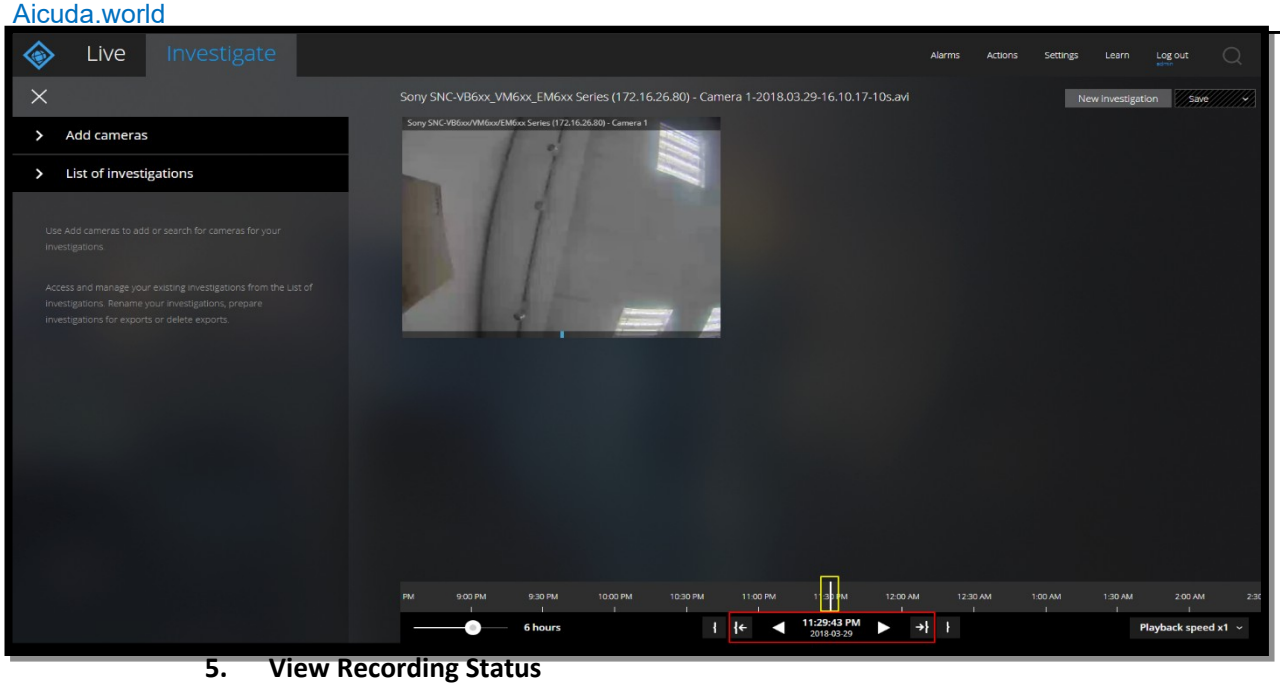


3. Drag and drop cameras to the investigation and click on **Save** or **Save as**.



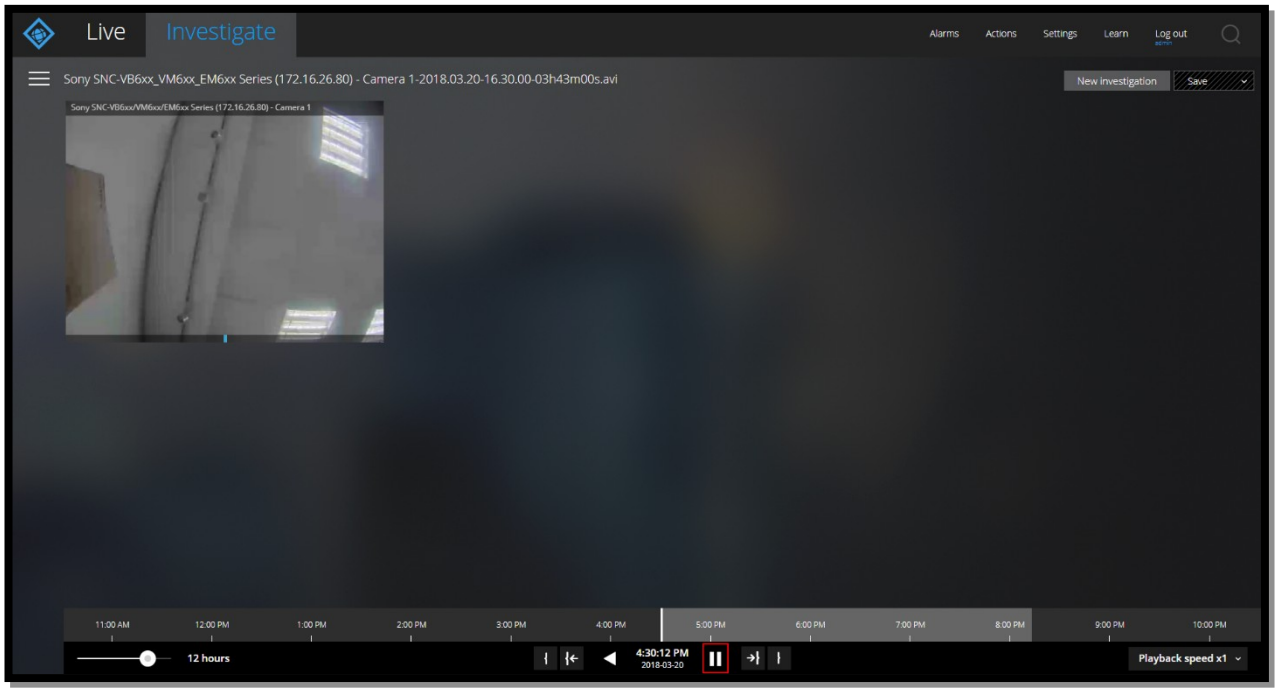
4. **Recording Camera**

Set the recording camera event by dragging the Time scale bar; go to the end time selection and click the **Record Forward** button.



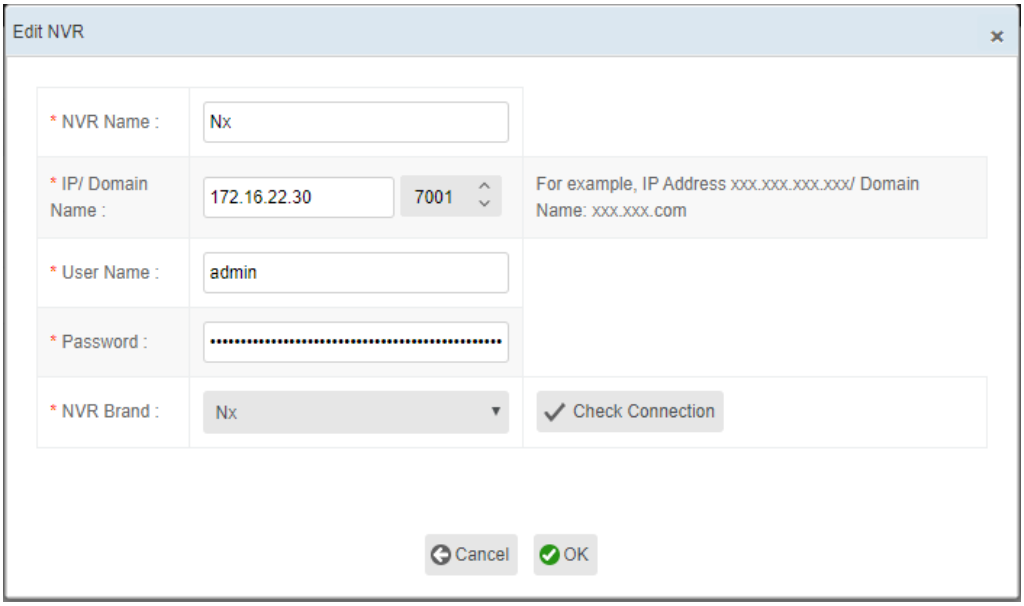
5. View Recording Status

1. Select the Time frame and click on the **Play** button.



21.2 Editing NVR

Click the **Edit** button of the corresponding NVR in the NVR window to open the Edit NVR window.



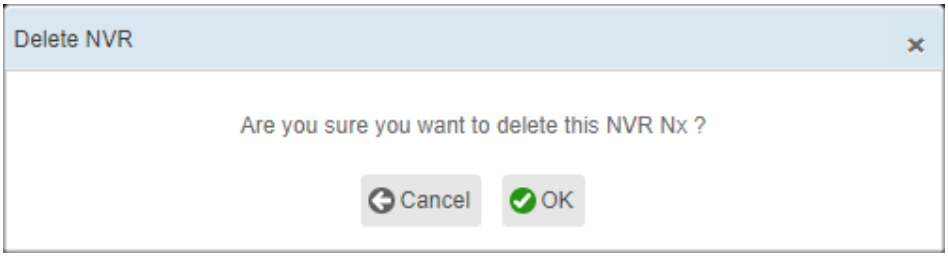
Edit NVR Window

Item	Description
NVR Name	Enter the name of the NVR.
IP Address/Domain Name (port)	Enter the IP address or domain name with the port number of the NVR.
User Name	Enter the username of the NVR.
Password	Enter the password of the NVR.
NVR Brand	Select the NVR brand.

Click **Check Connection** to test whether Vaidio can connect to the NVR.
Click **OK** to apply the changes to the settings and update the NVR information in the NVR window.
Click **Cancel** to discard the settings and return to the NVR window.

21.3 Deleting NVR

Click the **Delete** button of the corresponding NVR to open the Delete NVR window.

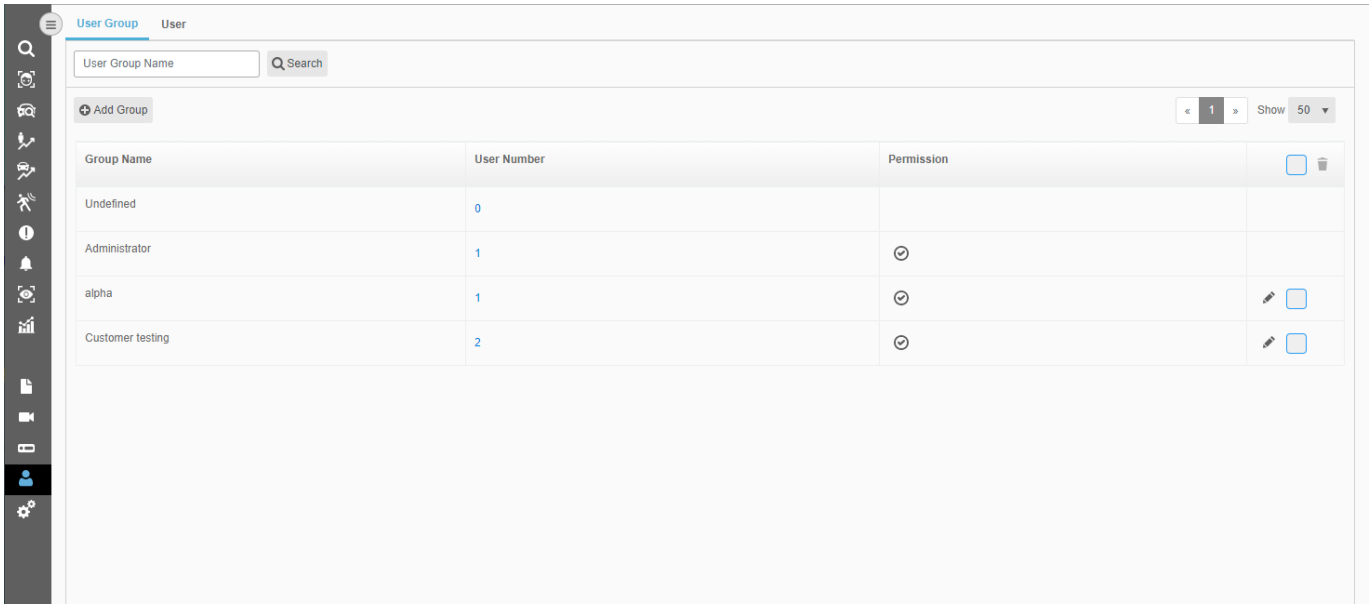


Delete NVR Window

Click **OK** to delete the NVR.
Click **Cancel** to discard the action.

