EVA (Extended Video Analytics)

CORTROL LPR v1.0.1

LPR User Manual

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EVA (Extended Video Analytics)

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Settings

Introduction

Use this guide to understand the interface and features of the Analytics System Settings and learn how to customize them.

Main Items

The Settings section includes:

- General Settings item to set general system parameters
- License item to manage licenses and get up-to-date information about them
- Updates item to view and update the Middleware version
- Clients item to manage clients and differentiate access to the system between different client structures
- Users item to view and manage system users
- Roles item to view and manage user access rights
- Sound item to manage sound alerts for installed plugins
- Plugin Marketplace item to view and manage plugins
- Video Streams item to view and manage video streams
- Servers item to view the data of server load and analytics activity
- Logs item to view all user actions in the system
- Events item to customize internal notifications and manage events for further sending to the third-party services or API

How to Configure the Hardware Tab Settings

Select the hardware type:

- Select the CPU hardware type to run the analytics processing on the central processor.
- Select the GPU hardware type to run the analytics processing on the graphics processor.

> The analytics is processed faster by the GPU than by the CPU.

Select the decoding type. Depending on the type of decoding, the video is processed on different devices:

- CPU - This selection provides video decoding on the central processor.
- Intel – This selection provides video decoding on the Intel Integrated Graphics Processor (Intel HD Graphics).
- NVDEC – This selection provides video decoding on the NVIDIA graphics processor.

The FPS mode allows to set the number of frames per second processed by the analytics:

- A higher frame rate gives a better result if the video contains dynamic objects (e.g., people moving in a shopping center or vehicle traffic on the road).
- A lower frame rate is sufficient if the video contains static objects (e.g., vehicles in a parking lot).

> The higher the frame rate, the more resources are required for analytics to process the video.

The Key Frame mode selects only keyframes from the video stream. Keyframes have the lowest compression ratio, which saves resources for decoding and processing the video stream by analytics.

> Suitable for video streams with compression (e.g., h264, h265, etc.).

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The Once Every X Seconds mode processes 1 frame after a set period, while the remaining frames are skipped.

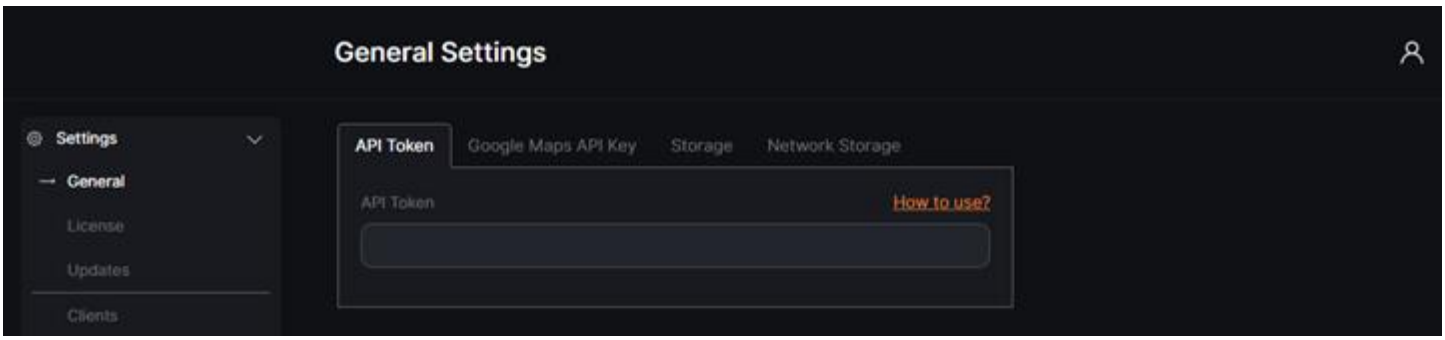
> Suitable for cases where very rare frame processing (less than 1 frame per second) is required.

General Settings

> This page describes the General Settings item that allows setting general system parameters.

Overview

To open the General Settings item, in the left menu:

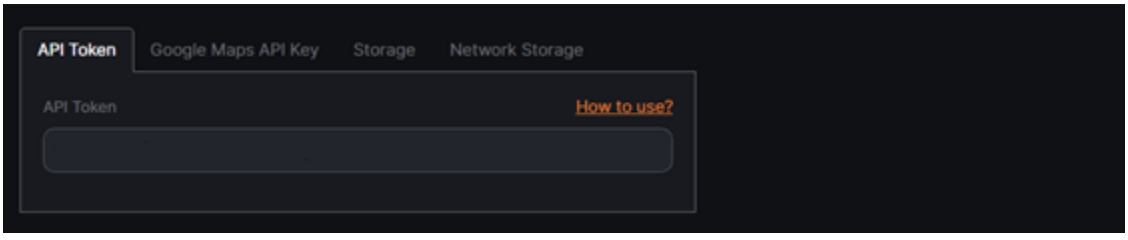


This page describes the General Settings item that allows setting general system parameters.

1. Select the Settings section
2. Choose the General item
3. See general settings

Use and Functionality

The General Settings navigation menu consists of 5 tabs:



- API Token
- Google Maps API Key
- Storage
- Network Storage

> The selected tab is always highlighted.

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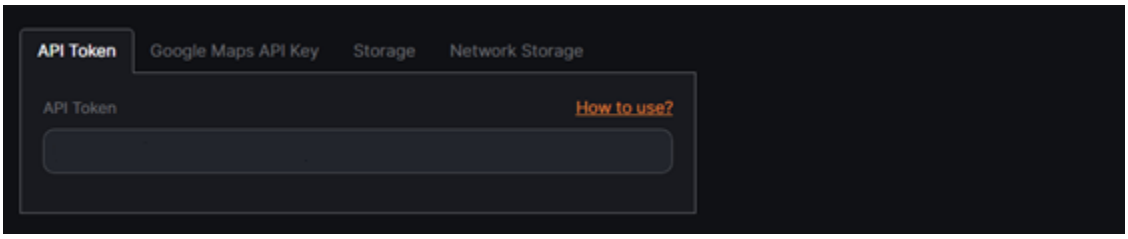
API Token Tab

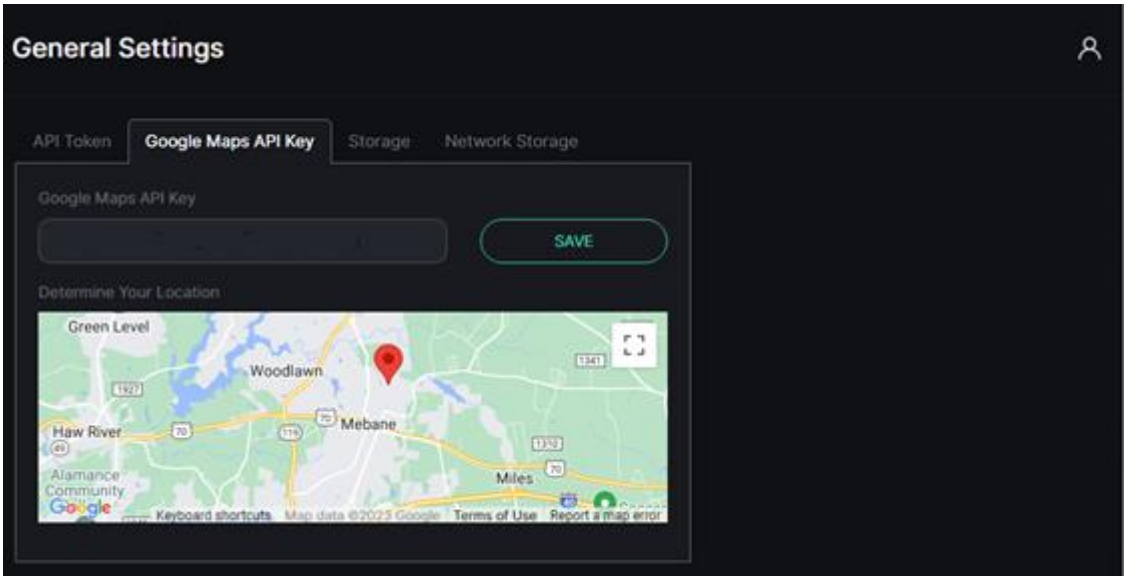
To use the API token, select and copy the token from the corresponding field:



Click the How to Use button to open the API documentation for installed plugins in the system.

Google Maps API Key Tab

To use the Google Maps service:



1. Insert the Google Maps API key into the corresponding field
2. Click the Save button for connection to Google Maps
3. Set a default Camera Location marker by clicking the desired place on the map to find the approximate location of streaming cameras

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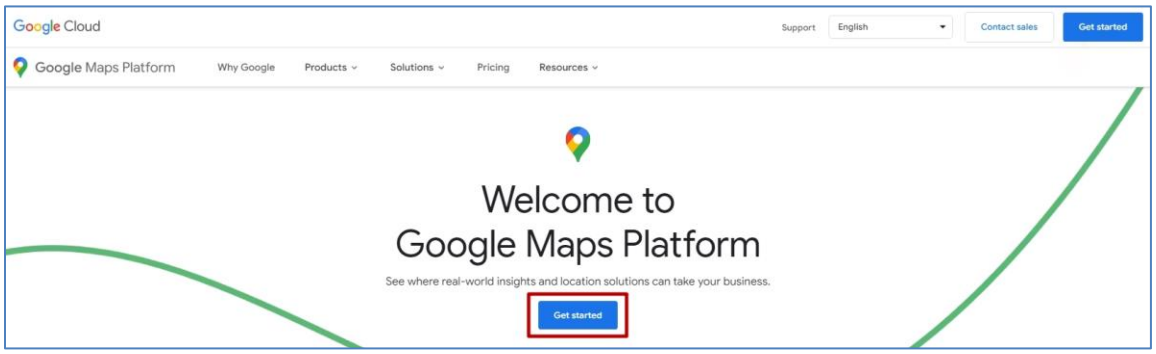
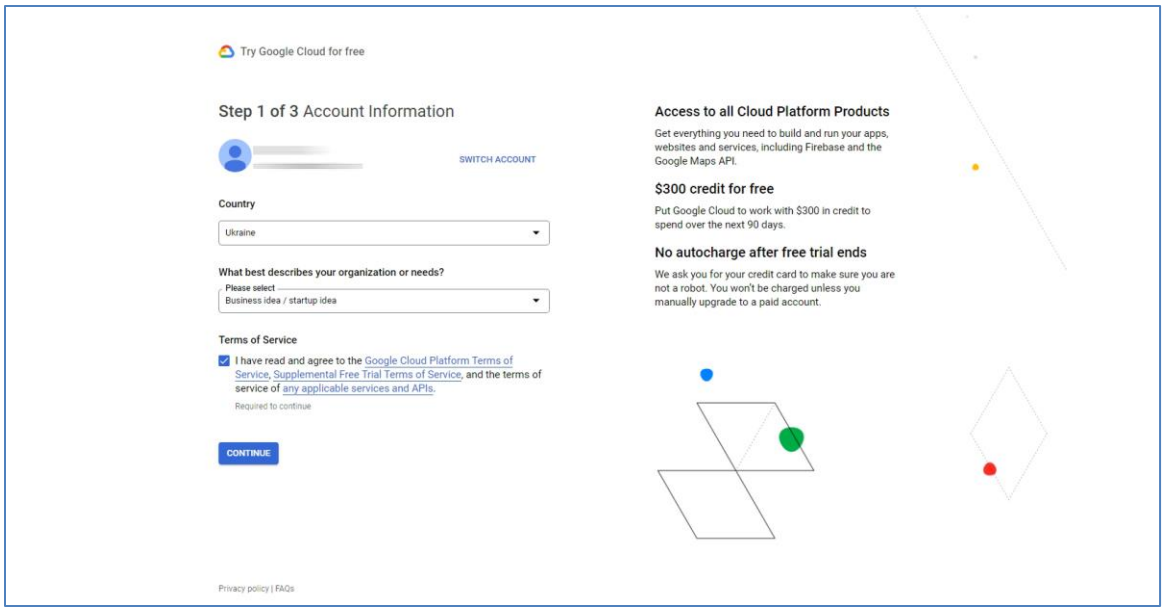
How to Get Google Maps API Key?

To get the Google Maps API key, open the Google Maps Platform by the link and click the Get Started button:



Sign into the Google account or register to continue.
Once signed in, verify the Google billing account.

Step 1:



- Select the appropriate answers from the drop-down lists
- Carefully read the Terms of Service and check the box to agree
- Click the Continue button

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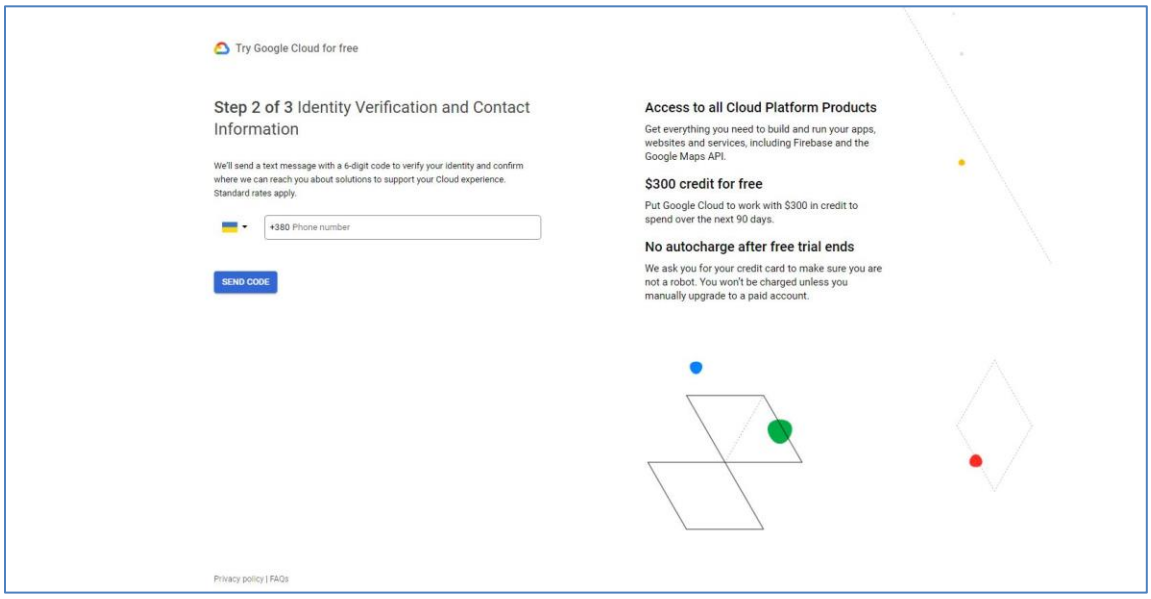
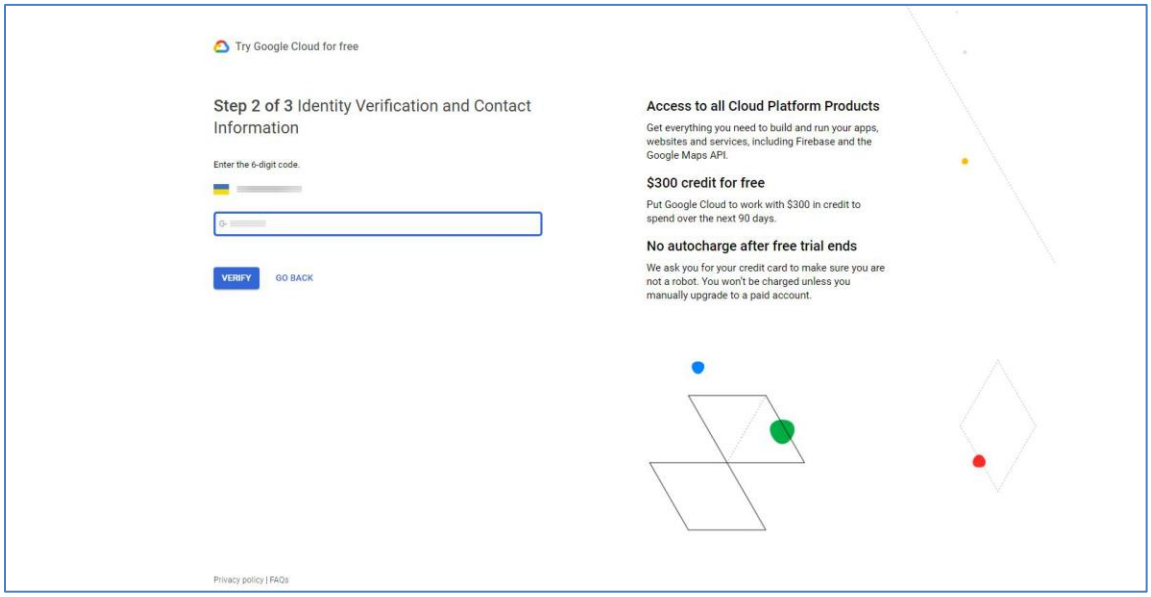
Step 2:



- Enter the phone number
- Click the Send Code button

Once the verification code is obtained by SMS:



- Fill in the required field with obtained verification code
- Click the Verify button

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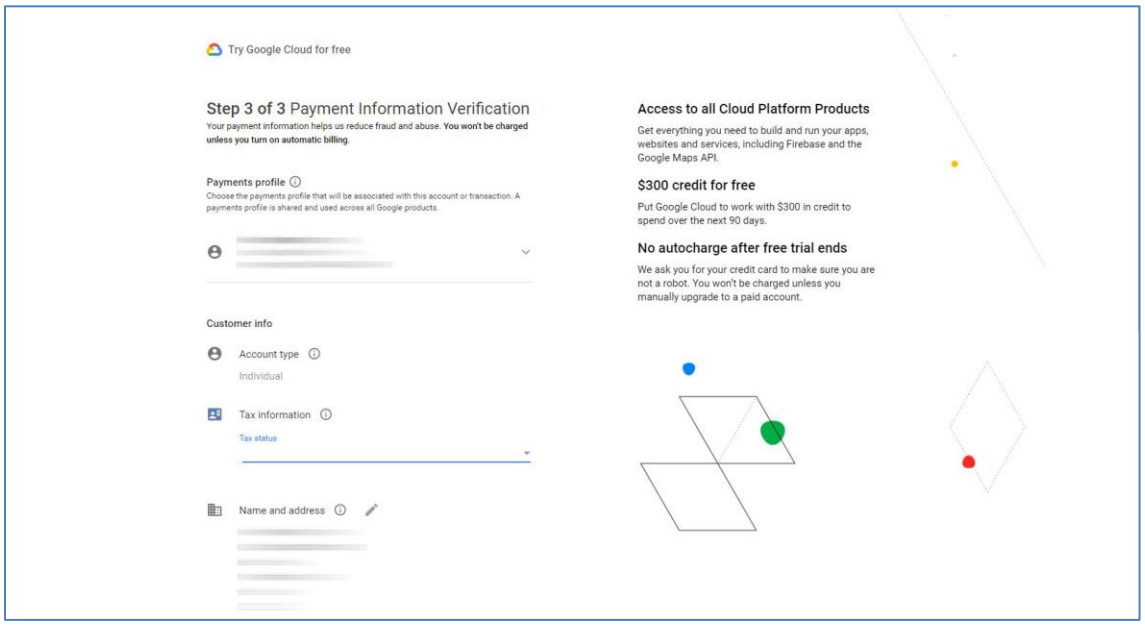
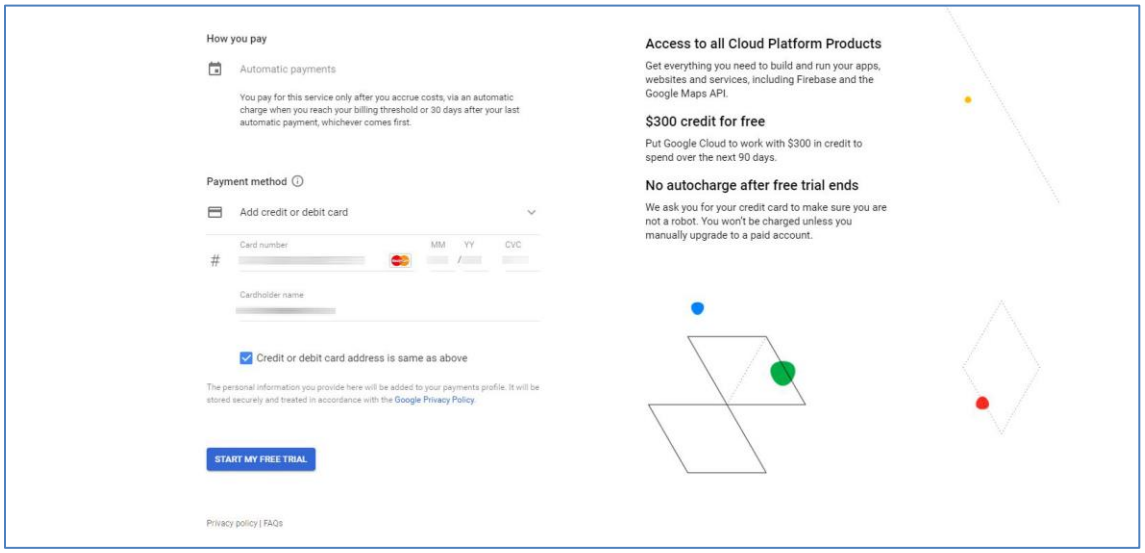
Step 3:





- Fill in the required fields
- Click the Start My Free Trial button

The system withdraws $1 from the specified card for verification, after which the money is returned to the specified card. Make sure to have enough funds on the account to complete the verification.

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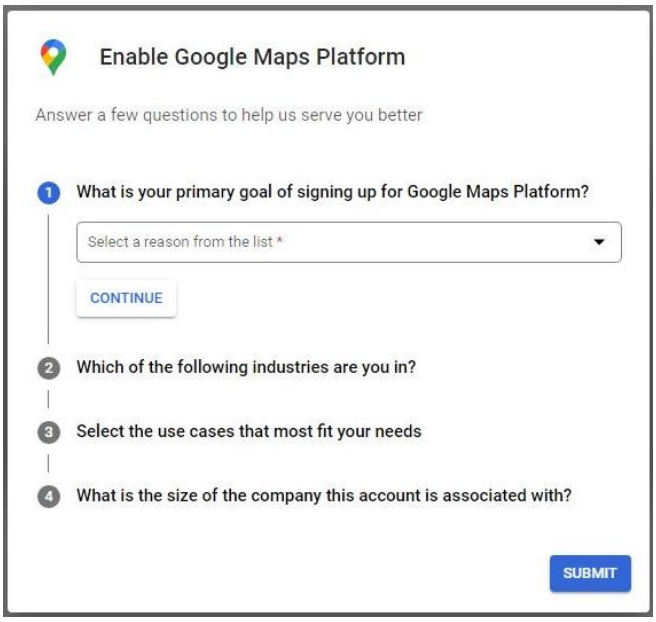
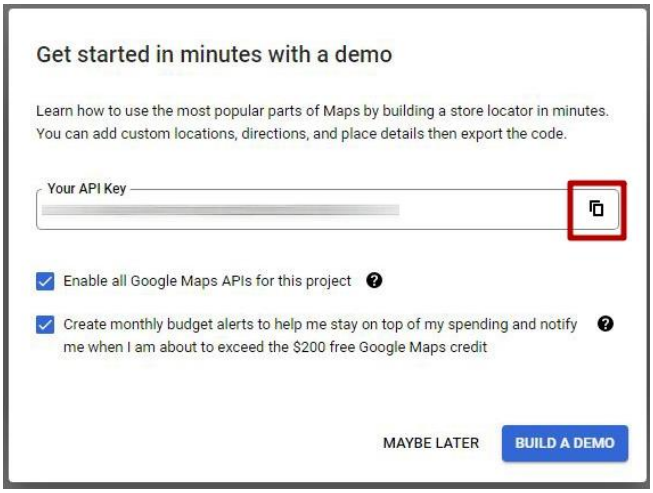
Once the billing account is verified:



- Answer a few questions
- Click the Submit button

After the submission, a new window with generated API key opens:



- Copy the API key to the clipboard
- Click the Maybe Later button

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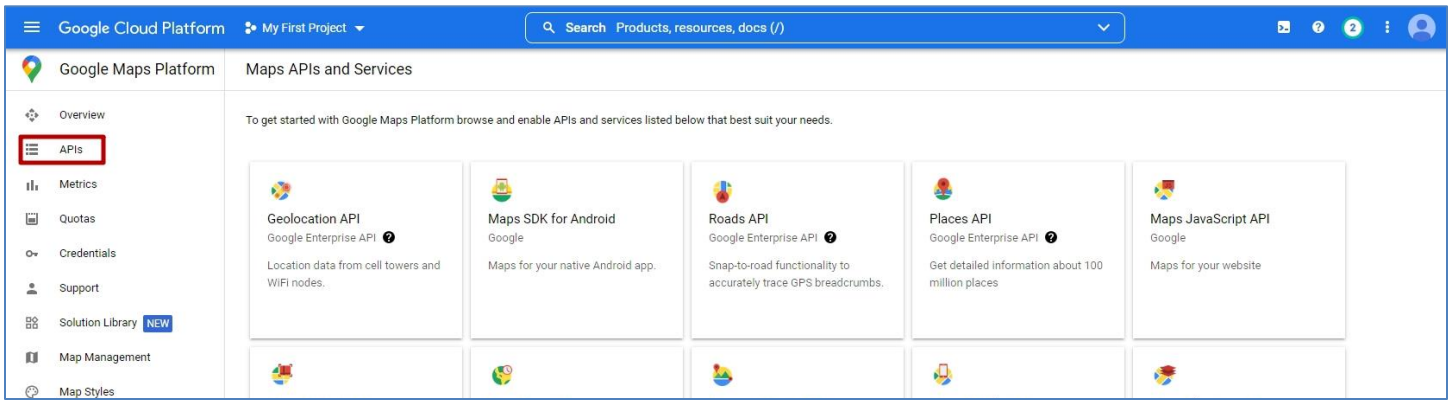
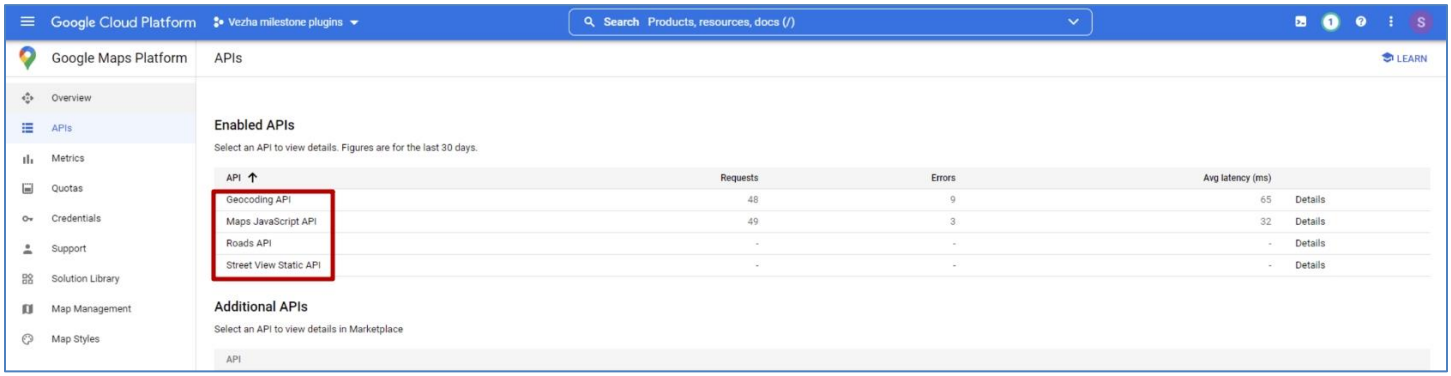
After redirecting to the control console, select the APIs item:



In the APIs item, make sure the following APIs are enabled:



- Geocoding API
- Maps JavaScript API
- Roads API
- Street View Static API

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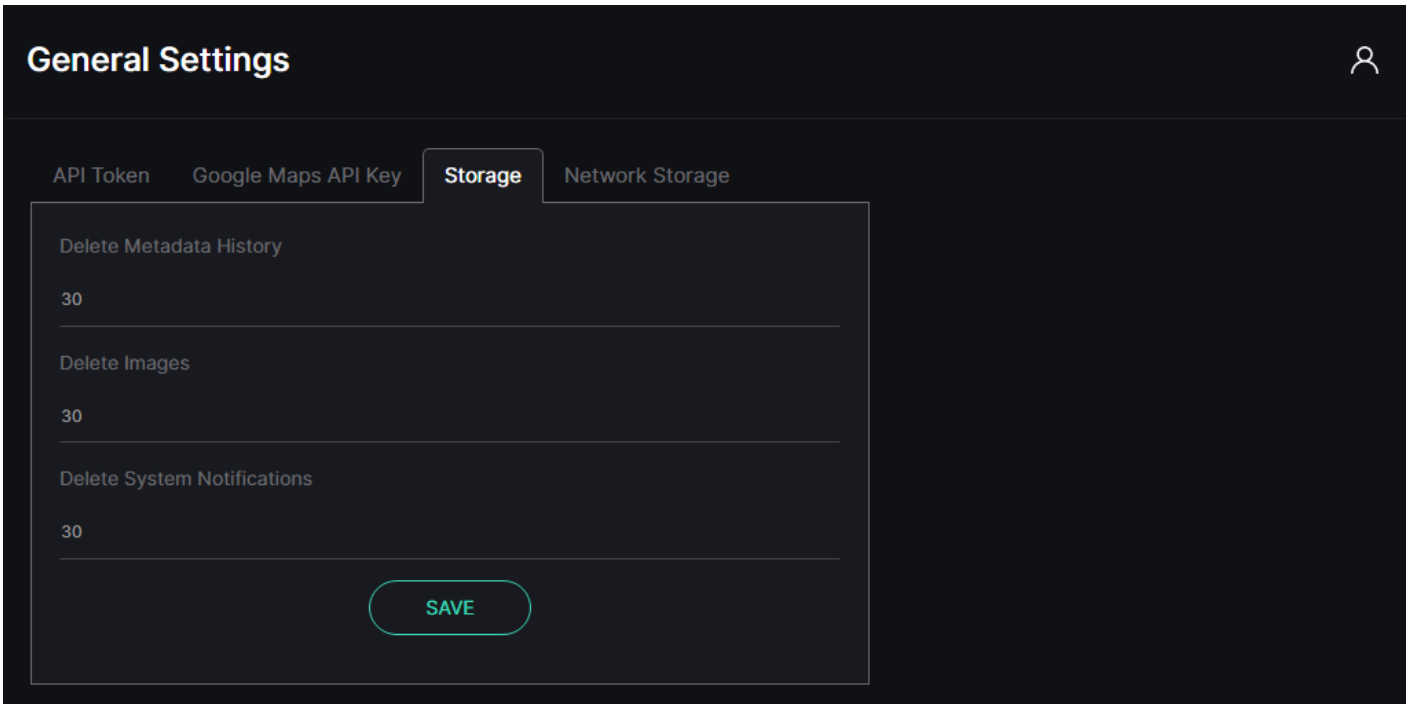
Storage Tab

The Storage tab allows customizing the data archive settings. Set the parameters as needed:

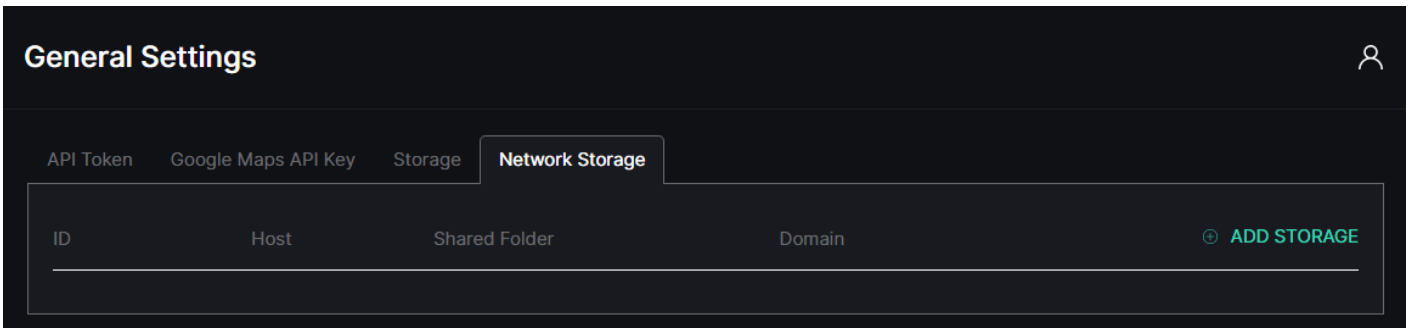


- Specify the time in days during which the system stores:
  - History of search results (Delete Metadata History field)
  - Images (Delete Images field)
  - History of events (Delete System Notifications field)
- Click the Save button to apply changes

Network Storage

The Network Storage tab is only compatible with Forensic Analytics and works only via SMB protocol in Linux

The Network Storage tab holds the information about storage:



- ID
- Host
- Shared folder name
- Domain

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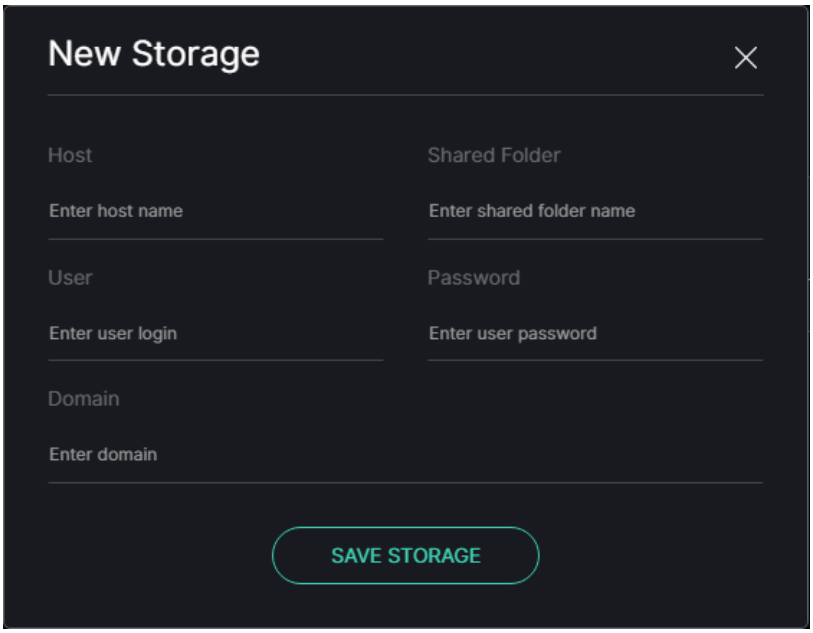
To add new storage:

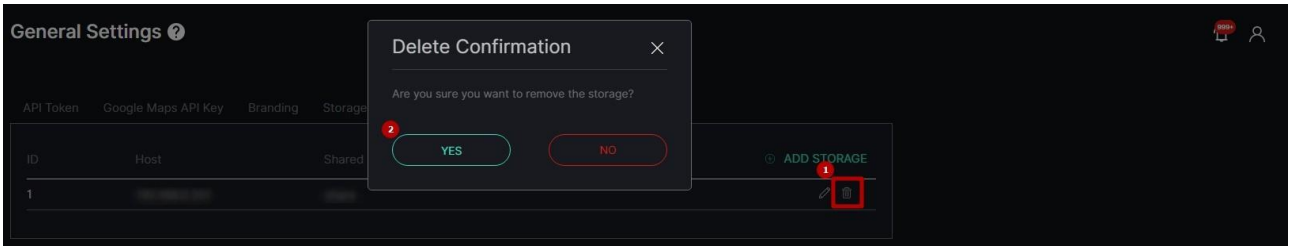


1. Click the Add Storage button
2. Fill in the required fields:
    a. Host name
    b. Shared folder name
    c. Shared folder access login and password (optionally)
    d. Domain
3. Click the Save Storage button to confirm the intention

To edit the required storage:

1. Select the Edit icon
2. Fill in the required fields:
    a. Host name
    b. Shared folder name
    c. Shared folder access login and password (optionally)
    d. Domain
3. Click the Save Storage button to apply changes

To remove the storage:



1. Select the Delete icon
2. Confirm the intention

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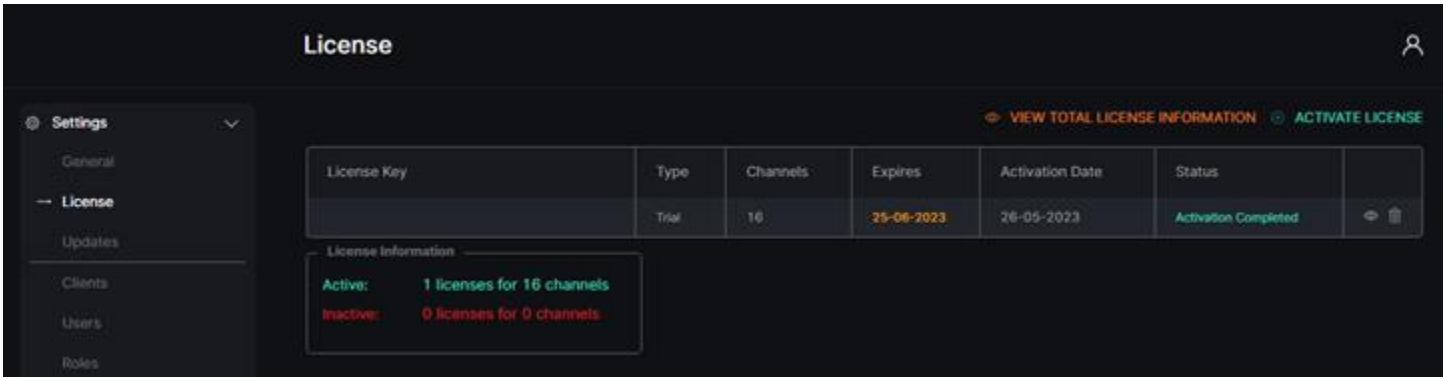
License

This page describes the License item that allows managing licenses and getting up-to-date information about them.

Overview

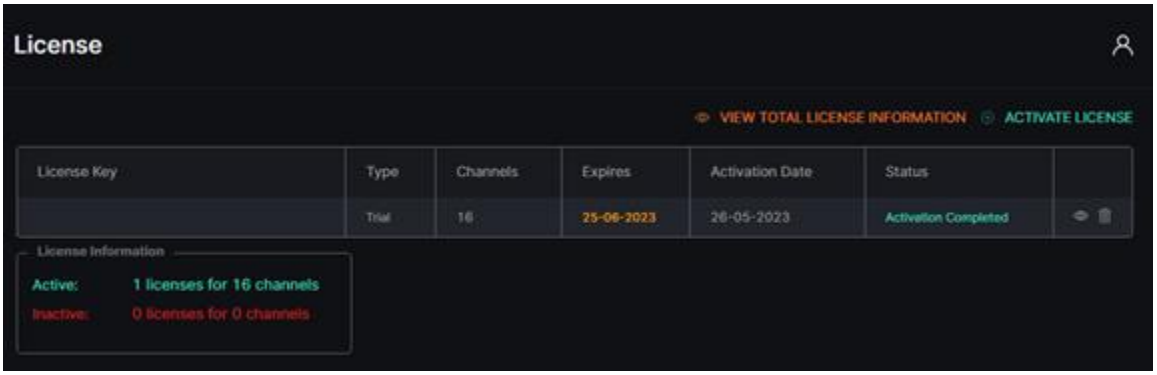
To open the License item, in the left menu:



1. Select the Settings section
2. Choose the License item
3. See licenses

Use and Functionality

The License item shows:



1. Table with license data and tools that includes:
    a. License Key number
    b. Type of license
    c. Channels (analytics) quantity
    d. Expiration date
    e. Activation date
    f. License status
    g. Toolbox includes:
        i. License details
        ii. License deactivation
2. Additional info box with active/inactive licenses counter
3. Pop-up window with total information about licenses
4. Online/offline license activation form

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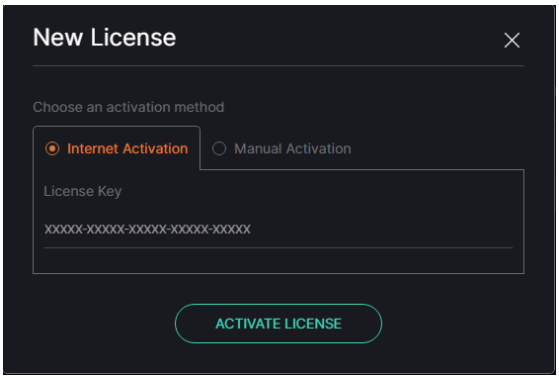
License Online Activation

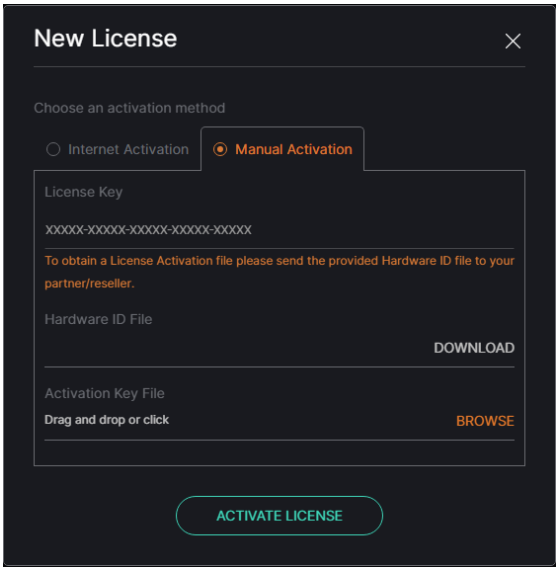
To activate a new license online:



1. Click the Add License button
2. See the New License pop-up window
3. Make sure the Internet Activation tab is selected, then fill in the License Key field (in the form XXXXX-XXXXX-XXXXX-XXXXX-XXXXX)
4. Select the Activate License button

License Offline Activation

To activate a new license offline:



1. Click the Add License button
2. See the New License pop-up window
3. Make sure the Manual Activation tab is selected, then:
   a. Enter the License Key (in the form XXXXX-XXXXX-XXXXX-XXXXX-XXXXX) sent by the partner/reseller via email
   b. Click the Download button to obtain the Hardware ID File and send it to the partner/ reseller
   c. Get the Activation Key File from the partner/reseller and click on the Browse button to upload the obtained file
4. Select the Activate License button

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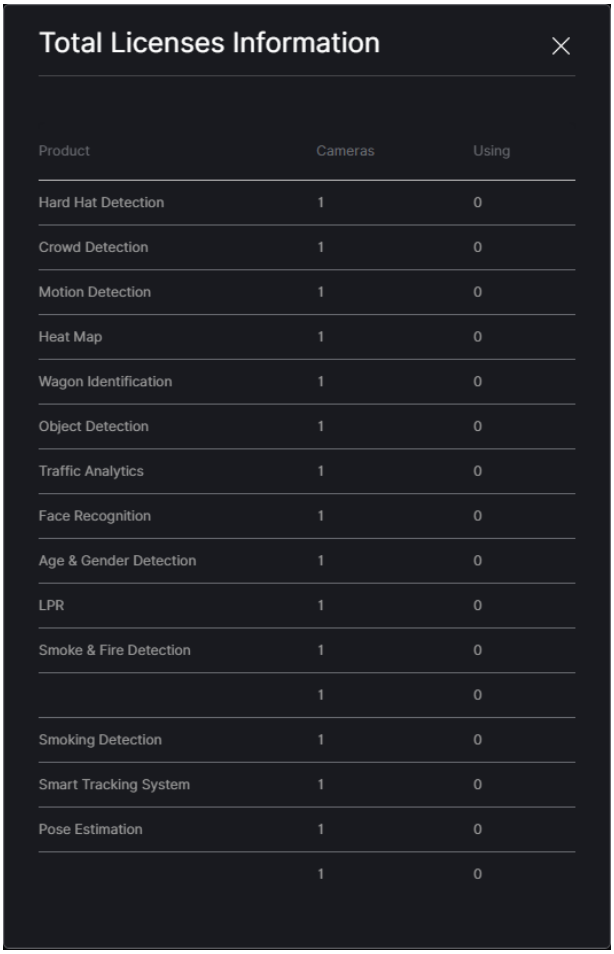
- The download button becomes available only when a valid license key is entered in the License Key field.
- The Activate License button becomes available only when a valid Activation Key File is uploaded.

View Total License Information

To view the total license information:



1. Select the View Total License Information button
2. See the total licenses information that includes:
    a. List of analytics included in all licenses (both active and inactive)
    b. Number of video streams available for simultaneous connection in each analytics
    c. Number of currently running analytics

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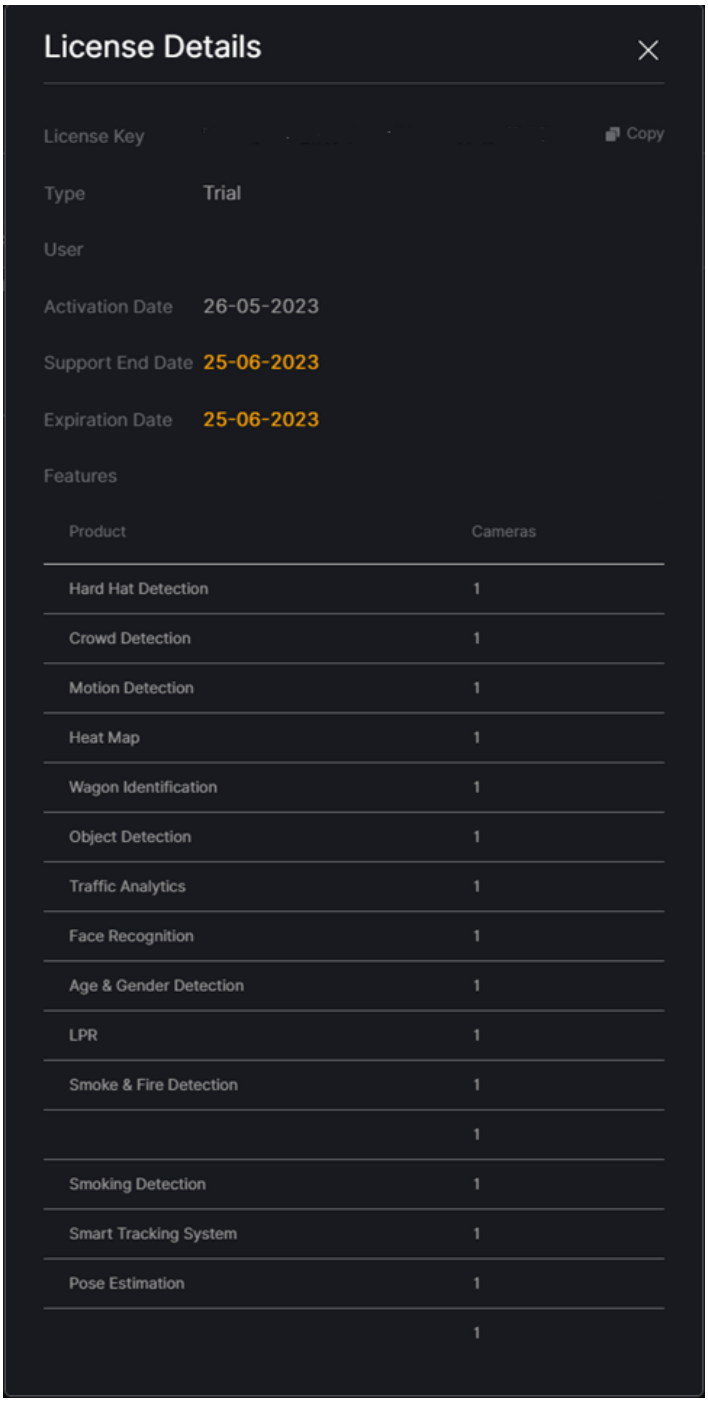
License Details

To view the required license details:



1. Click the View icon on the toolbox
2. View detailed information about the required license, and the list of analytics and their quantity that the license includes

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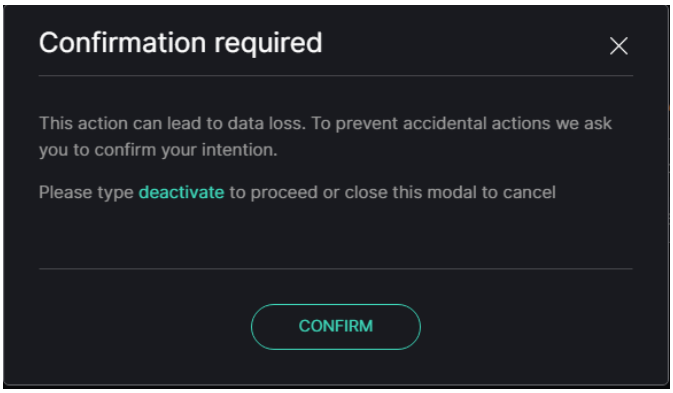
Deactivate License

To deactivate the desired license:



1. Click the Delete icon on the toolbox
2. See the deactivation confirmation pop-up window
3. Enter the "Deactivate" word in the corresponding field
4. Confirm the intention

The deactivated license data cannot be restored.
If the deactivation confirmation pop-up window was opened by accident, just close it without confirming the intention.

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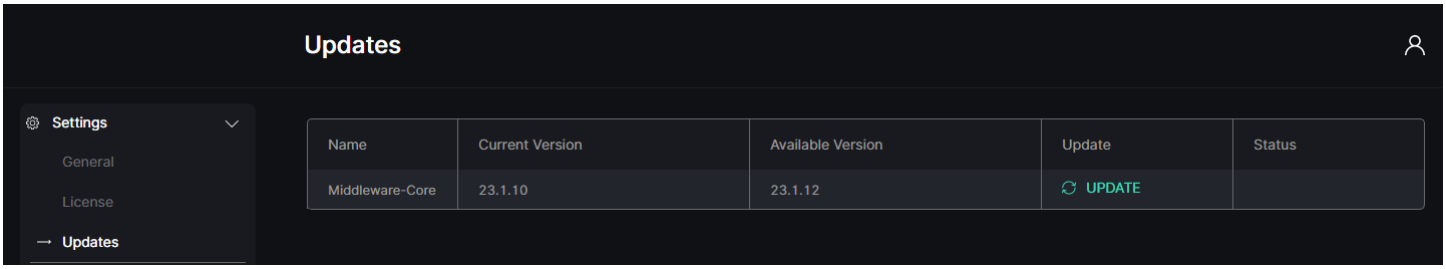
Updates

This page describes the Updates item that allows viewing and updating the Middleware version.

Overview

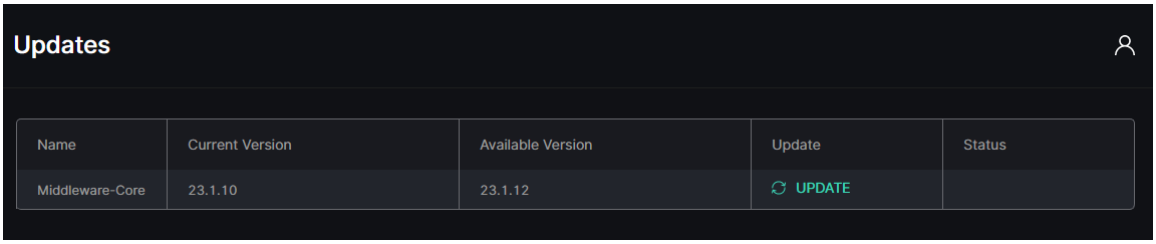
To open the Updates item, in the left menu:



1. Select the Settings section
2. Choose the Updates item
3. See updates

Use and Functionality

The Updates item shows the table that includes:



- Middleware name
- Current version
- Last available version for update
- Update button to run the process of version updating
- Current update status

The status is only displayed during the update process.

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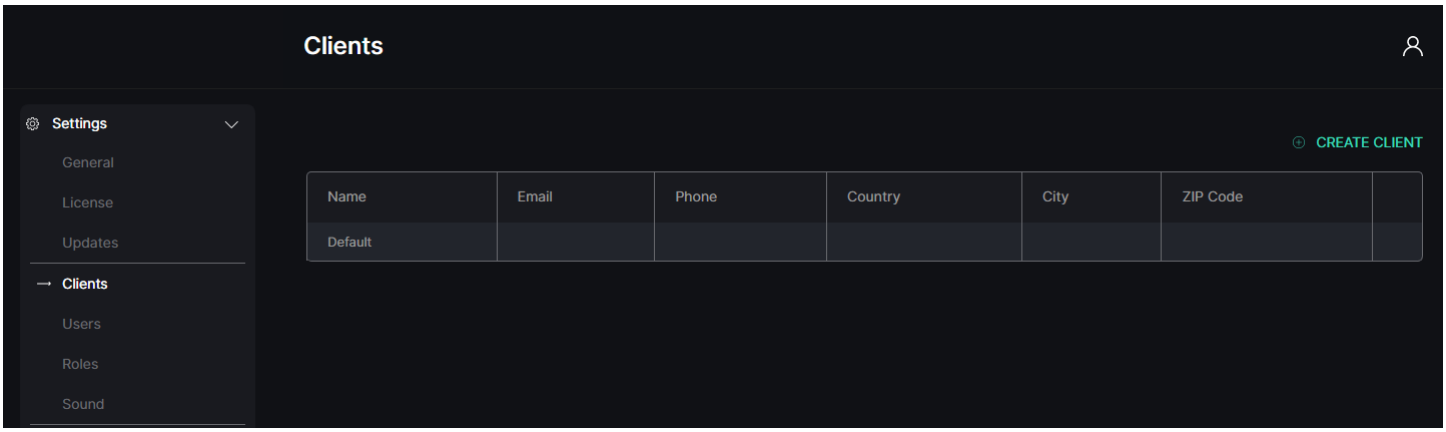
Clients

This page describes the Clients item that allows managing clients and differentiating access to the system between different client structures.

Overview

To open the Clients item, in the left menu:

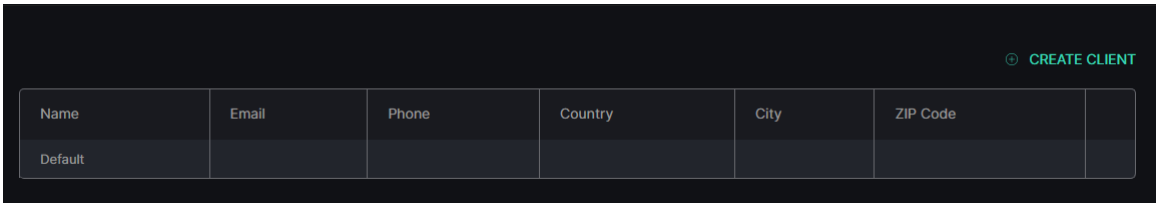


1. Select the Settings section
2. Choose the Clients item
3. See clients

- The Clients item is enabled in the Settings section only for Administrator. All created clients and users don't have access to the Clients item.
- Different clients do not see each other and do not interact in the system. The same applies to users associated with different clients.

Use and Functionality

The Clients item shows:



- List of created clients and their contact information including:
  - Name
  - Email
  - Phone
  - Country
  - City
  - ZIP Code
- Toolbox includes:
  - Delete Client tool
  - Edit Client tool

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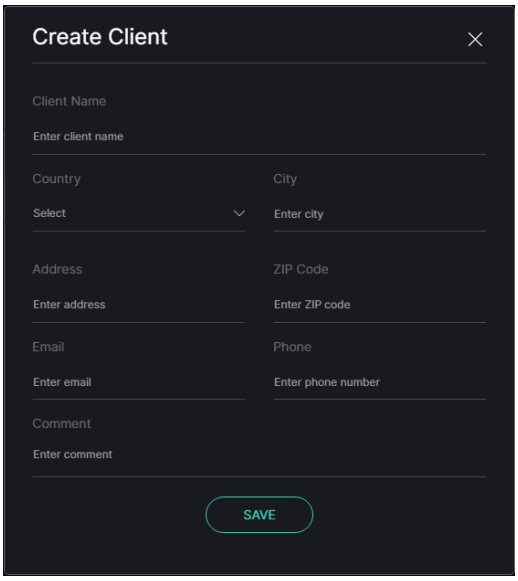
Create Client

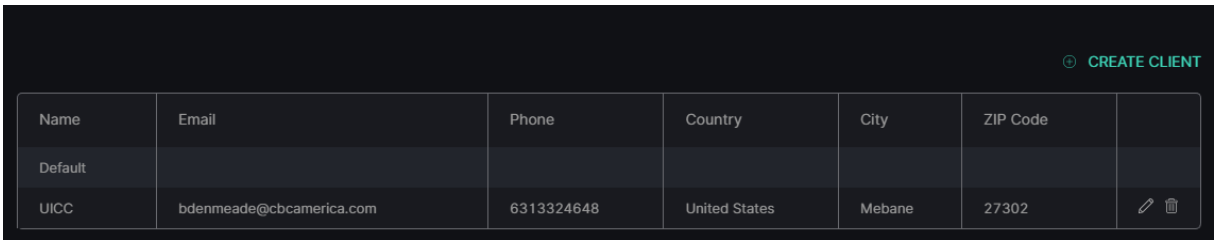
To create a new client:



- Click the Create Client button
- Fill in the fields with the client's contact information in the Create Client pop-up window
- Click the Save button to confirm the intention

Edit Client

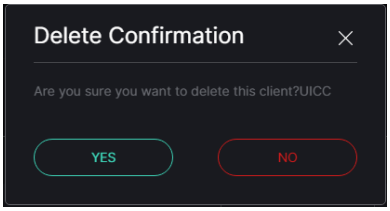
To edit the contact information of the selected client, click the Edit icon on the toolbox:



- Change the contact information in the required fields
- Click the Save button to apply changes

Delete Client

To remove the required client:



1. Select the Delete icon on the toolbox
2. Confirm the intention

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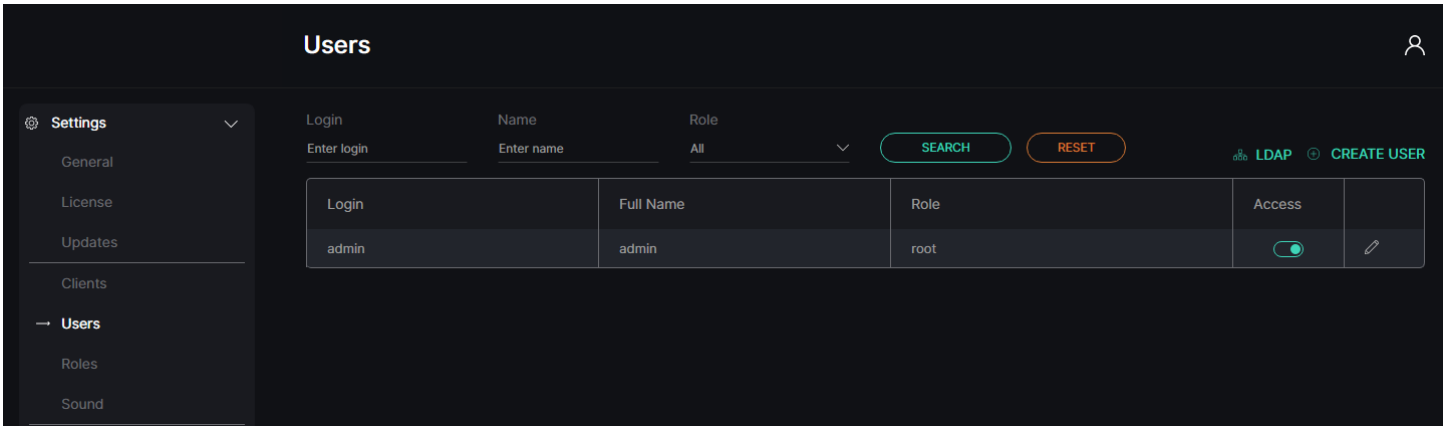
Users

This page describes the Users item that allows viewing and managing system users.

Overview

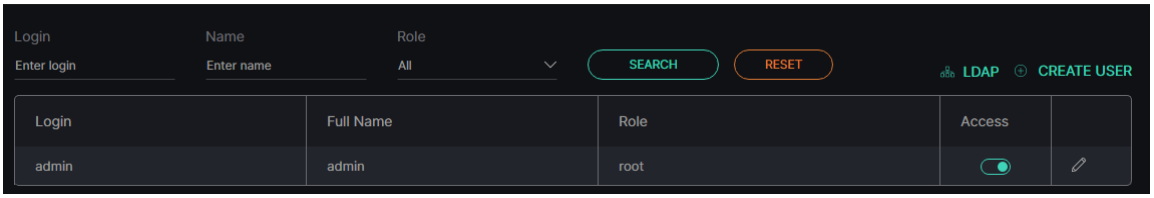
To open the Users item, in the left menu:



1. Select the Settings section
2. Choose the Users item
3. See users

Use and Functionality

The Users functional menu allows to:



- Enter the login or characters in the login
- Enter the username or characters in the name
- Select the role assigned to the user from the drop-down list
- Click the Search button to start filtering
- Click the Reset button to clear the filters

Once selected and filtered, see the list of users in the table below. It holds:

- User's account login (with LDAP tag in case the selected user was fetched to the system from LDAP)
- User's full name
- Role assigned to the user
- Toggle to enable (green) or disable (grey) the user access to the system
- Toolbox includes:
    - Edit User tool
    - Delete User tool

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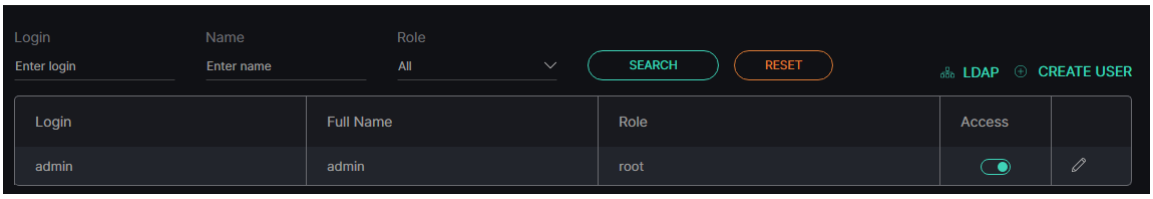
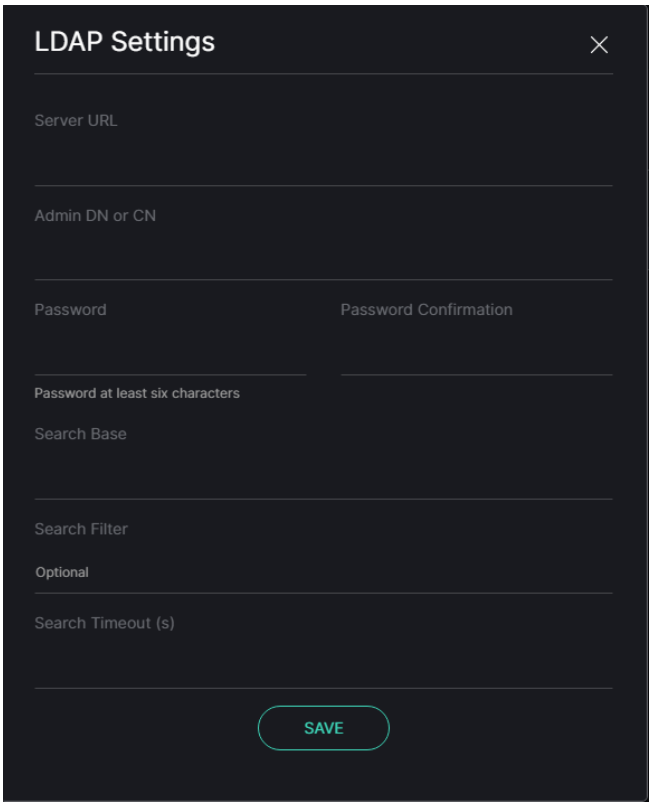
LDAP

To set the LDAP parameters:



1. Click the LDAP button to open the drop-down menu
2. Select the LDAP Settings button

In the LDAP Settings pop-up window:



- Fill in the required fields:
  - LDAP Server URL
  - Administrator's Distinguished Name (DN) or Common Name (CN)
  - Administrator's Password
  - Search Base components
  - Search Filter (optional parameter)
  - Search Timeout (in seconds)
- Click the Save button to apply settings

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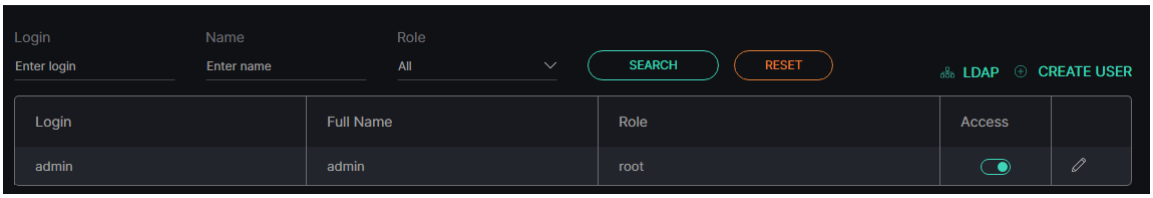
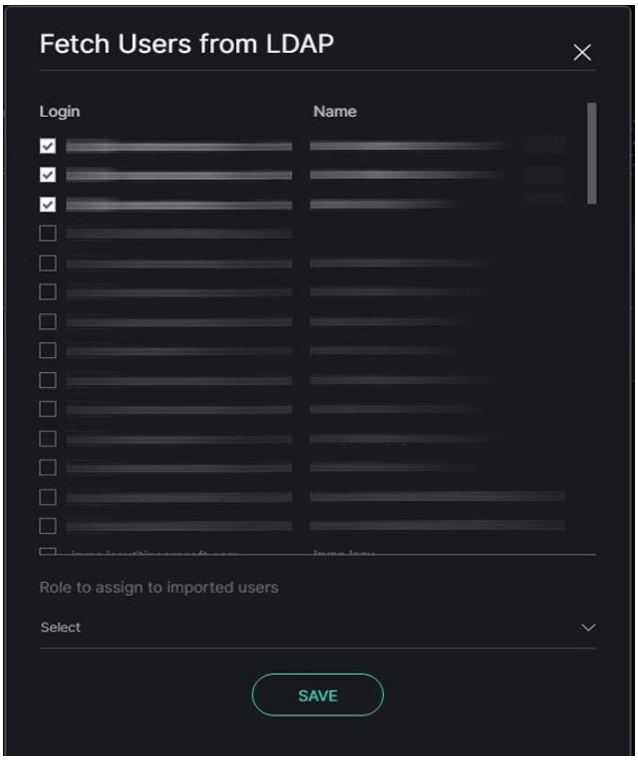
To import users from LDAP:



1. Click the LDAP button to open the drop-down menu
2. Select the Fetch Users from LDAP button

In the Fetch Users from LDAP pop-up window:



- Check the boxes next to the required users
- Select the role for new users from the drop-down list
- Click the Save button to confirm the intention

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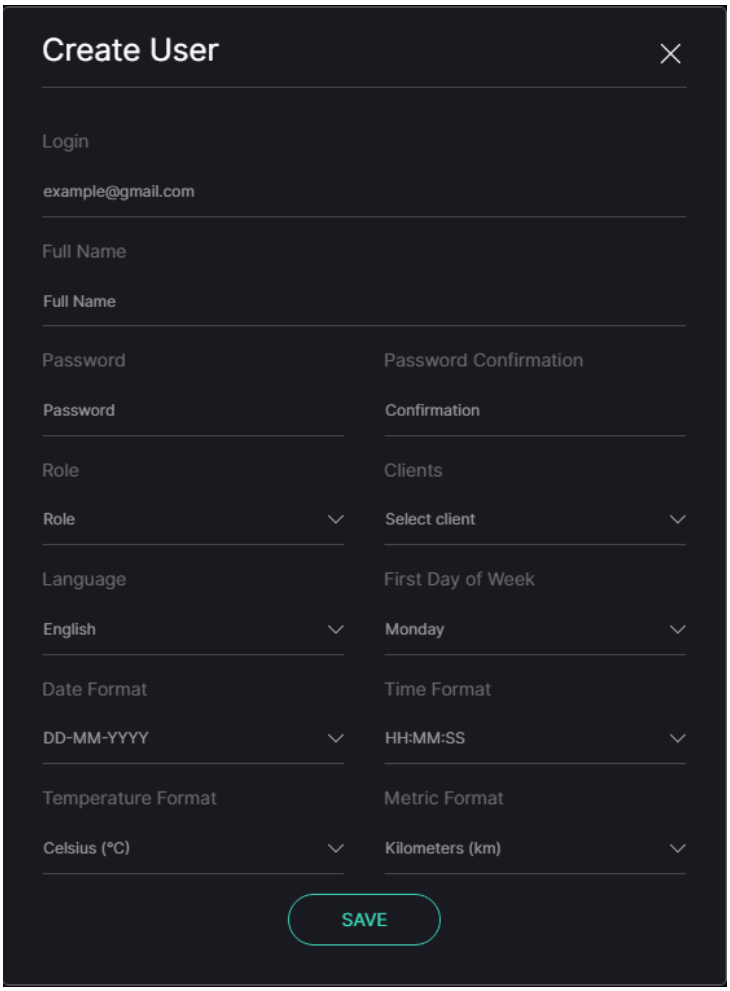
Create User

To create a new user:



1. Note: Prior to creating a user, it is recommended to create Roles first.
2. Click the Create User button
3. See the Create User pop-up window and fill in the required fields:
    a. Enter the user's email address in the Login field
    b. Enter the user's full name
    c. Enter the password for the new user's account and confirm it
    d. Select the role (set of access rights) for the user from the drop-down list
    e. Select the client to which the new user belongs from the drop-down list
    f. Select the interface language from the drop-down list
    g. Select the first day of the week (Monday or Sunday) from the drop-down list
    h. Select the Date, Time, Temperature, and Metric formats from the drop-down lists
4. Click the Save button to confirm the intention

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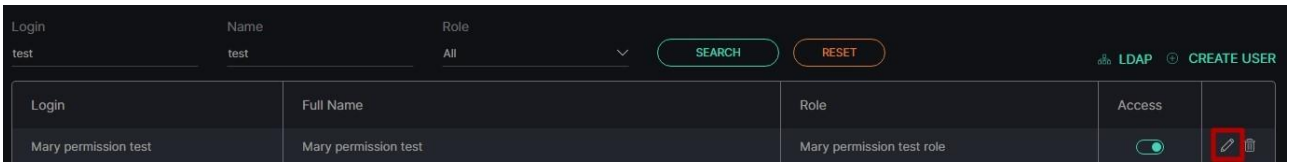
Edit User

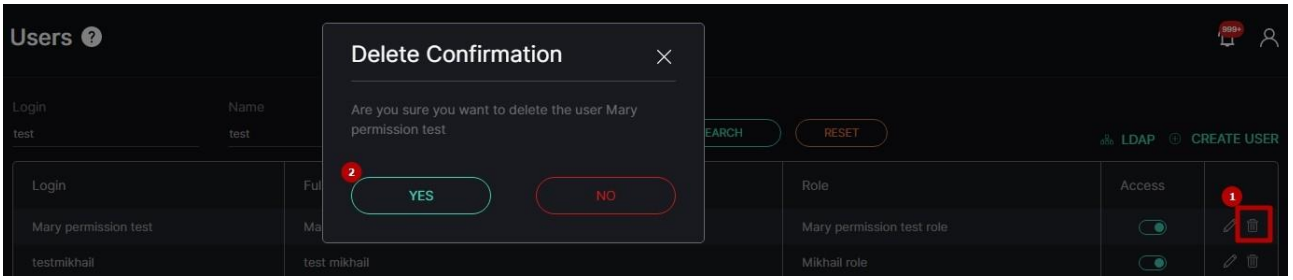
To edit the parameters of the selected user, click the Edit icon on the toolbox:



To view editing user parameters, except for Login editing, read Create User.

Delete User

To remove the required user:



1. Select the Delete icon on the toolbox
2. Confirm the intention

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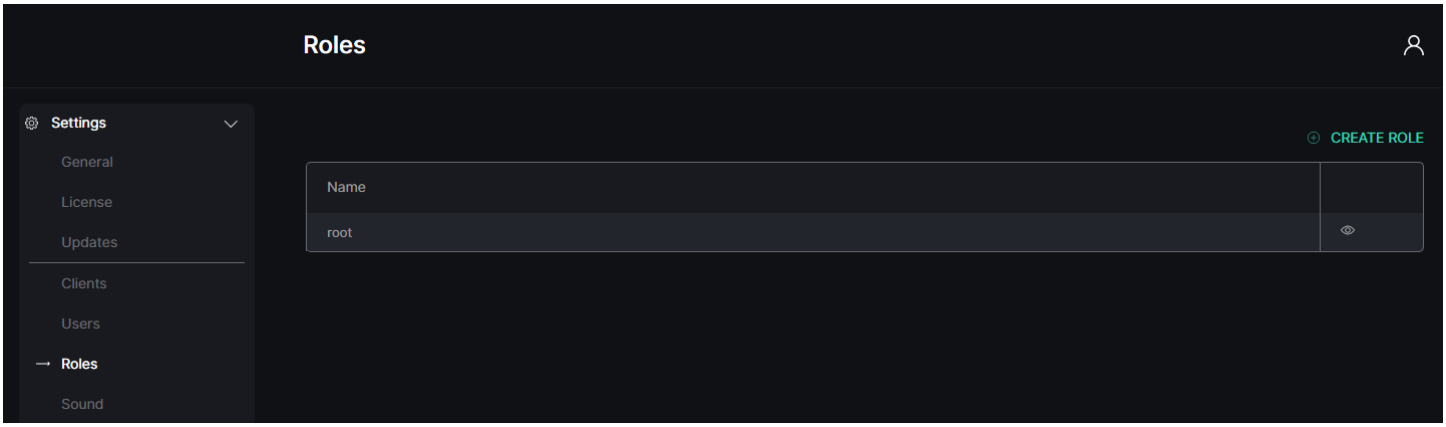
Roles

This page describes the Roles item that allows viewing and managing user access rights.

Overview

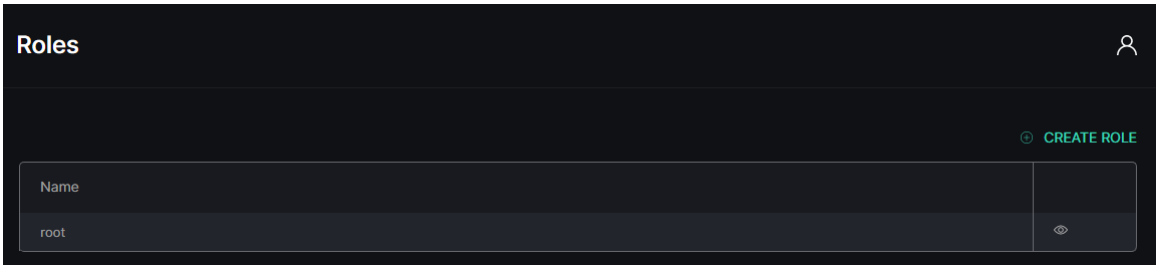
To open the Roles item, in the left menu:



1. Select the Settings section
2. Choose the Roles item
3. See roles

Use and Functionality

The Roles item shows:



- List of created roles
- Toolbox includes:
  - Delete
  - Edit
  - View

The root role is created by default and cannot be edited or removed.

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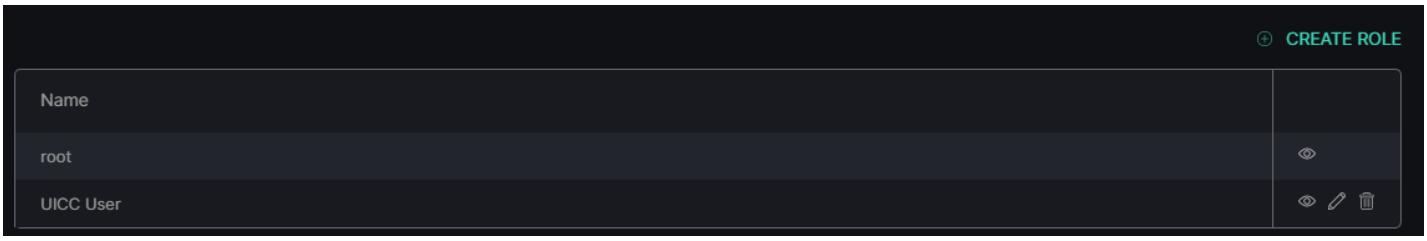
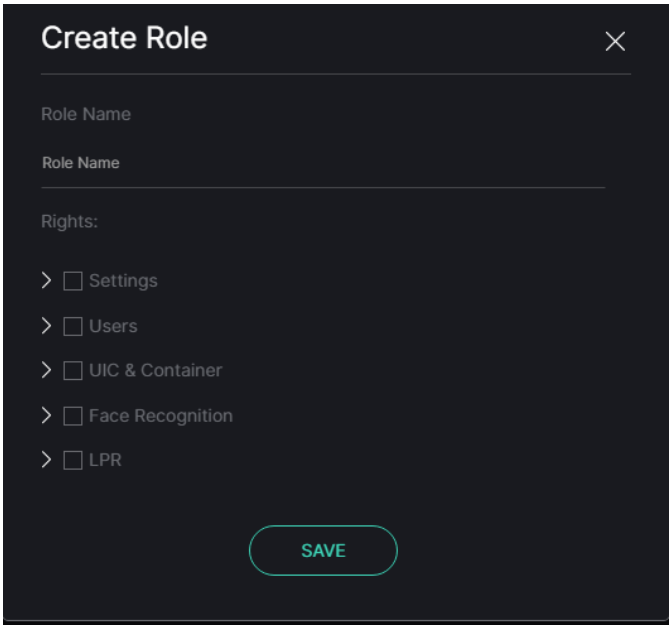
Create Role

To create a new role, click the Create Role button:



In the Create Role pop-up window:



- Enter the role name
- Set the access rights:
  - Check the boxes next to the required plugins to assign access rights
  - Click the arrows next to the required plugin name to open extended access rights options
- Click the Save button to confirm the intention

Some access rights checkboxes are disabled until the earlier primary access rights are checked.

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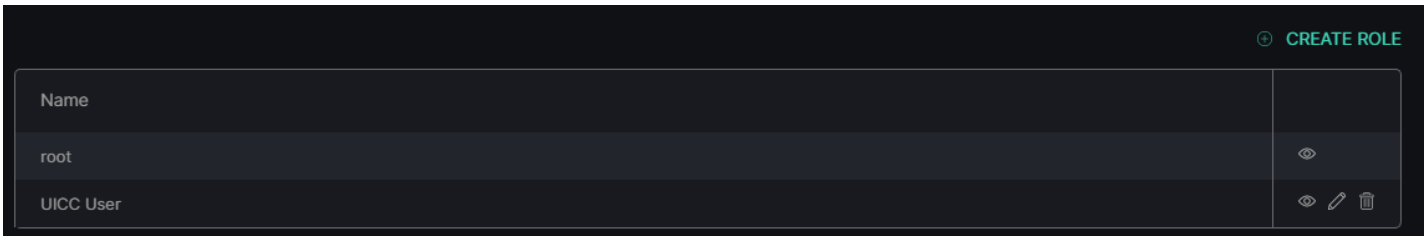
Edit Role

To edit the required role, click the Edit icon on the toolbox:



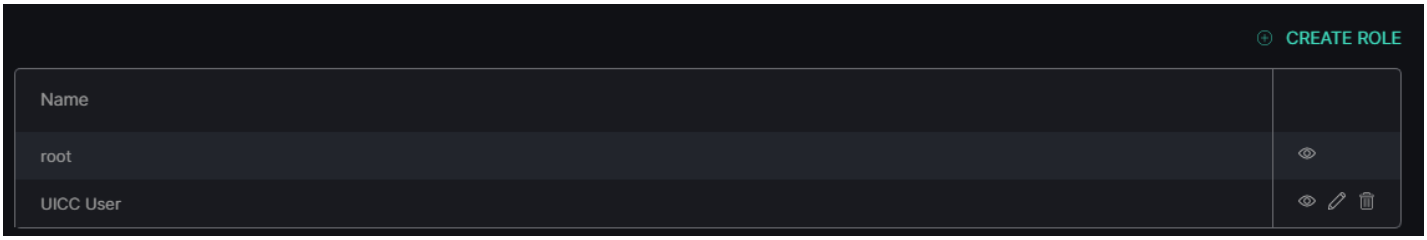
In the Edit Role pop-up window:

- Change the role name
- Set the access rights:
  - Check the boxes next to the required plugins in order to assign access rights
  - Click the arrows next to the required plugin name to open the extended access rights options
- Click the Save button to save changes

Some access rights checkboxes are disabled until the earlier primary access rights are checked.