22. User

Click the **User** tab to see the window below.



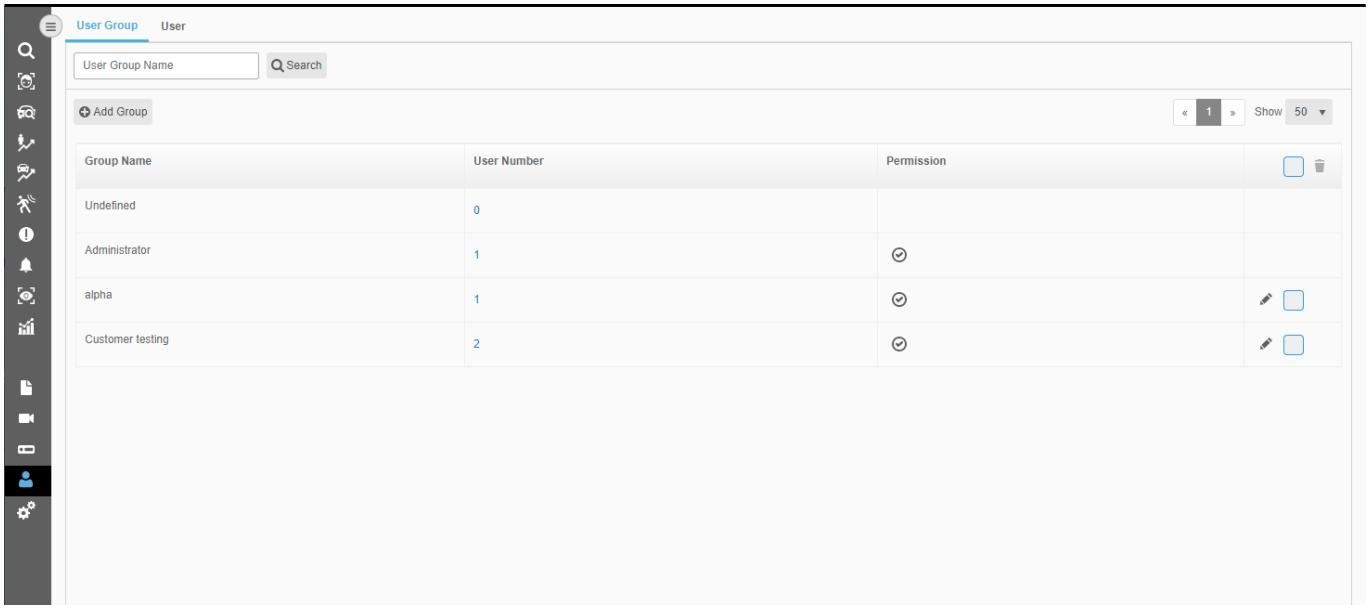
User Window

In the User page, there are two sub-tabs: **User Group** and **User**, only the admin user is allowed to access this page.

Item	Description
User Group	**User** default page, allowing the user to create, edit, and delete User Group.
User	Allow the user to create, edit, and delete User.

22.1 User Group

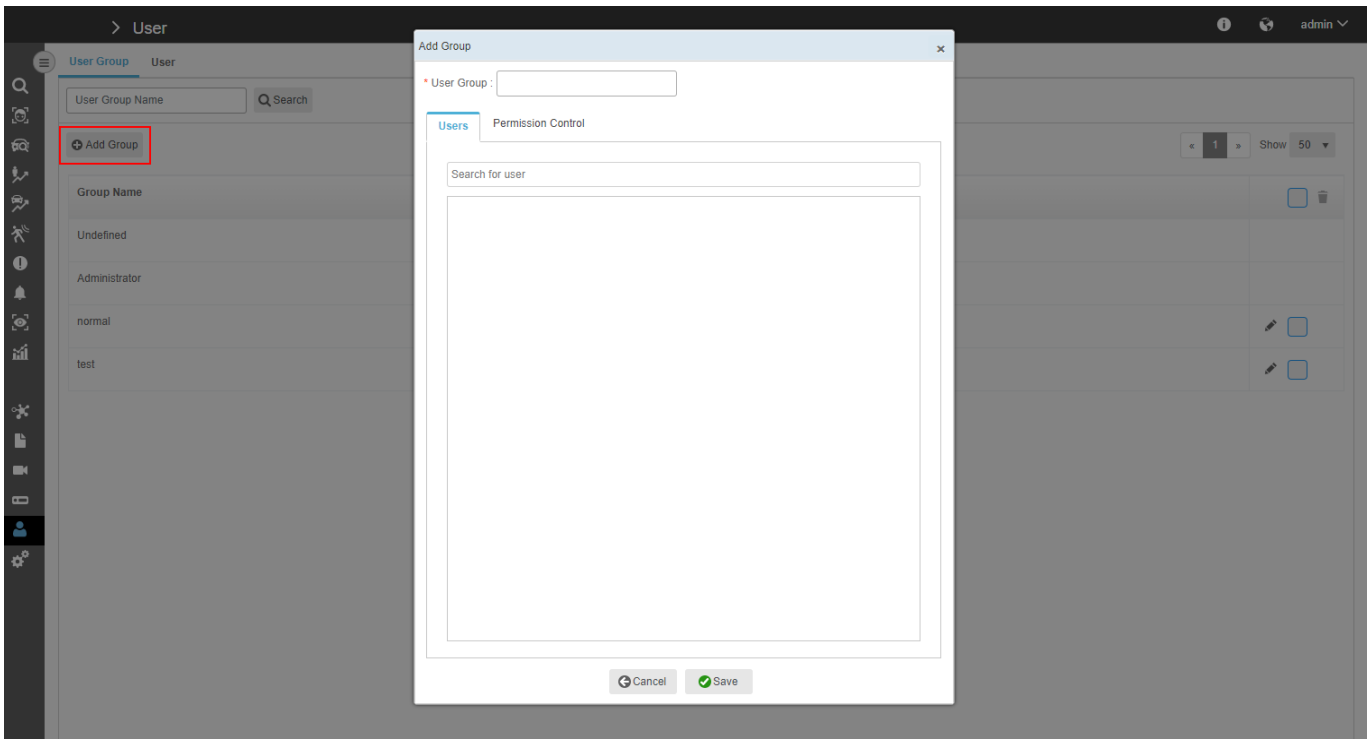
The User Group sub-tab is the default page of User, shown in the window below.



User Group Window

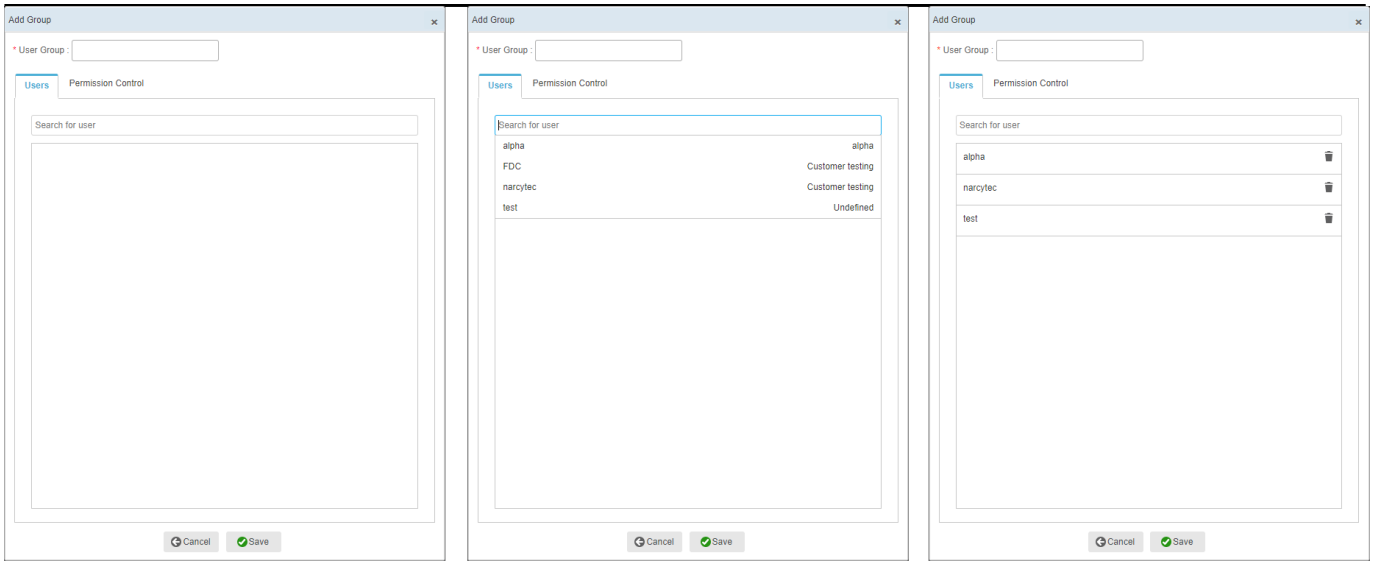
Click the number in **User Number** column to find out list of users belong to the Group.
Click in the **Permission** column to see the cameras available for the corresponding user.
The Administrator and Undefined Group cannot be edited. Administrator is user with highest level access, while Undefined is for unassigned users with lowest access level.

22.1.1 Users



Add Group Window

Click the Add Group button to create new user group, there are two subtabs in the Add Group window: Users and Permission Control.