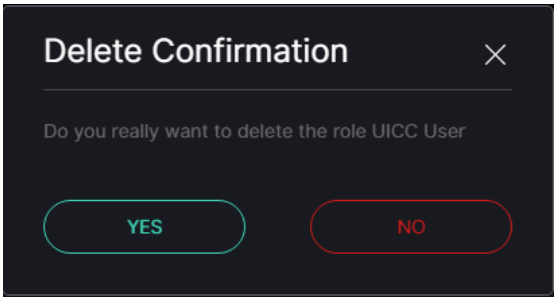
View Role

To view the access rights for the required role, click the View icon on the toolbox:



Delete Role

To remove the role:



1. Select the Delete icon on the toolbox
2. Confirm the intention

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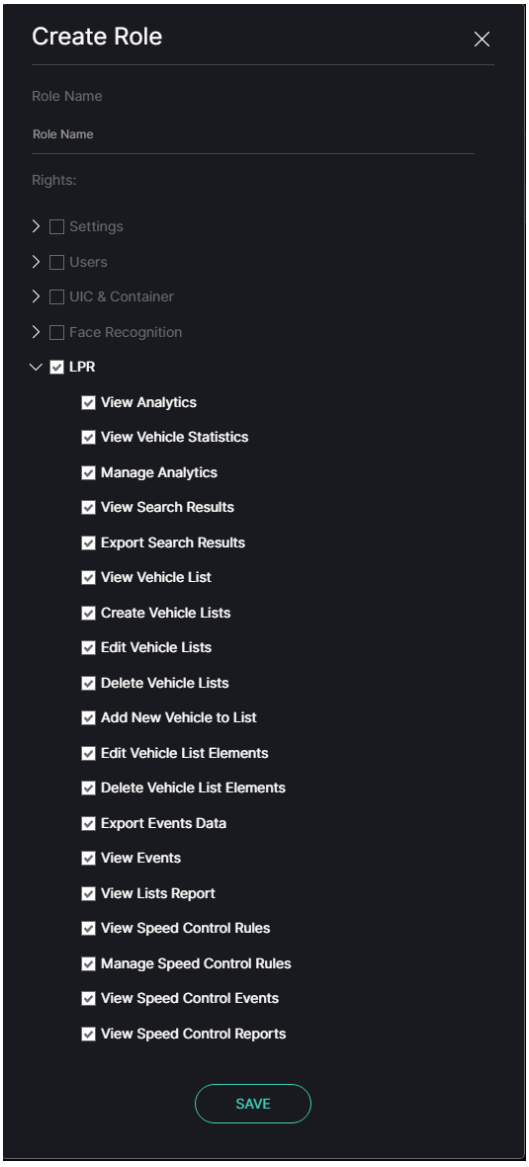
LPR: User Access Rights

This page includes the LPR user access rights overview.

Overview

LPR permissions include:



- Primary permissions:
  - View Analytics
  - View Vehicle Statistics
  - View Search Results
  - View Vehicle Lists
  - View Speed Control Rules
  - View Speed Control Events
  - View Speed Control Reports

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- Secondary permissions:
  - Manage Analytics
  - Export Search Results
  - Create Vehicle Lists
  - Edit Vehicle Lists
  - Delete Vehicle Lists
  - Add New Vehicle to List
  - Edit Vehicle List Elements
  - Delete Vehicle List Elements
  - View Events
  - View Lists Report
  - Manage Speed Control Rules
- Export Events Data tertiary permission

- The Manage Analytics permission requires the earlier assignment of the View Analytics permission. Otherwise, this choice is blocked.
- The Export Search Results permission requires the earlier assignment of the View Search Results permission. Otherwise, this choice is blocked.
- The Create/Edit/Delete Vehicle Lists, Add New Vehicle to List, Edit/Delete Vehicle Lists Elements, View Events, and View Lists Report permissions require the earlier assignment of the View Vehicle Lists permission. Otherwise, these options are blocked.
- The Export Events Data permission requires the earlier assignment of the View Vehicle Lists and View Events permissions. Otherwise, this choice is blocked.
- The Manage Speed Control Rules permission requires the earlier assignment of the View Speed Control Rules permission. Otherwise, this choice is blocked.
- The user has full access to the LPR section features only if all LPR permissions are selected within the assigned role.
- The user does not have any access to the LPR section unless at least one LPR primary permission is selected within the assigned role.

View Analytics

The View Analytics permission gives limited access to the Analytics item of the LPR section. It allows to:

- View the list of created analytics and their status
- Filter analytics for quick search

View Vehicle Statistics

The View Vehicle Statistics permission gives full access to the Vehicle Statistics item of the LPR section.

View Search Results

The View Search Results permission gives almost full access to the Search item of the LPR section, except exporting search results reports.

It also allows viewing search results for required analytics from the Analytics item if the View Analytics permission is assigned too.

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View Vehicle Lists

The View Vehicle Lists permission gives limited access to the Lists item of the LPR section. In the Lists61 tab, it allows to:

- Filter lists for quick search
- View the table with created lists
- Search vehicle information cards by number
- View created lists
- View vehicle information cards

View Speed Control Rules

The View Speed Control Rules permission opens access to the Speed Control item of the LPR section and allows viewing the list of created rules in the Rules tab.

View Speed Control Events

The View Speed Control Events permission opens access to the Speed Control item of the LPR section and gives full access to the Events tab.

> It also allows viewing events with required rules from the Rules tab, if the View Speed Control Rules permission is assigned too.

View Speed Control Reports

The View Speed Control Reports permission opens access to the Speed Control item of the LPR section and gives full access to the Report tab.

Manage Analytics

The Manage Analytics permission allows to:

- Create analytics
- Edit analytics
- Change analytics status
- View analytics live
- Delete analytics

Export Search Results

The Export Search Results permission allows export search results reports in PDF format in the Search item.

Create Vehicle Lists

The Create Vehicle Lists permission allows you to create lists of vehicles in the Lists tab of the Lists item.

Edit Vehicle Lists

The Edit Vehicle Lists permission allows to edit lists of vehicles in the Lists tab and on the List View page of the Lists item.

Delete Vehicle Lists

The Delete Vehicle Lists permission allows to remove lists of vehicles in the Lists tab and on the List View page of the Lists item.

Add New Vehicle to List

The Add New Vehicle to List permission allows to create a vehicle information card and import lists of vehicle information cards in CSV on the List View page of the Lists item.

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> It also allows creating vehicle information cards from the Search item (requires the View Search Results permission assigned) and View Analytics page of the Analytics item (requires the View Analytics and Manage Analytics permissions assigned).

Edit Vehicle List Elements

The Edit Vehicle List Elements permission allows to edit vehicle information cards on the List View and Card pages of the Lists item.

Delete Vehicle List Elements

The Delete Vehicle List Elements permission allows to remove vehicle information cards on the List View and Card pages of the Lists item.

View Events

The View Events permission gives full access to the Events tab of the Lists item, except exporting event reports.

Export Events Data

The Export Events Data permission allows exporting event reports in PDF format in the Events tab of the Lists item.

View Lists Report

The View List Report permission gives full access to the Report tab of the Lists item.

Manage Speed Control Rules

The Manage Speed Control Rules permission allows to:

- Create rules
- Edit rules
- Delete rules

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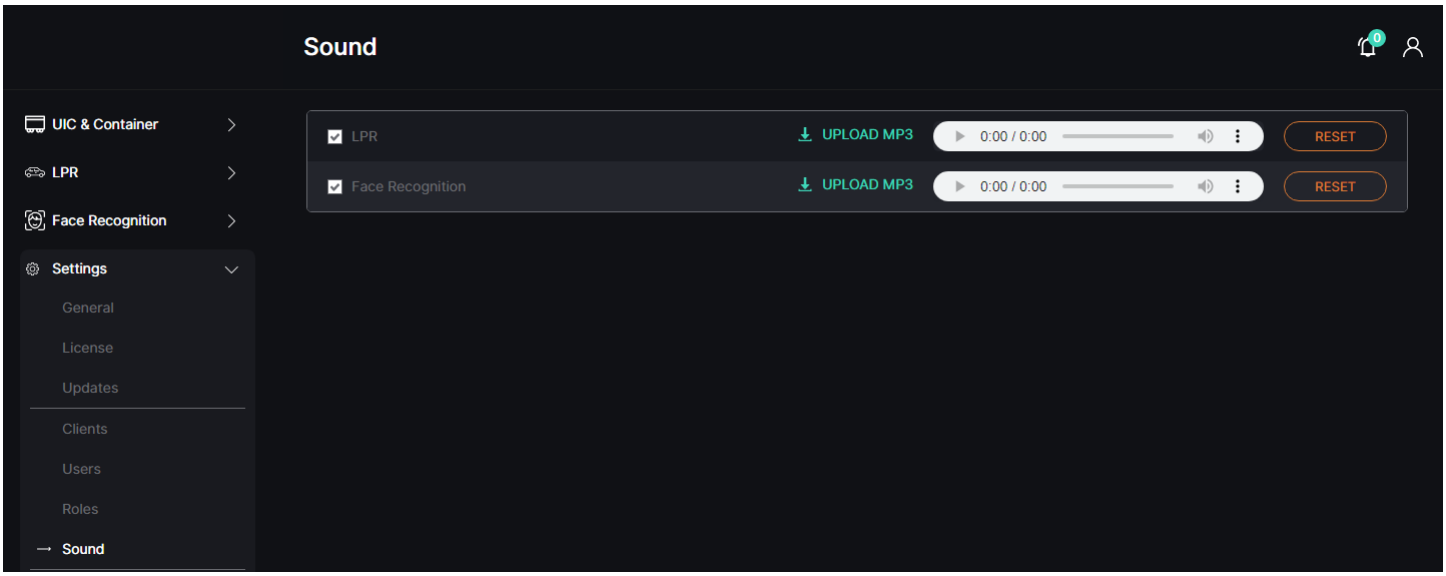
Sound

This page describes the Sound item that allows managing sound alerts for installed plugins.

Overview

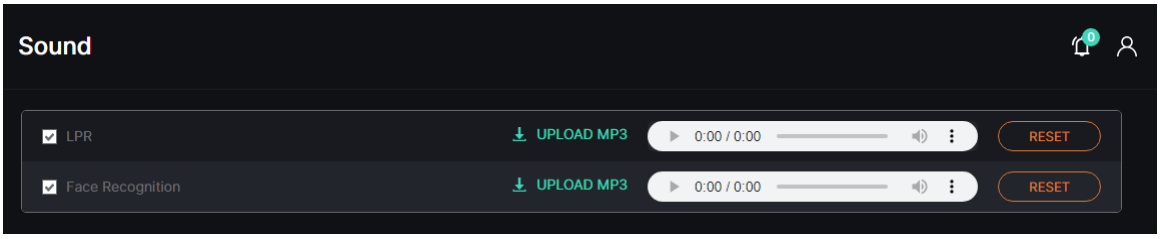
To open the Sound item, in the left menu:



1. Select the Settings section
2. Choose the Sound item
3. See sounds

Use and Functionality

The Sound item allows to:



1. Select/deselect the checkbox next to the required plugin name to enable/disable the notification alert sound for the selected plugin
2. Click the Upload MP3 button to change the default alert sound to the one chosen on the device
3. Use functionality of the Audio Player that includes:
    a. Play toggle to start/stop the audio file playback
    b. Sound current duration and total duration time displayed as mm:ss
    c. Volume bar to control the volume level by dragging the handle
    d. Mute toggle to turn on and off the playback sound
    e. Extra menu with Download and Playback Speed buttons
4. Click the Reset button to return to the default sound settings

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The event notification sound alert is produced when all of the following conditions are met in the system:

1. The Sound toggle is enabled in the Account settings.
2. The required plugin is installed and enabled in the Plugin Marketplace item of the Settings section (enabled plugins are displayed in the system menu).
3. The checkbox next to the required plugin is selected in the Sound item of the Settings section.
4. The required plugin includes the Events item.
5. The Internal Notification checkbox is selected in the Notifications tab while adding or editing the analytics settings in the required plugin.
6. The required plugin icon is displayed on the Notifications panel.

Plugin Marketplace

This page describes the Plugin Marketplace item that allows viewing and managing plugins.

Overview

To open the Plugin Marketplace item, in the left menu:

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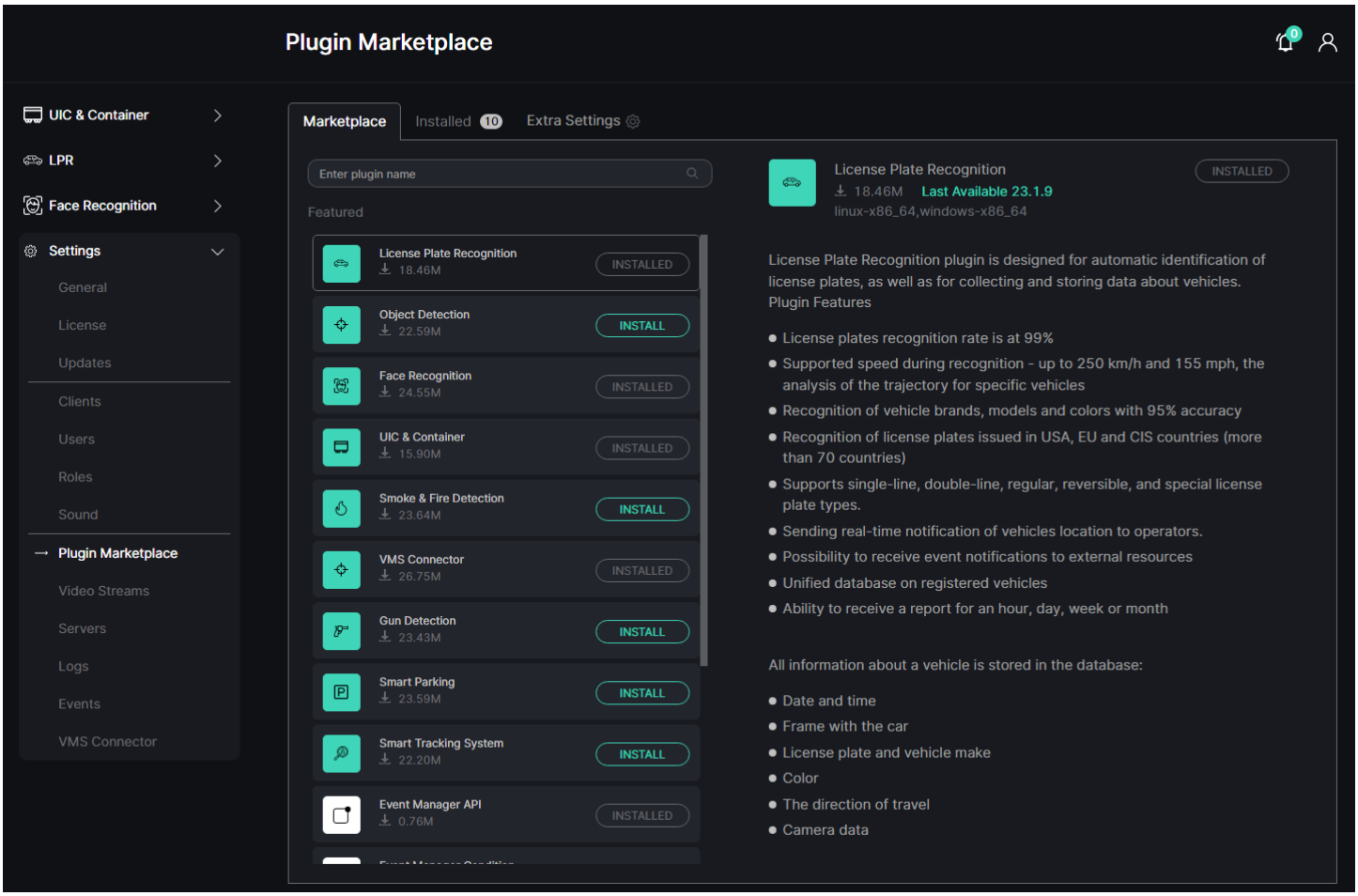
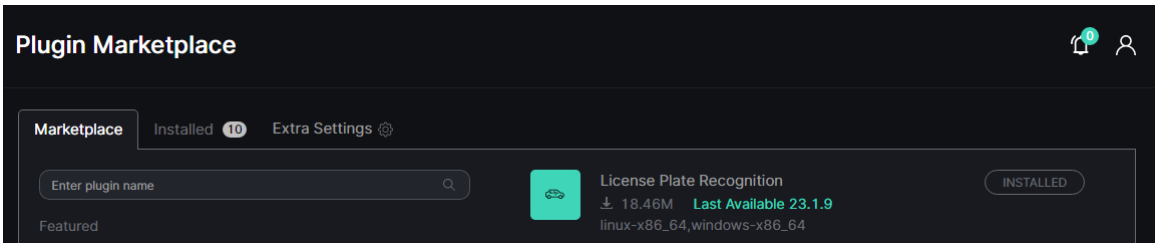


1. Select the Settings section
2. Choose the Plugin Marketplace item
3. See plugin marketplace

Use and Functionality

The Plugin Marketplace functional menu includes:



- Marketplace tab to install plugins
- Installed tab to manage installed plugins
- Extra Settings button with options to:
  - Install plugin from disk
  - Disable all downloaded plugins
  - Enable all downloaded plugins

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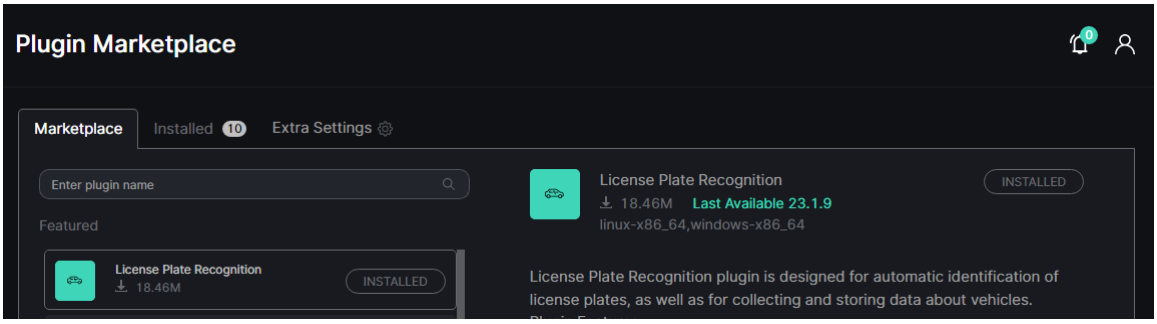
- Selected tab is always highlighted. Switch between tabs by clicking on their names.
- Marketplace tab opens first by default.
- Figure in a circle next to the Installed tab means the number of plugins available for update.

Marketplace Tab

The Marketplace tab holds a list of all available for installation plugins in the system.
To install a new plugin:



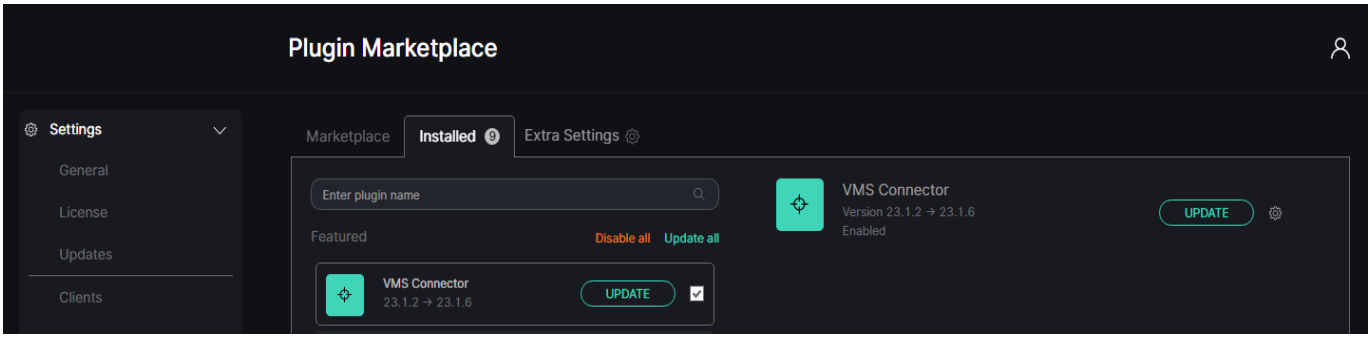
1. Enter the plugin name or characters in the name to filter plugins in the list
2. Select the required plugin in the list to read the information about it in the Description block
3. Click the Install button to start the installation

The Description block includes:

- File size
- Last available update version
- Supported OS
- Plugin features description
- Install button

Installed Tab

The Installed tab holds a list of installed plugins in the system.
To update a plugin:



1. Enter the plugin name or characters in the name to filter plugins in the list
2. Select the required plugin in the list to read the information about it and check the last available version in the Description block
3. Click the Update button to start the plugin version update

The Description block includes:

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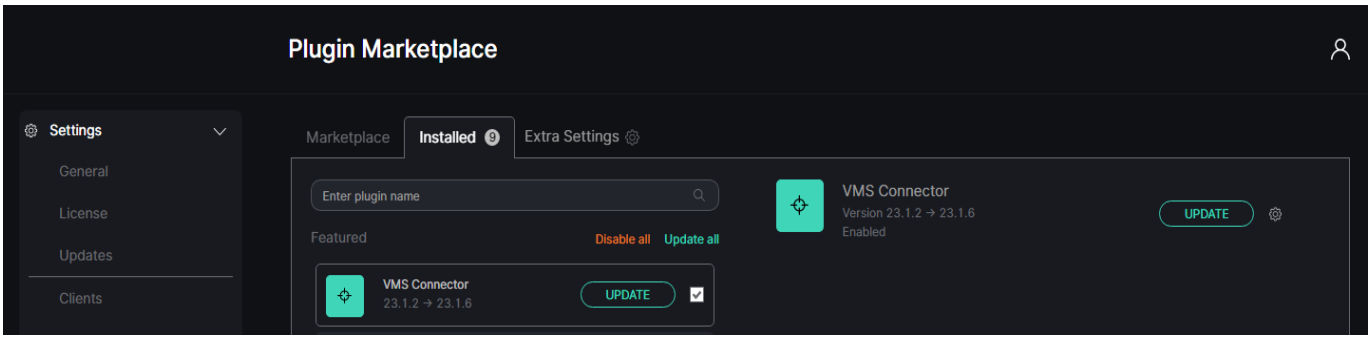
- Current and last available update version
- Enabled or Disabled plugin status
- Plugin features description
- Update button
- Settings icon with options to:
- Enable or disable the selected plugin
- Uninstall the selected plugin

Installed tab added options allow users to:



1. Click the Disable All button and confirm the intention in the pop-up window to disable all installed plugins at once
2. Click the Update All button and confirm the intention in the pop-up window to update all plugins to the last available versions at once
3. Select the checkbox next to the required plugin to enable or disable only the selected plugin

- Enabled plugins are displayed in the left menu by default.
- Disabled plugins are removed from the main menu but still installed in the system.

Video Streams

This page describes the Video Streams item that allows viewing and managing video streams.

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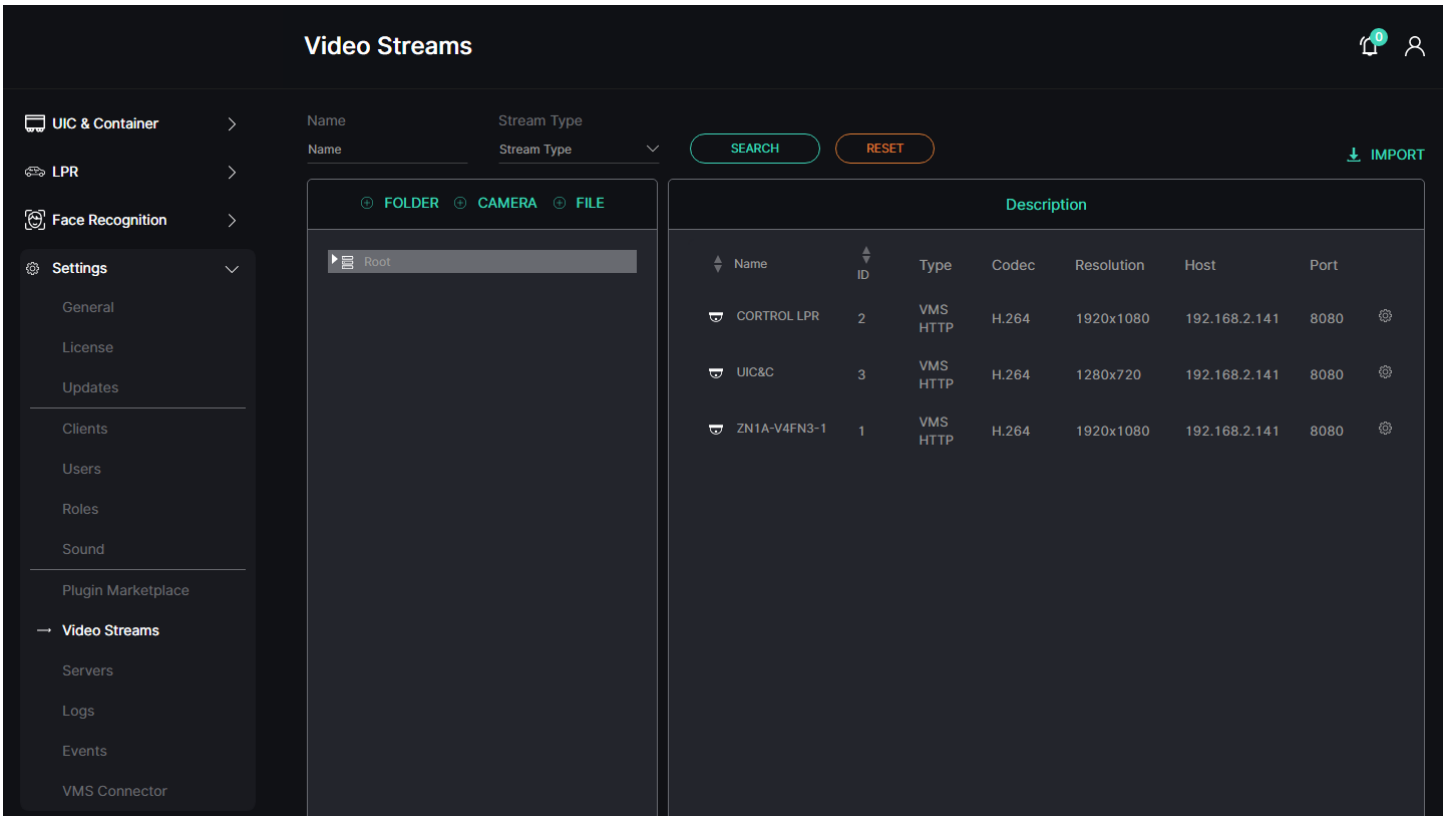
Overview

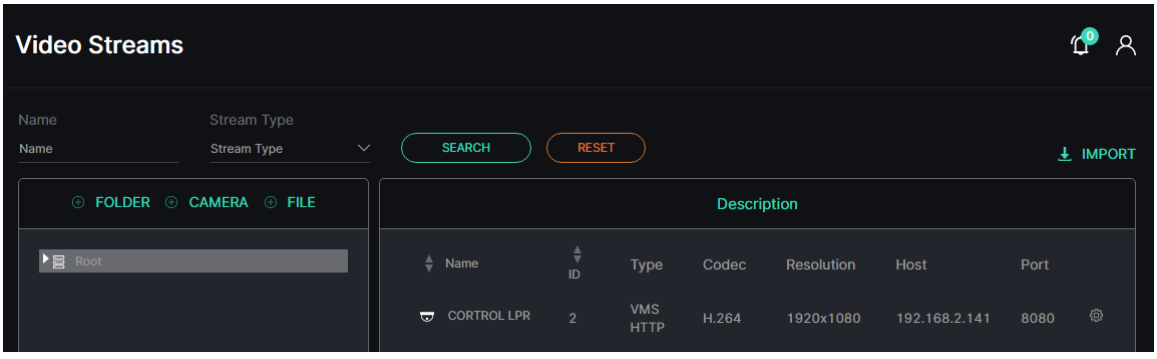
To open the Video Streams item, in the left menu:



1. Select the Settings section
2. Choose the Video Streams item
3. See video streams

Use and Functionality

The Video Streams item shows:



1. Functional menu to:
    a. Enter the video stream name or characters in the name to filter video streams
    b. Select the video stream type from the drop-down list:
        i. RTSP
        ii. FTP
        iii. HTTP

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iv. File

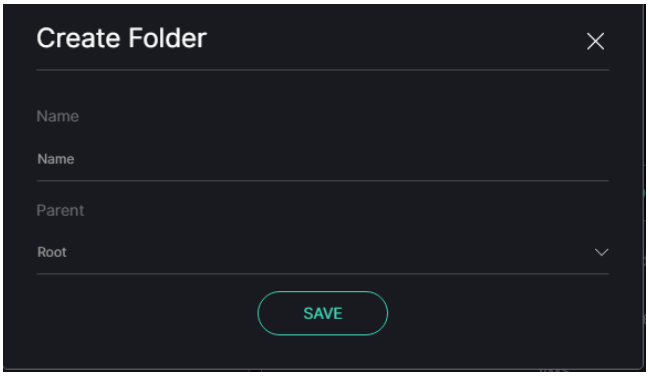
c. Click the Search button to start filtering
d. Click the Reset button to clear the filters

2. Folders block to add folders, cameras, and files
3. Description blocks to:
    a. View the list of created folders, cameras, and files with added data
    b. Use extra functionality for cameras and files management

- The Add Folder, Add Camera, and Add File buttons are also available in the drop-down menu upon clicking on the RMB anywhere inside the Folders or Description blocks.
- Toggles next to the Name and ID titles in the Description block allow users to sort the content by the corresponding parameters.

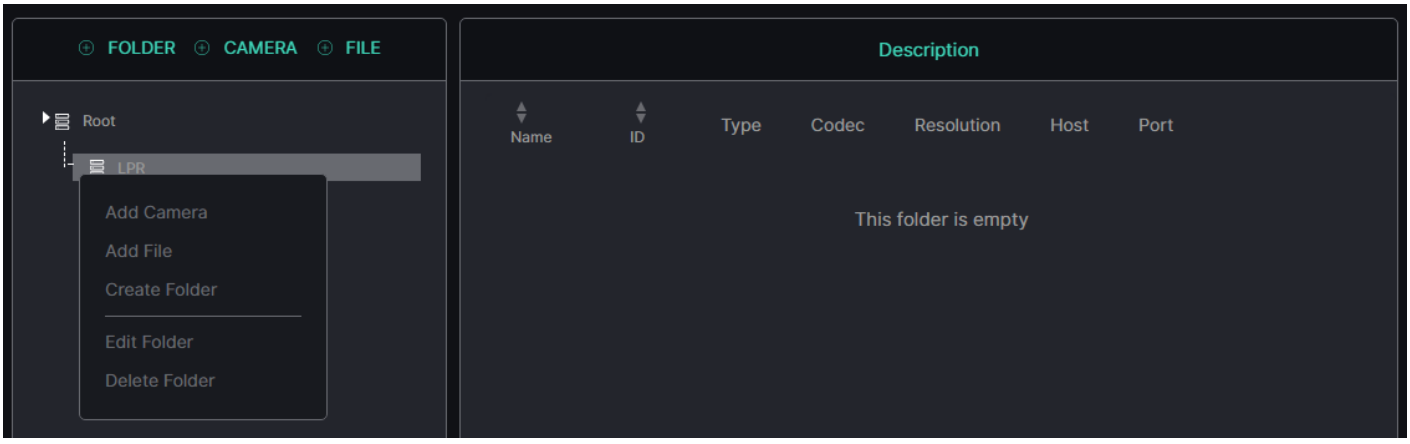
Manage Folders

To add a new folder:



1. Select the Folder button at the top of the Folders block
2. Fill in the fields in the Add Folder pop-up window:
    a. Enter the name of the new folder
    b. Select the required parent folder from the drop-down list
3. Click the Save button to confirm the intention

To edit a folder:



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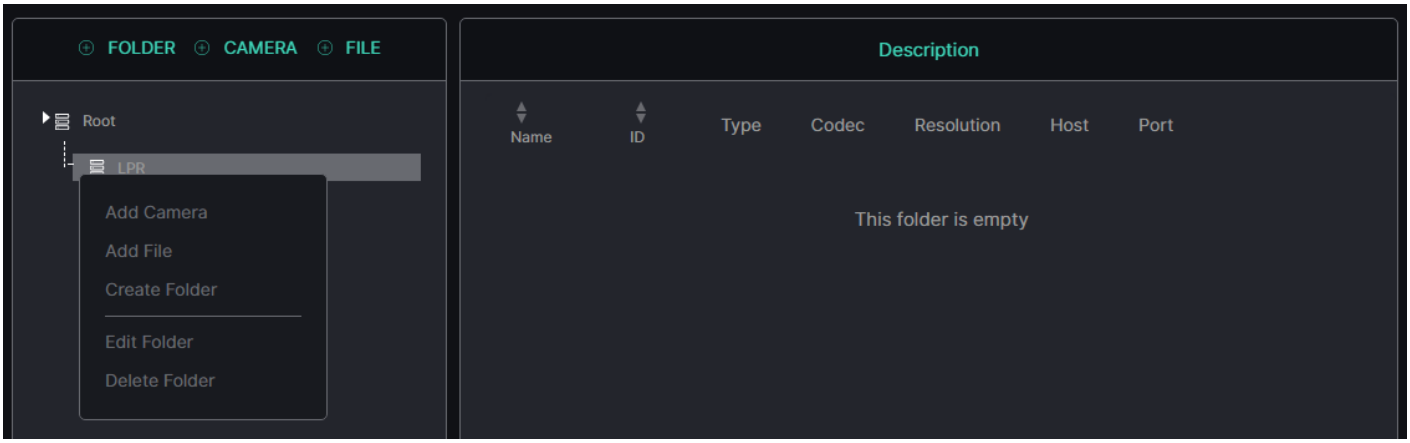
1. Click the required folder with RMB to open the drop-down menu
2. Select the Edit Folder button. In the pop-up window:
    a. Edit the name of the folder
    b. Select another parent folder from the drop-down list
    c. Click the Save button to apply changes

To remove a folder:

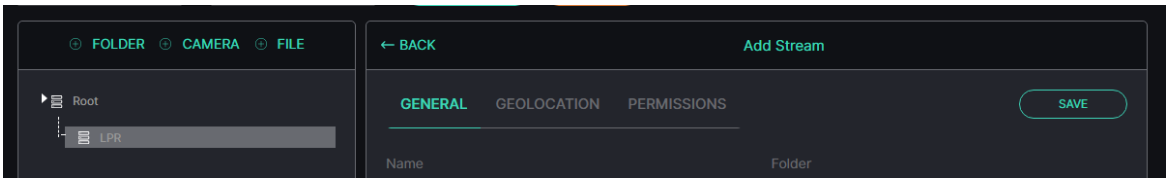


- Select the required folder with RMB to open the drop-down menu
- Select the Delete Folder button and confirm the intention in the pop-up window

> It is unable to remove a folder holding a video stream or video file. First, remove all items from the folder and then continue with the deletion.

Manage Cameras

To add a new camera, select the Camera button at the top of the Folders block. The Add Stream navigation menu allows to:



- Click the Back button to return to the Description block
- See the setting tabs and move among them by clicking their titles:
    - General
    - Geolocation
    - Permissions
- Select the Save button to confirm the intention

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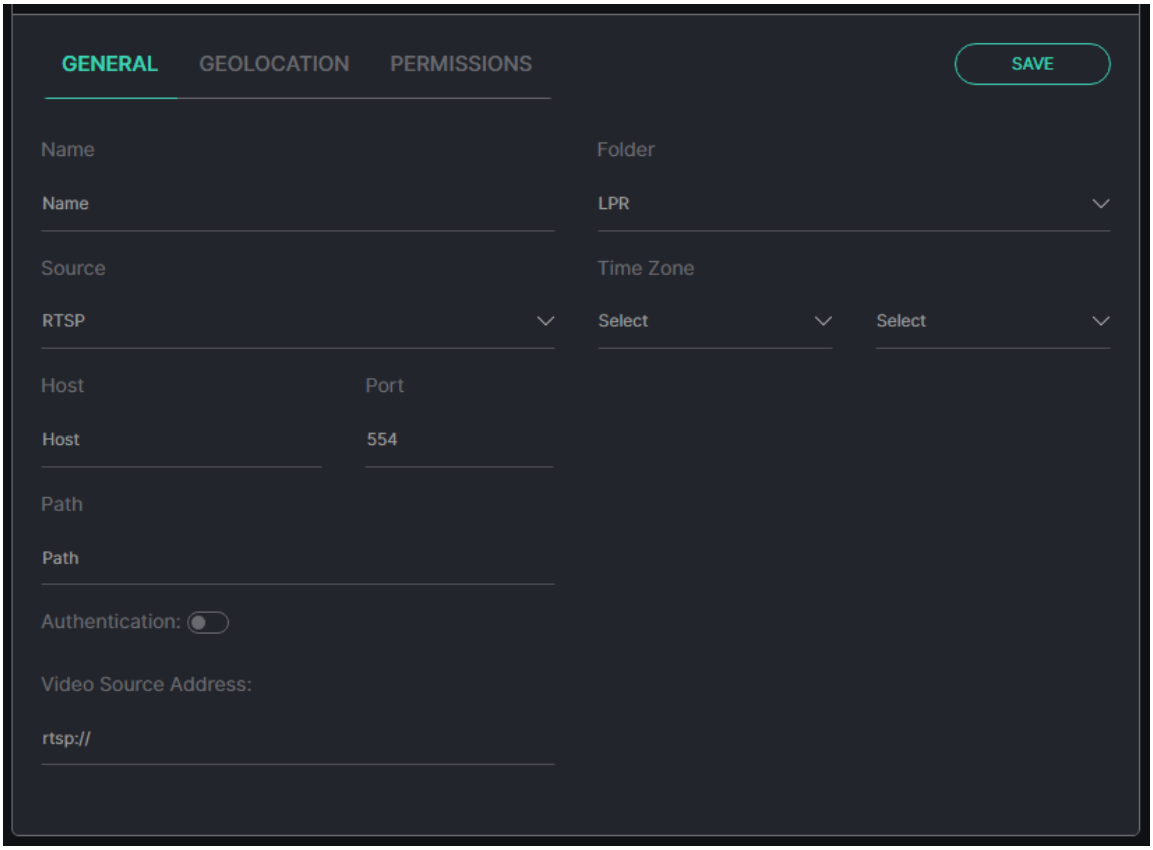
The current tab is always highlighted.