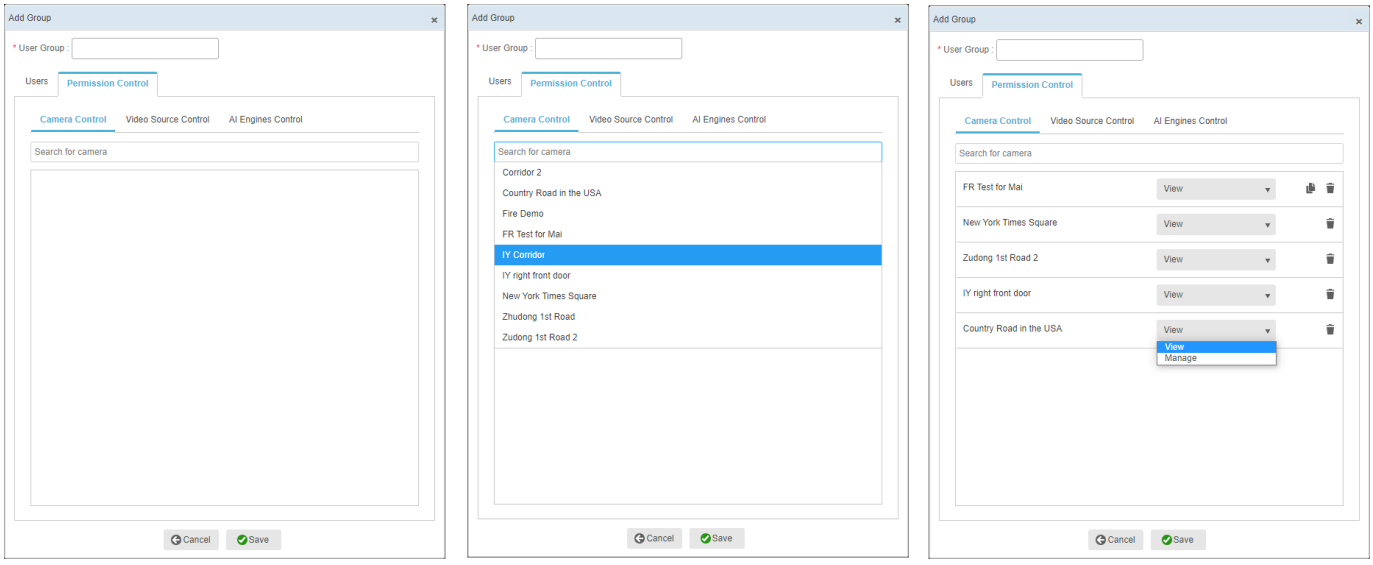


Add users in User Group window

In the User subtab, use search bar to get list of users available in the system.
In the search dropdown menu, user account name would appear on the left with user group they on the right.
Selected User would show in the given space at bottom, user already belong to another group would be changed to the current group when window is saved.

22.1.2 Permission Control

Click Permission Control to assign data access privilege for the selected users.
In Permission Control, there are three sub tabs: Camera Control, Video Source Control and AI Engines Control.

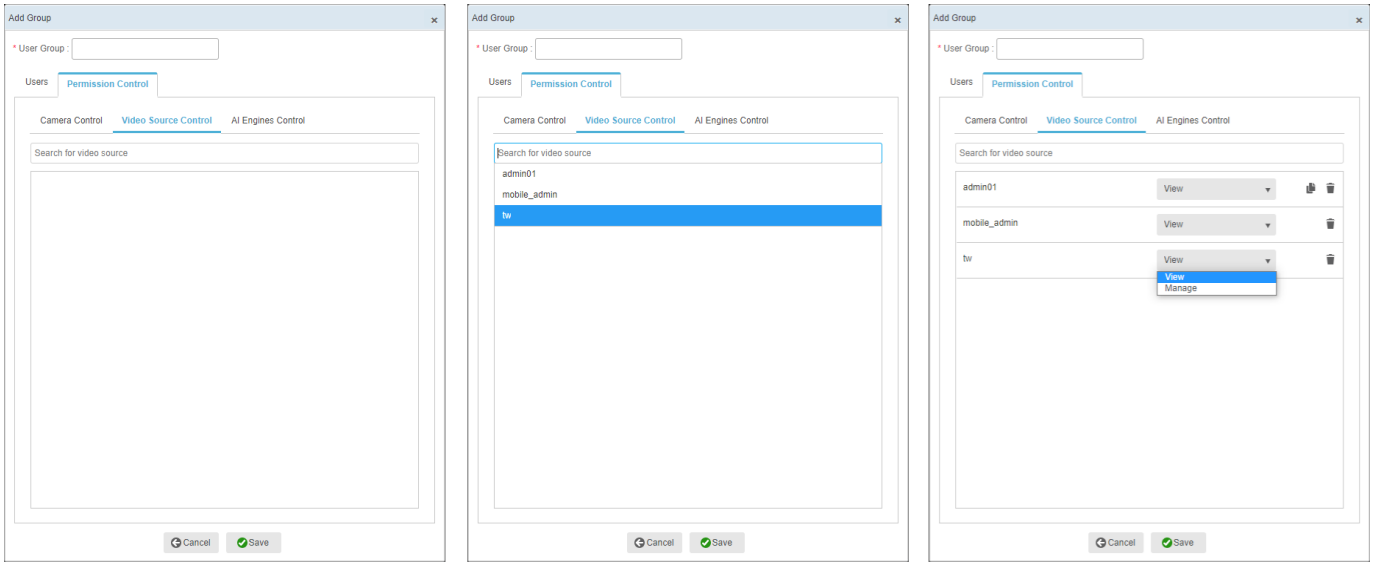


Camera Control

In Camera Control, use search bar to find list of camera available in the system.
In the search dropdown menu, camera name would appear, selected camera would show in the given space at bottom, assign View or Manage permission accordingly.

View: The user assigned with View can only see cameras in the camera list and their analytic events but cannot edit them.
Manage: The user assigned with Manage can see and edit the camera configuration from the camera list.
Refer to Chapter 18.1 Edit Camera for more details.

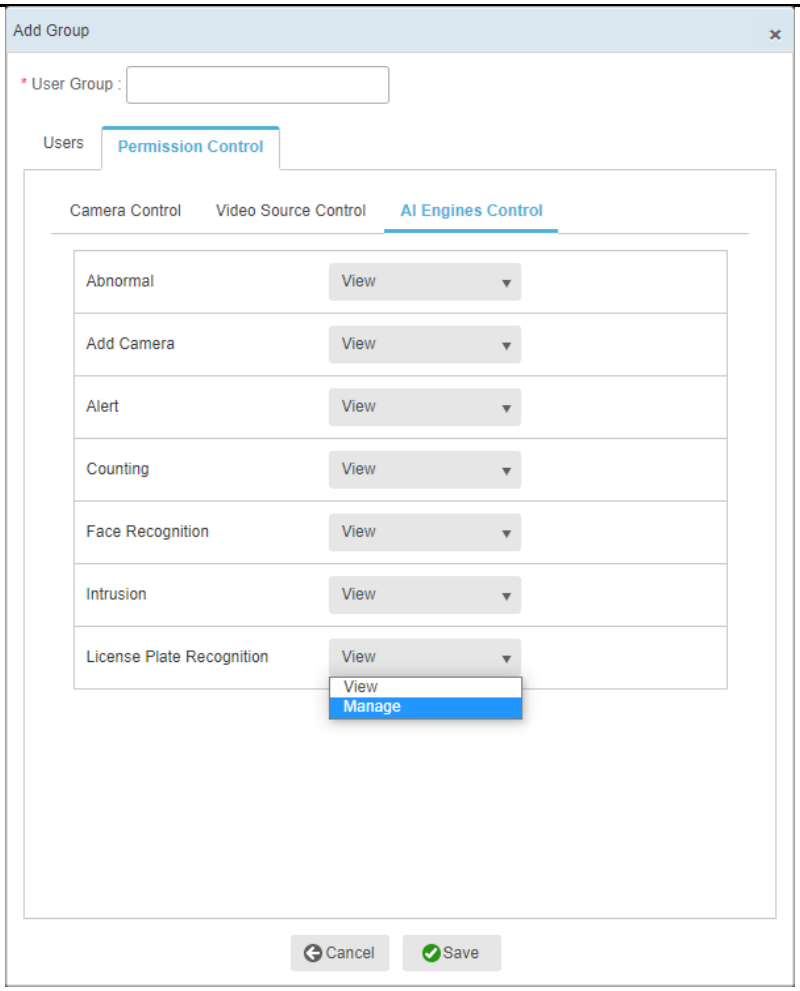
The user is also allowed to add the allowed camera to Alert Rule if this user is assigned Manage permission in Alert.
Refer to Chapter 13.3 Alert Rule for more details.



Video Search Control

In Video Search Control, use search bar to find list of Video Source available in the system.
In the search dropdown menu, video source name would appear, selected video source would show in the given space at bottom, assign View or Manage permission accordingly.

View: The user assigned with View would allow to view and download files under the selected video source but cannot edit them.
Manage: The user assigned with Manage can view and edit the files under the selected video source from the file list.
Refer to Chapter 17 File for more details.



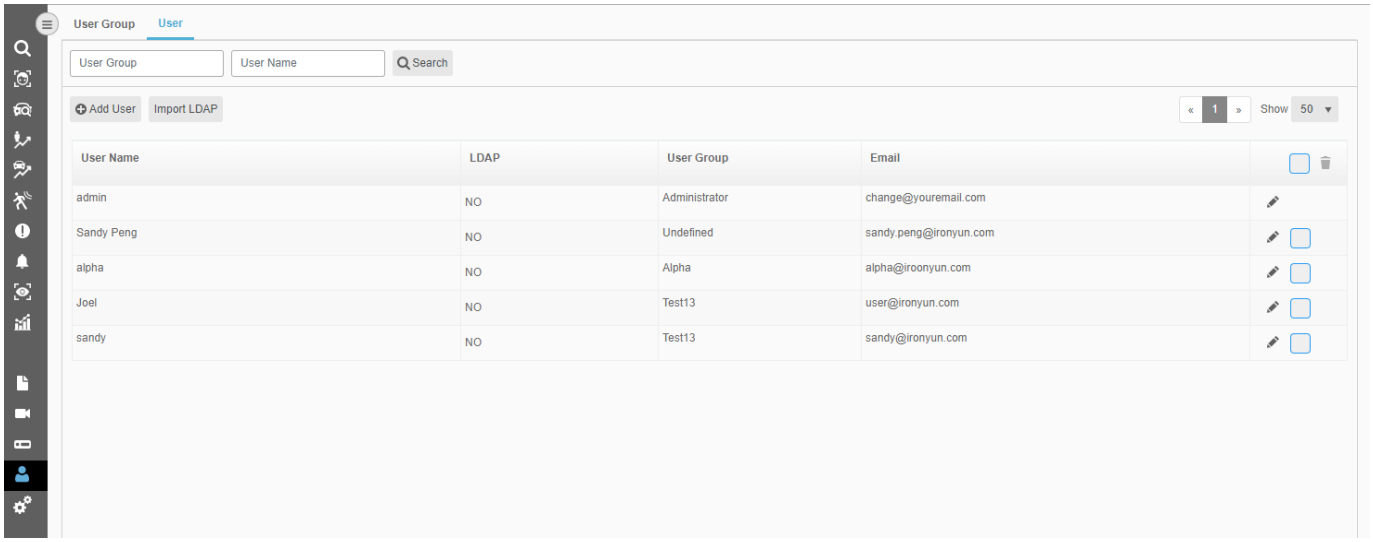
Ai Engines Control

Item	Description
AI Engines	Abnormal **View:** Users assigned with View privilege can see the Abnormal events but cannot delete them. **Manage:** User assigned with Manage privilege can see and delete the Abnormal events. Add Camera **View:** User assigned with View privilege can see camera but cannot edit the camera. **Manage:** Users assigned with Manage privilege can edit the camera. Alert **View:** User assigned with View privilege can see Alert events but cannot delete the events. The user can see the Alert rules but cannot add/edit the rules. **Manage:** Users assigned with Manage privilege can see the Alert events and delete them. The user can see and add/edit the Alert rules. Counting **View:** User assigned with View privilege can see the People Counting and Vehicle Counting events in graph and list view. Face Recognition **View:** User assigned with View privilege can see FR events but cannot add/edit the target lists. **Manage:** User assigned with Manage privilege can see FR events and add/edit the target lists.