In the General tab fill in the fields:



- Enter the video stream name
- Select the video source type from the drop-down list and fill in the added fields:
  - RTSP (added fields: Host Name, Host Port, Host Path, Authentication - Login and Password (optionally), Video Source Address)
  - FTP (added fields: Host Name, Host Port, Host Path, Events and Extra Options (optionally), Video Source Address)
  - HTTP (added fields: Host Name, Host Port, Host Path, Authentication - Login and Password (optionally), Video Source Address)
- Select a folder from a drop-down list to place the video stream
- Select the camera's relative location and time zone

The Geolocation tab supplies the ability to:

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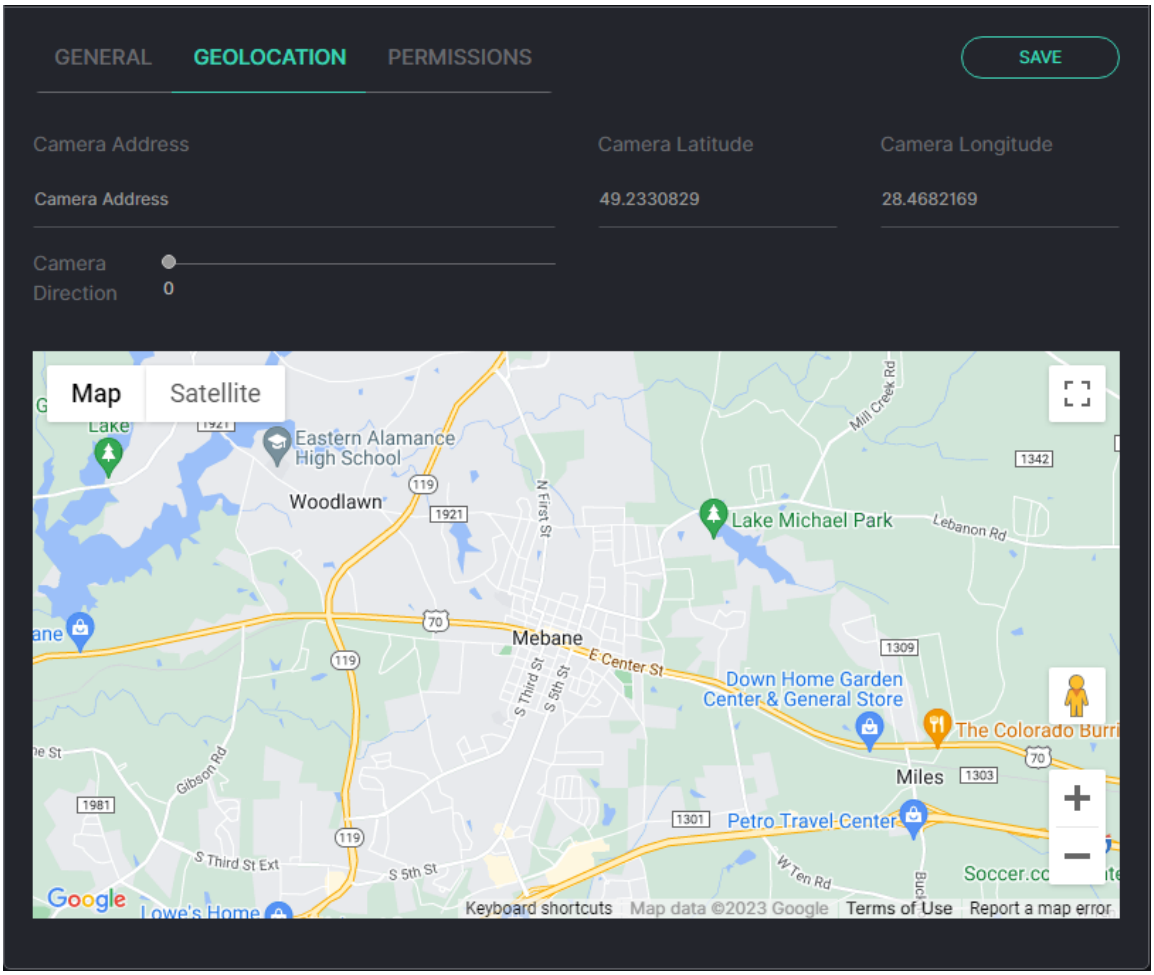

- Set the camera address, latitude, and longitude by:
  - Clicking and dragging the Camera icon on the Google Map
  - Filling in the Camera Address, Camera Latitude, and Camera Longitude fields
- Set the camera direction by moving the slider

The Permissions tab supplies the ability to:

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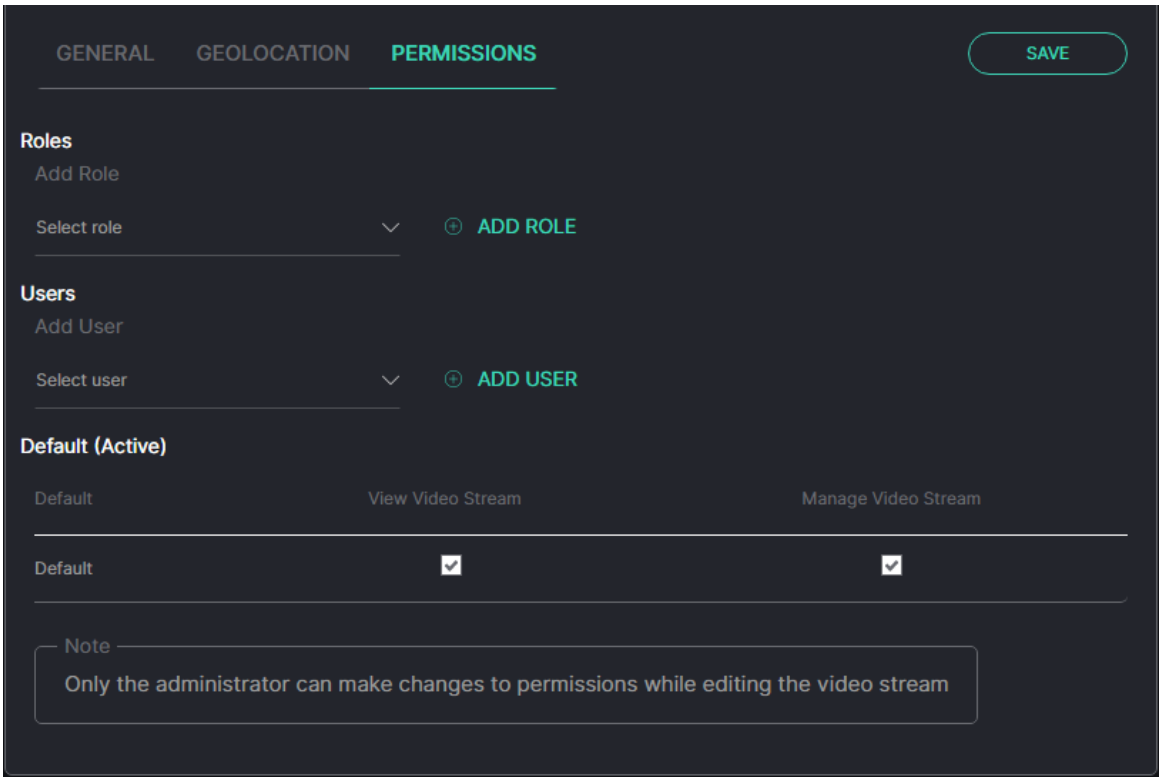

- Assign video stream permissions for Roles:
  - Select the required role from the drop-down list
  - Click the Add Role button
  - Select the checkboxes for the required permissions
  - Click the Delete icon to remove the unnecessary role
- Assign video stream permissions for Users:
  - Select the required user from the drop-down list
  - Click the Add User button
  - Select the checkboxes for the required permissions
  - Click the Delete icon to remove the unnecessary user
- Select the checkboxes for the required video stream permissions by default

The View Video Streams permission allows viewing the video stream in the Video Streams item, as well as using the video stream in analytics and viewing search results, event notifications, and statistics related to the video stream.
The Manage Video Streams permission allows editing and removing the video stream in the Video Streams item.
Default parameters are active only if no Roles or Users are added.
The quantity of added Roles and Users is not limited.

To edit a camera:

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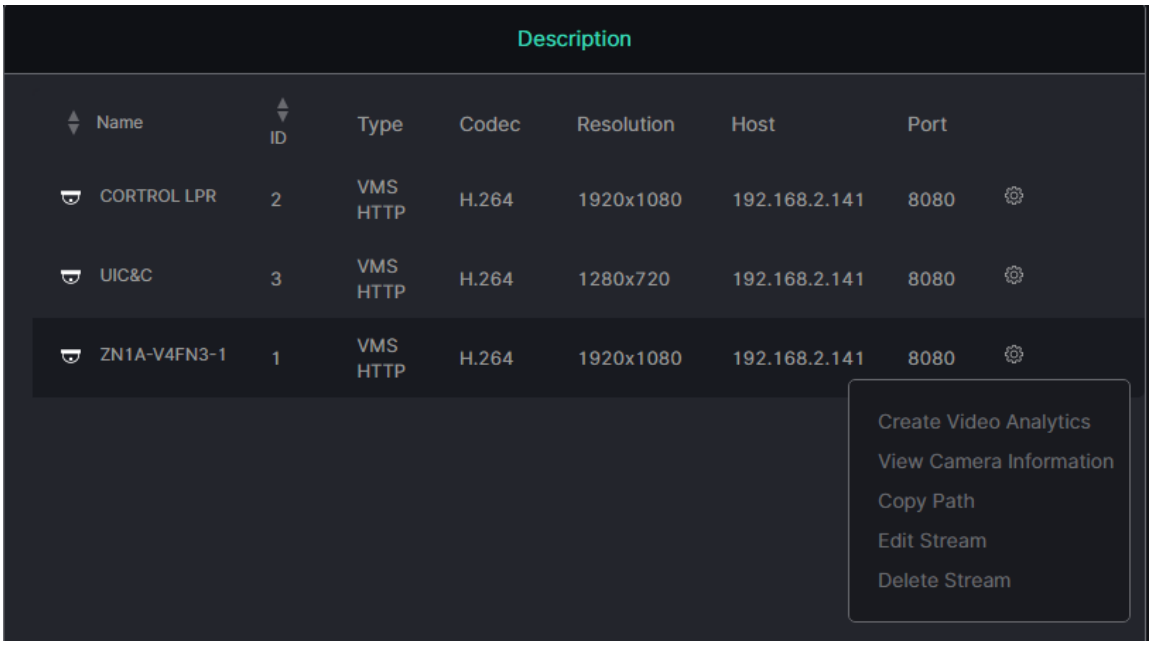
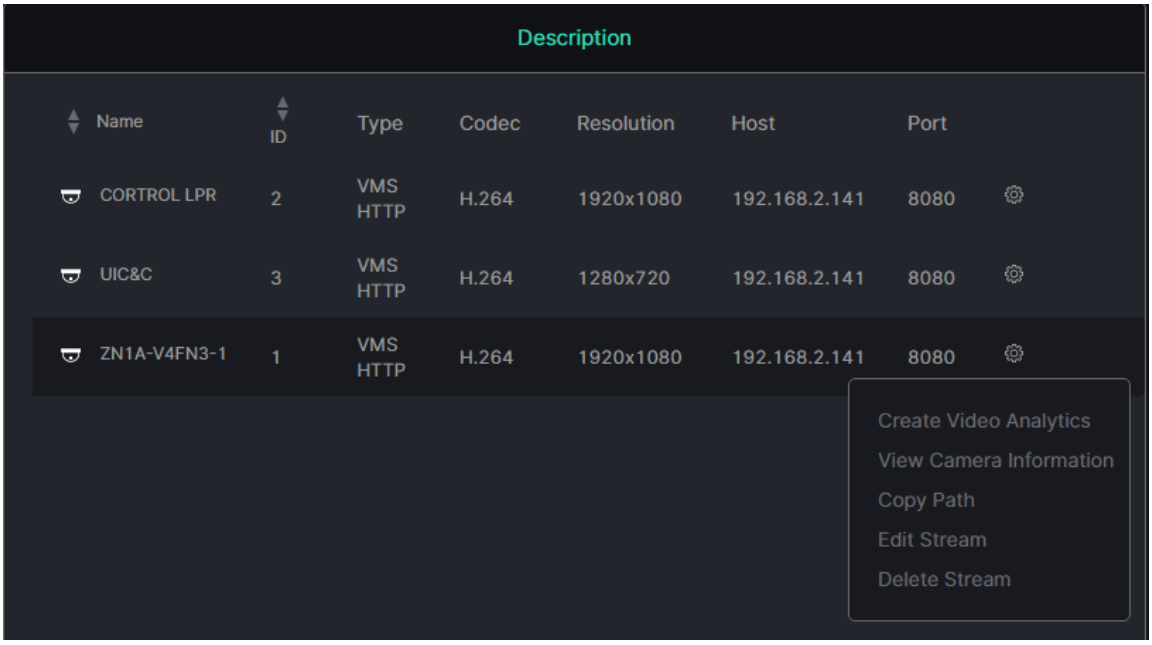


1. Find the desired video stream in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the Edit Stream button

- All parameters configured while adding a video stream are editable.
- Only the administrator can make changes to permissions while editing the video stream. For other system users, the Permissions tab is disabled.

To remove a camera:



1. Find the desired video stream in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu

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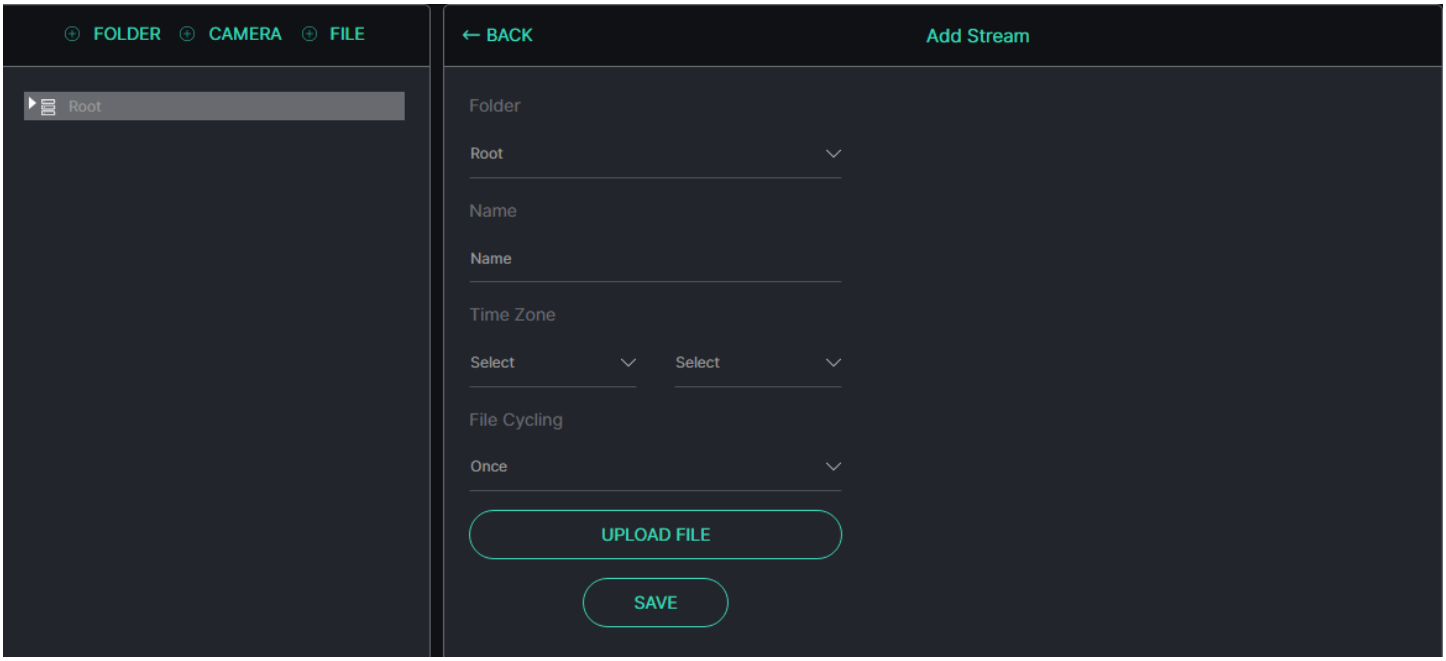
3. Select the Delete Stream button and confirm the intention in the pop-up window

> It is unable to remove a video stream associated with created analytics. First, remove all analytics associated with the video stream and then continue with the deletion.

Manage Files

To add a new video file, select the File button at the top of the Folders block. In the Add Stream block:



1. Fill in the required fields:
    a. Select a folder from a drop-down list to place the video file
    b. Enter the video file name
    c. Select the camera's relative location and time zone
    d. Select the type of video file playback in the analytics process from the drop-down list:
        i. Once
        ii. Cycled
2. Click the Upload File button to select a video file from the device
3. Select the Save button to confirm the intention

> Click the Back button to return to the Description block.

To edit a video file:

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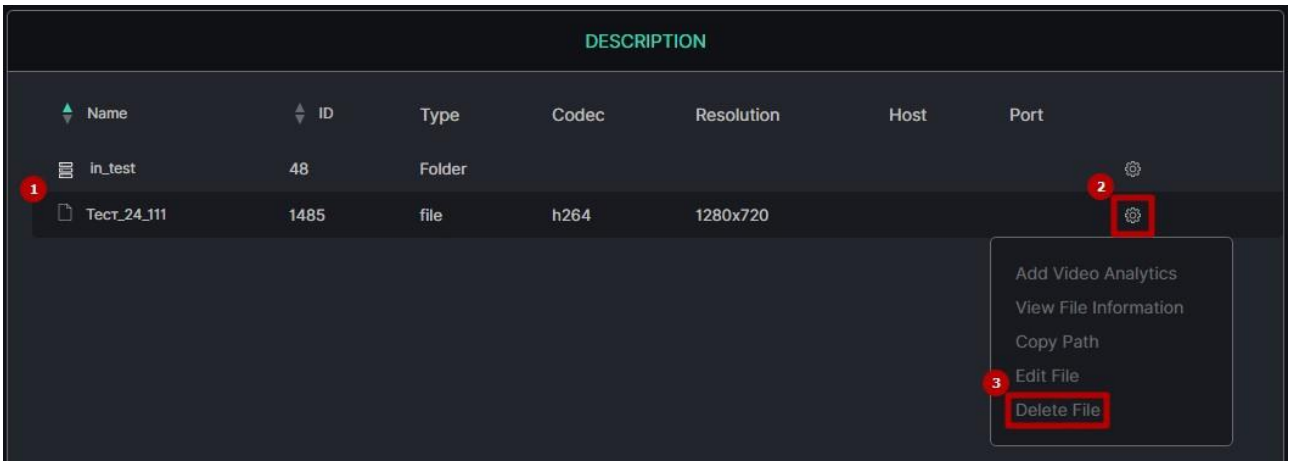
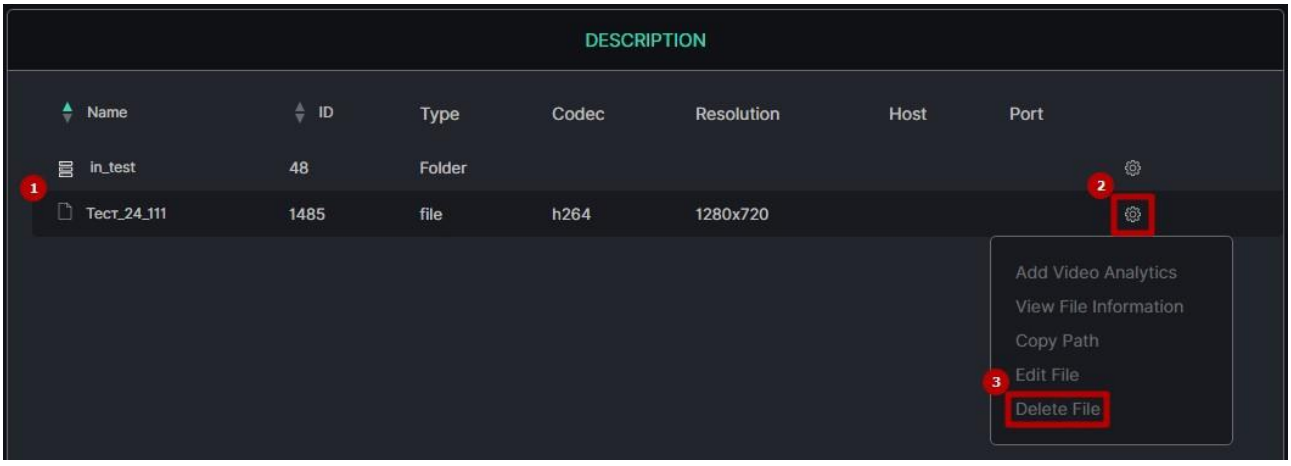


1. Find the desired video file in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the Edit File button

All parameters configured while adding a video file are editable.

To remove a video file:



1. Find the desired video file in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the Delete File button and confirm the intention in the pop-up window

It is unable to remove a video file associated with created analytics. First, remove all analytics associated with the video file and then continue with the deletion.

View Camera/File Information

To view the video stream or video file information and video preview:

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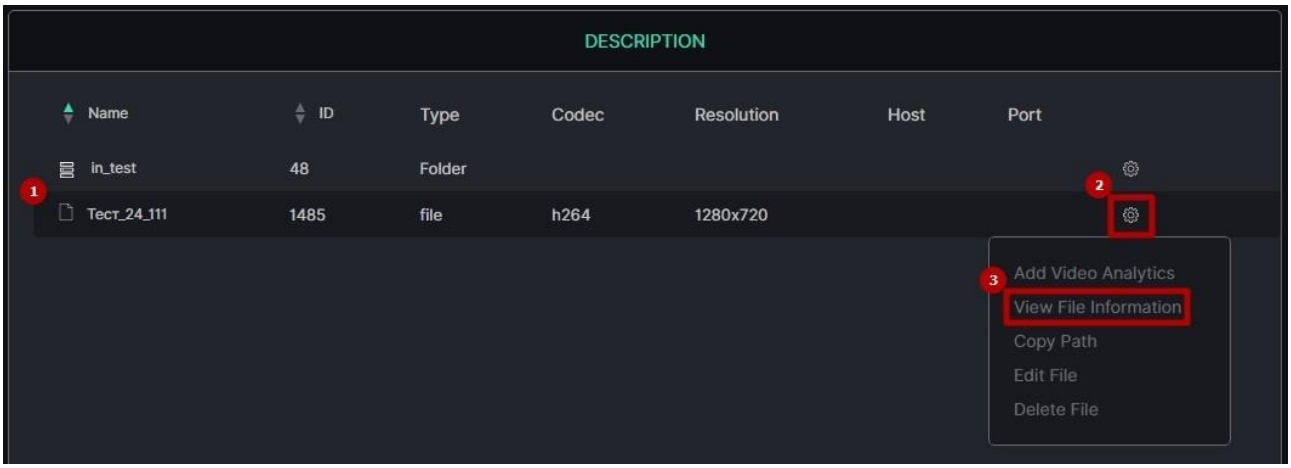
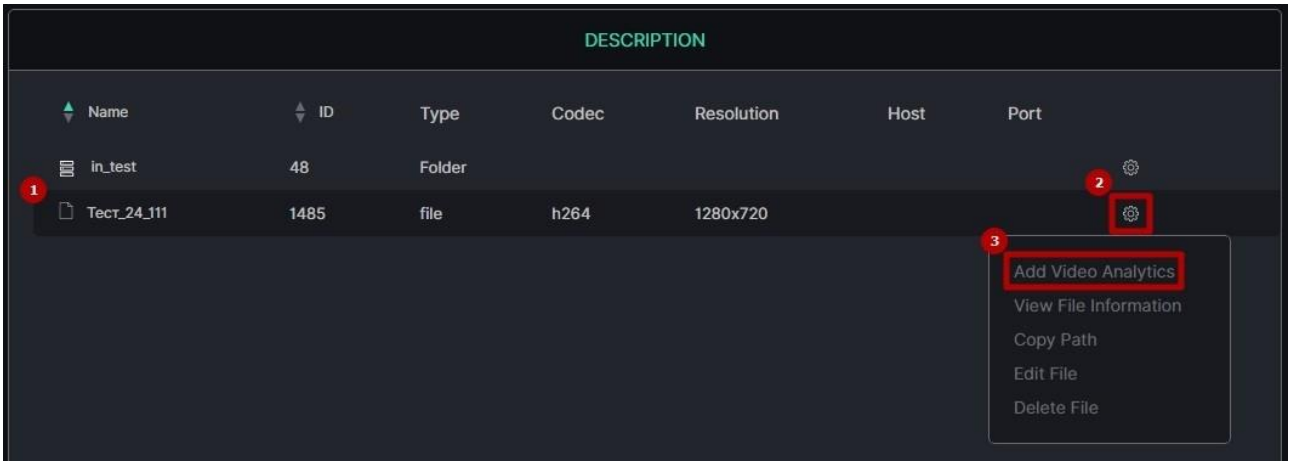


1. Find the desired video stream or video file in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the View Camera Information (for video streams) or View File Information (for video files) button to open the information pop-up window

To update the video stream preview, click the Update button above the preview in the popup window. The option is available only for video streams.

Add Video Analytics

To add video analytics from a video stream or video file:



1. Find the desired video stream or video file in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the Add Video Analytics button to open the pop-up window

In the Add Video Analytics pop-up window:

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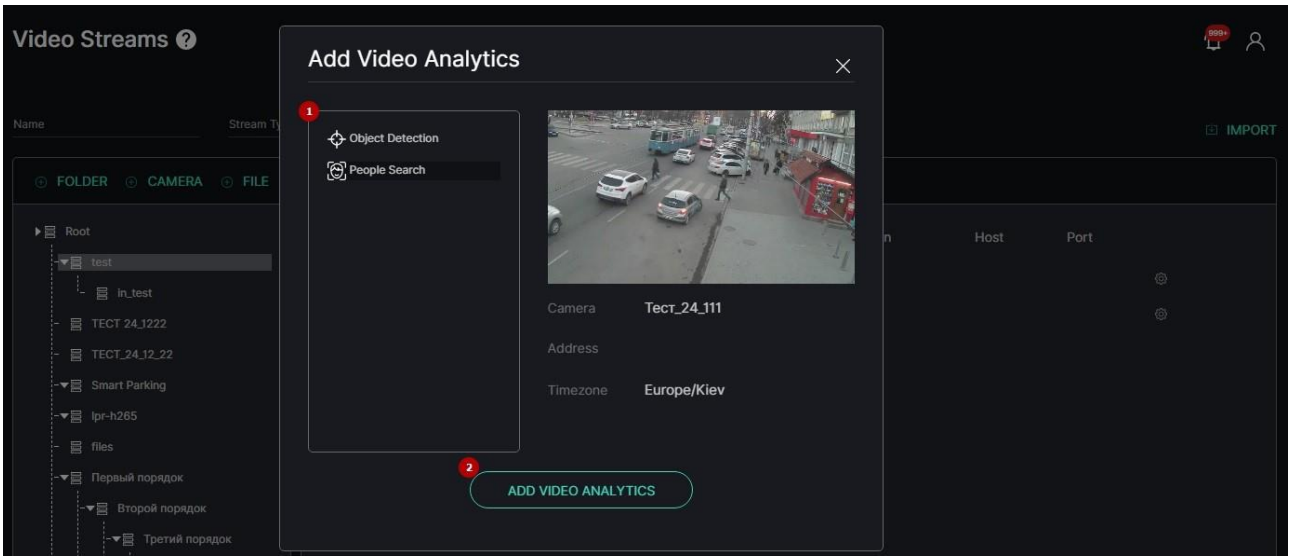
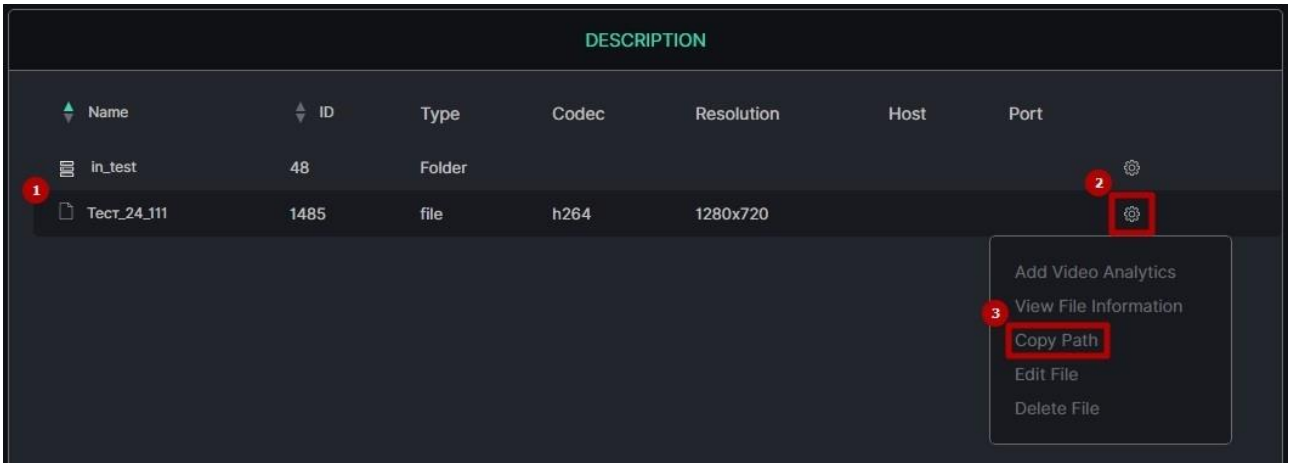


1. Select the required plugin from the list
2. Click the Add Video Analytics button to open the Add Analytics page of the selected plugin

> The selected video file or video stream is automatically set in the Video field on the Add Analytics page.

Copy Path

To copy the path to a video stream or video file:



1. Find the desired video stream or video file in the Description block
2. Hover the mouse over the Settings icon to open the drop-down menu
3. Select the Copy Path button to copy the path to the clipboard for further use

Import Cameras from ONVIF

To add several video streams from ONVIF:

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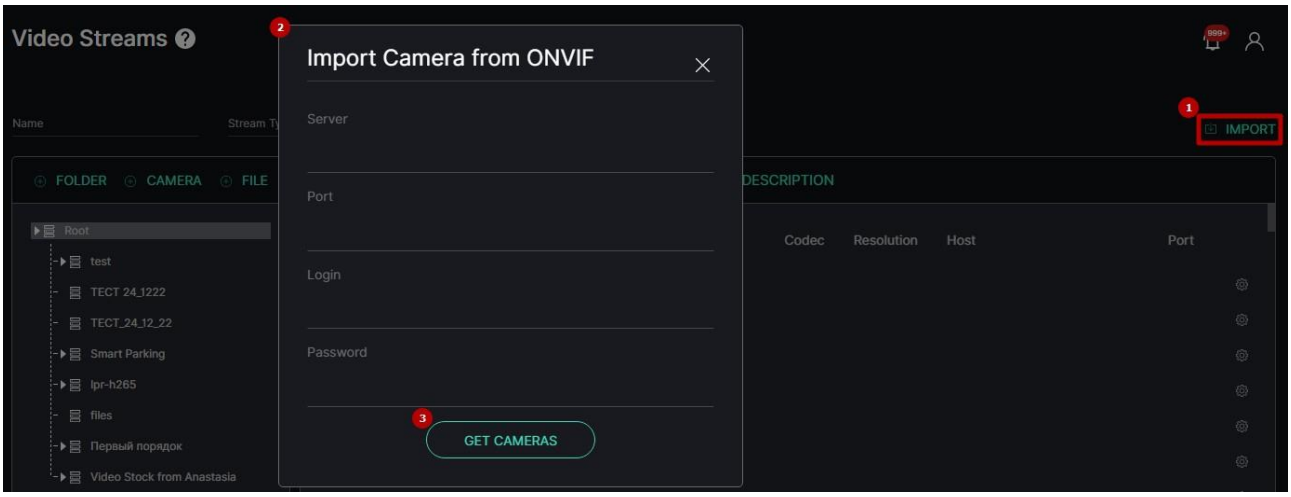

1. Click the Import button
2. View the Import Camera from ONVIF pop-up window and fill in the required fields:
    a. Enter the address of the server to which the cameras are connected
    b. Enter the port number
    c. Enter the ONVIF login
    d. Enter the ONVIF password
3. Click the Get Cameras button to confirm the intention

Servers

ⓘ This page describes the Servers item that allows viewing the data of server load and analytics activity.

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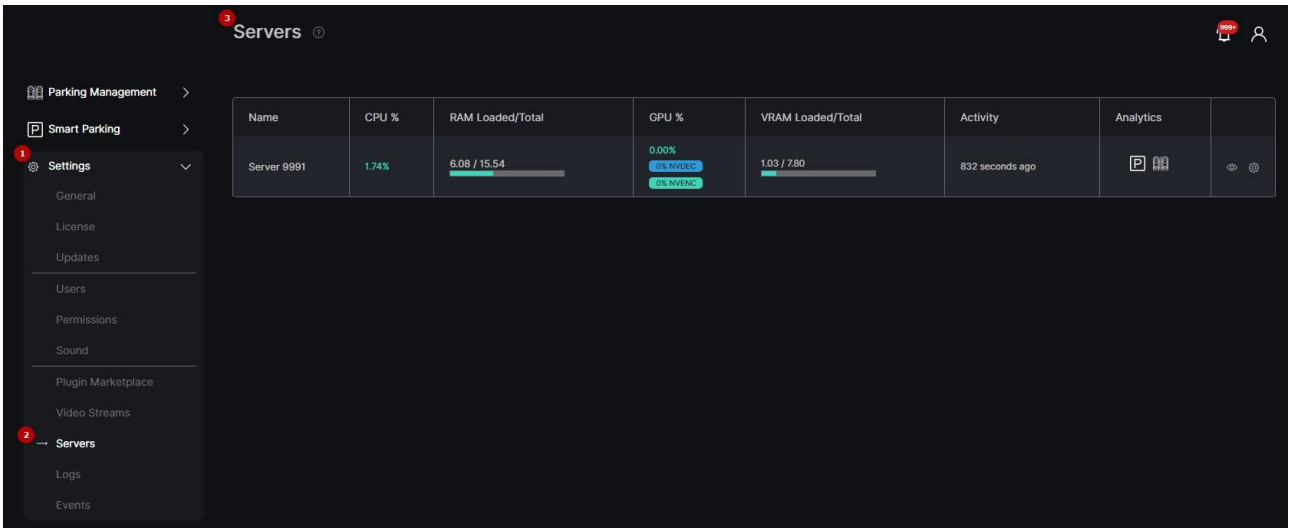
Overview

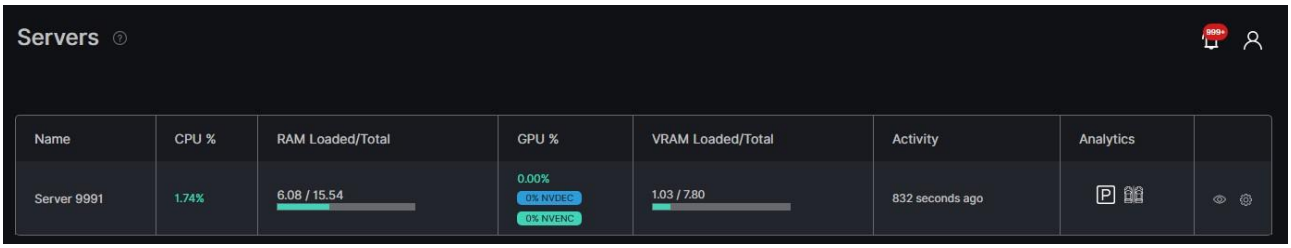
To open the Servers item, in the left menu:



1. Select the Settings section
2. Choose the Servers item
3. See servers

Use and Functionality

The Servers item shows:



- Server name
- CPU and GPU current activity in percentage
- RAM and VRAM load
- Latest update time of the server load data
- Current working analytics

The GPU % column also displays the current percent of GPU consumption by the encoding and decoding processes.

Server Details

To view server details:

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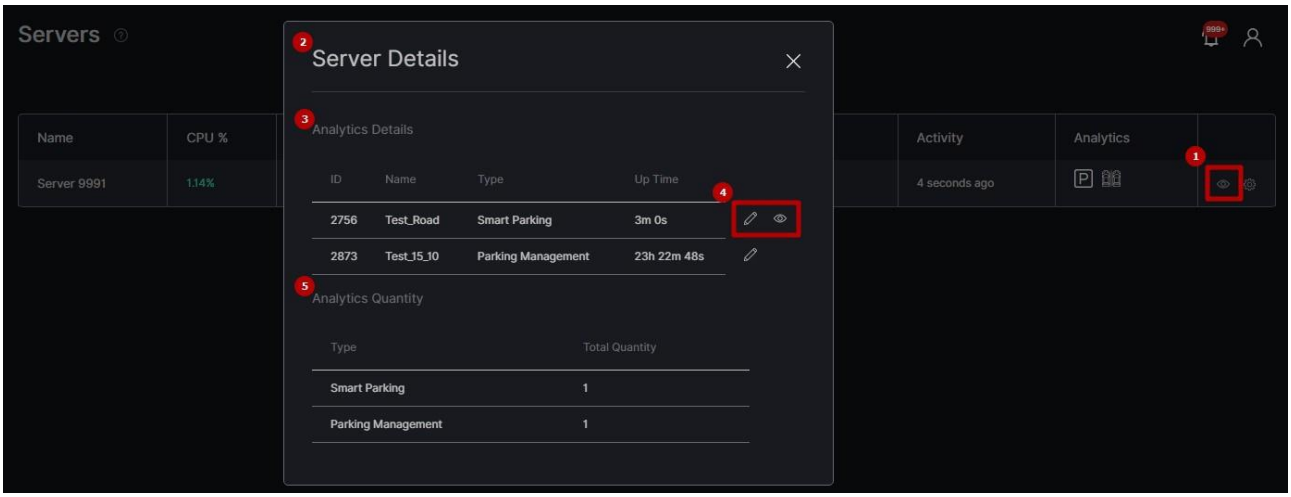
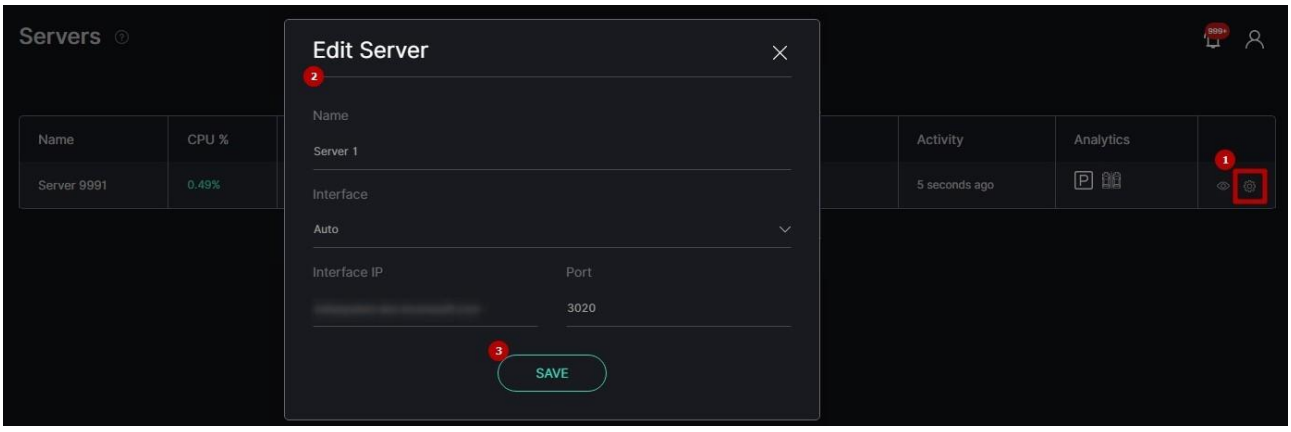


1. Click the View icon on the toolbox
2. See the Server Details pop-up window
3. View active analytics details
4. Click the:
    a. Edit icon to edit settings in the selected analytics
    b. View icon to see the selected analytics process in real-time
5. View active analytics quantity

Edit Server

To edit server parameters:



1. Click the Settings icon on the toolbox
2. Fill in the fields in the Edit Server pop-up window:
    a. Edit the server's name
    b. Select NIC to receive real-time analytics broadcast
    c. Specify the IP address for real-time analytics broadcast
    d. Specify the port for real-time analytics broadcast or leave the default setting (3020)
3. Click the Save button to apply changes

Logs

ⓘ This page describes the Logs item that allows viewing the log of user actions in the system.