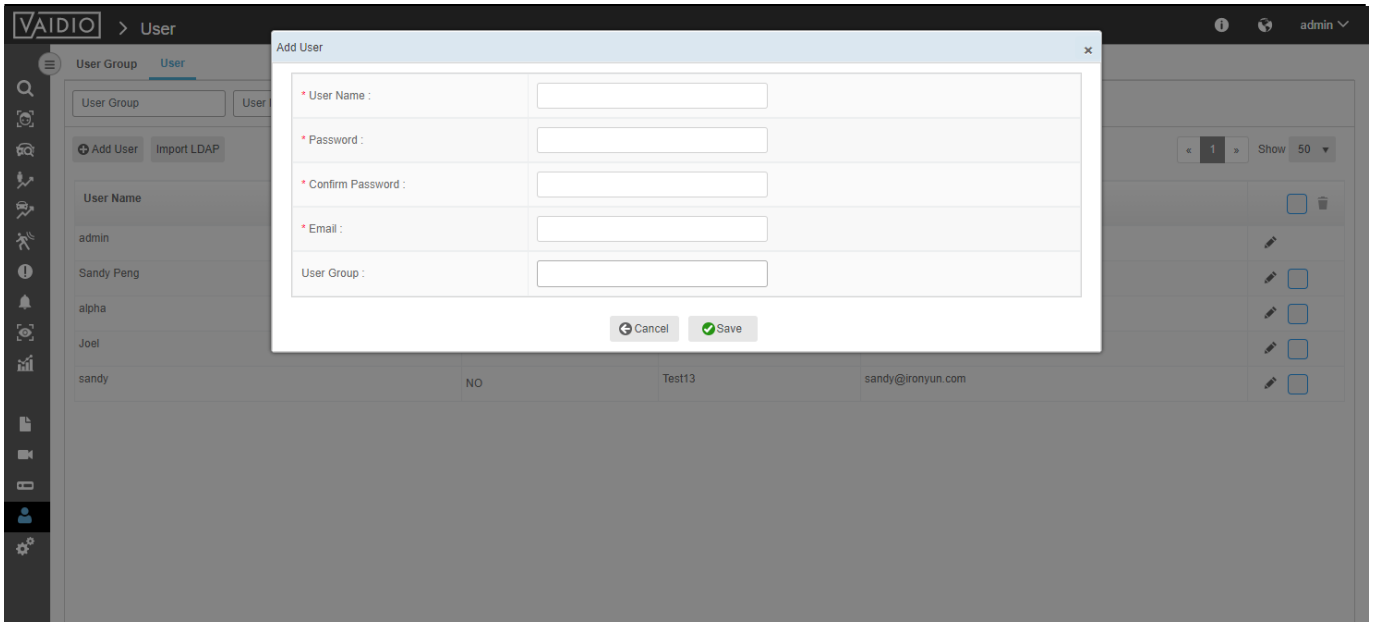
	Intrusion **View:** Users assigned with View privilege can see the Intrusion events but cannot delete them. **Manage:** Users assigned with Manage privilege can see and delete Intrusion events. License Plate Recognition **View:** User assigned with View privilege can see LPR events but cannot add/edit the LPR lists. **Manage:** User assigned with Manage privilege can see LPR events and add/edit the LPR lists.

22.2 User

Click the User sub-tab to see the window below.



Click the **Add User** button to create a new user and add to User group.



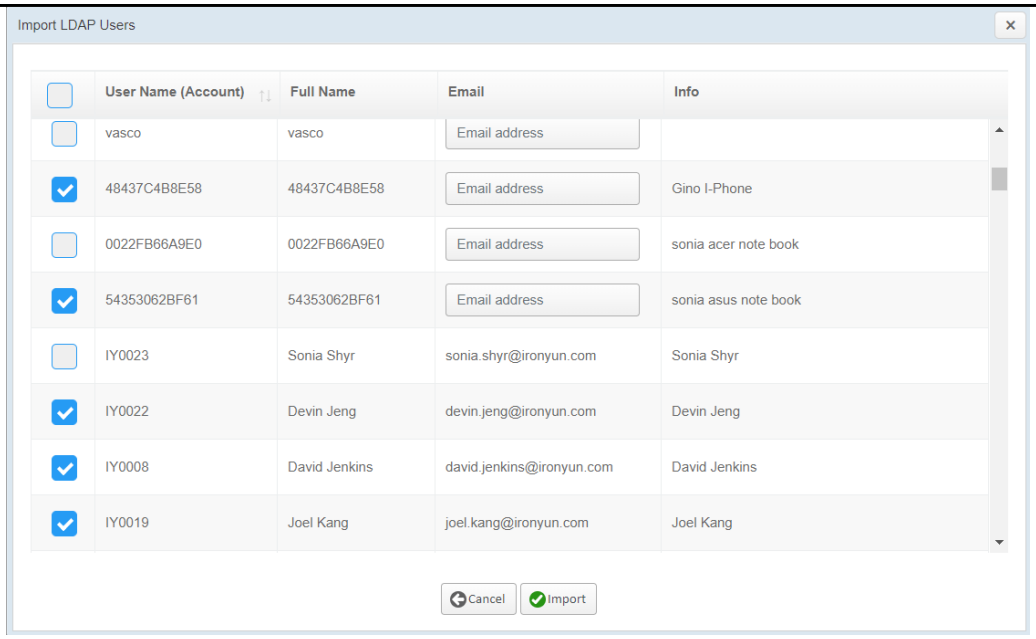
Add User Window

Item	Description
User Name	Enter the name of the user.
Password	Enter the password of the user.
Confirm Password	Re-enter the password.
Email	Enter the email address of the user.
User Group	Select User group or leave blank to have user assigned to undefined group.

22.3 Import LDAP Users

In the User page, click the **Import LDAP** button to import LDAP users. Make sure that the LDAP server is configured in the LDAP page under System.
Refer to Chapter 21.7 LDAP for more details.

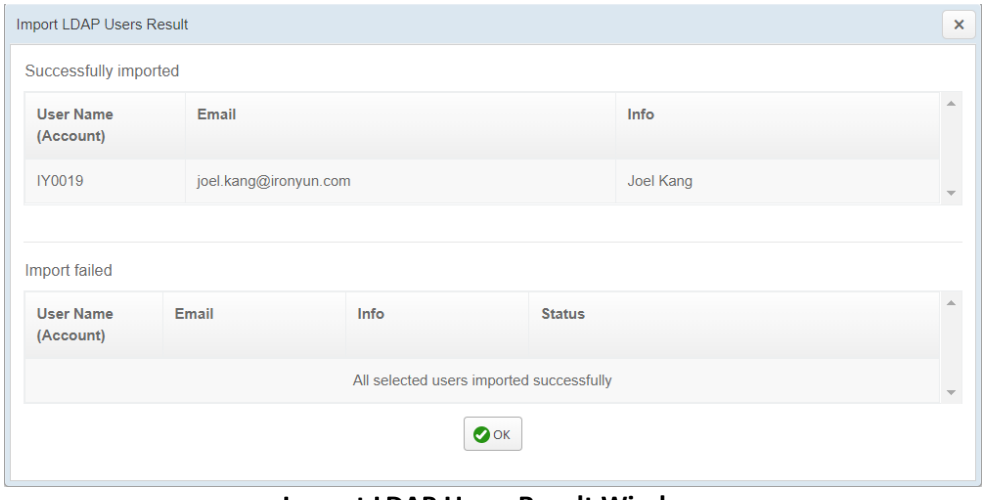
The Import LDAP Users window appears.
Check to select the users and click the **Import** button to import



Import LDAP Users Window

Item	Description
User Name (Account)	Username or account name imported from the LDAP server
Full Name	Full name imported from the LDAP server
Email	Email address imported from the LDAP server. Some LDAP servers may have a different contact bridge, which is not in an email format; then, Email is left empty. The administrator can manually enter the email address for this LDAP user.
Info	Information or description imported from the LDAP server

After being imported from the LDAP server, the checked users are displayed in the Import LDAP Users result to show whether the selected user(s) has been successfully or unsuccessfully imported.
Click **OK** to confirm the import.



Import LDAP Users Result Window

The selected LDAP users are now imported into the user list.
YES indicates that the user is imported from the LDAP server; NO indicates that the user is added from a normal Add User in the LDAP column.
Note that in Edit User, the User Name, Password and Confirm Password cannot be modified for an LDAP imported user.

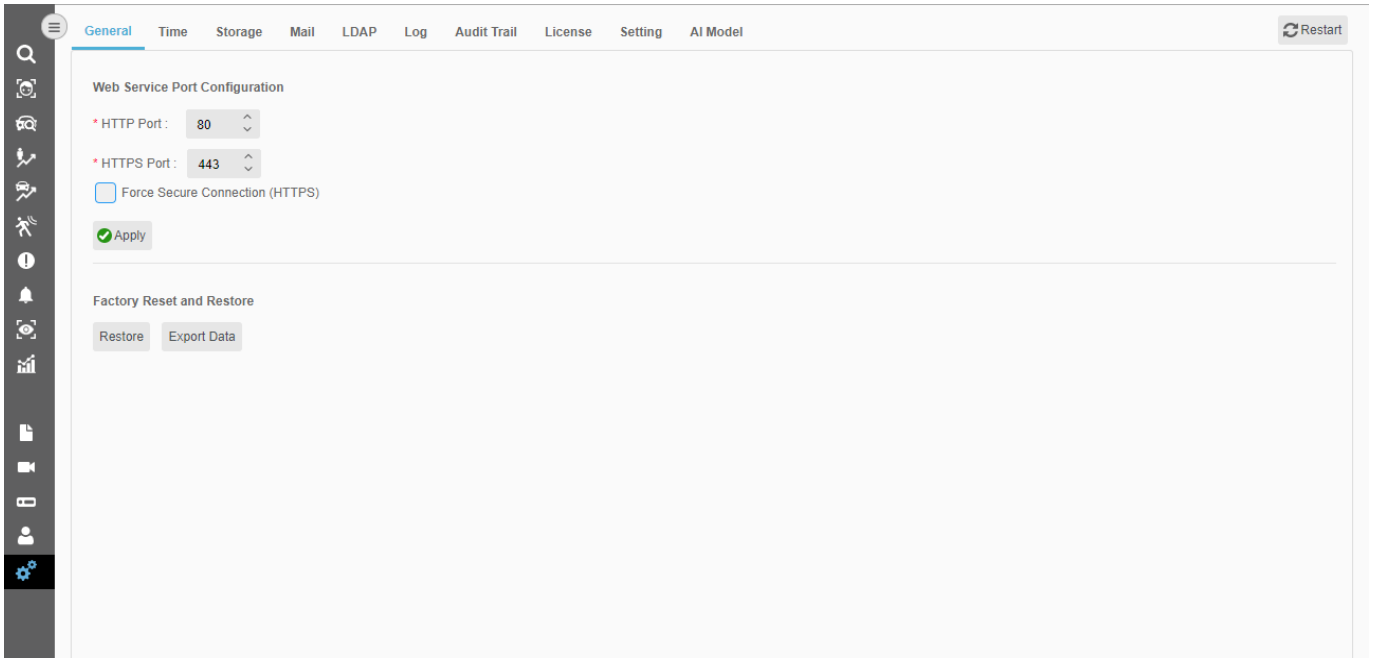
All imported LDAP users can use their original username or account name and password to log into the system.

User Name	LDAP	Create Time	Email	Privilege	
admin	NO	2020-03-13 10:36:48	navid.mai@ironyun.com	90	
IYdemo	NO	2020-03-13 13:53:22	IronYun@changeyouremail.com	12	
Joel	NO	2020-03-18 16:52:57	joel.kang@ironyun.com	3	
sandy	NO	2020-04-30 17:37:08	sandy.wang@ironyun.com	7	
Hyper	NO	2020-06-11 14:18:48	change@youremail.com	14	
User001	NO	2020-06-11 15:04:42	user001@ironyun.com	0	
kevinkuan	NO	2020-06-15 17:01:56	change@yourmail.com	11	
senturian	NO	2020-06-24 16:28:04	anthony.tsung@ironyun.com	0	
global4	NO	2020-07-04 05:25:34	justing@global4security.com	3	

Users imported from the LDAP server

23. System

Click the **System** tab to see the window below.
The following tabs are displayed in this window: **General, Time, Storage, Mail, LDAP, Log, Audit Trail, License, Setting,** and **AI Model.**

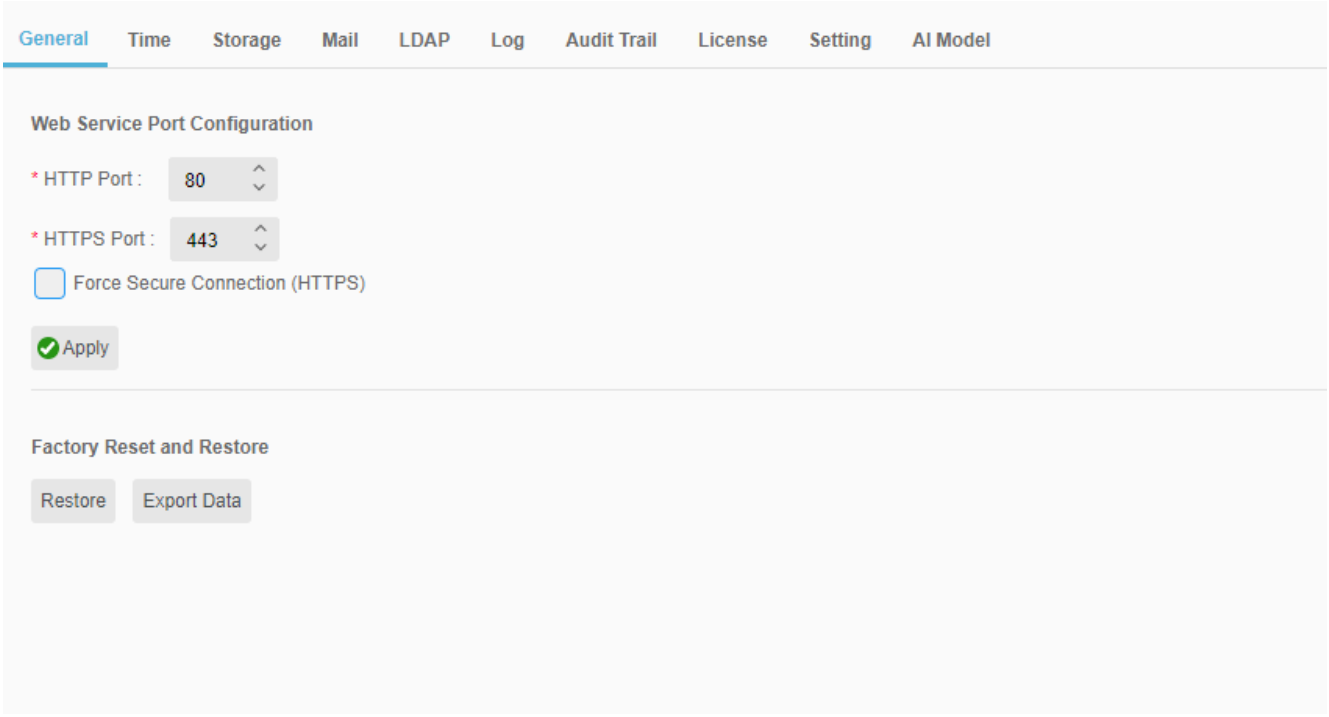


System Window

Click the **Restart** button to reboot Vaidio.

23.1 General

Click the **General** tab to see the window below.



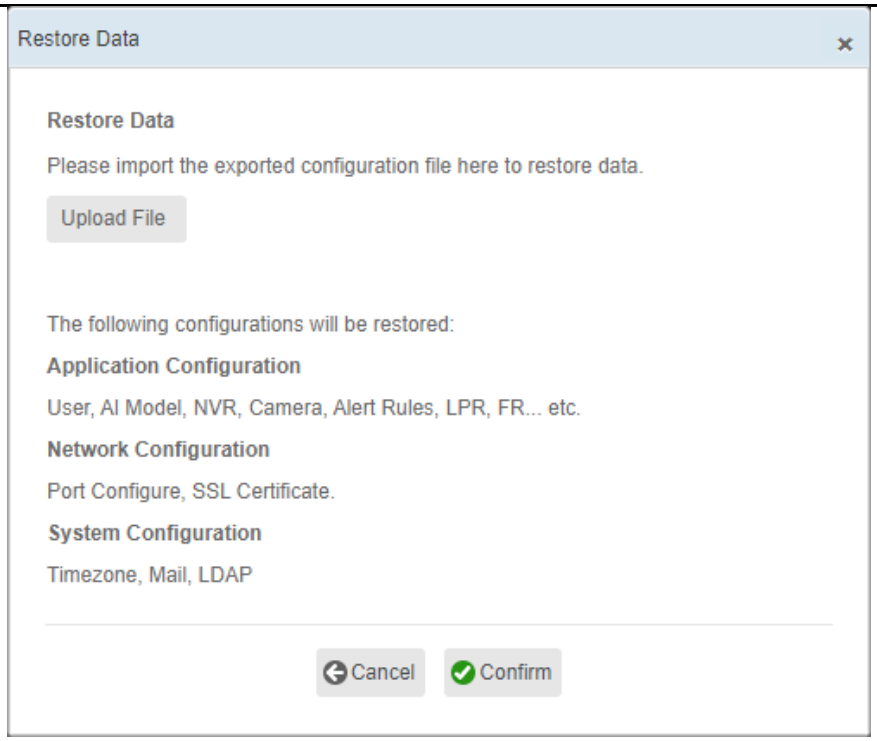
General Window

Item	Description
HTTP Port	Enter the port number of the HTTP.
HTTPS Port	Enter the port number of the HTTPS
Force secure connection (HTTPS)	Enable to only allow the secure communication network.

Click **Apply** to save the settings.

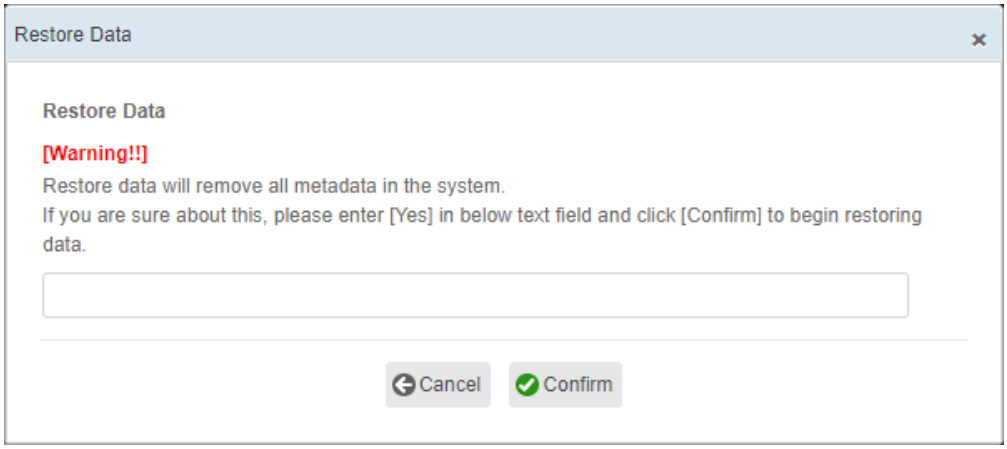
23.1.1 Restore

Click the **Restore** button to open a new window with the following content.
Click the **Upload File** button to locate the Vaidio configuration file for Restore.



Restore Data

Click **Confirm** to see the following window for the final confirmation of Restore.



Restore Data Confirmation

Enter “Yes” in the textbox and click **Confirm** to proceed with restoring the data.
Click **Cancel** to discard the process.

23.1.2 Export Data

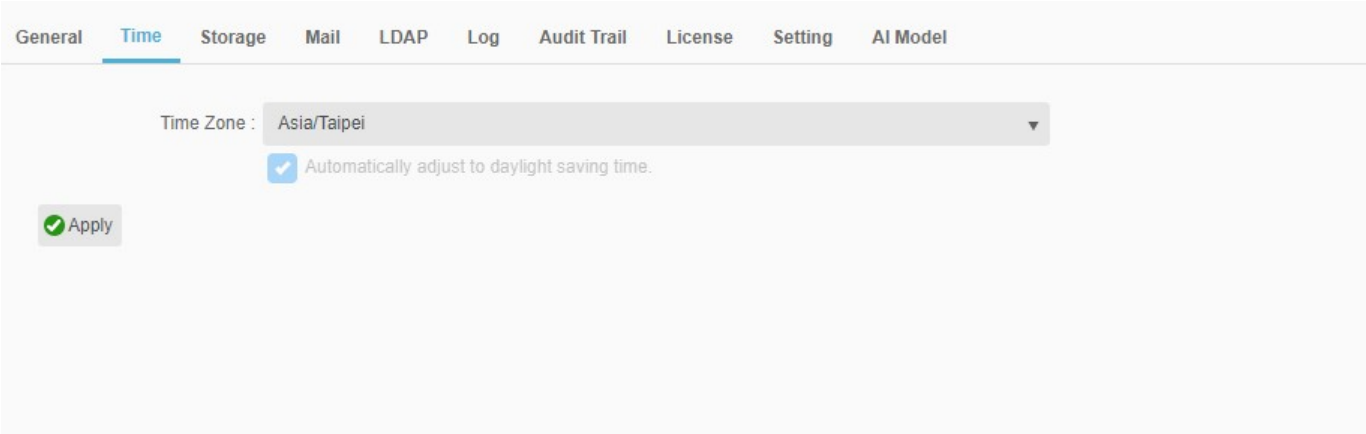
Click the **Export Data** button in the **General** tab to save the Vaidio configuration to the local computer.

Export Data	
Application Configuration	User List
	Vaidio (for central search)
	AI Model

	NVR List
	Camera List
	ROIs
	Profiles
	LPR List
	Alert rule (Exclude FR)
Network Configuration	Server Name
	Network Interface
	Interface
System Configuration	Date/Time
	Time zone
	Log Level
	Log Rotation
	Notification

23.2 Time

Click the **Time** tab to see the window below.