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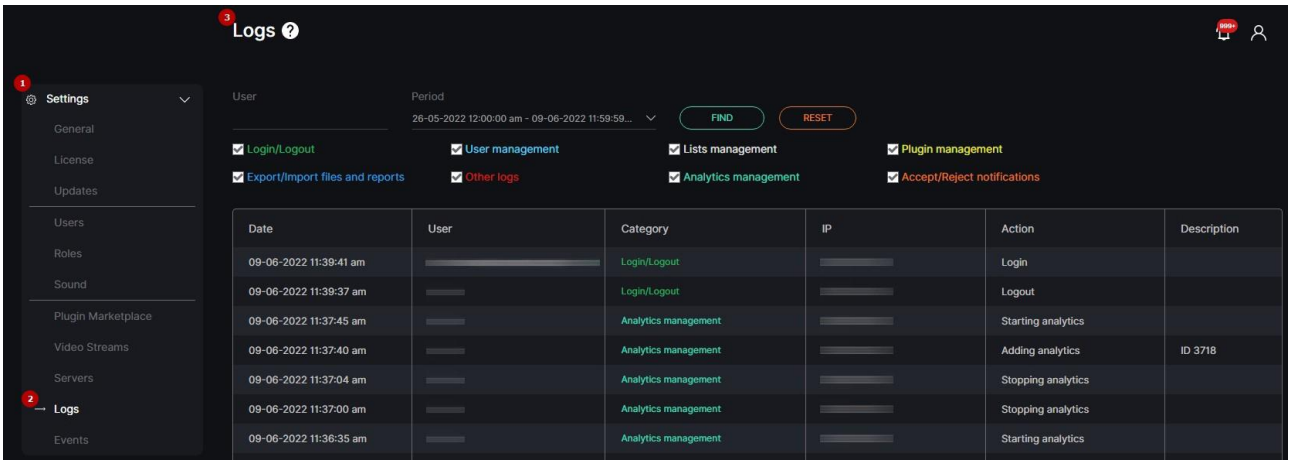
Overview

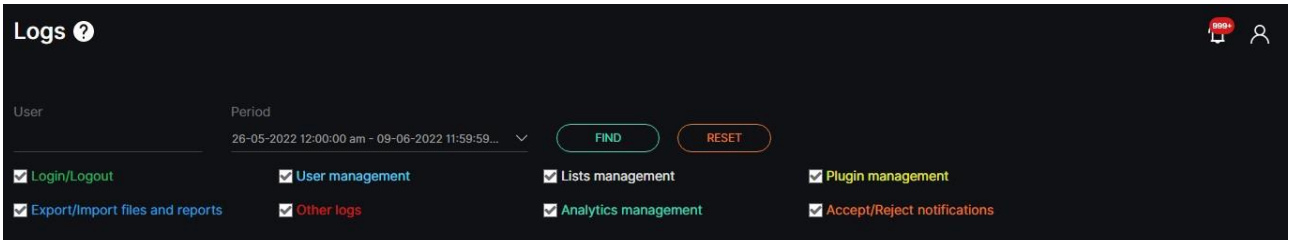
To open the Logs item, in the left menu:



1. Select the Settings section
2. Choose the Logs item
3. See logs

Use and Functionality

The Logs functional menu allows to:



- Enter the username or characters in the name to filter users
- Select the required time frame
- Check the user action category boxes:
  - Login/Logout
  - User Management
  - Lists Management
  - Plugin Management
  - Export/Import Files and Reports
  - Other Logs
  - Analytics Management
  - Accept/Reject Notifications
- Click the Find button to start filtering
- Click the Reset button to clear the filters

Once selected and filtered, see the log of user actions in the table below. It contains:

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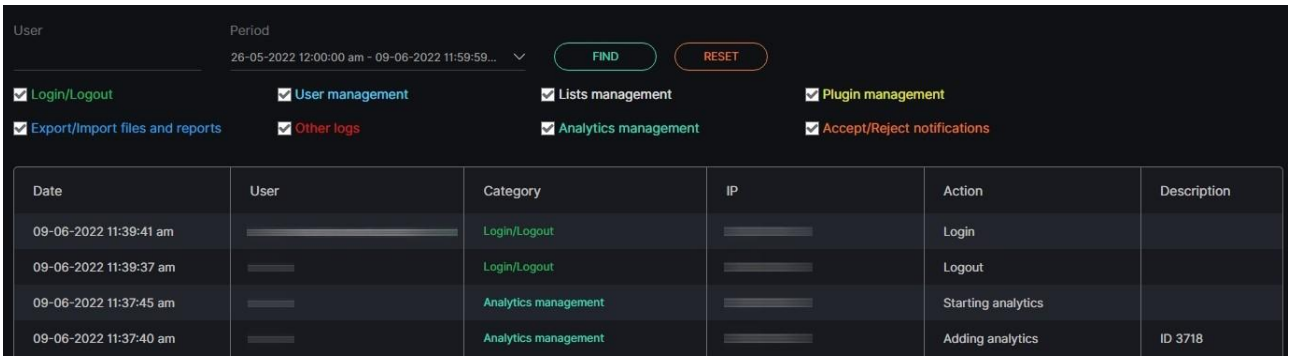

- Date and time of the action
- Name of the user that performed the action
- Name of the user action category
- IP address of the user that performed the action
- Action performed by the user in the system
- Short description of each performed action

User Action Types

User actions in the system include:

- Login and logout
- Adding and editing a user
- Adding and editing a rule
- Adding and editing a Google Maps API Key
- Changes to Storage (event storage time)
- Adding and editing a License Key
- Adding, editing, enabling, disabling, and removing a plugin
- Enabling and disabling a sound effect
- Adding, editing, and removing a video stream
- Adding, editing, enabling, disabling, and removing an analytics
- Accepting and rejecting notifications as false
- File import and export
- Reports export
- Adding, editing, and removing a list
- Adding, editing, and removing a list element
- Enabling and disabling a list notification
- Editing parameters for events out of the lists
- Resetting the notification panel
- Adding, editing, and removing elements from the Event Manager

Events

ⓘ This page describes the Events item that allows viewing and managing event lists.

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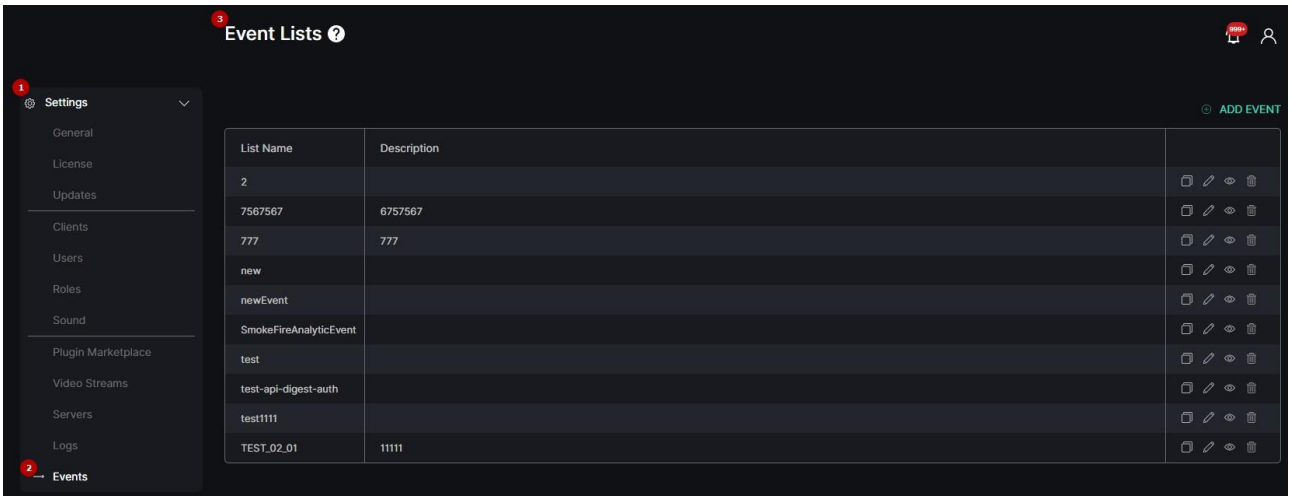
Overview

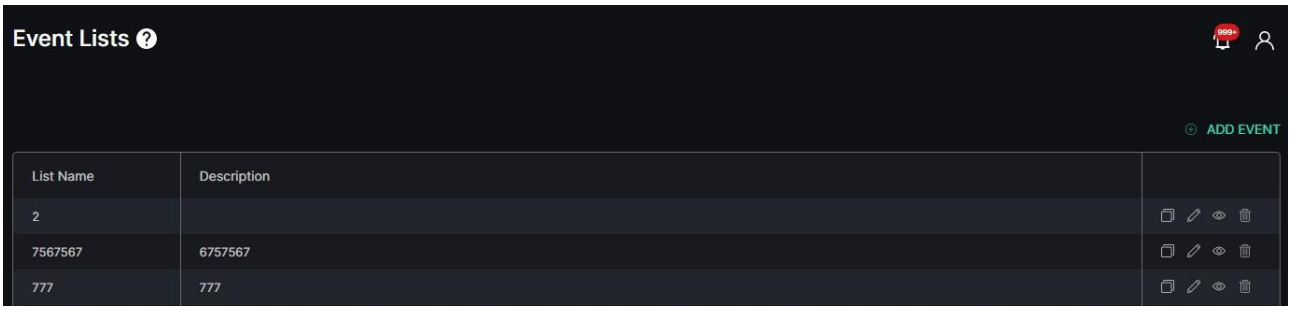
To open the Events item, in the left menu:



1. Select the Settings section
2. Choose the Events item
3. See event lists

Use and Functionality

The Events item shows:



- Event list name
- List description
- Toolbox includes:
  - Copy Event tool
  - Edit Event tool
  - View Event tool
  - Delete Event tool

Add Event

To add a new event:

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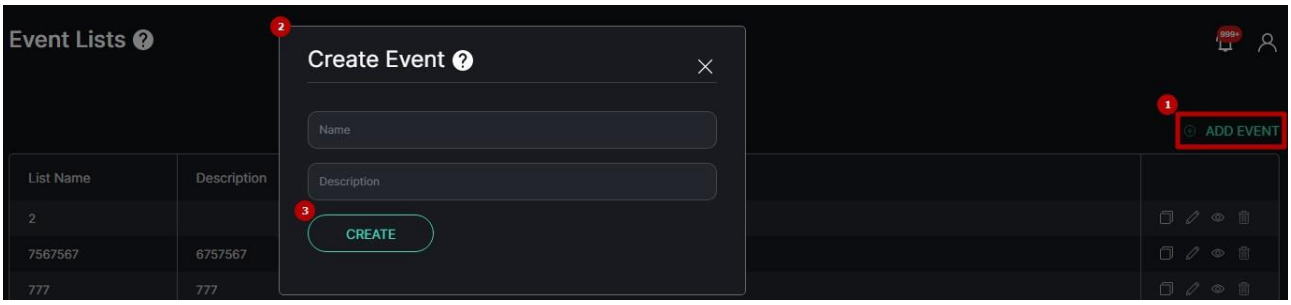
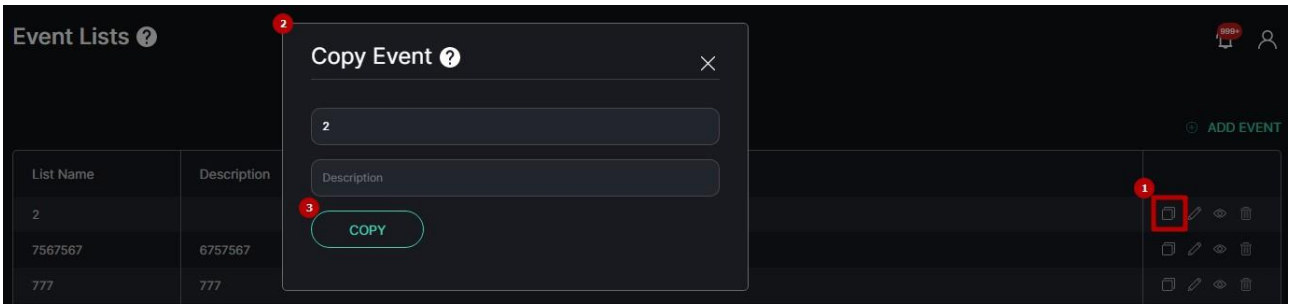


1. Click the Add Event button
2. Fill in the fields in the pop-up window:
    a. Enter the event name
    b. Type a short event description
3. Click the Create button to confirm the intention

Copy Event

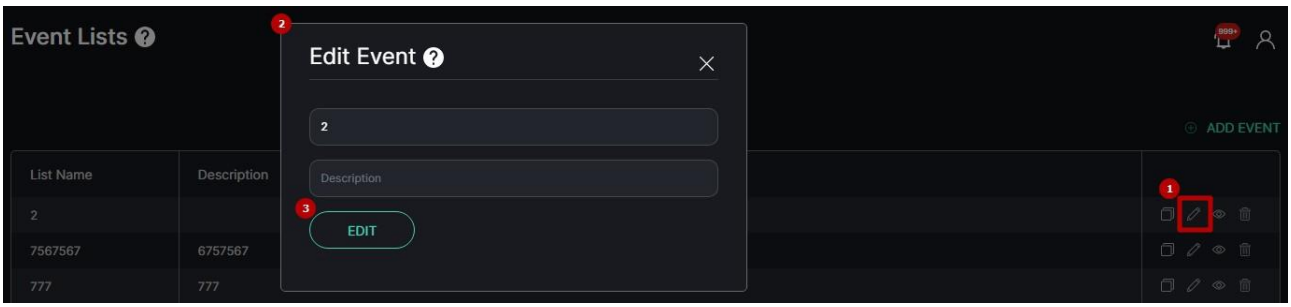
To copy the existed event:



1. Select the Copy Event icon on the toolbox
2. Fill in the fields in the pop-up window:
    a. Enter a name for the copied event
    b. Type a short event description
3. Click the Copy button to confirm the intention

Edit Event

To edit the event:



1. Select the Edit Event icon on the toolbox
2. Fill in the fields in the pop-up window:
    a. Enter another name for the selected event
    b. Type a short event description

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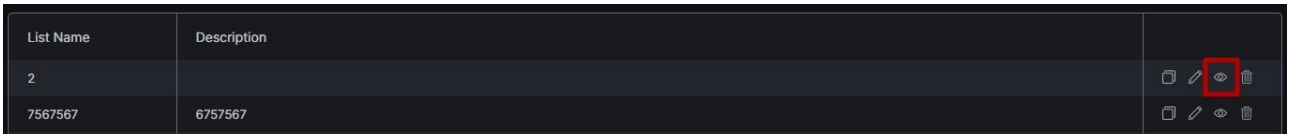
3. Click the Edit button to apply changes

View Event

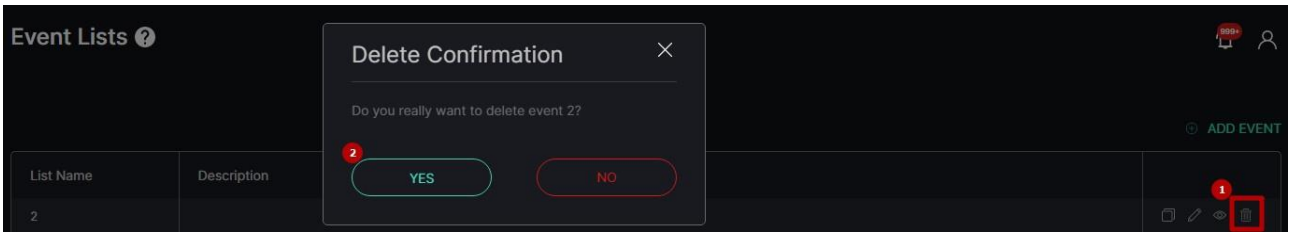
To open Event Manager Constructor, select the View Event icon on the toolbox:



To learn more about events configuration in Event Manager Constructor, read Event Manager.

Delete Event

To remove the event:



1. Select the Delete Event icon on the toolbox
2. Confirm the intention

Event Manager

This page describes the Event Manager Constructor interface and functionality.

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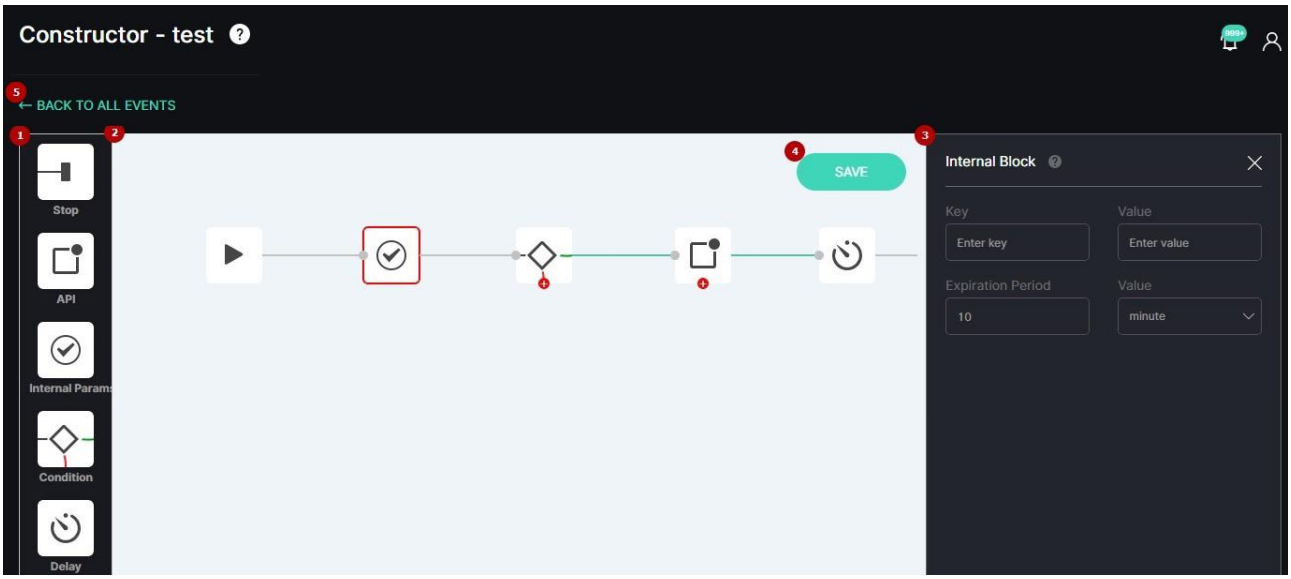
EVA (Extended Video Analytics)

CORTROL LPR v1.0.1

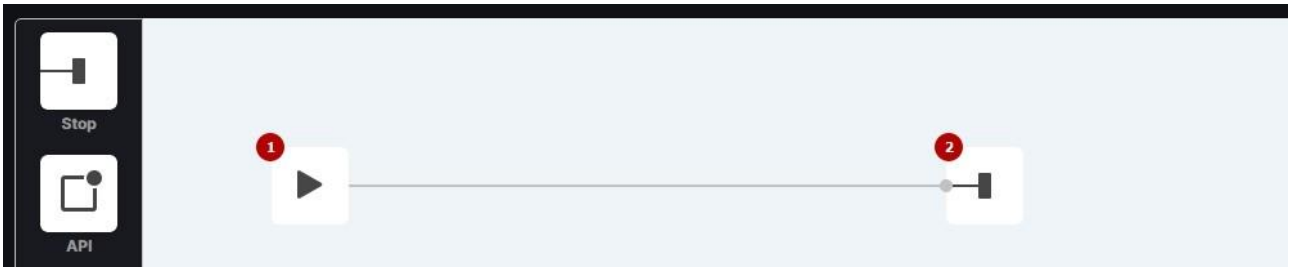
Overview

The main Constructor interface considers:



1. Block menu with all available blocks
2. Workspace to customize the sequence of blocks
3. Block settings box to configure the required block parameters
4. Save button to save settings
5. Back to All Events button to return to the main Events item

By default, the workspace holds 2 blocks connected to each other:



1. Start block
2. Stop block

- There is only one Start block in the workspace at the beginning of the branch, while a Stop block is added multiple times for each block branch end.
- The Start and Stop blocks are one-sided and cannot be placed between other blocks.

Use and Functionality

To add a new block in the connection:

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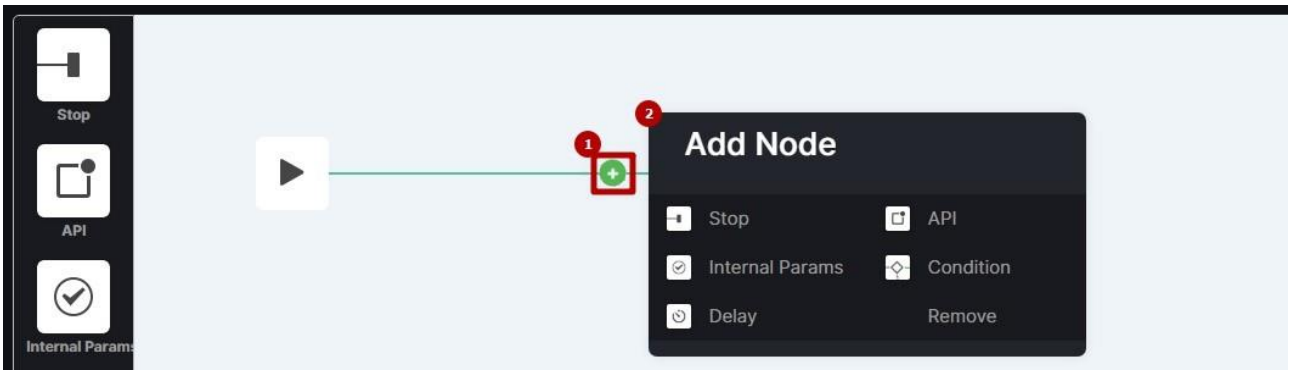
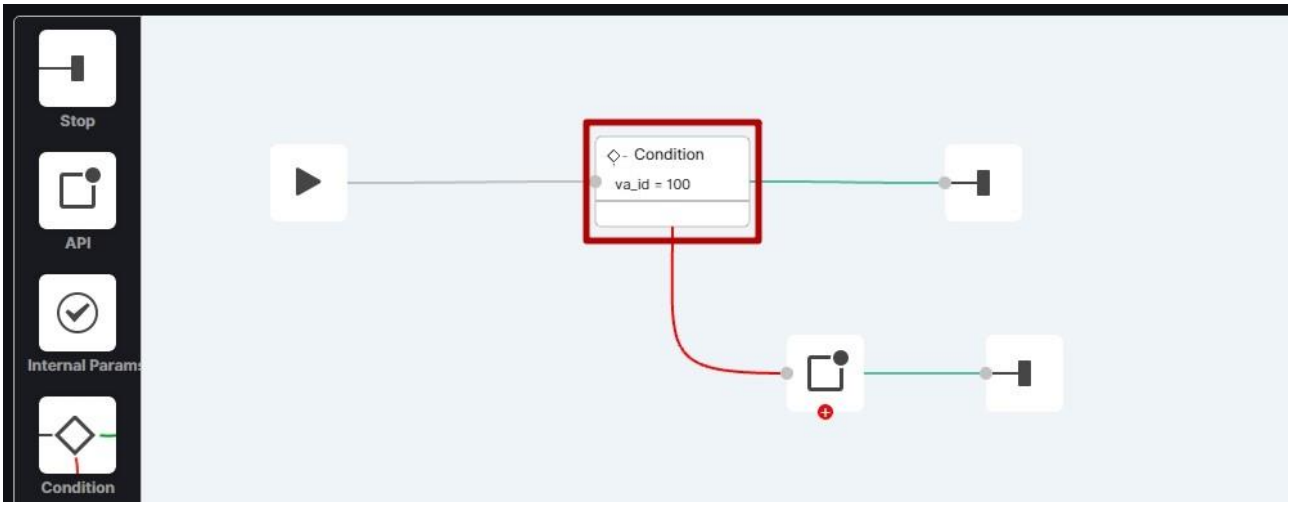


1. Hover the mouse over the connection and click the green Plus button
2. Select the required block in the pop-up window

Click and drag the desired block to the required location within the workspace to move blocks.

To view the block's parameters preview, double-click the required block icon in the workspace:



The Condition and API blocks in the workspace have two node connections: Green for successful requests and red for failed ones. To continue the connection with the red node:

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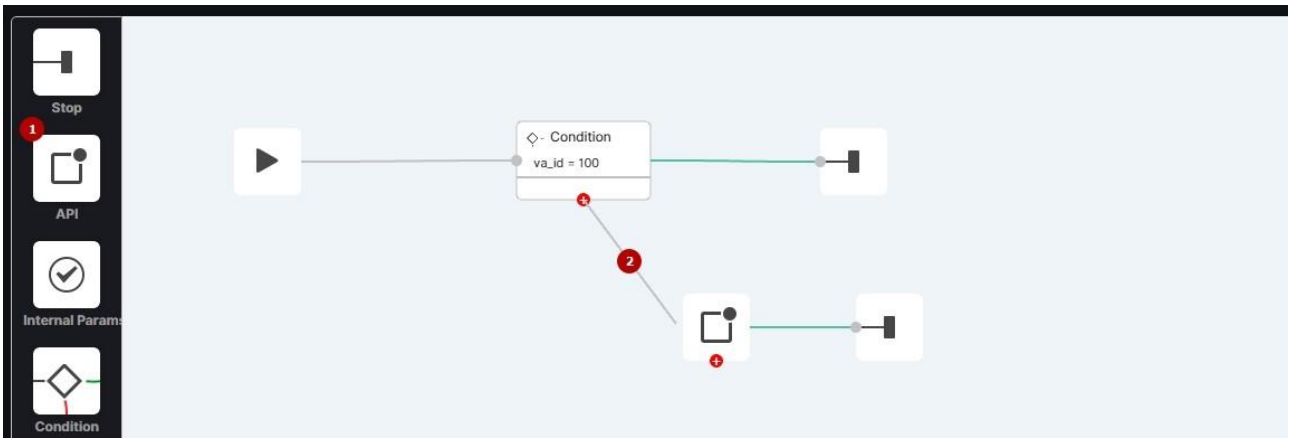
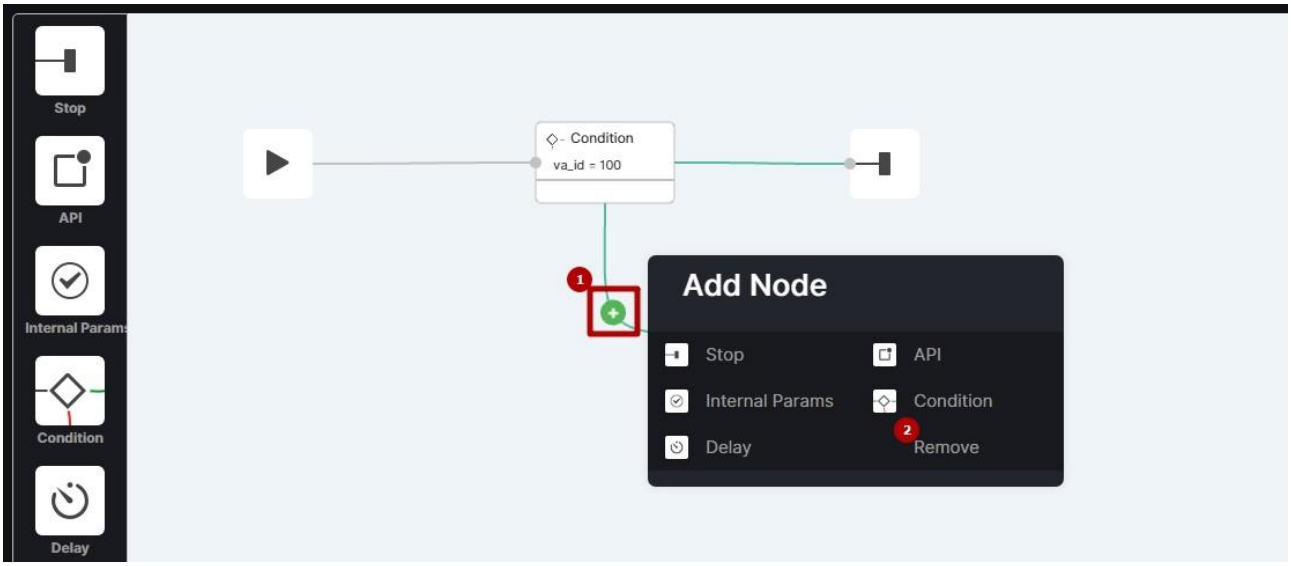


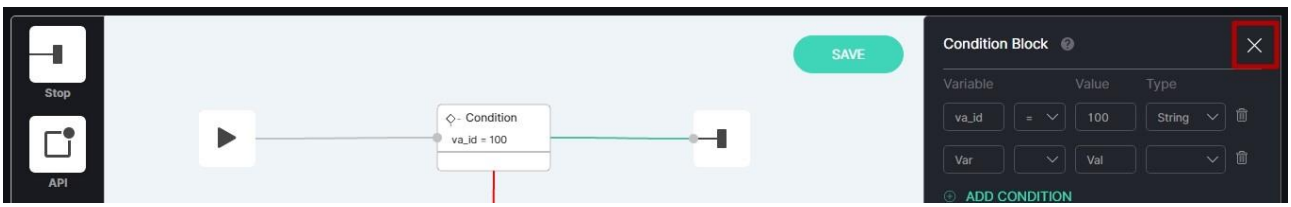
1. Click the required block in the block menu and drag it to the workspace
2. Click the red connection node and drag the line to the required block to link them

To remove a connection between two blocks:



1. Hover the mouse over the required connection and click the green Plus button
2. Select the Remove button in the pop-up window

To close a block box, click the Close button in the upper-right corner of the box:



To remove the required block:

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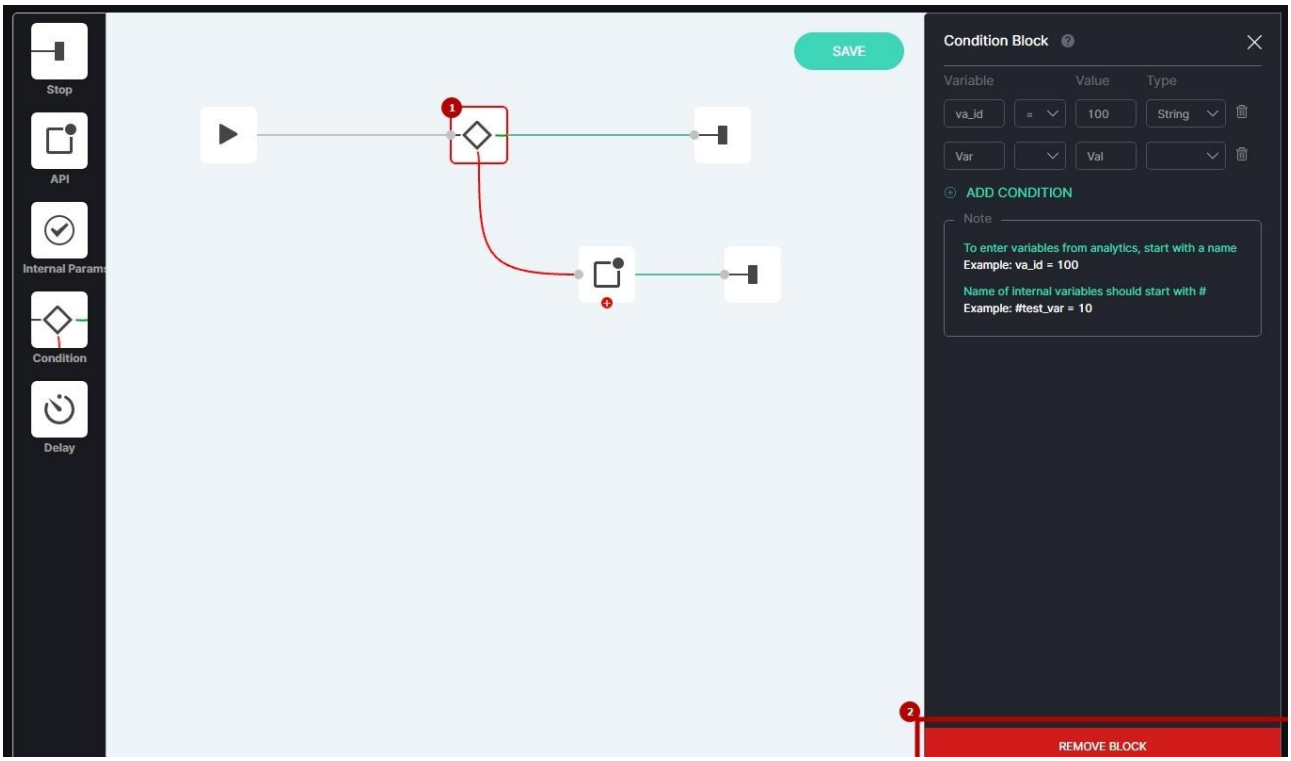

1. Select the block icon in the workspace to open the block box
2. Click the Remove Block button at the bottom of the box

The Start block is not available for removal from the workspace.

Event Data

Introduction

Use these variables and values as examples to set the event notifications properly in the Condition and API blocks to send to third-party services.

Event Data: Crowd Detection


```
{
"stream.location.longitude": "28.468217",
"stream.params.file_cycle": "0",
"va_id": "2381",
"stream.status": "online",
"ms_type": "stats",
"stream.fileName": "1635777954360GYdAb4CuApqkekYqGdFg2VG43Lz2jDot.jpg",
"ms_type": "stats",
"stream.fileName": "1635777954360GYdAb4CuApqkekYqGdFg2VG43Lz2jDot.jpg",
"stream.params.login": "",
"stream.modules.2379.notifyEnabled": "true",
"stream.location.latitude": "49.233083",
"stream.modules.2379.id": "2379",
```


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```
"client_id": "0",
"people_num": "2",
"stream.modules.2381.type": "crowd",
"stream_id": "1464",
"stream.modules.2380.enabled": "false",
"stream.modules.2381.notifyEnabled": "true",
"stream.modules.2381.enabled": "true",
"stream.modules.2379.type": "person_reid",
"stream.address": "",
"stream.modules.2379.enabled": "true",
"stream.modules.2380.id": "2380",
"timestamp": "2021-11-01 16:51:31",
"stream.uuid": "e66d5fe5-930c-4ed4-8b2d-f6f77e7db1a8",
"stream.id": "1464",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2380.type": "traffic",
"stream.modules.2380.events": "[]",
"stream.modules.2381.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.resolution.width": "1920",
"people_num_cap": "0",
"stream.resolution.height": "1080",
"stream.modules.2379.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.params.password": "",
"stream.name": "load_Testing",
"stream.params.file_fast_speed": "0",
"stream.url": "rtsp://localhost:8554/load_Testing",
"stream.createdAt": "01-11-2021 16:45:34",
"stream.params.auth_type": "no_auth",
"stream.direction": "0",
"stream.modules.2380.notifyEnabled": "false",
"detect_time": "0",
"stream.modules.2381.id": "2381",
"analytics_type": "crowd"
}
```


Event Data: Face Recognition


```
{
"age": "22-30",
"alert.author": "user",
"alert.comment": "",
"alert.createdAt": "27-10-2021 18:13:34",
"alert.id": "20",
"alert.image": "wanted_faces/c2fd86c8-db95-4d79-9543-9b94c0347249.jpg",
"alert.images": "[\"wanted_faces/c2fd86c8-db95-4d79-9543-9b94c0347249.jpg\"]",
"alert.list_id": "9",
"alert.name": "person",
"alert.status": "1",
"angles_deviation": "0.8360419273376465",
"camera_buffer": "10",
"client_id": "0",
"encoding": "[-0.030368655920028687,...]",
"exp_time": "1635152739",
```


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"face_image": "faces/
2237/2021/10/25/12/9c8db0e2-281b-434e-9428-32b73b424c26_1635152734709_cropped.jpg",
"frame_image": "faces/
2237/2021/10/25/12/9c8db0e2-281b-434e-9428-32b73b424c26_1635152734709.jpg",
"gender": "0",
"image_keys": "[\"facesbdc2eb24-29ba-467f-8eda-7edc99fb2395\", \"faces1b0daa2e-81b4-4fd9-aa61-de62e4df4093\",
\"facesc236cd19-7c53-4980-93e5-26fb665c6ff6\"]",
"image_quality": "0.22306156158447266",
"list.attendanceEnabled": "false",
"list.clientId": "0",
"list.color": "#ffffff",
"list.comment": "",
"list.createdAt": "13-10-2021 12:38:25",
"list.creation_unix_timestamp_ms": "1634117905000",
"list.enabled": "false",
"list.entrance_streams": "[]",
"list.events": "[]",
"list.exit_streams": "[]",
"list.id": "9",
"list.name": "test",
"list.params.confidenceThreshold": "65",
"list.size": "6",
"list.status": "0",
"list.streams": "[]",
"mask": "false",
"millis_from_start": "0",
"ms_type": "detection",
"race": "Asian",
"stream.address": "",
"stream.clientId": "0",
"stream.createdAt": "06-10-2021 15:46:53",
"stream.direction": "0",
"stream.fileName": "16348308437100aMR2CgJofmXnME7hluTbhgYLg7GLIBE.jpg",
"stream.id": "1448",
"stream.location.latitude": "49.233083",
"stream.location.longitude": "28.468217",
"stream.modules.35.enabled": "false",
"stream.modules.35.events": "[]",
"stream.modules.35.id": "35",
"stream.modules.35.notifyEnabled": "false",
"stream.modules.35.type": "alpr",
"stream.modules.36.enabled": "false",
"stream.modules.36.events": "[]",
"stream.modules.36.id": "36",
"stream.modules.36.notifyEnabled": "false",
"stream.modules.36.type": "object_in_zone",
"stream.modules.38.enabled": "false",
"stream.modules.38.events": "[]",
"stream.modules.38.id": "38",
"stream.modules.38.notifyEnabled": "false",
"stream.modules.38.type": "railroad",
"stream.modules.39.enabled": "false",
"stream.modules.39.events": "[]",
"stream.modules.39.id": "39",
"stream.modules.39.notifyEnabled": "false",

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```
"stream.modules.39.type": "object_in_zone",
"stream.modules.42.enabled": "false",
"stream.modules.42.events": "[]",
"stream.modules.42.id": "42",
"stream.modules.42.notifyEnabled": "false",
"stream.modules.42.type": "object_in_zone",
"stream.modules.46.enabled": "false",
"stream.modules.46.events": "[]",
"stream.modules.46.id": "46",
"stream.modules.46.notifyEnabled": "false",
"stream.modules.46.type": "object_in_zone",
"stream.modules.47.enabled": "false",
"stream.modules.47.events": "[]",
"stream.modules.47.id": "47",
"stream.modules.47.notifyEnabled": "false",
"stream.modules.47.type": "alpr",
"stream.modules.48.enabled": "false",
"stream.modules.48.events": "[]",
"stream.modules.48.id": "48",
"stream.modules.48.notifyEnabled": "false",
"stream.modules.48.type": "object_in_zone",
"stream.modules.49.enabled": "false",
"stream.modules.49.events": "[]",
"stream.modules.49.id": "49",
"stream.modules.49.notifyEnabled": "false",
"stream.modules.49.type": "alpr",
"stream.modules.2226.enabled": "true",
"stream.modules.2226.events": "[{\"params\":{}}]",
"stream.modules.2226.id": "2226",
"stream.modules.2226.notifyEnabled": "true",
"stream.modules.2226.type": "object_in_zone",
"stream.modules.2235.enabled": "false",
"stream.modules.2235.enabled": "false",
"stream.modules.2235.events": "[{\"params\":{}}]",
"stream.modules.2235.id": "2235",
"stream.modules.2235.notifyEnabled": "false",
"stream.modules.2235.type": "face",
"stream.modules.2237.enabled": "true",
"stream.modules.2237.events": "[{\"id\":\"eb61a5cc-3322-4ae7-8bd8-94f03e7b5336\",\"params\":{}}]",
"stream.modules.2237.id": "2237",
"stream.modules.2237.notifyEnabled": "true",
"stream.modules.2237.type": "face",
"stream.modules.2247.enabled": "false",
"stream.modules.2247.events": "[]",
"stream.modules.2247.id": "2247",
"stream.modules.2247.notifyEnabled": "false",
"stream.modules.2247.type": "object_in_zone",
"stream.modules.2255.enabled": "false",
"stream.modules.2255.events": "[]",
"stream.modules.2255.id": "2255",
"stream.modules.2255.notifyEnabled": "false",
"stream.modules.2255.type": "object_in_zone",
"stream.modules.2266.enabled": "false",
"stream.modules.2266.events": "[]",
"stream.modules.2266.id": "2266",
```


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"stream.modules.2266.notifyEnabled": "false",
"stream.modules.2266.type": "object_in_zone",
"stream.modules.2282.enabled": "false",
"stream.modules.2282.events": "[]",
"stream.modules.2282.id": "2282",
"stream.modules.2282.notifyEnabled": "false",
"stream.modules.2282.type": "object_in_zone",
"stream.modules.2295.enabled": "false",
"stream.modules.2295.events": "[]",
"stream.modules.2295.id": "2295",
"stream.modules.2295.notifyEnabled": "false",
"stream.modules.2295.type": "object_in_zone",
"stream.modules.2298.enabled": "false",
"stream.modules.2298.events": "[]",
"stream.modules.2298.id": "2298",
"stream.modules.2298.notifyEnabled": "false",
"stream.modules.2298.type": "object_in_zone",
"stream.name": "Faces_test",
"stream.params.auth_type": "basic",
"stream.params.id": "4b442282-2f17-4f05-9e7c-cad8b59de6f9",
"stream.params.login": "",
"stream.params.password": "",
"stream.resolution.height": "600",
"stream.resolution.width": "800",
"stream.status": "online",
"stream.type": "rtsp",
"stream.url": "rtsp://admin:password@127.0.0.1:554/live/42528faa-d125-4585-ac04-a9d3442dfec1",
"stream.uuid": "13bbfb9f-d12f-4c5b-9bbc-a655cd6ae089",
"stream_id": "1448",
"timestamp": "2021-10-25 09:05:34",
"uuid": "9c8db0e2-281b-434e-9428-32b73b424c26",
"va_id": "2237",
"weighting_coeffs": "[0.3334648311138153,0.3350006937980652,0.3315344750881195]"
}

Event Data: LPR

{
"alert.author": "user",
"alert.comment": "",
"alert.createdAt": "10-09-2021 16:41:22",
"alert.id": "3",
"alert.list_id": "3",
"alert.name": "AB7766BM",
"alert.status": "enabled",
"alert.type": "1",
"color": "5",
"country": "UKRAINE-1",
"direction": "81",
"frame": "plates/2343/2021/10/25/11/AB7766BM_1635152343194.jpg",
"inList": "true",
"list.clientId": "0",
"list.color": "#ffffff",
"list.comment": "",

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"list.createdAt": "10-09-2021 16:33:14",
"list.creation_unix_timestamp_ms": "1631280794000",
"list.enabled": "true",
"list.events": "[]",
"list.id": "3",
"list.name": "list 2",
"list.size": "3",
"list.status": "1",
"list.streams": "[]",
"make_model": "[{\"year\":\"\",\"model\":\"ONIX\",\"make\":\"CHEVROLET\"}]",
"ms_type": "detection",
"number": "AB7766BM",
"objects": "[{\"image\":\"plates/2343/2021/10/25/11/
AB7766BM_1635152343194_cropped.jpg\",\"box\":
[0.24375000596046448,0.272222220897674 56,0.3140625059604645,0.31203705072402954],
\"type\":\"number\",\"uuid\":\"a7a8b134-acc8-4b38-a625-4bf2b28c5f11\"}]",
"stream.address": "",
"stream.clientId": "0",
"stream.createdAt": "20-10-2021 12:53:21",
"stream.direction": "0",
"stream.fileName": "1634804597329fmi9fSQ1BeGOdm8px8PS3YuVPoebcUrw.jpg",
"stream.id": "1459",
"stream.location.latitude": "49.233083",
"stream.location.longitude": "28.468217",
"stream.modules.2314.enabled": "false",
"stream.modules.2314.events": "[]",
"stream.modules.2314.id": "2314",
"stream.modules.2314.notifyEnabled": "false",
"stream.modules.2314.type": "alpr",
"stream.modules.2321.enabled": "false",
"stream.modules.2321.events": "[]",
"stream.modules.2321.id": "2321",
"stream.modules.2321.notifyEnabled": "false",
"stream.modules.2321.type": "alpr",
"stream.modules.2327.enabled": "false",
"stream.modules.2327.events": "[]",
"stream.modules.2327.id": "2327",
"stream.modules.2327.notifyEnabled": "false",
"stream.modules.2327.type": "object_in_zone",
"stream.modules.2343.enabled": "true",
"stream.modules.2343.events": "[{\"id\":\"eb61a5cc-3322-4ae7-8bd8-94f03e7b5336\", \"params\":{}}]",
"stream.modules.2343.id": "2343",
"stream.modules.2343.notifyEnabled": "true",
"stream.modules.2343.type": "alpr",
"stream.name": "alpr-test",
"stream.params.auth_type": "basic",
"stream.params.id": "42528faa-d125-4585-ac04-a9d3442dfec1",
"stream.params.login": "admin",
"stream.params.password": "password",
"stream.resolution.height": "1080",
"stream.resolution.width": "1920",
"stream.status": "online",
"stream.type": "rtsp",
"stream.url": "rtsp://admin:password@127.0.0.1:554/live/42528faa-d125-4585-ac04-a9d3442dfec1",
"stream.uuid": "f249ff99-acb6-4f3d-a787-3063d85c9205",

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```
"stream_id": "1459",
"timestamp": "1635152343194",
"va_id": "2343"
}
```


Color ID Description
1 - Black,
2 - Blue,
3 - Yellow,
4 - Unknown,
5 - White,
6 - Brown,
7 - Red,
8 - Green,
9 - Orange,
10 - Beige,
11 - Violet,
12 - Grey,
13 - Cyan,
14 - Pink,
15 - Silver,
16 - Golden,
17 - Bordeaux

Event Data: Motion Detection


```
{
"stream.location.longitude": "28.468217",
"va_id": "2382",
"stream.status": "online",
"frame_image": "motion_alerts/2382/2021/11/1/16/1635778593177.jpg",
"stream.modules.2382.type": "motion",
"stream.fileName": "1635777954360GYdAb4CuApqkekYqGdFg2VG43Lz2jDot.jpg",
"stream.modules.2379.id": "2379",
"client_id": "0",
"stream.modules.2381.type": "crowd",
"stream_id": "1464",
"stream.modules.2380.enabled": "false",
"stream.modules.2379.type": "person_reid",
"stream.modules.2380.id": "2380",
"stream.modules.2382.enabled": "true",
"stream.uuid": "7b42a0d5-83b0-4164-8c77-198fcfcf453b",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2380.type": "traffic",
"stream.modules.2381.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.resolution.width": "1920",
"in_time": "2021-11-01 14:56:33",
"stream.url": "rtsp://localhost:8554/load_Testing",
"stream.createdAt": "01-11-2021 16:45:34",
"stream.params.auth_type": "no_auth",
"analytics_type": "motion",
"stream.params.file_cycle": "0",
"stream.modules.2382.notifyEnabled": "true",
```


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```
"stream.params.login": "",
"stream.modules.2379.notifyEnabled": "true",
"stream.location.latitude": "49.233083",
"box":
"[0.019999999552965164,0.009999999776482582,0.029999999329447746,0.019999999552965164]",
"rule_type": "disappeared_object",
"stream.modules.2381.notifyEnabled": "true",
"stream.modules.2381.enabled": "true",
"stream.address": "",
"stream.modules.2379.enabled": "true",
"stream.modules.2382.id": "2382",
"timestamp": "2021-11-01 14:56:33",
"stream.modules.2382.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.id": "1464",
"stream.modules.2380.events": "[]",
"thumbnail_image": "motion_alerts/2382/2021/11/1/16/1635778593177_thumbnail.jpg",
"rule_id": "714fd00ca6bc",
"stream.resolution.height": "1080",
"stream.modules.2379.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.params.password": "",
"stream.name": "load_Testing",
"stream.params.file_fast_speed": "0",
"stream.direction": "0",
"rule_points": "[[0.007291666697710525,0.013888888992369175],
[0.6875,0.007407407276332378],[0.5755208134651184,0.6509259343147278],
[0.3765625059604645,0.5824074149131775],[0.007291666697710525,0.9851852059364319]]",
"stream.modules.2380.notifyEnabled": "false",
"stream.modules.2381.id": "2381"
}
```


Event Data: Object Detection


```
{
"stream.modules.2376.enabled": "true",
"stream.location.longitude": "28.468217",
"stream.modules.1359.events": "[]",
"va_id": "2376",
"ms_type": "alert",
"stream.modules.1479.notifyEnabled": "false",
"stream.modules.1479.id": "1479",
"stream.modules.1804.events": "[]",
"stream.status": "online",
"frame_image": "object_alerts/2376/2021/11/1/16/1635777073646.jpg",
"stream.modules.2376.notifyEnabled": "true",
"stream.fileName": "16357768419588lHhFSiPznO601x0qDw5rOPxO25a6bcP.jpg",
"check_type": "absent",
"type": "2",
"client_id": "0",
"stream_id": "1326",
"zone_polygon": "[[0.007291666697710525,0.013786764815449715],
[0.5296875238418579,0.007352941203862429],[0.3921875059604645,0.9613970518112183],
[0.007291666697710525,0.977941554336548]]",
"stream.modules.2333.enabled": "false",
"stream.modules.1479.enabled": "false",
```


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```
"stream.uuid": "bfacacf7-dbbb-4076-9e1a-18996aad87b0",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2376.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.modules.2376.id": "2376",
"stream.resolution.width": "1920",
"stream.params.luxriot_channel_id": "107",
"stream.modules.1360.type": "traffic",
"in_time": "2021-11-01 14:31:10",
"stream.modules.1360.enabled": "false",
"stream.url": "rtsp://localhost:8554/lpr-ua",
"stream.createdAt": "11-05-2021 10:28:25",
"stream.params.auth_type": "no_auth",
"stream.modules.1359.enabled": "false",
"analytics_type": "object_in_zone",
"stream.params.file_cycle": "0",
"stream.modules.1479.type": "alpr",
"stream.params.login": "",
"stream.params.luxriot_server_id": "101",
"stream.modules.1804.notifyEnabled": "false",
"stream.location.latitude": "49.233083",
"box": "[[0.2800000011920929,0.0,0.5099999904632568,0.07999999821186066]]",
"stream.modules.1360.notifyEnabled": "false",
"stream.modules.1479.events": "[]",
"stream.modules.1804.enabled": "false",
"zone_id": "24c19529cf8f",
"stream.modules.1360.events": "[]",
"stream.modules.1804.id": "1804",
"stream.modules.1804.type": "object_in_zone",
"stream.modules.1359.id": "1359",
"stream.modules.1360.id": "1360",
"stream.address": "",
"stream.modules.2333.notifyEnabled": "false",
"stream.modules.2376.type": "object_in_zone",
"timestamp": "2021-11-01 14:31:13",
"stream.id": "1326",
"stream.modules.2333.type": "alpr",
"thumbnail_image": "object_alerts/2376/2021/11/1/16/1635777073646_thumbnail.jpg",
"stream.modules.1359.notifyEnabled": "false",
"stream.modules.2333.id": "2333",
"stream.modules.2333.events": "[]",
"stream.resolution.height": "1080",
"stream.params.password": "",
"stream.name": "alpr-ua",
"stream.params.file_fast_speed": "0",
"stream.modules.1359.type": "alpr",
"stream.direction": "0"
}
```


Event Data: Person Alert Expiration Message

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```
{
"cause": "person_alert_expired",
"alert_id": "123",
"list_id": "1"
}
```


Event Data: Pose Estimation


```
{
"stream.location.longitude": "28.468217",
"stream.params.file_cycle": "0",
"va_id": "2383",
"ms_type": "alert",
"stream.status": "online",
"frame_image": "fallen_people/2383/2021/11/1/17/1635779096852.jpg",
"stream.fileName": "1635778935451d0KAPlDbMhlxTQUcR8wB8ltyBBQMhb77.jpg",
"stream.params.login": "",
"stream.location.latitude": "49.233083",
"box": "[134,100,220,337]",
"client_id": "0",
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"zone_id": "1635779047538",
"rule_type": "walking",
"stream_id": "1465",
"zone_polygon": "[[9,9],[630,9],[630,470],[9,470]]",
"stream.address": "",
"timestamp": "1635779096795",
"stream.modules.2383.enabled": "true",
"stream.modules.2383.type": "fallen_people",
"stream.uuid": "487199c4-3dac-40bc-9dea-82723568a159",
"stream.id": "1465",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2383.notifyEnabled": "true",
"thumbnail_image": "fallen_people/2383/2021/11/1/17/1635779096852_thumbnail.jpg",
"stream.resolution.width": "640",
"stream.modules.2383.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.resolution.height": "480",
"stream.params.password": "",
"stream.name": "fall",
"stream.params.file_fast_speed": "0",
"stream.url": "rtsp://localhost:8554/fall",
"stream.createdAt": "01-11-2021 17:02:15",
"stream.params.auth_type": "no_auth",
"stream.direction": "0",
"stream.modules.2383.id": "2383",
"analytics_type": "fallen_people"
}
```


Event Data: Smart Tracking System

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{
"stream.location.longitude": "28.468217",
"attributes.gender": "1",
"stream.status": "online",
"frame_image": "persons-reid/2021/11/1/17/_37_46_711469.jpg",
"stream.modules.2382.type": "motion",
"stream.fileName": "1635777954360GYdAb4CuApqkekYqGdFg2VG43Lz2jDot.jpg",
"stream.modules.2379.id": "2379",
"client_id": "0",
"attributes.up_length": "short",
"stream.modules.2381.type": "crowd",
"stream_id": "1464",
"attributes.hat": "0",
"stream.modules.2380.enabled": "false",
"stream.modules.2379.type": "person_reid",
"stream.modules.2380.id": "2380",
"stream.modules.2382.enabled": "true",
"attributes.down_length": "long",
"attributes.down_clothes": "pants",
"stream.uuid": "5964b4c4-b8d1-4e1c-80a3-d27b0f84811c",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2380.type": "traffic",
"embeddings_id": "1635781066503304002",
"stream.modules.2381.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.resolution.width": "1920",
"attributes.hair_length": "short",
"stream.url": "rtsp://localhost:8554/load_Testing",
"stream.createdAt": "01-11-2021 16:45:34",
"stream.params.auth_type": "no_auth",
"attributes.up": "5",
"analytics_type": "person_reid",
"stream.params.file_cycle": "0",
"distance": "0.0",
"stream.modules.2382.notifyEnabled": "true",
"stream.params.login": "",
"stream.modules.2379.notifyEnabled": "true",
"stream.location.latitude": "49.233083",
"box":
"[0.8799999952316284,0.5299999713897705,0.9300000071525574,0.7200000286102295]",
"stream.modules.2381.notifyEnabled": "true",
"stream.modules.2381.enabled": "true",
"stream.address": "",
"stream.modules.2379.enabled": "true",
"frame_id": "1489602",
"stream.modules.2382.id": "2382",
"timestamp": "01-11-2021 17:37:45",
"stream.modules.2382.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"attributes.bag": "bag",
"stream.id": "1464",
"stream.modules.2380.events": "[]",
"unix_timestamp_ms": "1635781065561",
"stream.resolution.height": "1080",
"stream.modules.2379.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.params.password": "",

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"stream.name": "load_Testing",
"stream.params.file_fast_speed": "0",
"attributes.down": "1",
"attributes.age": "adult",
"stream.direction": "0",
"stream.modules.2380.notifyEnabled": "false",
"person_image": "persons-reid/2021/11/1/17/_37_46_711469_cropped_2.jpg",
"stream.modules.2381.id": "2381"
}

Event Data: Traffic Analytics

{
"stream.modules.2376.enabled": "true",
"stream.location.longitude": "28.468217",
"stream.modules.1359.events": "[]",
"va_id": "2377",
"stream.modules.1479.notifyEnabled": "false",
"stream.modules.1479.id": "1479",
"stream.modules.1804.events": "[]",
"stream.status": "online",
"stream.modules.2376.notifyEnabled": "true",
"stream.fileName": "16357768419588lHhFSiPznO601x0qDw5rOPxO25a6bcP.jpg",
"stream.modules.2377.notifyEnabled": "true",
"stream_id": "1326",
"stream.modules.2333.enabled": "false",
"stream.modules.1479.enabled": "false",
"stream.uuid": "86022427-9e61-4e40-bd9b-ca2c56ed4141",
"stream.type": "rtsp",
"stream.clientId": "0",
"stream.modules.2376.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.modules.2376.id": "2376",
"stream.resolution.width": "1920",
"stream.params.luxriot_channel_id": "107",
"stream.modules.1360.type": "traffic",
"stream.modules.1360.enabled": "false",
"stream.url": "rtsp://localhost:8554/lpr-ua",
"stream.createdAt": "11-05-2021 10:28:25",
"stream.params.auth_type": "no_auth",
"stream.modules.1359.enabled": "false",
"analytics_type": "traffic",
"stream.params.file_cycle": "0",
"stream.modules.2377.enabled": "true",
"stream.modules.1479.type": "alpr",
"stream.params.login": "",
"stream.params.luxriot_server_id": "101",
"stream.modules.2377.id": "2377",
"stream.modules.1804.notifyEnabled": "false",
"stream.location.latitude": "49.233083",
"stream.modules.1360.notifyEnabled": "false",
"stream.modules.1479.events": "[]",
"result": "{\"0\":{\"2\":{\"1\":1,\"image\":\"traffic_alerts/2377/car/
2021/11/1/16/1635777522.jpg\",\"crop_images\":[\"traffic_alerts/2377/car/
2021/11/1/16/1635777522_crop_0_.jpg\"]}}}",

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"stream.modules.1804.enabled": "false",
"stream.modules.1360.events": "[]",
"stream.modules.1804.id": "1804",
"stream.modules.1804.type": "object_in_zone",
"stream.modules.1359.id": "1359",
"stream.modules.1360.id": "1360",
"stream.address": "",
"stream.modules.2333.notifyEnabled": "false",
"stream.modules.2376.type": "object_in_zone",
"stream.id": "1326",
"millis_from_start": "0",
"stream.modules.2333.type": "alpr",
"stream.modules.2377.events": "[{\"id\":\"7800c045-0a8d-4545-9ef1-1b0a3f0de6c4\", \"params\":{}}]",
"stream.modules.1359.notifyEnabled": "false",
"stream.modules.2377.type": "traffic",
"stream.modules.2333.id": "2333",
"stream.modules.2333.events": "[]",
"stream.resolution.height": "1080",
"stream.params.password": "",
"stream.name": "alpr-ua",
"stream.params.file_fast_speed": "0",
"stream.modules.1359.type": "alpr",
"stream.direction": "0"
}

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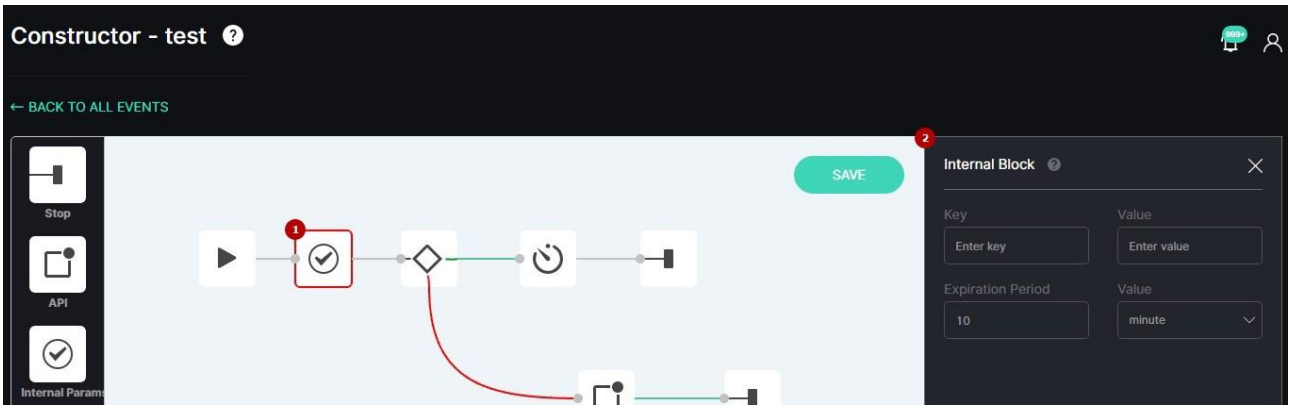
Internal Block

This page describes the Internal block of the Event Manager Constructor. This block is intended for preserving the required parameters for a certain period for further use in the Condition block.

Overview

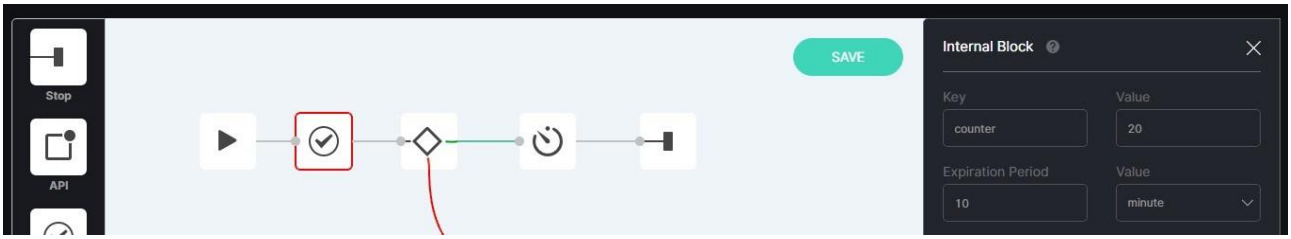
To open the Internal block, in the Event Manager Constructor workspace:



1. Select the Internal block icon
2. See the Internal block

Use and Functionality

The Internal block functional menu allows to:



- Enter the required parameter name in the Key field and the corresponding value in the Value field
- Set the end time period in the Expiration Period field and select the time unit of measure from the Value drop-down list:
  - Seconds
  - Minutes
  - Hours
  - Days

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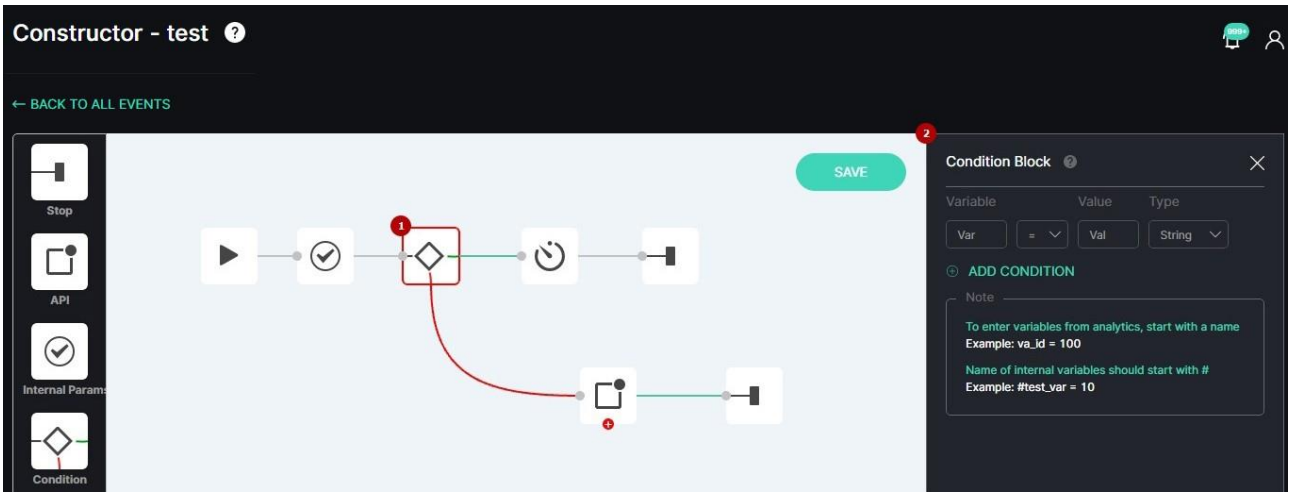
Condition Block

This page describes the Condition block of the Event Manager Constructor. This block is intended for setting the conditions for sending customized event notifications within the system, to third-party services and API.

Overview

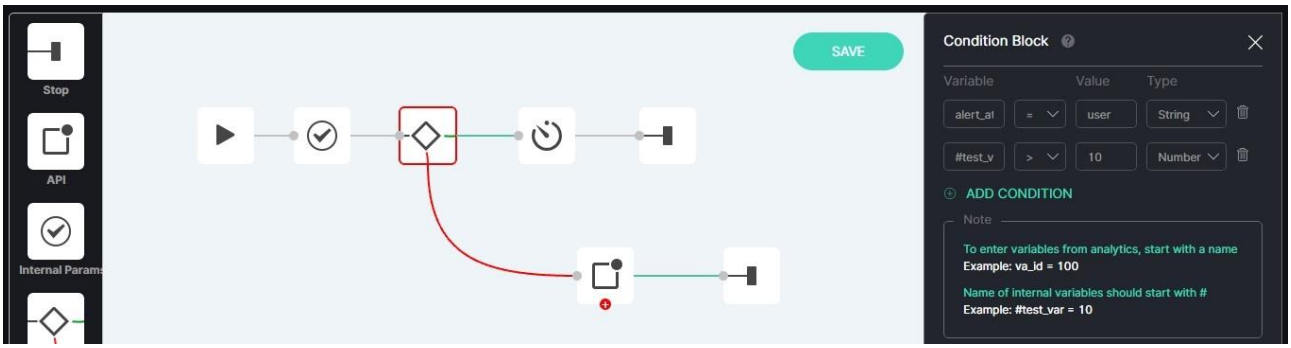
To open the Condition block, in the Event Manager Constructor workspace:



1. Select the Condition block icon
2. See the Condition block

Use and Functionality

The Condition block functional menu allows to:



- Enter variables and values for comparison
- Select the comparison condition from the drop-down list:
  - more (>)
  - less (<)
  - equal (=)
  - unequal (!=)
- Select the data type from the drop-down list:
  - Number
  - String
  - Boolean

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- Delete the required condition by clicking the Delete icon
- Add more conditions by clicking the Add Condition button

- Only lowercase letters are allowed in variables.
- Event notifications are sent further only if all configured conditions in the block are met simultaneously.

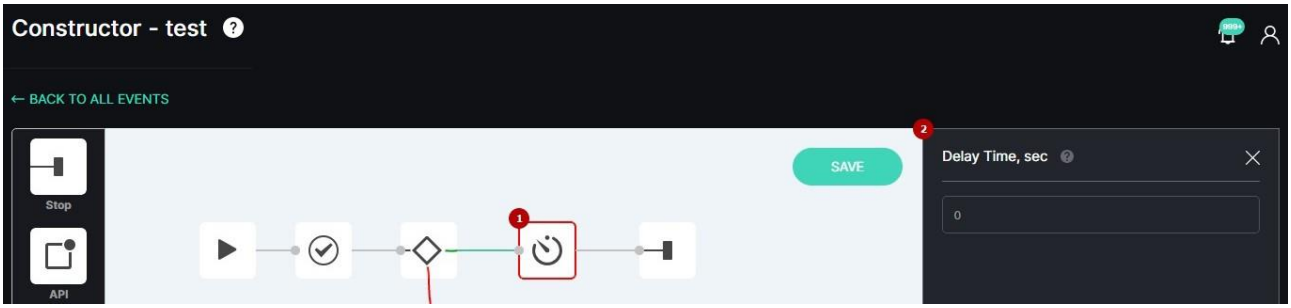
Internal variables are configured by users at their own discretion. Read articles in the Event Data section to view variables from analytics and values settings.

Delay Block

This page describes the Delay block of the Event Manager Constructor. This block is intended for setting the delay time between notifications sending.

Overview

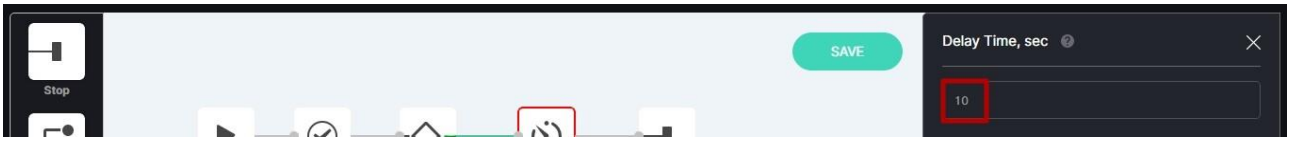
To open the Delay block, in the Event Manager Constructor workspace:



1. Select the Delay block icon
2. See the Delay block

Use and Functionality

To set the delay time, fill in the field with a value in seconds:



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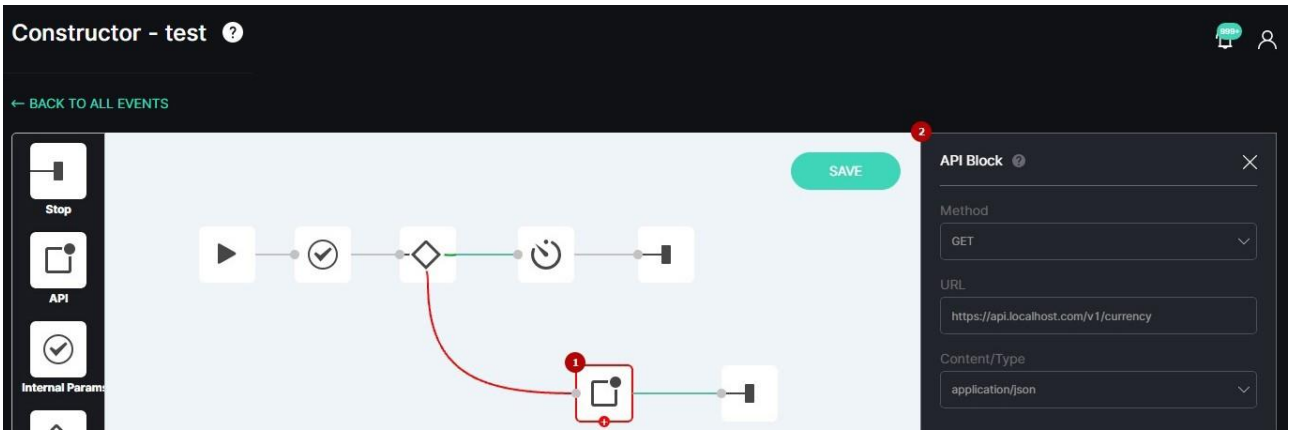
API Block

This page describes the API block of the Event Manager Constructor. This block is intended for sending messages on the specified API.

Overview

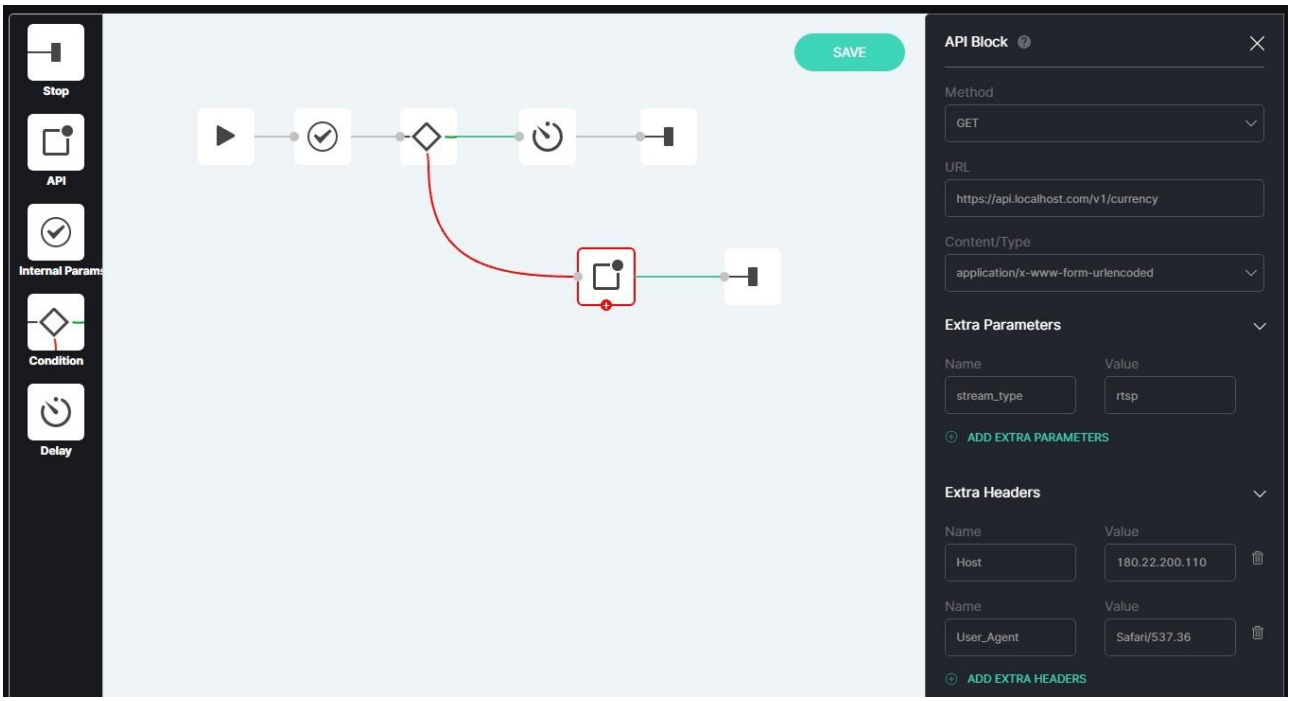
To open the API block, in the Event Manager Constructor workspace:



1. Select the API block icon
2. See the API block

Use and Functionality

The API block functional menu allows to:



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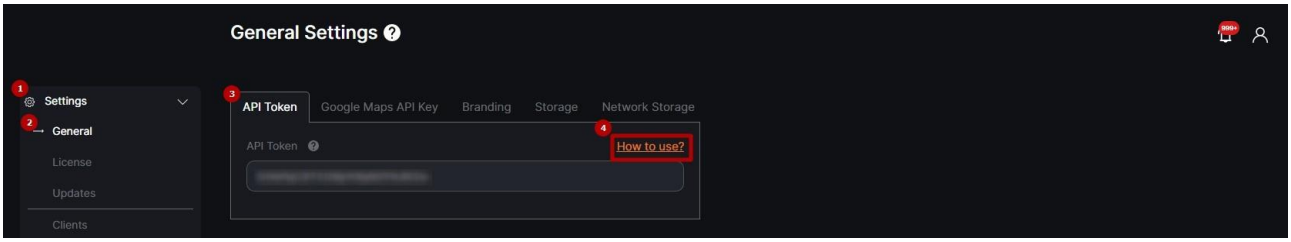
- Select the request method from the drop-down list:
    a. Get
    b. Post
- Enter the API URL
- Select the content/type from the drop-down list:
    a. application/json
    b. application/x-www-form-urlencoded
    c. application/xml
- Fill in the Extra Params and Extra Headers fields
- Delete the required parameters or headers by clicking the Delete icon
- Add more parameters or headers by clicking the Add Extra Params or Add Extra Headers buttons respectively

To learn more about extra parameters, open the API documentation:



1. Select the Settings section
2. Choose the General item
3. Select the API Token tab
4. Click the How to Use button

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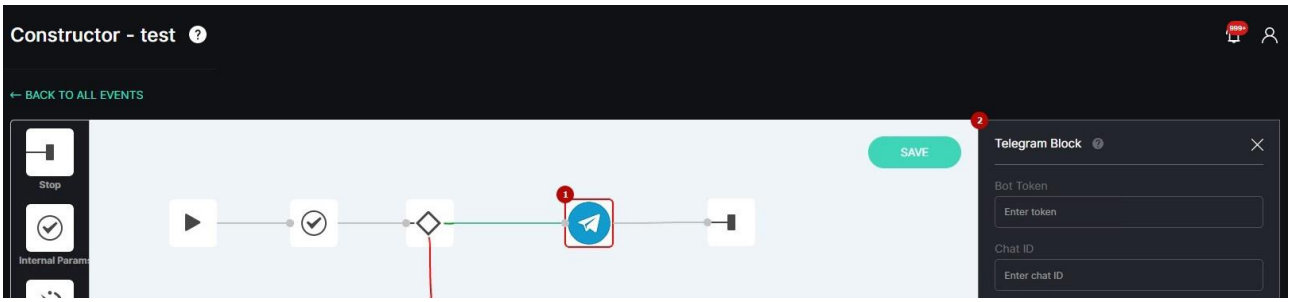
Telegram Block

The Telegram block is intended for sending messages to the Telegram messenger.

Overview

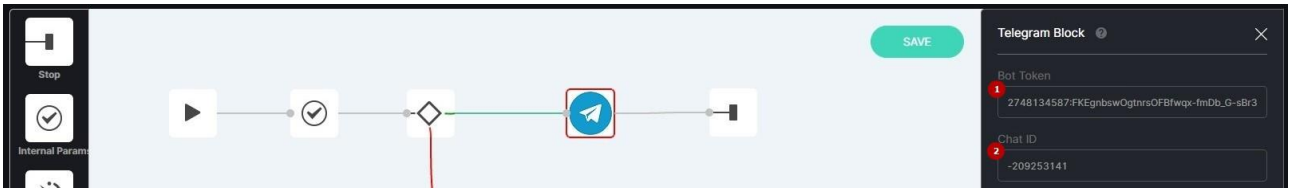
To open the Telegram block, in the Event Manager Constructor workspace:



1. Select the Telegram block icon
2. See the Telegram block

Use and Functionality

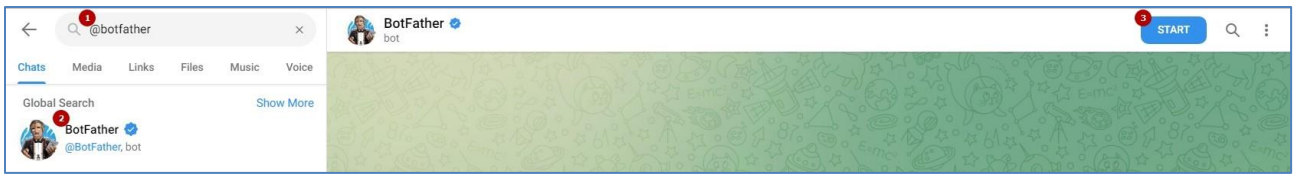
The Telegram block functional menu allows to:



- Enter bot token
- Enter chat ID

Get Bot Token

To start the bot creation process, in the Telegram window:



1. Enter @botfather in the Search field
2. Select BotFather from the search results in the drop-down list
3. Click the Start button to start the chat

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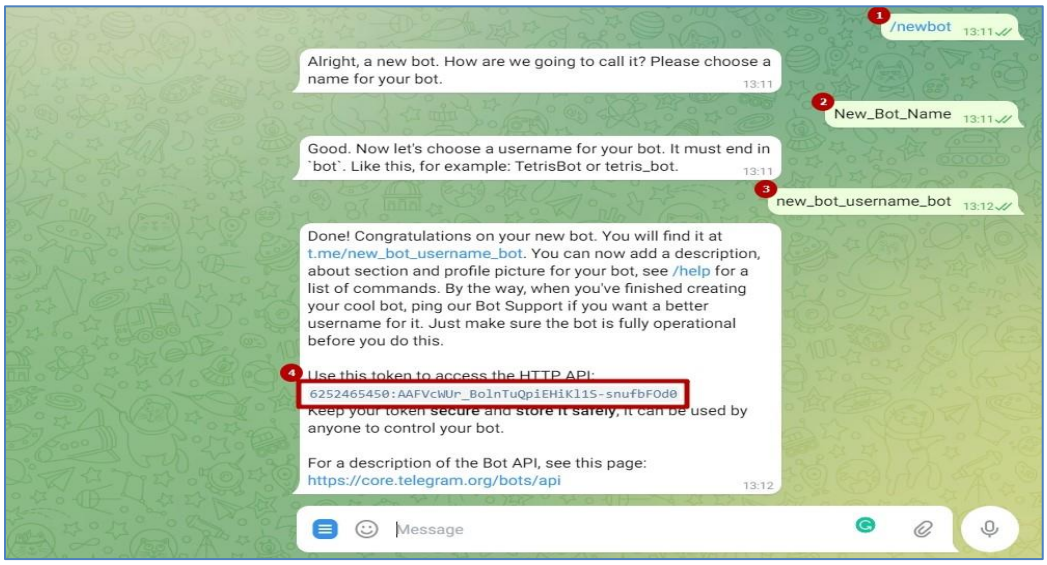
To create a new chat bot and get a bot token:



1. Enter /newbot command
2. Enter desired bot name
3. Enter desired bot username
4. Get the new token

Bot username must end in "bot" (e.g. test_bot).