Time Window

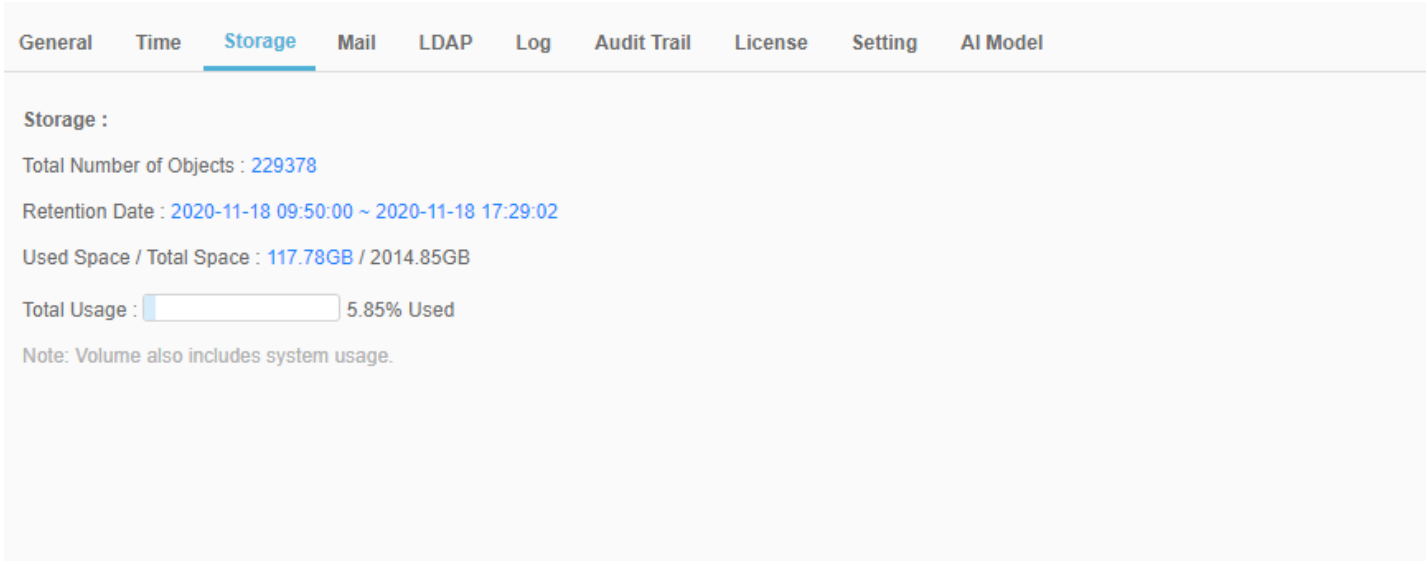
Item	Description
Time Zone	Select the user's time zone from the list.
Automatically adjust to daylight saving time	Select to automatically use daylight saving time when applicable.

23.3 Storage

Click the **Storage** tab to see the window below. This window displays the data volume storage information of

Vaidio. Any data out of the retention date will not be found.

In the case of AI Storage Installation, when the user installs an HDD into the Vaidio appliance, the system storage will automatically detect the new data volume to utilize.

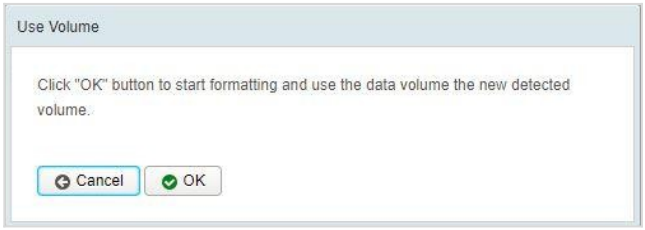


Storage Window

Use a new data volume

When the system detects a new data volume, the user will see the message: “A new volume is detected. Click to start using the data volume.” Click **Use Volume** to initialize this volume.

Click OK to confirm using the data and start the process, or click Cancel to cancel using the new volume.



Confirm to use the new data volume

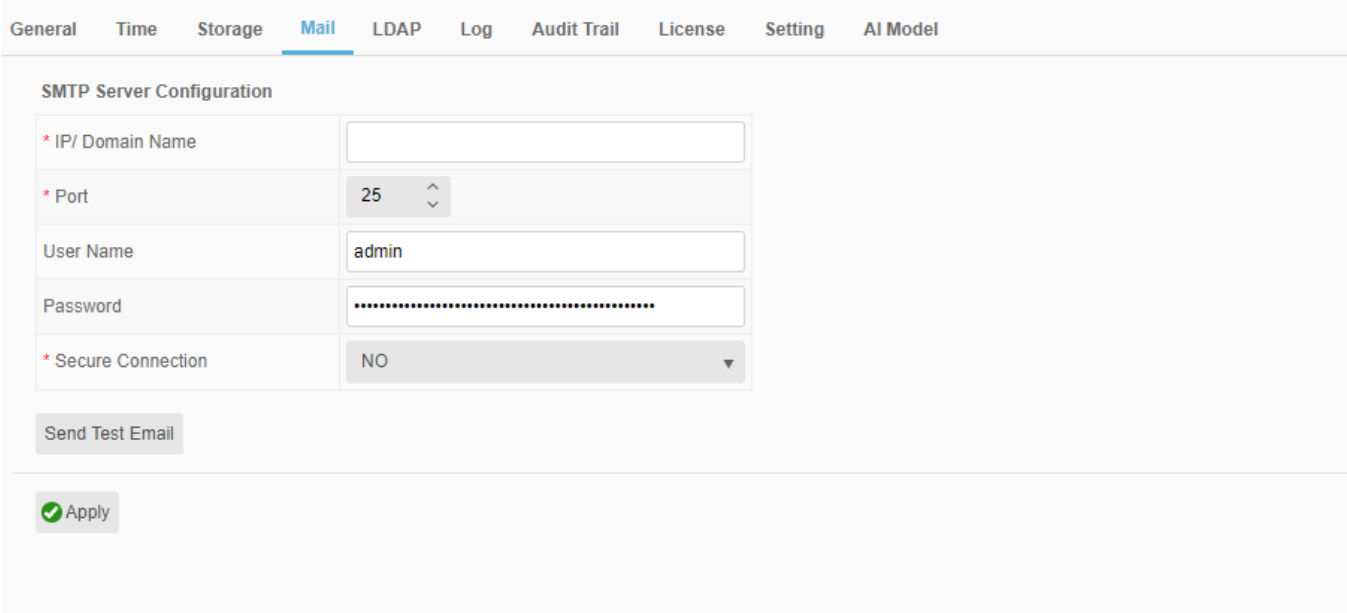
The system will reboot to format the new data volume. After the process, the user will see that the new volume has been attached. The name of the attached volume appears in the Data Volume Information.

Note:

Make sure that Vaidio functions with a data storage volume. Otherwise, data will occupy the system resource and affect the performance due to the resource sharing from the system.

23.4 Mail

Click the **Mail** tab to see the window below. This window is used to configure the email settings of the administrator.



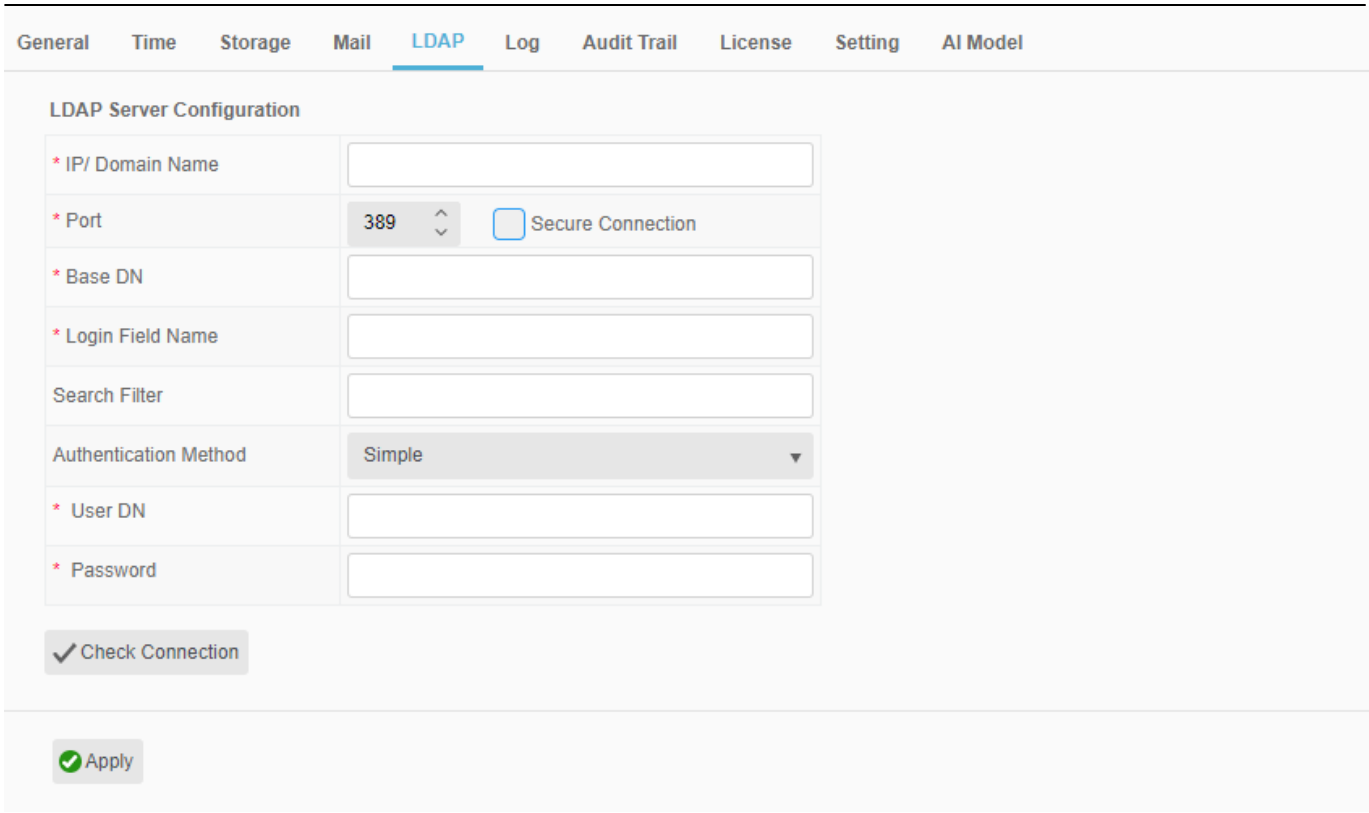
Mail Window

Item	Description
IP/Domain Nam	Enter the SMTP server email, which is also known as the notification sender.
Port	Enter the port number of the SMTP server.
Username	Enter the email address of the administrator.
Password	Enter the password of the email account.
Secure Connection	Select whether to use secure communication. The available options are: **NO**, **SSL,** and **TLS**.

Click **Apply** to save the settings.

23.5 LDAP

Click the **LDAP** tab to see the window below. This window is used to configure the LDAP server.