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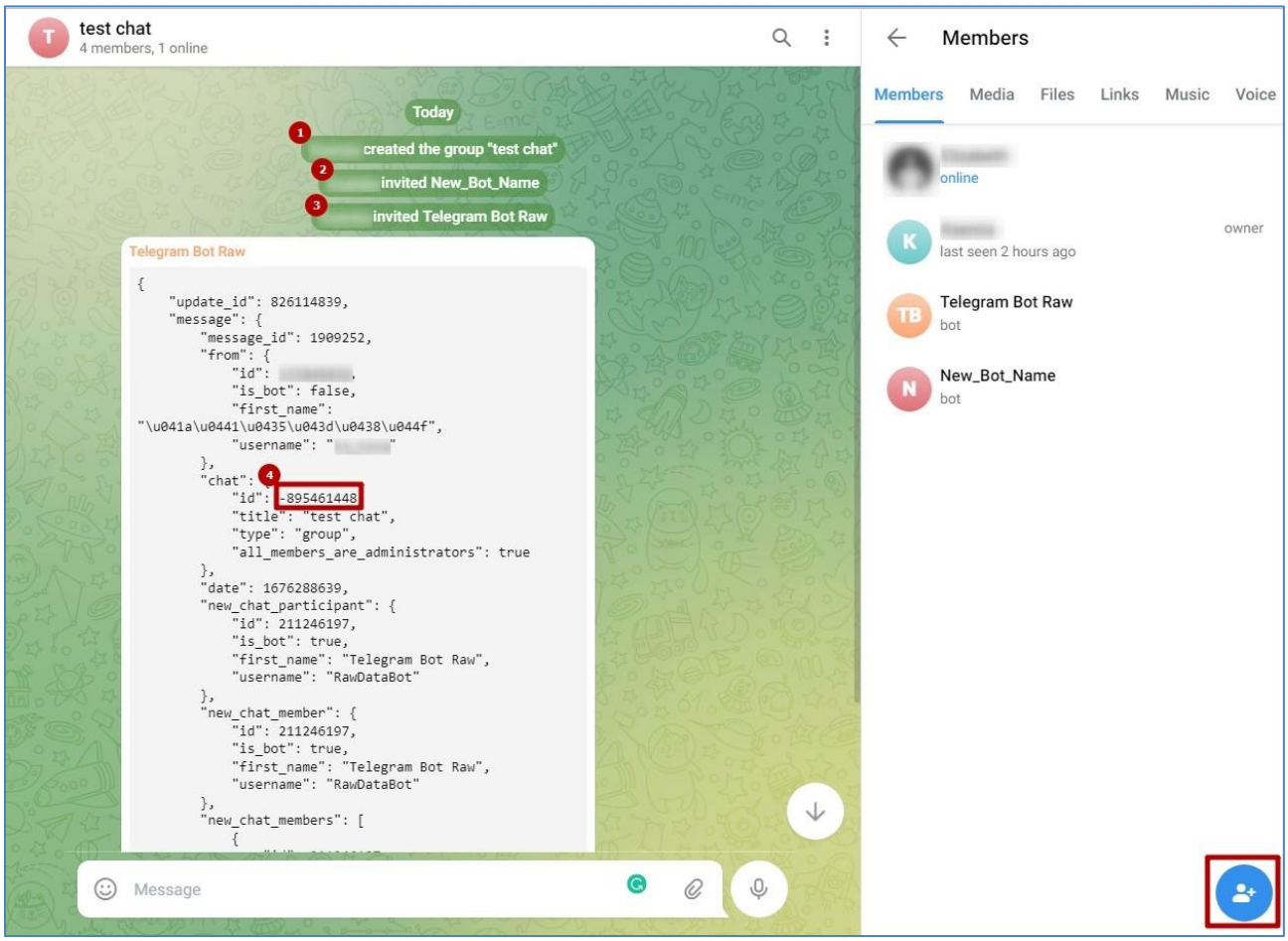
Get Chat ID

To get the Telegram chat ID:



1. Create a new group chat and add all required members
2. Add your previously created bot upon the Add Users button in the bottom-right corner of the window
3. Add @RawDataBot upon the Add Users button in the bottom-right corner of the window
4. Get the chat ID in the new message from the Telegram Bot Raw

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LPR

Introduction

Use this guide to understand the interface and features of the LPR plugin and learn how to utilize it for the best result.

What Is LPR?

LPR automatically identifies license plates, collects and stores vehicle data in the database.

Primary Capabilities

LPR is capable to:

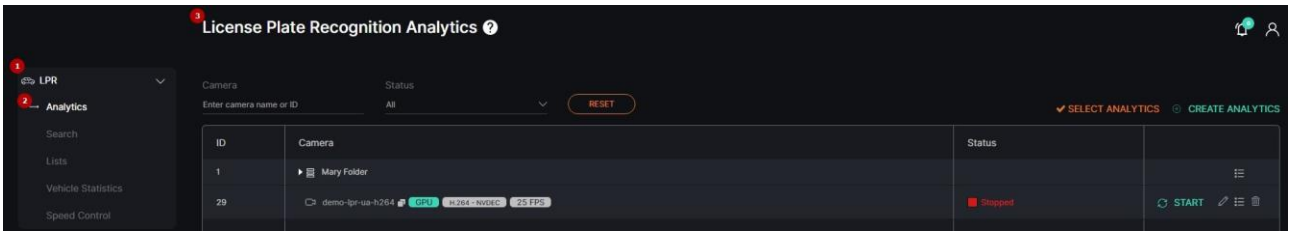
- Capture and recognize the license plate within 8-30 milliseconds
- Support license plate recognition at speeds up to 250 km/h
- Recognize the make, model, and color of the vehicle, as well as the country identifier with 95% accuracy
- Determinate the route and direction of the vehicle

LPR: Analytics

ⓘ This page includes the Analytics item overview and options to customize analytics. The item displays a list of analytics including status and the ability to manage analytics.

Overview

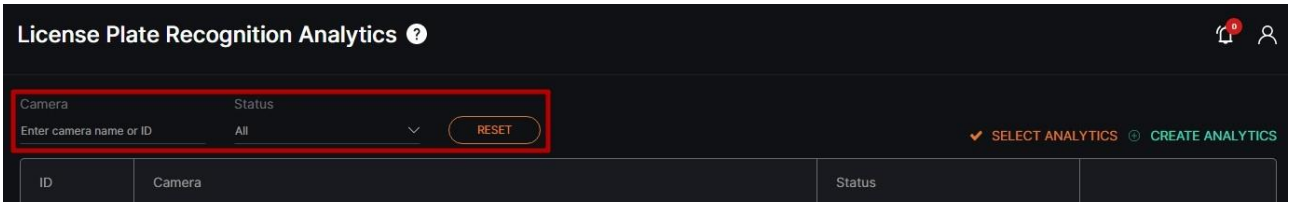
To open the Analytics item, in the left menu:



1. Select the LPR section
2. Choose the Analytics item
3. See analytics

Use and Functionality

The License Plate Recognition Analytics functional menu allows to:



- Fill in the Camera field with:
  - Camera name or characters in the name
  - Analytics ID
  - Video stream ID

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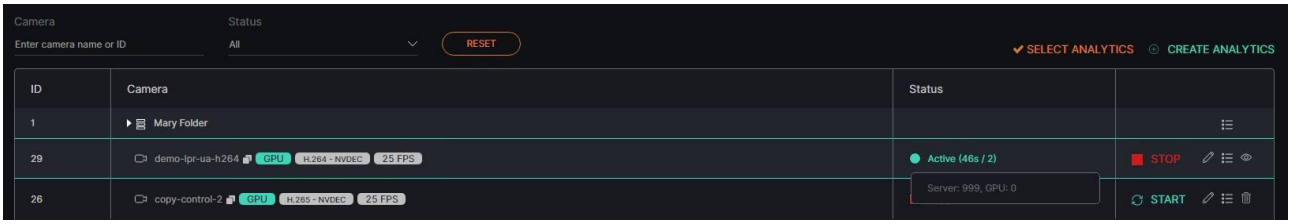
- Select the required analytics status
- Click the Reset button to clear the filters

> The status options include All, Active, and Stopped.

See the list of analytics in the table below. It holds:

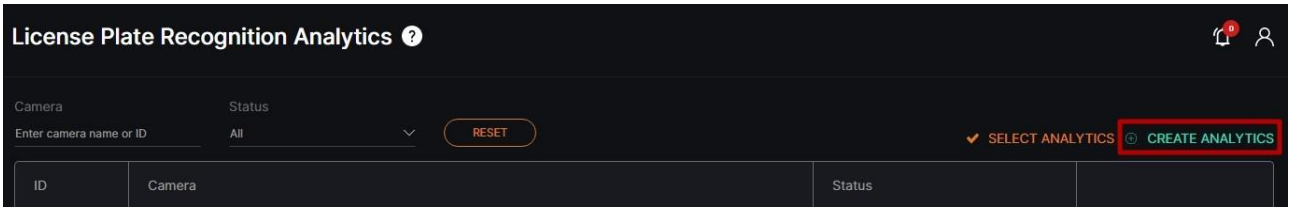


- Analytics and folders ID
- Camera includes:
  - Folders' and separate video streams' names
  - Copy Name icon to copy the video stream name
  - Video source type
  - More hardware parameters
- Video stream or video file playback status. For the Active and Offline statuses, the system also displays:
  - Countdown since analytics launch
  - Last server connection to analytics (seconds ago)
- Toolbox includes:
  - Start/Stop
  - Edit
  - Search Results
  - View
  - Delete

> - To learn more about grouping video streams into folders and making the appropriate changes in the Video Streams item, read Video Streams.
> - To find out the ID of the CPU/GPU and the server running the video stream, hover the mouse over the circle next to the status of the running analytics.

Create Analytics

To create new analytics, click the Create Analytics button:



The Create License Plate Recognition Analytics navigation menu allows to:

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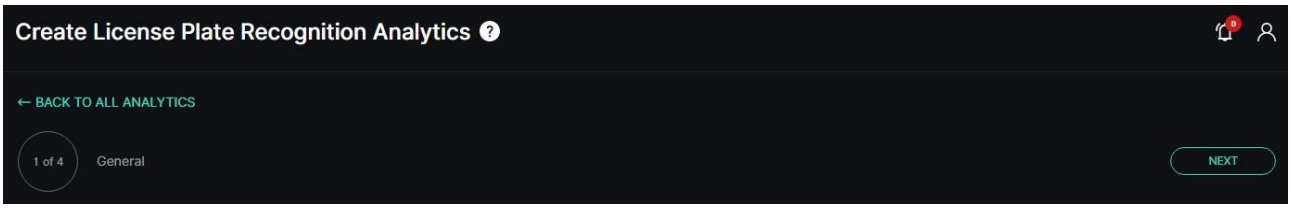
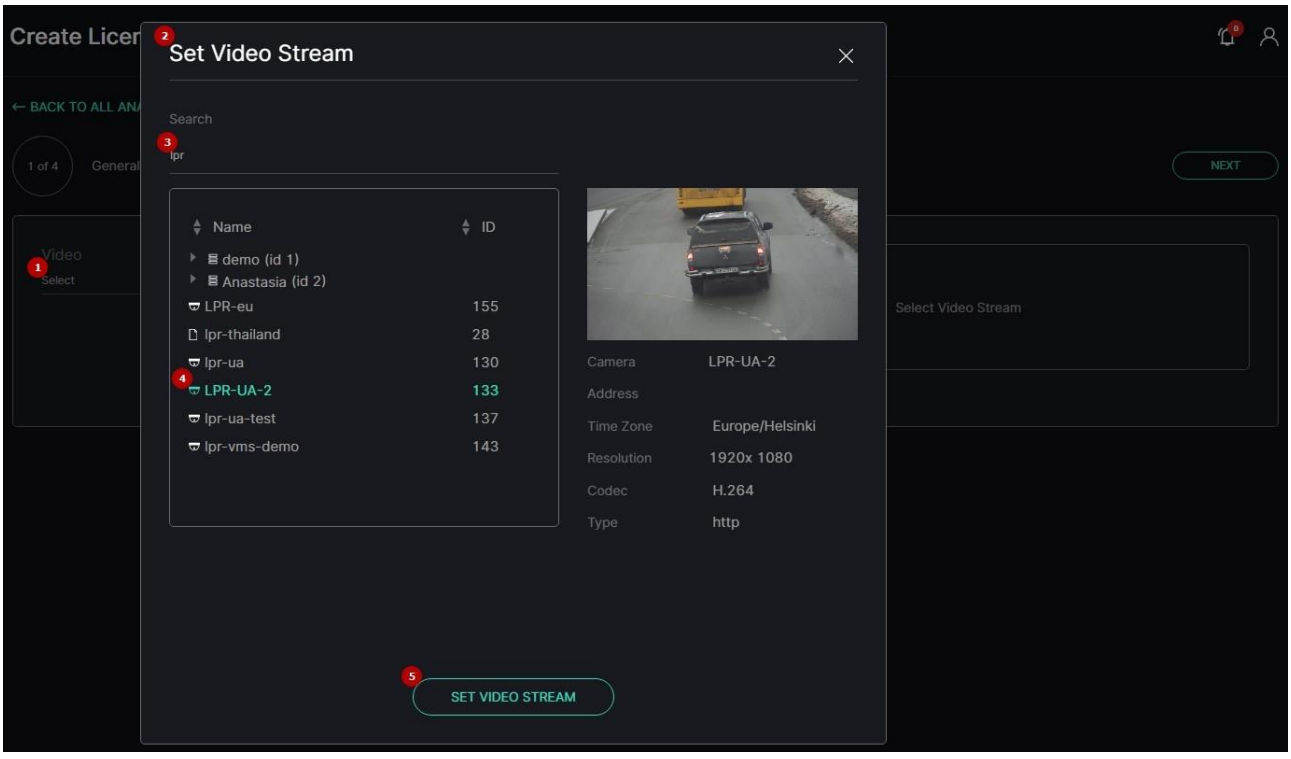


Click the Back to All Analytics button to return to the main Analytics item

- See the title and serial number of the current tab
- Click the Back or Next button to move among tabs:
  - General
  - Hardware
  - Notifications
  - Permissions

General Tab

The General tab provides the ability to set a video stream and customize analytics parameters.
To set a video stream:



1. Click the Video field
2. See the Set Video Stream pop-up window
3. Fill in the Search field with:
   a. Camera name or characters in the name

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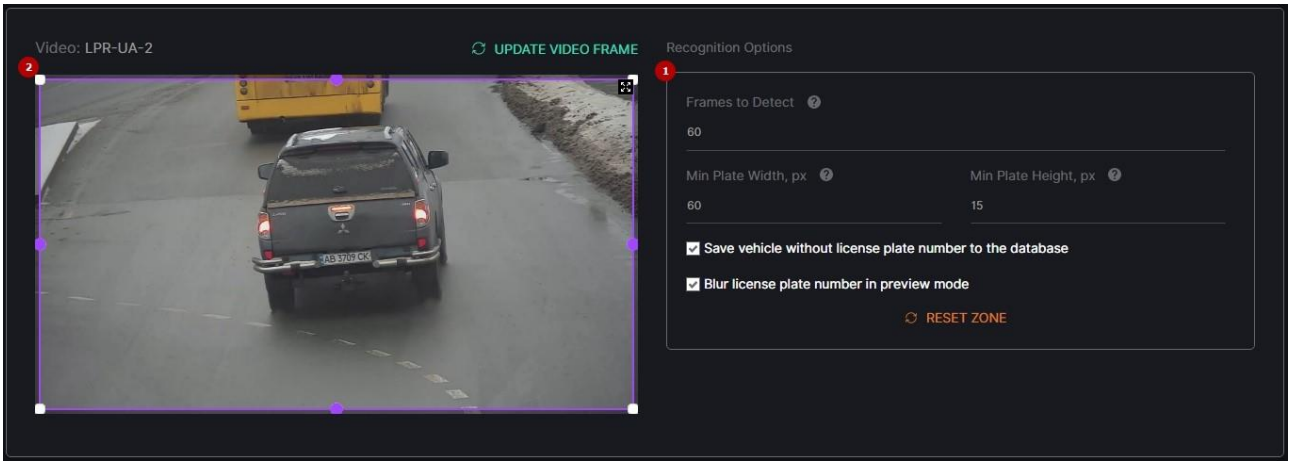
b. Video stream ID

4. Select the required camera from the filtered list
5. Click the Set Video Stream button to confirm the intention

> To refresh the video preview, upon selecting the Set Video Stream button, click the Update Video Frame button above the frame. This button is available upon adding the video stream.

Recognition Options

To perform the recognition, apply these recognition options:



1. Set the parameters:
   a. Set the number of frames for the sample from which the best frame is selected for vehicle detection
   b. Set the minimum plate width for recognition (in pixels)
   c. Set the minimum plate height for recognition (in pixels)
   d. Select the Save Vehicle Without License Plate Number to the Database checkbox to save detected vehicles with absent or unrecognizable license plate numbers to the database
   e. Select the Blur License Plate Number in Preview Mode checkbox to blur the license plate area in the analytics live view mode
2. Modify the detection zone:
   a. Click and drag the handles with LMB to set the zone borders
   b. Click and drag the area inside the zone with LMB to move the whole zone
   c. Click the handle with RMB to delete it
   d. Click the Reset Zone button to return the detection zone borders to their original position

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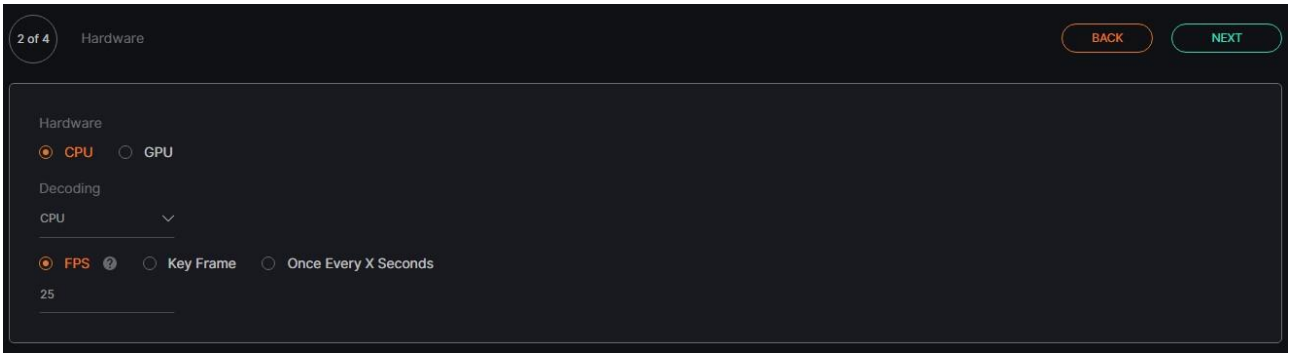
- The possible range for the Frames to Detect parameter is from 1 to 100 frames.
- The minimum value for the Min Plate Width, px parameter is 60 pixels.
- The minimum value for the Min Plate Height, px parameter is 15 pixels.
- The detection zone is based on at least 3 handles.

Hardware Tab

The Hardware tab provides the ability to customize hardware parameters:

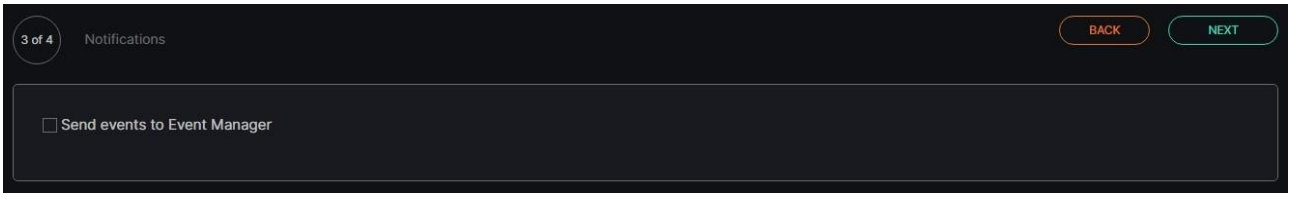


- Choose the CPU or GPU hardware acceleration
- Select the hardware decoder from the drop-down list:
  - CPU
  - Intel
  - NVDEC
- Select the frame processing mode:
  - FPS to set the desired number of frames per second
  - Key Frame to set the frame processing only by keyframes
  - Once Every X Seconds to set intervals in seconds between frame processing

- The recommended value for the FPS mode is 25.
- The default parameters allow the production of analytics. To customize the analytics, set parameters as needed.
- To learn more about hardware settings, read How to Configure the Hardware Tab Settings page 11.

Notifications Tab

The Notifications tab allows managing the events notifications. Check the Send Events to Event Manager box to allow the system to send all notifications to the Event Manager and then to external resources:



The default parameters allow the production of analytics. To customize the analytics, set parameters as needed.

Permissions Tab

The Permissions tab provides the ability to:

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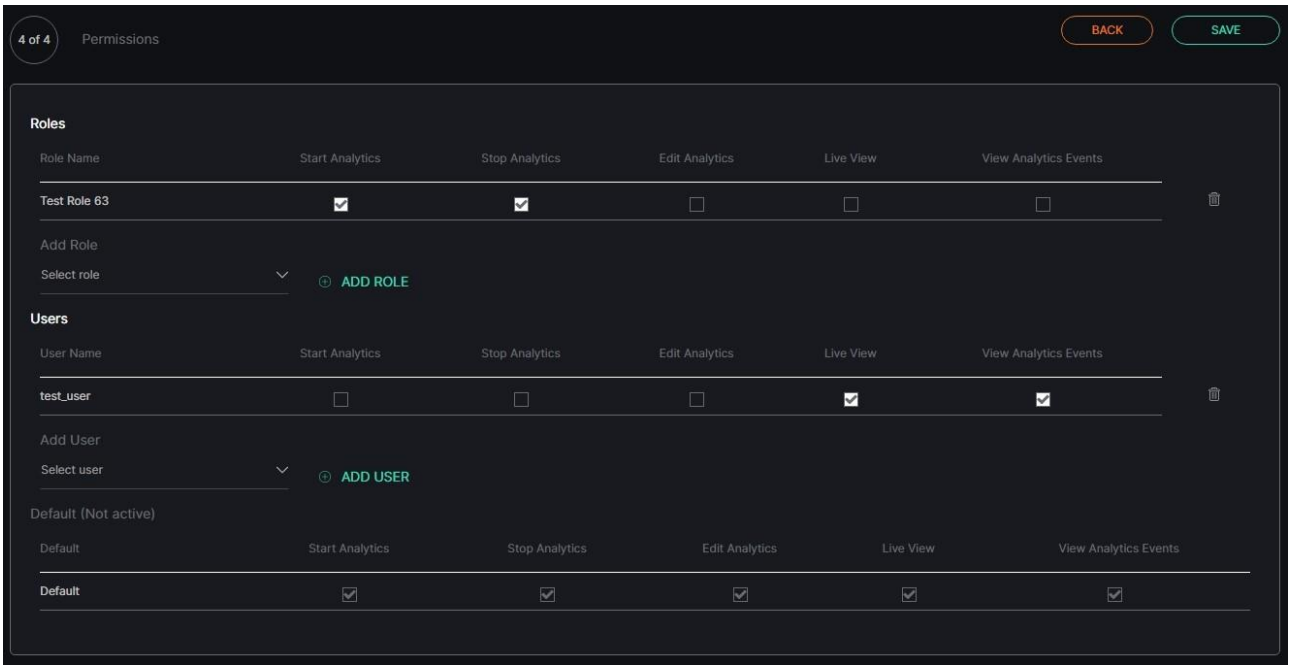


- Assign analytics access rights for Roles:
  - Select the required role from the drop-down list
  - Click the Add Role button
  - Select the checkboxes for the required access rights
  - Click the Delete icon to remove the unnecessary role
- Assign analytics access rights for Users:
  - Select the required user from the drop-down list
  - Click the Add User button
  - Select the checkboxes for the required access rights
  - Click the Delete icon to remove the unnecessary user
- Select the checkboxes for the required analytics access rights by default
- Select the Save button to confirm the intention in the navigation menu

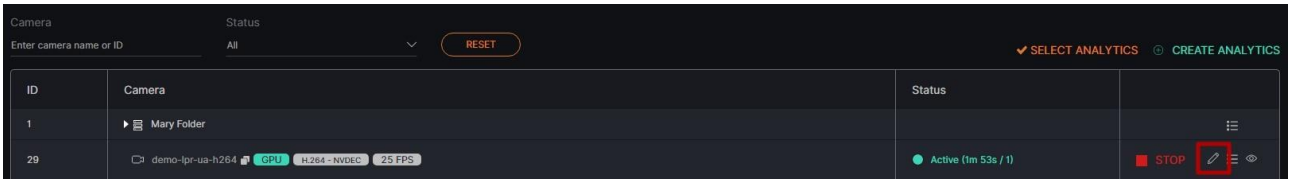
- Default parameters are active only if no Roles or Users are added.
- The quantity of added Roles and Users is not limited.

Once saved, the LPR Analytics editor opens to allow the users to:

- Modify parameters
- Set parameters
- Run the created analytics
- Proceed to live view mode

Edit Analytics

To edit settings in the selected analytics, click the Edit icon on the toolbox:



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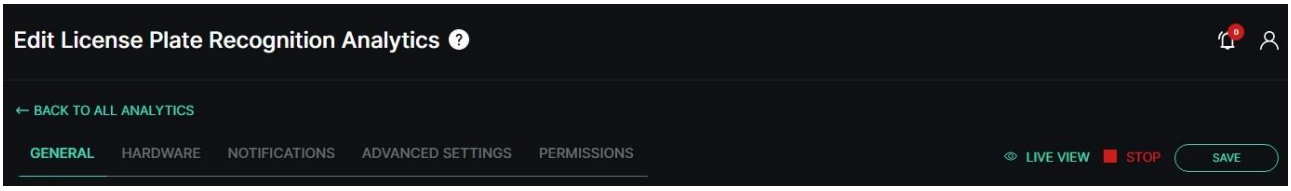
The Edit License Plate Recognition Analytics navigation menu allows to:



- Click the Back to All Analytics button to return to the main Analytics item
- See the setting tabs and move among them by clicking their titles:
  - General
  - Hardware
  - Notifications
  - Advanced Settings
  - Permissions

- Select the Stop button to disable the analytics:
  - Yes, to confirm the analytics disabling
  - No to cancel the intention or close the pop-up window

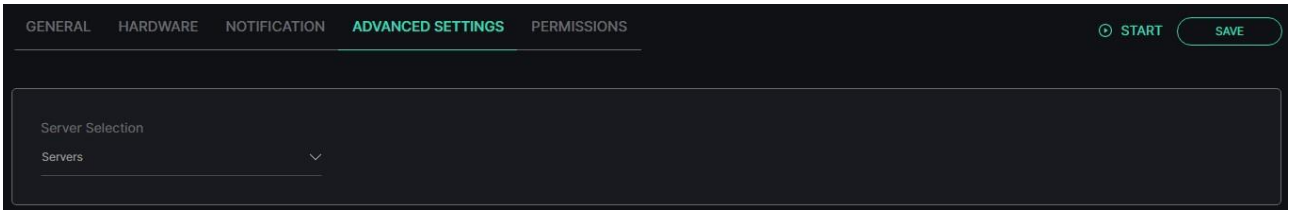
- Select the Start button to enable the analytics
- Click the Live View button to see the selected analytics process in real-time
- Select the Save button to apply the changes to the selected analytics

- The current tab is always highlighted.
- Analytics editing is available only when selected analytics is disabled.
- The Stop button is available only when the current analytics is active.
- The Start button is available only when the current analytics is stopped.
- The Live View button is available only when the current analytics is active.

To view editing parameters for the General, Hardware, Notifications, and Permissions tabs, read Create Analytics199.

Advanced Settings Tab

The Advanced Settings tab allows the users to select a server from the drop-down list to run the analytics:



Analytics Status

To enable or disable the analytics and view the change of the analytics status:

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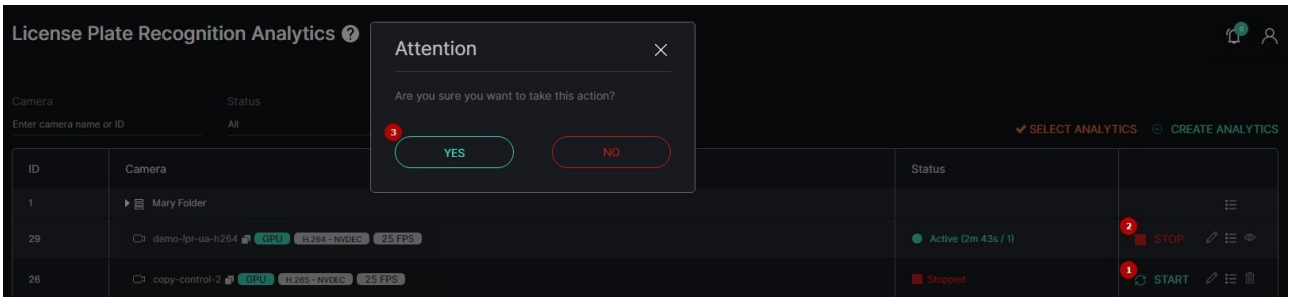
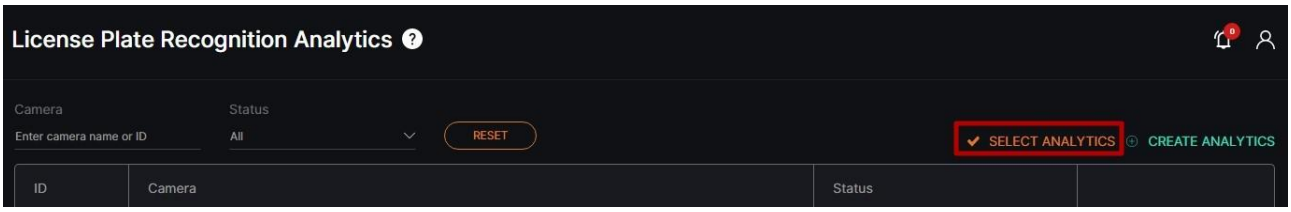
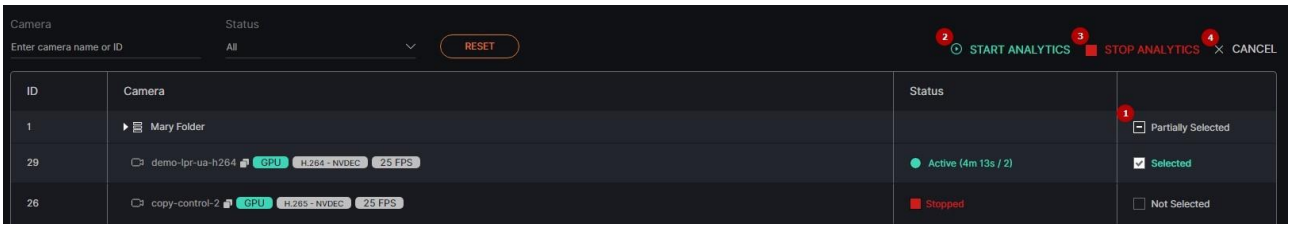


1. Select the Start button to enable the analytics
2. Click the Stop button to disable the analytics process
3. Confirm the intention

To enable or disable multiple analytics at once, click the Select Analytics button:



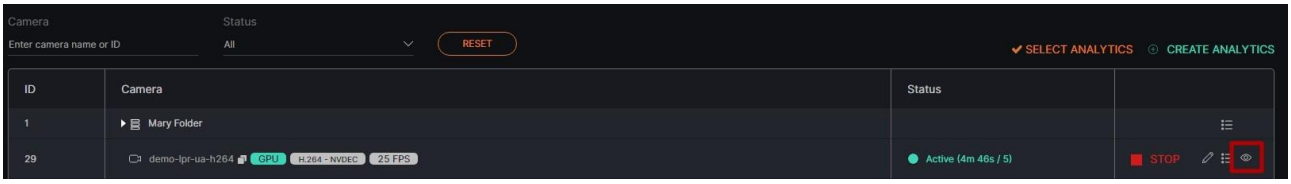
The Select Analytics functional menu allows to:



1. Check the boxes next to the required folders or separate analytics to select them
2. Click the Start Analytics button and confirm the intention in the pop-up window to enable all selected analytics
3. Click the Stop Analytics button and confirm the intention in the pop-up window to disable all selected analytics
4. Click the Cancel button to quit the analytics selection

View Analytics

To see the selected analytics in real-time, click the View icon on the toolbox:



The View icon becomes available only when selected analytics is active.

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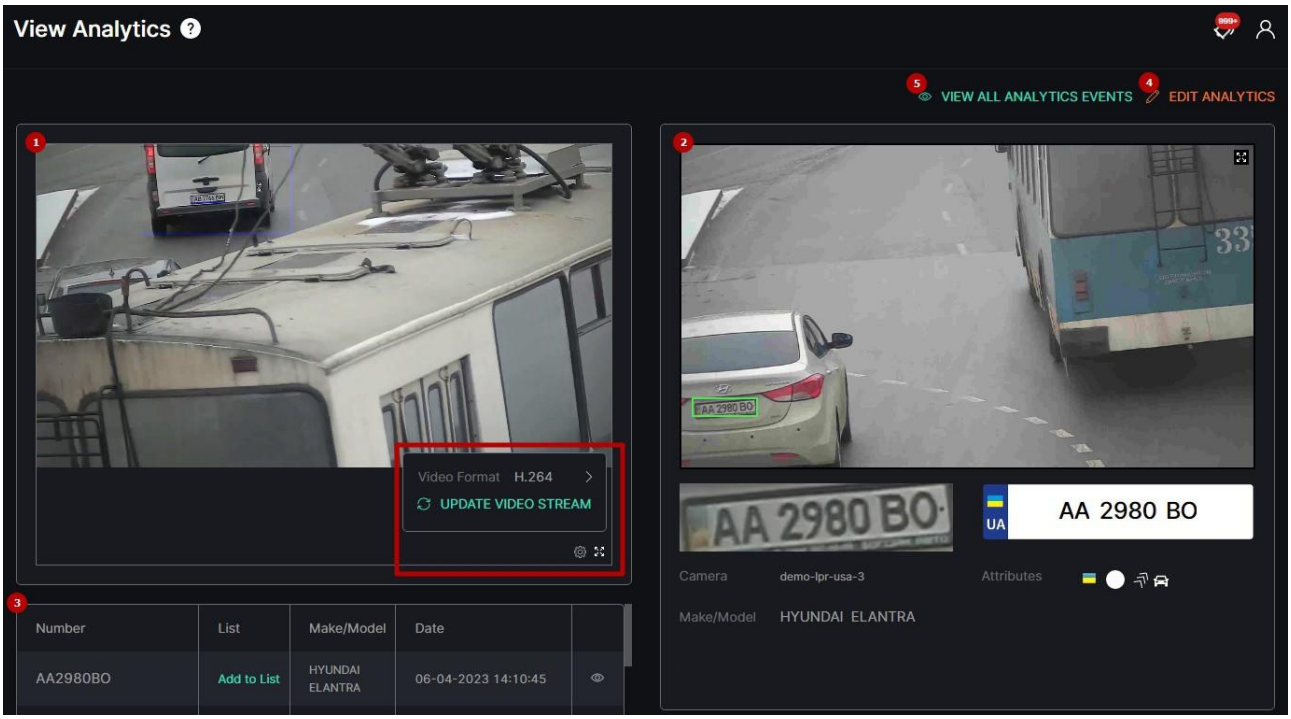
Live view analytics mode allows to:



1. In the video block:
    a. View the video from the camera in real-time mode
    b. Hover the mouse over the Settings icon to:
        i. Select the desired video format
        ii. Click the Update Video Stream button to manually update the video
    c. Click the Enlargement icon to expand the video to full screen
2. In the vehicle data block:
    a. View the frame preview with the recognized license plate number
    b. View the recognized vehicle information
3. In the table below:
    a. Select the Add to List button to add the license plate number to the required list. In the pop-up window:
        i. Write a comment about the license plate number in the Notes field
        ii. Select a required list
        iii. Click the Save button
    b. Select the View icon to view the additional information. In the pop-up window:
        i. See the extended vehicle data
        ii. Save the image in the full-size
        iii. Export the selected license plate recognition report
        iv. Add the license plate number to the required list
4. Click the Edit Analytics button to make changes to the current analytics settings
5. Click the View All Analytics Events button to see all events from the selected analytics

Click the enlargement icon in the upper-right corner of the frame preview to open the Fullscreen view mode.

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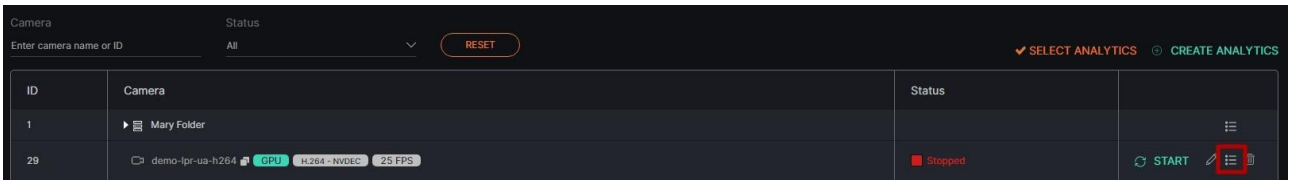
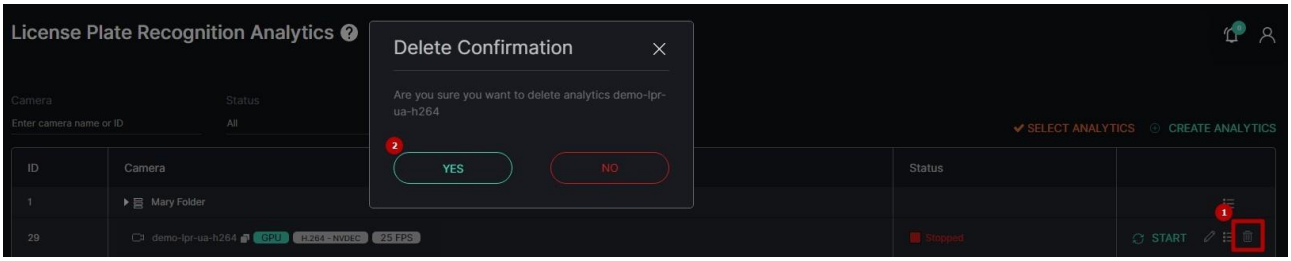
View Search Results

To view selected analytics search results in the Analytics item, click the Search Results icon on the toolbox:



Delete Analytics

To remove the analytics:



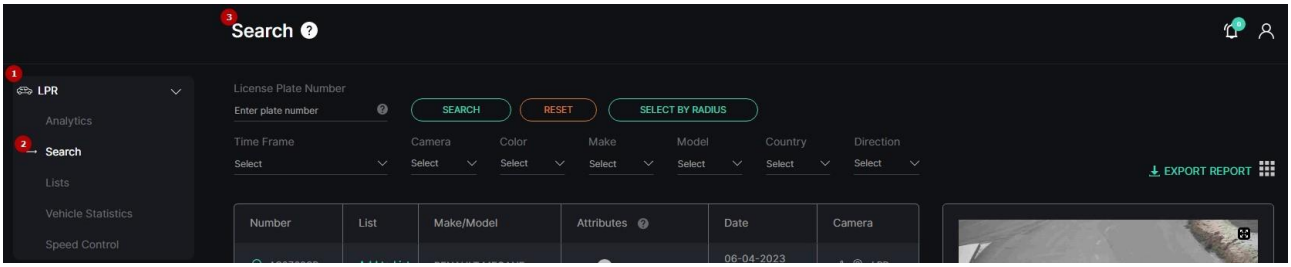
1. Select the Delete icon on the toolbox
2. Confirm the intention

LPR: Search

This page comprises the Search item overview and functionality description. The item displays the vehicle search results including a license plate number, make and model, date and time, camera data, and frame with a vehicle.