LDAP Window

Item	Description
Server IP/Name	IP address or name of the LDAP server
Port	Port number of the LDAP server
Base DN	Base DN of the corresponding field in the format of the LDAP server. *For example, Base DN includes CN=Users, DC=companyname, DC=com, which correspond to the company's AD server.*
Login Field Name	Username or account name of the user. *For example, Login Field Name corresponds to a specific name field in the AD server which is the target to be used for LDAP user login. It can be an account name, user name, or any other account-related field. In the above screen sample, sAMaccountName is the field used to login to the company AD server.*
Search Filter	Enter the search filter of the LDAP server. *For example, the search filter is the attribute description or classification or value of the user of the company's AD server.*
Authentication Method	Select the authentication method to define the LDAP server authentication. Simple The simple authentication method has the LDAP client send the username (as an LDAP distinguished name) and password (in clear text) to the LDAP server Anonymous The anonymous authentication method has the client send an LDAP request without doing a "bind", which is treated as anonymous.
User DN	Enter the User DN of the LDAP server. *For example, User DN includes CN=account name, CN=users, DC=companyname, DC=com, which correspond to the company's AD server.*
Password	The password of the user from the LDAP server

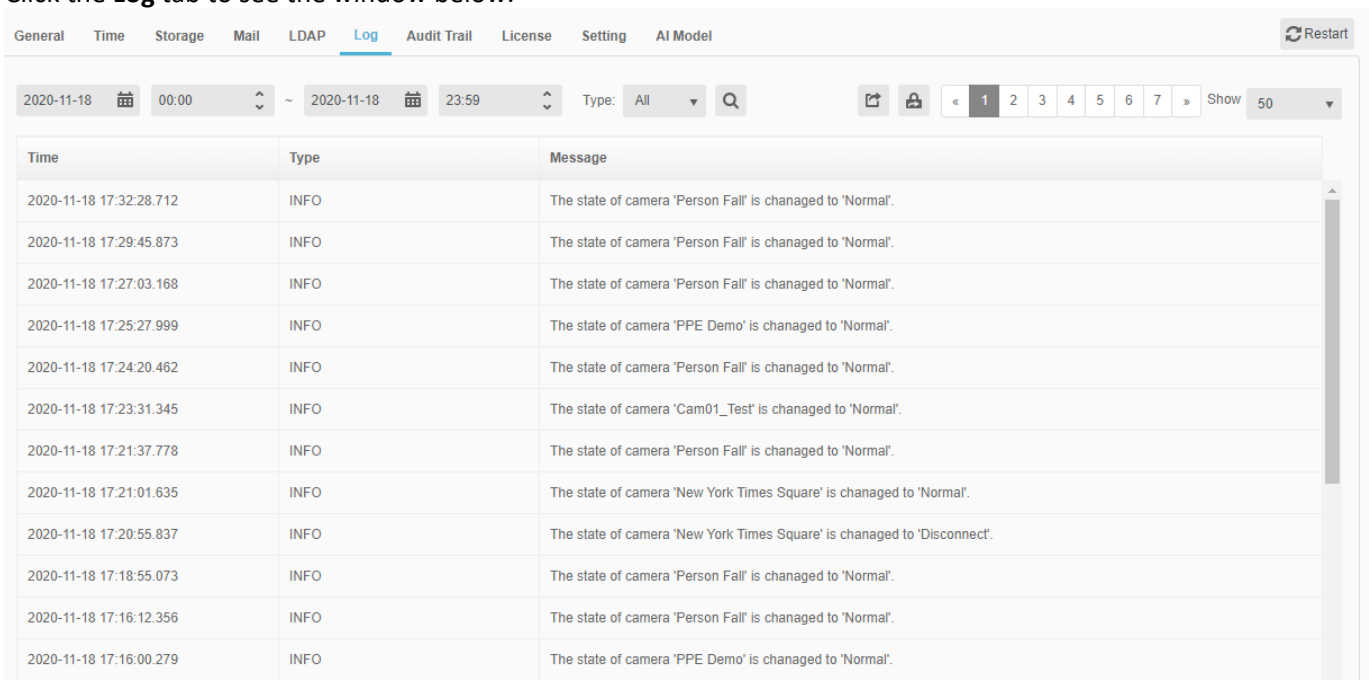
Click the **Check Connection** button to check whether the LDAP server configuration is well set.
Click the **Apply** button to apply the configured LDAP server.

Note:

LDAP (Lightweight Directory Access Protocol) is an Internet protocol that emails and other programs use to look up information from a server. Each LDAP server may contain different fields and formats based on the organization's access directory.
Usually, the person who fills out the **LDAP Server Configuration** is assumed to have a good understanding of the LDAP server, such as the company IT/MIS member or someone familiar with AD settings (access directory).

23.6 Log

Click the **Log** tab to see the window below.



Log Window

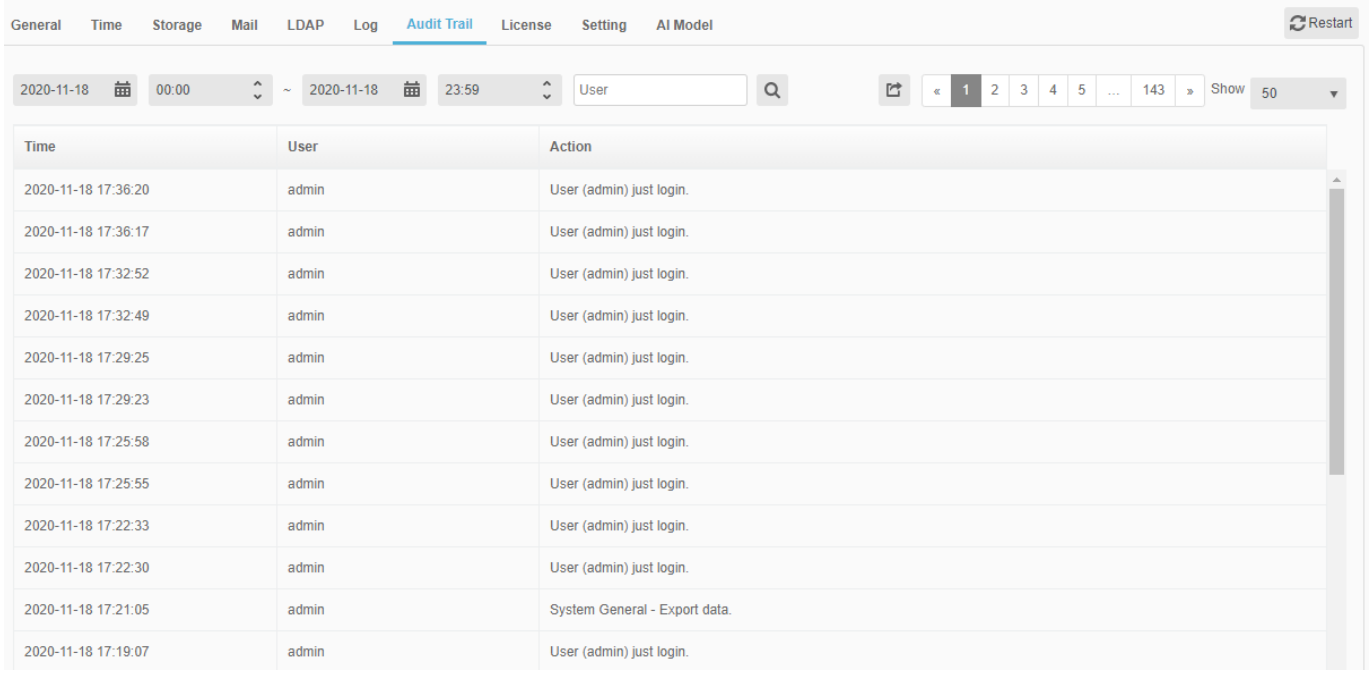
The data logs analyze specific trends or record the data-based events/actions of the Vaidio system environment network.
Click to define the query criteria by specifying the date and time.
Select Log Type in the scroll-down menu to define specific log types for the query.
There are 3 log types: INFO, WARN, and ERROR.
Click to export the encrypted diagnostic logs and send back to Aicuda customer support for diagnostic purpose.


Click Export Diagnostic Logs to provide detailed diagnostic and auditing information for customer support.


Click to export the results as an Excel file.

23.7 Audit Trail

Click the **Audit Trail** tab to see the window below.

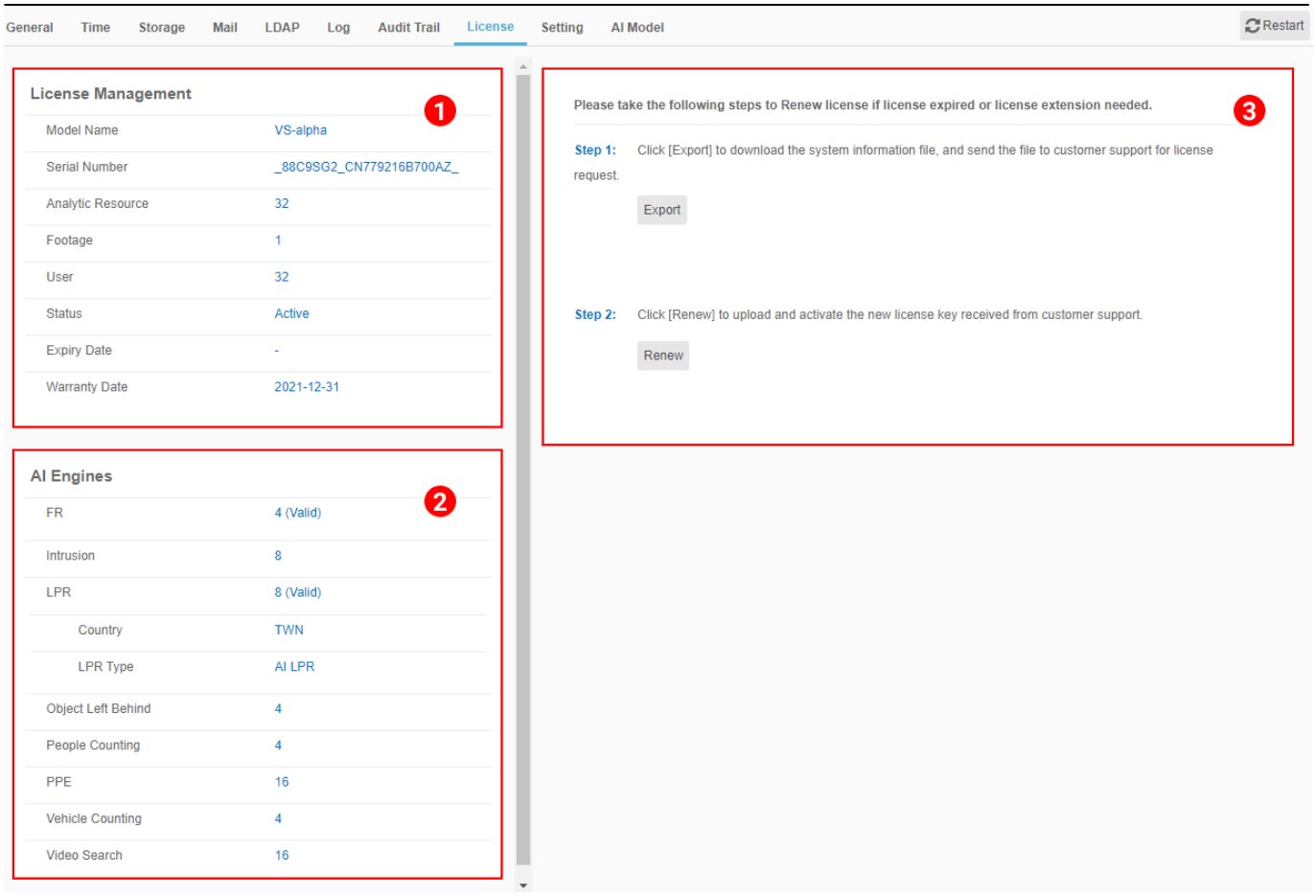


Audit Trail Window

Audit the time, user, and actions that are executed in the entire system.

23.8 License

Click the **License** tab to see the window below. This window is used to display the license information, request a new license, and activate the license of Vaidio. The left side of the window displays the current license information, and the right side of the window is used to request and activate the license. Notifications by email will be sent to the administrator 7 days, 3 days, and 1 day before the license expires.



License Window

	Item	Description
1	License Management	Display the valid license for the Vaidio. **Model Name:** Display the Vaidio model name **Serial Number:** Display the serial number of Vaidio **Analytic Resource:** Display the number of "resources" available for this Vaidio **Footage:** Resources that are used for video file processing. **User:** Display the maximum number of user accounts allowed in this Vaidio **Status:** Display the status of Vaidio **Expiry Date:** Display the expiry date if the model is for trial or demo use **Warranty Date:** Display the warranty date
2	AI Engines	List of resource channels of each AI Engine for this model. For example, one video search channel will consume 1 resource, and one intrusion detection channel will consume 2 resources.
3	License Renew Request	1. Export file and send to customer support for a license request. 2. Upload and activate the new license key Follow the instruction. The new license key consists of license control, the number of resource channels, and the number of users.

Request new license key

Click **Export** to export the current license key. Follow the browser native download and save the exported license key in a local directory.

The user needs to send the exported license key via email or post to customer support.

Customer support will send the new license key via email or post after receiving the exported license key from the user.

Save the new license file to a local directory.

Activate a license key

Click the **Renew** button to upload the file of the received license key and activate the new license.

23.9 Setting

Click the **Setting** tab to see the window below.

Setting Window

When **Setting** is rearranged, click the **Apply** button at the bottom of the page to save and apply the changes in the

settings.

23.9.1 Select Role

Select the role of the Vaidio in the network: **Standalone, Main,** and **Remote.**
The default role is Standalone. Once a new role is defined, changes will apply to the system.
Some functions will be hidden and disabled in Remote and Standalone.

	Vaidio Page	Vaidio Filter
Standalone	X	X
Main	O	O
Remote	Only System tab is left for access	

- Vaidio page and filter are hidden for standalone.
- When changed to Remote, all functional and management menu are hidden except for System page.

For how to add Remote to Main, please refer to Chapter 16. Vaidio for more information

23.9.2 Video

Record Video playback length
The user can select the video playback length in the given drop-down menu. The selected recorded video playback length will be applied as the default length for all recorded video download.

Drop Corrupted Frame
Enable Drop Corrupted Frame to eliminate the corrupted frames of live streaming videos before executing detection, which can save more computing resources for health frame detection.

Object Tracking Mode
Enable Object Tracking Mode to obtain people and vehicle tracking in Live View.
To enable the Object Tracking Mode in the Live View of a camera, the user must enable Counting-related AI Engines for that camera.
To Track a **Person,** enable at least one of the following: People Counting, Person Wrong Direction, Person Fall, and Loitering.
To Track a **Vehicle**, enable at least one of the following: Vehicle Counting, Vehicle Wrong Direction, and Illegal Parking.
Once the camera is enabled with the proper AI Engine, and the Object Tracking Mode is enabled in System/Setting, Live View will show tracking results.

Object Tracking Mode

Enable live streaming analytic
Live streaming analytic is enabled by default. Disable to deactivate live streaming cameras to enhance the system when retrieving or uploading videos.
All cameras will be deactivated when the user applies the change to enable/disable live-streaming analytics. The user must manually activate the camera in Edit Camera to return to the previous camera setting.

23.9.3 Sound

Alert and **Intrusion Sound**
Select notification sound for Alert and Intrusion. The user can click **Play** to listen to the sound or upload a new sound file. The sound file for Alert and Intrusion must be in mp3 format with a minimum size of 200kb.

23.9.4 License Plate Recognition

The LPR Pattern Editor allows the user to define the pattern of license plate numbers for different regions. Vaidio LPR will recognize the license plate number according to the defined pattern(s) and filter out license pattern, not in the defined text field.

23.9.5 Advanced

Theme Selection
There are Light and Dark color themes that can be applied to the Vaidio user interface.
Check to select one theme for Vaidio.

Camera Connection Retry Interval
Camera Connection Retry Interval is the time interval between attempts to reconnect until a successful connection is established. The user can specify the wait interval between attempts.

Log Retention Time
The period Log data will be maintained in the system.

Audit Trail Retention Time
The period Audit Trail data will be maintained in the system.

People Counting Reset Time:
The People Counting value will reset once everyday at the given start time.

Vehicle Counting Reset Time:
The Vehicle Counting value will reset once everyday at the given start time.

Search Result Display
Drag the slider to adjust the **Number of Search Results Displayed**. The number of displayed results would apply to all application results and exported Excel files.

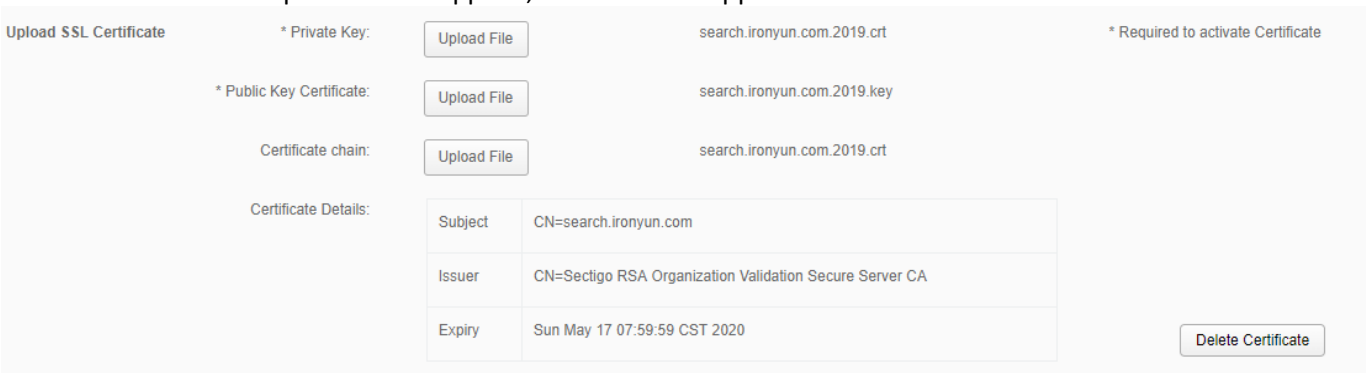
GPS Map
The Map is enabled by default, which allows the user to access Map View in Video Search, Alert, and Live View. When it is turned off, all map-related functions will be disabled with a hidden display in the system.

API Basic Authentication
Enable authentication for better interaction with the 3rd-party system(s). Authentication is the verification of the credential of the connection attempt; Vaidio allows remote access from a certain resource using Basic Authentication.

23.9.6 SSL Certificate

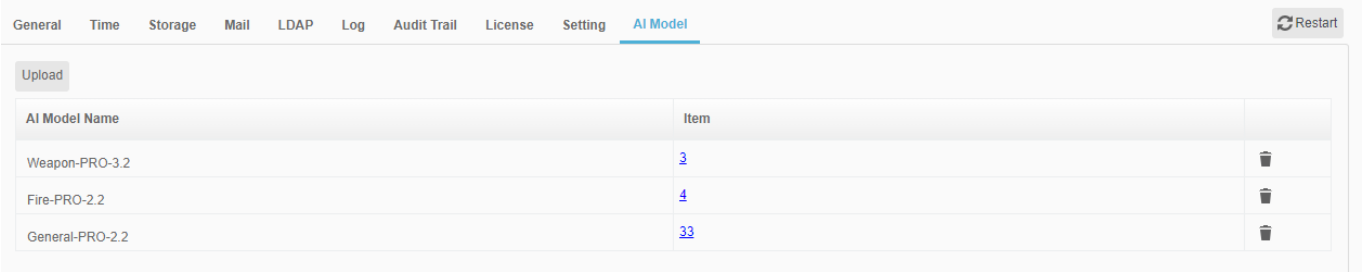
The SSL Certificate allows secure connections from a web server to a browser and avoids any disruption for the user to access the website.

Once the certificate is uploaded and applied, the detail will appear for the user reference.



23.10 AI Model

Click on the **AI Model** tab to see the window below. The user can upload a new AI model from a local directory for customized object searches.



AI Model Window

Item	Description
Upload	To upload a new AI Model, click **Upload** and select the file from the user's server to add to the list for selection. Once uploaded, a progress bar will appear to show the upload process; when the upload is complete, the new model will appear on the list. Note: Upload the zip file only (provided by customer support during installation)
AI Model name	Name of the AI Model
Object Type	Number of object types in the AI Model

Note:
Change the AI model when there is no analytic job in progress.
Please use the same AI Model in the remote Vaidio and local Vaidio when operating with remote Vaidio. Since every AI model has a different set of search objects, the system can only operate correctly when using consistent training data.

AI model recommendation

License Module	General Model	Fire Model	Weapon Model
Video Search	v	v	v
FR	v		
LPR	v		
Intrusion Detection	v	v	v
People Counting · Person Fall · Person Wrong Direction · Loitering	v		
Vehicle Counting · Vehicle Wrong Direction · Illegal Parking	v		

24. FAQ

1. Can I request a new object type to be detected?

Yes, we always welcome proposals of the use case of new object types that are not yet included in our AI models,

based on which we can train the AI models to detect new object types. We are constantly increasing the number of object types and their accuracy in our model, which are prioritized based on the scale and use case of the projects. For more information, email us at sales@aicuda.world

2. Do I need to train the AI model?

No, the user does not need to train the AI model. Aicuda AI models are pre-trained by our engineers and ready to deploy at customer site out-of-the-box from day 1. In other words, the AI models have learned to recognize the objects listed in the keyword list (available to the user for reference), and there is no calibration required to adapt the unit to its operating environment.

3. Can I use the same AI appliance for different AI model?

Yes. The same Vaidio appliance can be used for different AI models (General Model, Fire Model, Weapon Model, etc.) by activating the model as necessary in System > AI Model.
However, multiple models cannot be activated simultaneously; the activation of each model will apply to all functions and cameras in the network of the Vaidio appliance, and only one model is applied at a time.

25. Appendix

25.1 Supported Video Codec

The system supports the following video codec based on the currently used GPU:
H.264, MJPEG, MPEG1, MPEG2, MPEG4, VC1, VP8, VP9

25.2 Supported Object Types in AI Models

General Model

Category	Type
Transportation	Bicycle
	Bus
	Car
	Motorcycle
	Truck

	Person
Animal	Bear
	Cat
	cow
	Dog
	Horse
Object	Backpack
	Baseball bat
	Cellphone
	Handbag
	Laptop
	Suitcase
	Umbrella
Extend Object	Airplane
	Balls
	Boat
	Chair
	Gloves
	Kite
	Knife
	Plant
	Racket
	Skateboard
	Skis
	Snowboard
	Surfboard
	Tie
	Train

Human Model

Category	Type
Transportation	Bicycle
	Car

Human	Person
Object	Backpack
	Bag
	Baseball bat
	Gun
	Helmet
	Suitcase
	Umbrella
Extend Object	Baseball glove
	Boot
	Dress
	Glasses
	Hat
	Headphones
	Jacket
	Roller skates
	Scarf
	Shirt
	Shorts
	Sports uniform
	Tie
	Trousers
	Wheelchair

Fire Model

Category	Type
Transportation	Car
Human	Person
Object	Fire
	Smoke

Weapon Model

Category	Type

Human	Person
Object	Handgun
	Rifle

25.3 Open Source Credit

Open Source	
OpenCV	BSD
Cuda	Nvidia license agreement
Dlib	Boost software license
Tensorflow	Apache License 2.0
TensorRT	Nvidia Prerelease License Agreement