Overview

To open the Search item, in the left menu:



1. Select the LPR section
2. Choose the Search item
3. See vehicle search

Use and Functionality

The Search functional menu allows to:

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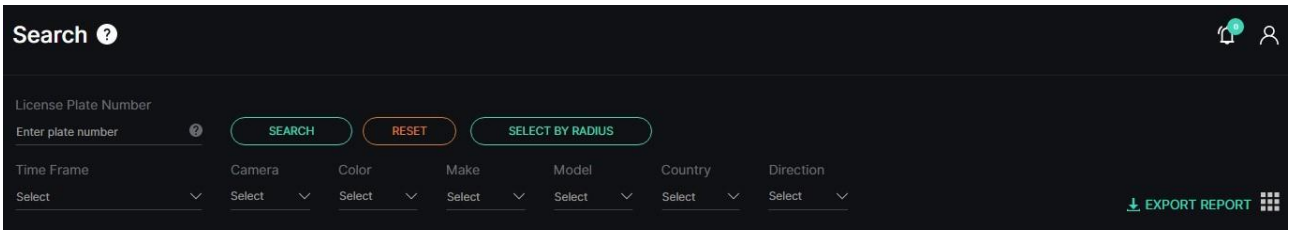
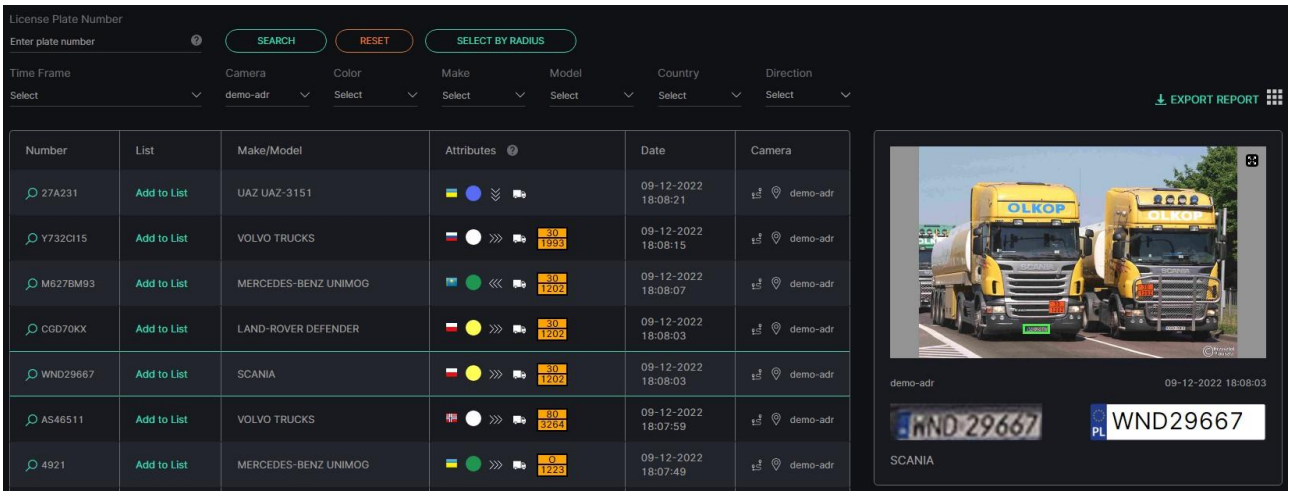


- Enter the license plate number to filter vehicles
- Click the Select by Radius button to set the area for search. In the pop-up window:
  - Enter the radius in kilometers
  - Click the map at the desired spot to set the center of the search circle
  - Select the Search button
- Select the required time frame
- Click the Camera parameter to choose the desired video analytics. In the pop-up window:
  - Check the boxes next to the required video analytics and folders
  - Click the Select Video Analytics button
- Select from the drop-down lists the estimated vehicle's:
  - Color
  - Make
  - Model
  - Country of registration
  - Direction of movement
- Click the Search button to start filtering
- Click the Reset button to clear the filters
- Click the Export Report button to download the report. In the Export Settings pop-up window, set the parameters:
  - Select the required report file format:
    - PDF
    - CSV
  - Enter the required number of the newest results collected for the report
  - Check the Add Frames with License Plate Numbers box to include relevant photos of license plates in the report
  - Click the Export button to confirm the intention
- Move between List and Grid view modes by clicking the corresponding toggle

Once selected and filtered, in the search results:



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- Click the Magnifying Glass icon next to the required number to filter search results only for the selected number
- View recognized vehicle data, date and time the license plate number has been recognized by the selected analytics
- View recognized vehicle attributes:
    - Country of registration
    - Color of the vehicle
    - Direction of movement
    - Vehicle type:
        - Car
        - Motorbike
        - Bus
        - Truck
        - Van
        - Pickup
        - SUV
    - ADR code (in case a vehicle carries dangerous goods)
- Click the list name to open the List View item or add a license plate number to the required list by clicking the Add to List button. In the pop-up window:
    - Write a comment about the license plate number in the Notes field
    - Select a required list
    - Click the Save button
- View the vehicle route and camera location on the map by clicking the corresponding icons in the Camera column
- Click the row in the table with the desired license plate number to see the frame with a vehicle preview
- Select the enlargement icon in the upper-right corner of the frame preview to view the other information. In the pop-up window:
    - See the extended vehicle data
    - Save the image in the full-size
    - Add the license plate number to the required list

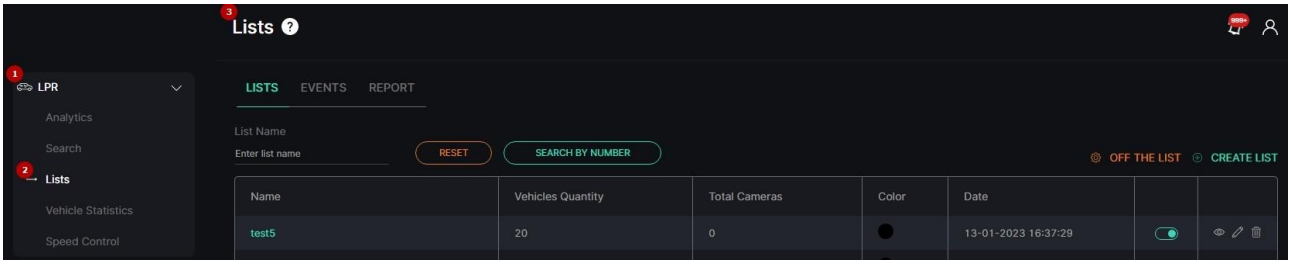
The same options are available in the grid view mode.

LPR: Lists

This section describes the Lists item that allows filtering and managing vehicle lists and cards, as well as viewing events and lists statistics data.

Overview

To open the Lists item, in the left menu:



1. Select the LPR section
2. Choose the Lists item
3. See lists navigational menu

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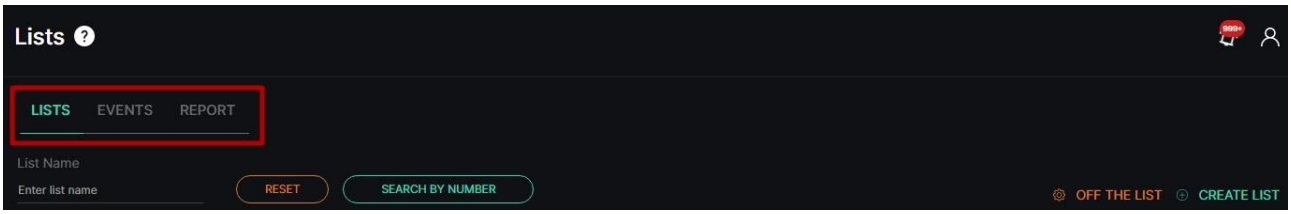
Use and Functionality

The Lists navigational menu consists of 3 tabs:



- Lists
- Events
- Report

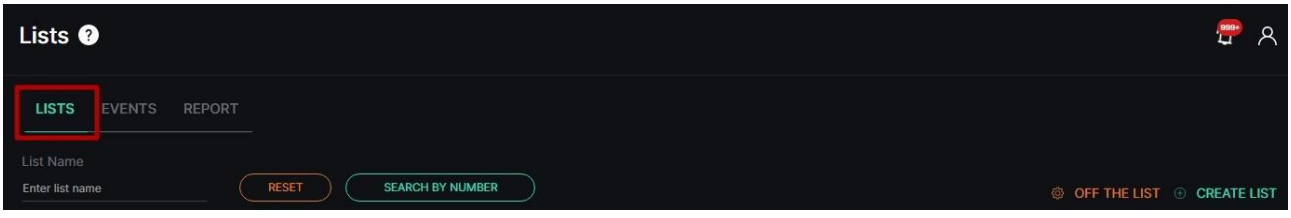
- The Lists item opens with the Lists tab by default.
- The selected tab is always highlighted.

Lists: Lists

This page includes the Lists tab overview and options to customize vehicle lists. The item allows filtering and managing lists and vehicle cards.

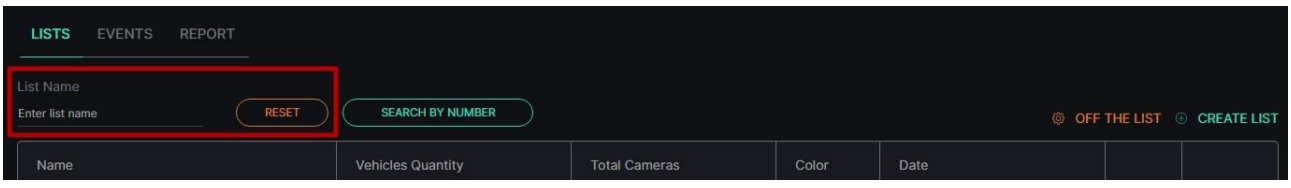
Overview

Select the Lists tab in the tabs menu:



Use and Functionality

The Lists tab functional menu allows to:



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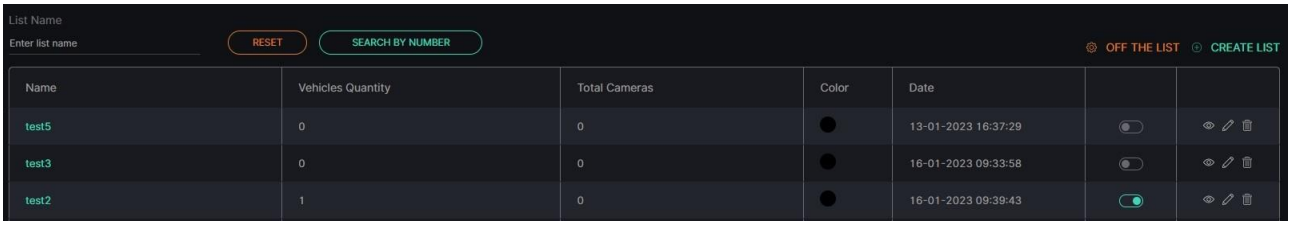
- Enter the list name or characters in the name to filter lists
- Select the Reset button to clear the filters

See the filtered lists in the table below. It contains:

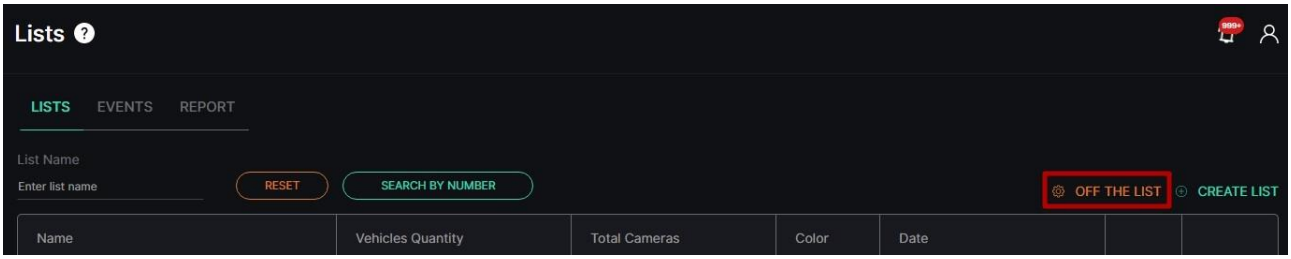


- List name
- Number of vehicles included in the list
- Total number of video streams involved in the list
- List color
- Enabled/Disabled list toggle
- Toggle to enable or disable the notifications in the list
- Toolbox includes:
  - Edit List
  - Delete List
  - View List

Turn on the Enabled\Disabled toggle to get matches with the list elements in the search results.

Off List Notification Settings

To set up notifications about recognized license plates out of lists select the Off the List button:



In the Off List Notification Settings pop-up window:

- Click the Camera parameter to choose the desired video analytics. In the pop-up window:
  - Check the boxes next to the required video analytics and folders
  - Click the Select Video Analytics button
- Check the Internal Notification box to allow the system to send all notifications to the Events
- tab of the Lists item
- Check the Send Events to Event Manager box to allow the system to send all notifications
- about license plates out of lists to the Event Manager and then to external resources
- Click the Save button

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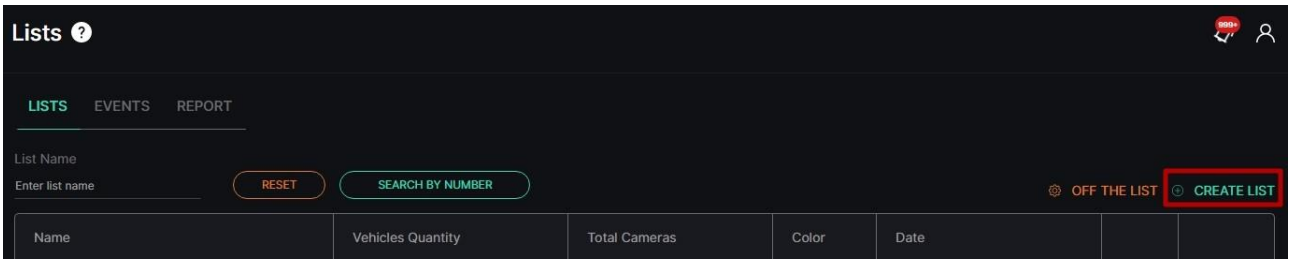
Create List

To create a new list, click the Create List button:



The Create List pop-up window allows to:

- Configure the General Settings tab's parameters:
  - Enter the list name
  - Click the Camera parameter to select the desired video analytics. In the pop-up window:
    - Check the boxes next to the required video analytics and folders
    - Click the Select Video Analytics button
  - Type a comment to the list in the Notes field
  - Click on the Color block to pick a color for the list
- Configure the Notifications tab's parameters:
  - Check the Internal Notification box to allow the system to send all notifications to the Events tab of the Lists item
  - Check the Send Events to Event Manager box to allow the system to send all notifications about license plates in the list to the Event Manager and then to external resources
- Configure the Permissions tab's parameters:
  - Assign list access rights for Roles:
    - Select the required role from the drop-down list
    - Click the Add Role button
    - Select the checkboxes for the required access rights
    - Click the Delete icon to remove the unnecessary role
  - Assign list access rights for Users:
    - Select the required user from the drop-down list
    - Click the Add User button
    - Select the checkboxes for the required access rights
    - Click the Delete icon to remove the unnecessary user
  - Select the checkboxes for the required list access rights by default
- Click the Save button to save parameters and create a new list

- The Permissions tab's default parameters are active only if no Roles or Users are added.
- The quantity of added Roles and Users in the Permissions tab is not limited.
- Checking the Internal Notification box allows getting event notifications only in case the Enabled/Disabled list toggle is turned on.

Once the list is created with the checked Internal Notification box, the Enabled/Disabled list toggle is turned on, and at least one of the selected analytics is enabled, the Notification icon signals about each new event notification. Click the Notification icon to open the Notification Panel. It comprises:

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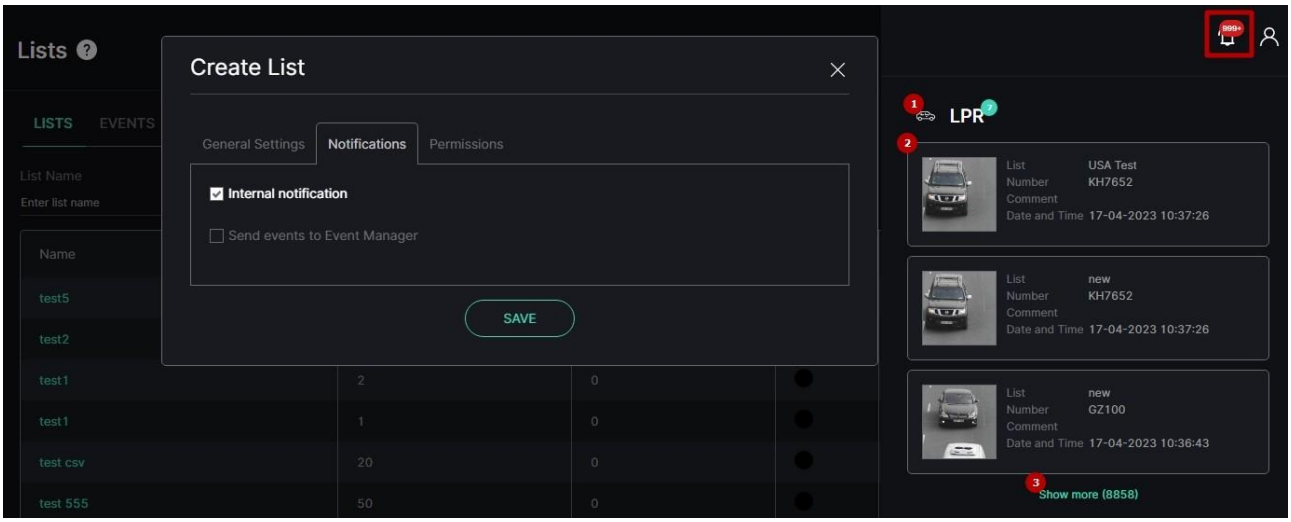

1. Plugin name box to:
    a. Collapse/expand the list of event notifications by clicking the plugin name
    b. Clear all plugin event notifications at once from the Notification Panel by clicking the Close button (this action doesn't affect events in the Events tab of the Lists item)
2. Event notification box to:
    a. View short event information and frame preview for up to 3 last notifications
    b. Open the event pop-up window by clicking the required notification
    c. Clear the desired event notification from the notification list by clicking the Close button inside the box (this action doesn't affect the event in the Events tab of the Lists item)
3. Show More button with the total events number to open the Events tab of the Lists item and view all events

List Permissions Configuration

For example, it is necessary to give full access to a new list to all users related only to a specific role, and at the same time, to restrict the vehicle card managing access rights in the list for one of the users related to this role. For this purpose:

1. In the Roles item of the Settings section assign all required LPR permissions to the role, including:
    a. View Vehicle Lists
    b. Add New Vehicle to List
    c. Edit Vehicle List Elements
    d. Delete Vehicle List Elements
2. In the Users item of the Settings section assign the selected role to all required users
3. In the Create List pop-up of the Lists item open the Permissions tab

Configure the parameters in the Permissions tab:

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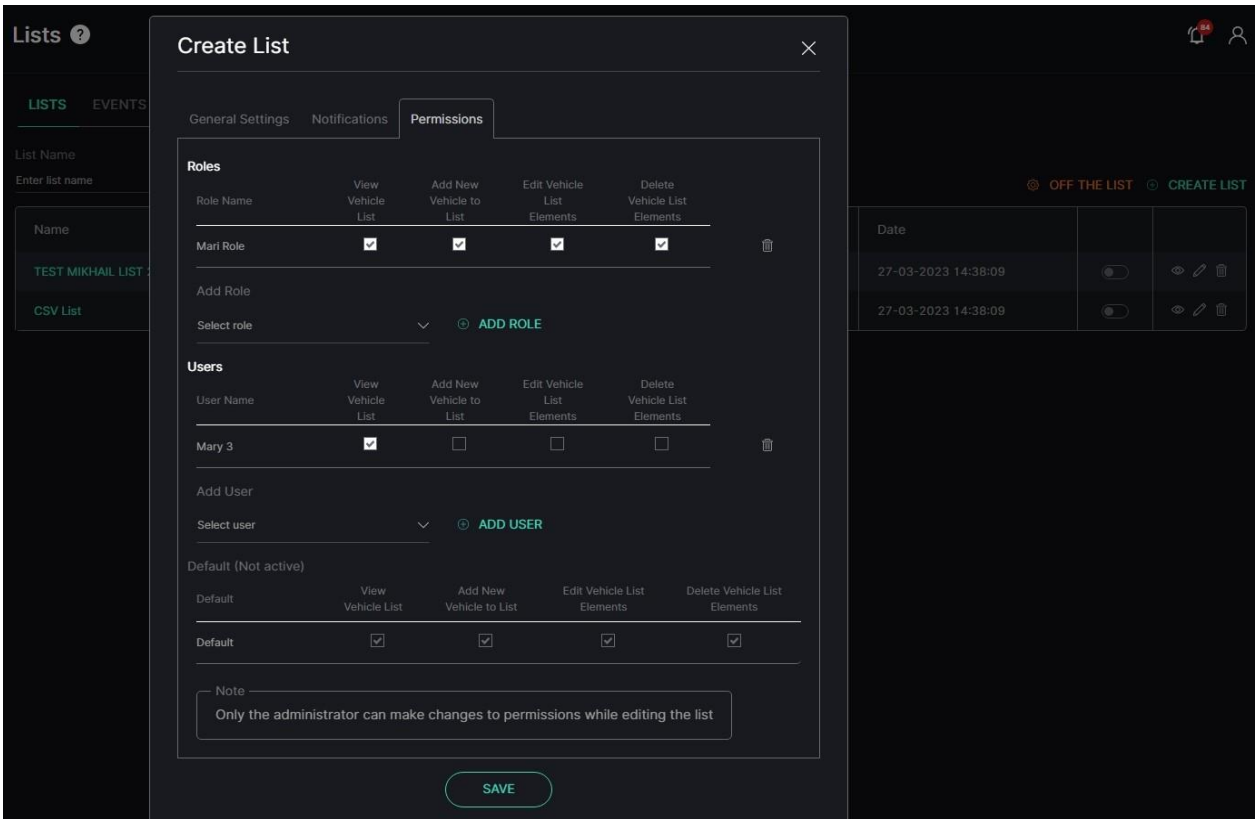


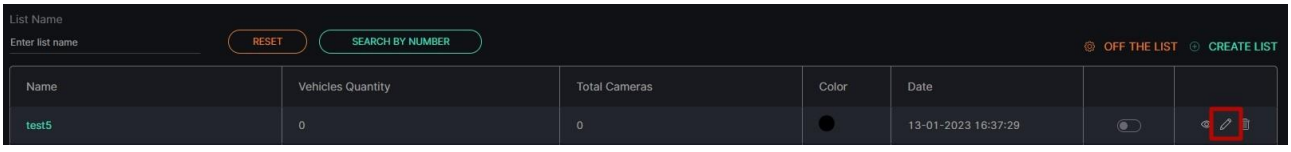
1. In the Roles block, add the required role and check all access rights boxes
2. In the Users block, add the required user and check only the View Vehicle Lists access right box
3. Finish the list configuration and save it

Once the list is created, all users with the selected role can view the new list and manage vehicle cards in it. At the same time, the additionally selected user can only view the new list but cannot manage vehicle cards in this list.

- User permissions are with higher priority than Role permissions.
- The sequence of access rights validation in the list by the system:
  - Global permissions
  - User permissions
  - Role permissions
  - Default permissions

Edit List

To edit the list, select the Edit icon on the toolbox:



To view editing list parameters, read Create List203.

Only the administrator can make changes to permissions while editing the video stream. For other system users, the Permissions tab is disabled.

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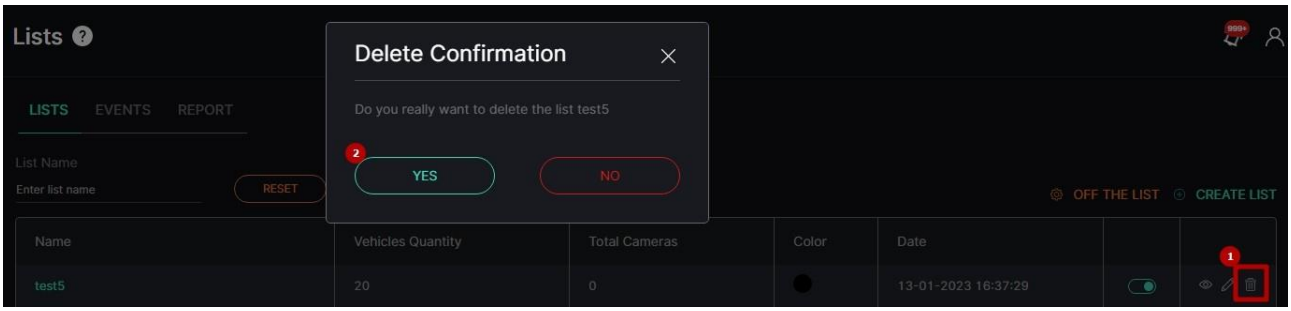
Delete List

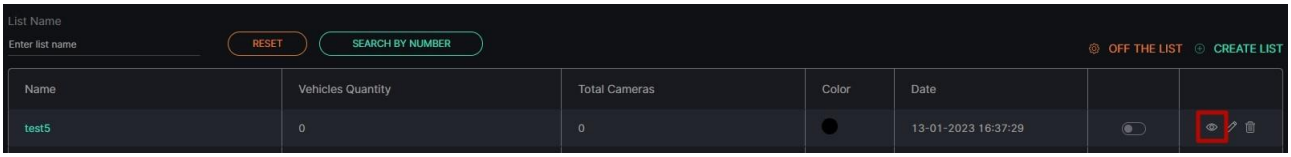
To delete the list:



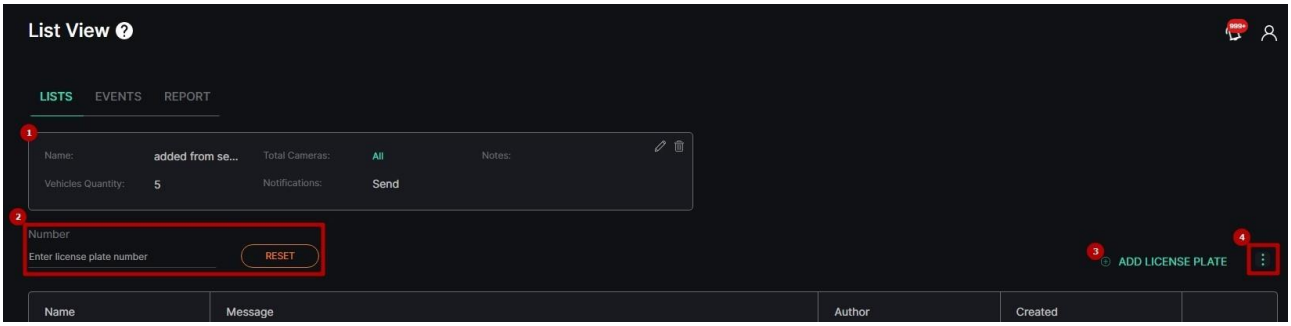
1. Select the Delete icon on the toolbox
2. Confirm the intention

View List

To view the list, select the View icon on the toolbox:



The List View functional menu comprises:



1. List Info Box contains:
    a. List parameters
    b. Edit List tool
    c. Delete List tool
2. Filters to:
    a. Enter the license plate number to filter vehicles
    b. Click the Reset button to clear the filters
3. Add License Plate button to add a license plate number to the list. In the pop-up window:
    a. Enter the desired license plate number
    b. Type a comment to the vehicle in the Message field
    c. Click the Save button
4. Options to import and export the list of vehicle information cards in CSV

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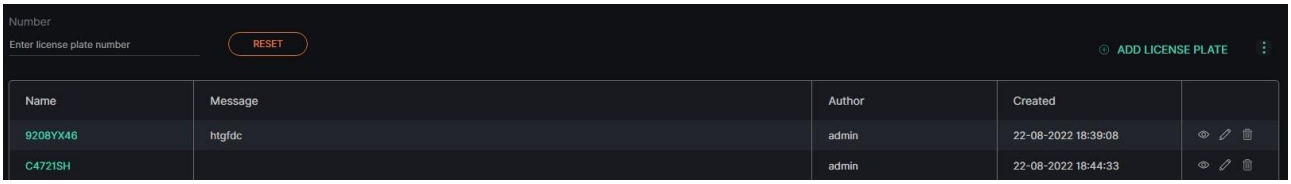
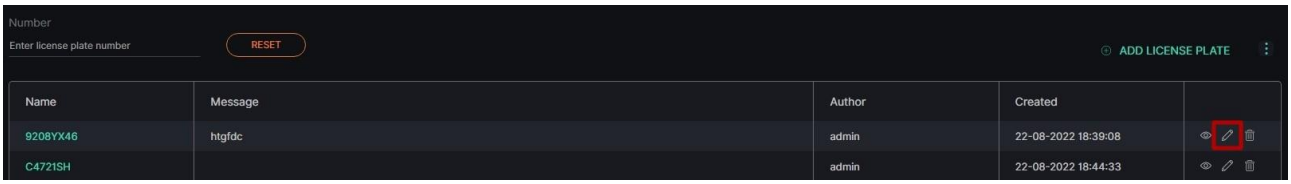
See the list of license plate numbers in the table below. It contains:



- License plate number
- Author's username and comment
- Date and time the number was added to the list
- Toolbox includes:
  - Edit Card
  - Delete Card
  - View Card

Edit Card

To edit the vehicle information card, select the Edit icon on the toolbox:

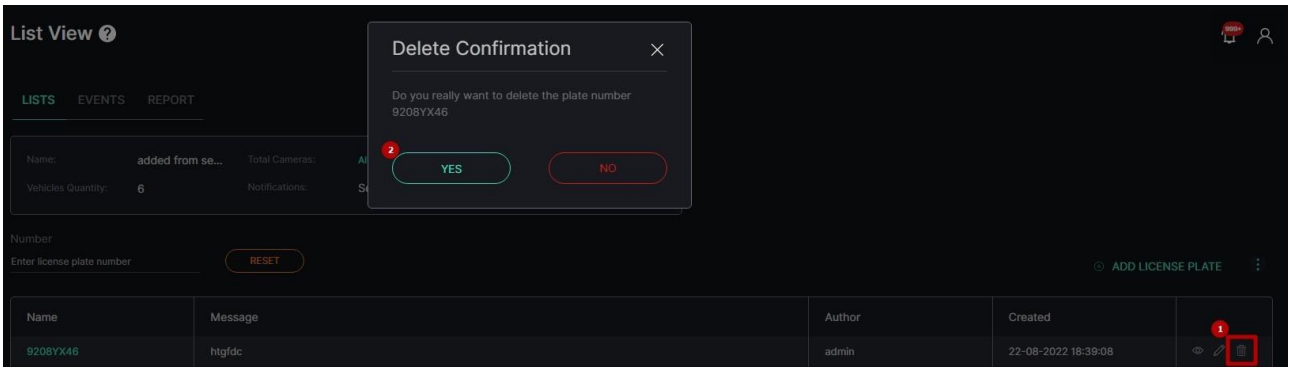


In the pop-up window:

- Change the license plate number
- Type a comment to the vehicle in the Message field
- Choose another list to move the vehicle card
- Click the Save button

Delete Card

To delete the vehicle card:



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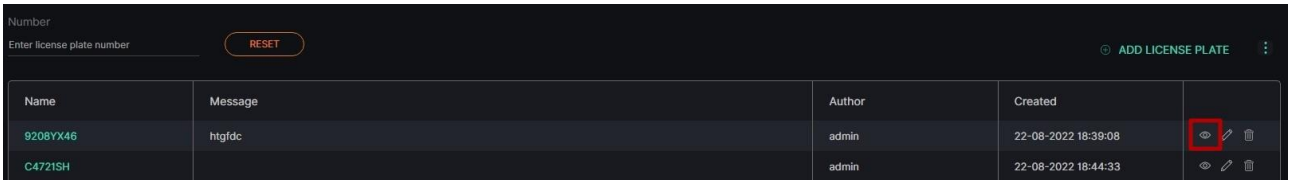
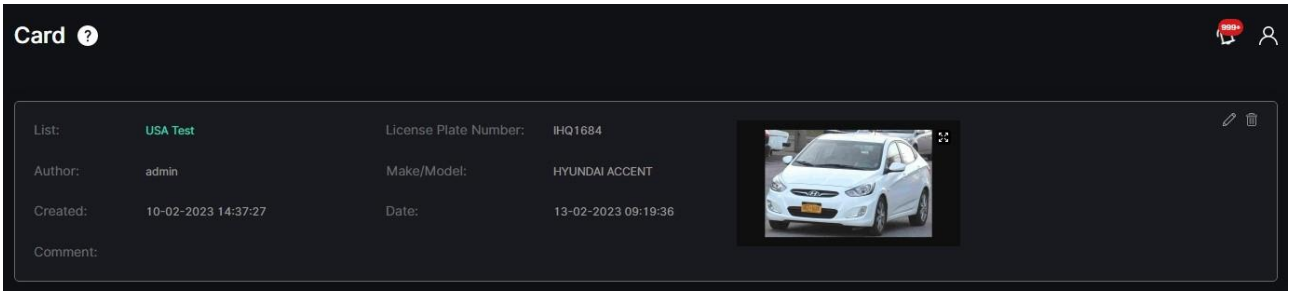
1. Select the Delete icon on the toolbox
2. Confirm the intention

View Card

To view the required vehicle card, select the View icon on the toolbox:



The Card Info Box holds:



- Vehicle info
- Frame with a vehicle
- Enlargement icon over the frame preview to view the image in the full-size
- Edit Card tool
- Delete Card tool

The vehicle's Events Log in the table below allows users to:

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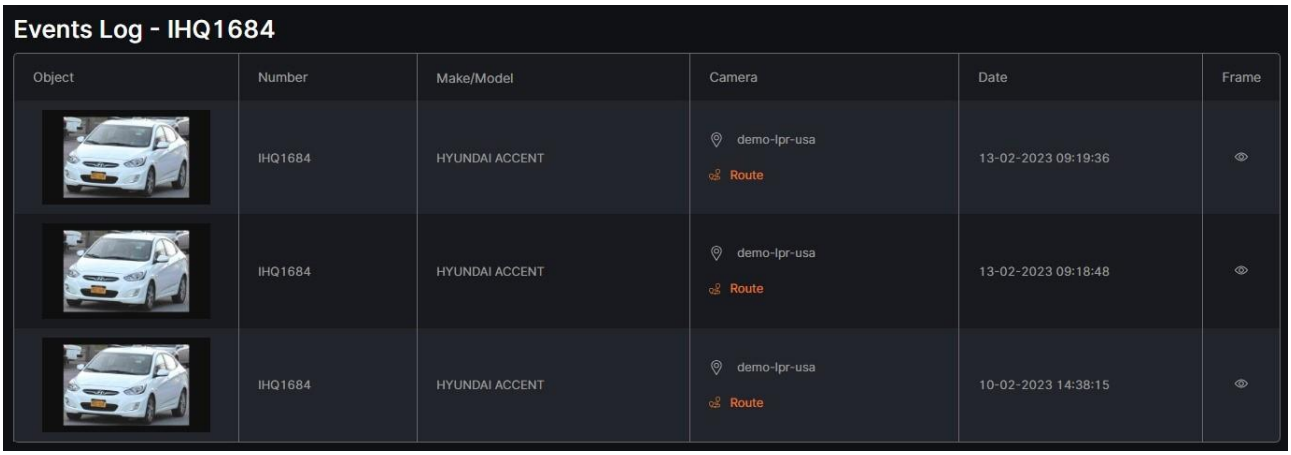
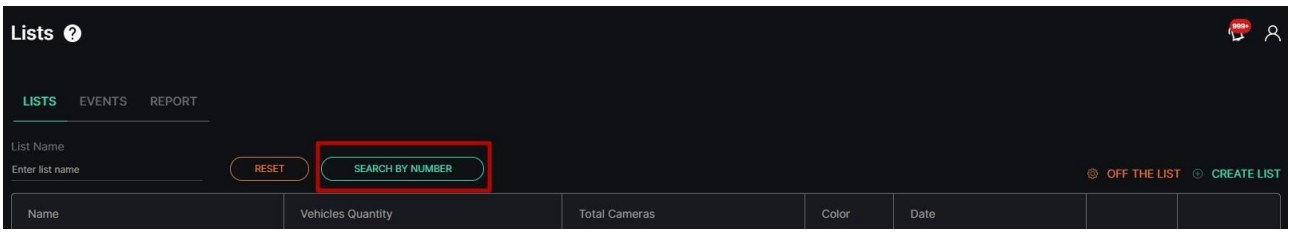


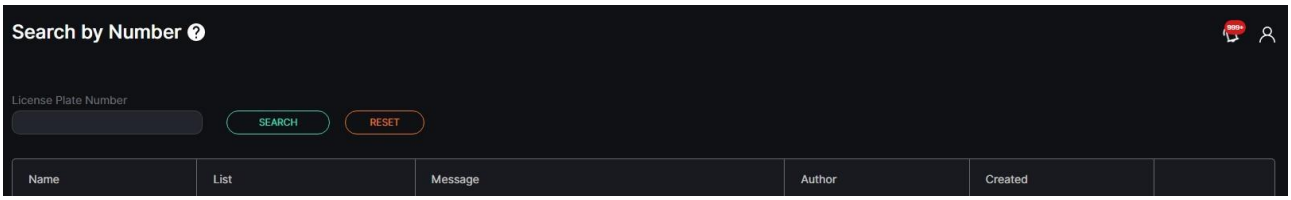
- View recognized vehicle data, date and time the license plate number has been recognized
- View the vehicle route and camera location on the map by clicking the corresponding icons in the Camera column
- Select the View icon to open the frame with the vehicle. To save the frame in full size click the Save Image button in the pop-up window

Search by Number

To quickly find a vehicle card, on the main Lists tab click the Search by Number button:



The Search by Number functional menu allows to:



- Enter the license plate number to filter vehicle cards
- Click the Search button to start filtering
- Click the Reset button to clear the filters

View the search results in the table below:

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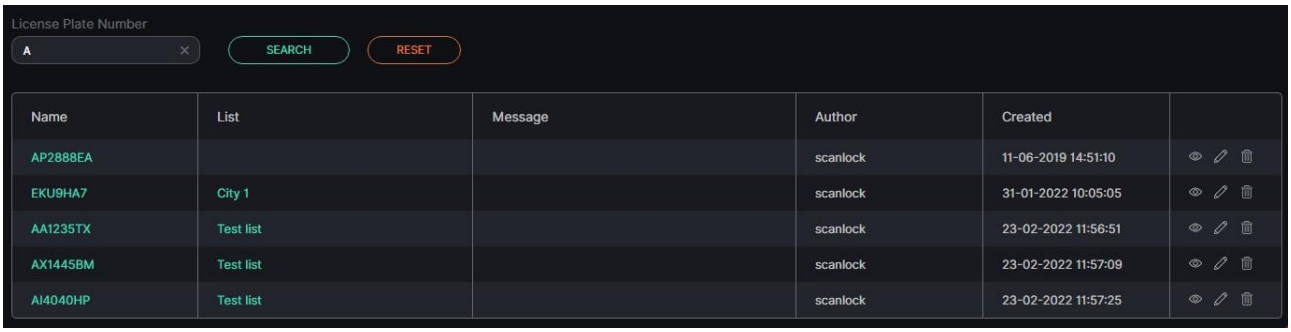


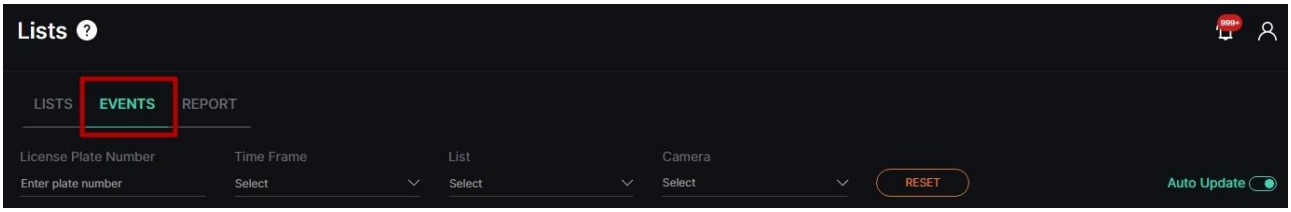
- License plate number
- The name of the list which holds the required number
- Author's username and comment
- Date and time the number was added to the list
- Toolbox includes:
  - Edit Card
  - Delete Card
  - View Card

Lists: Events

ⓘ This page includes the Events tab overview and functionality description. The tab displays the events including vehicle and camera data, date and time, and frame with a vehicle.

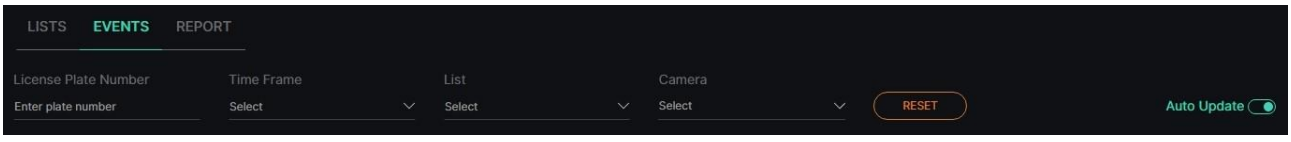
Overview

Select the Events tab in the tab's menu:



Use and Functionality

The Events tab functional menu allows to:



- Enter the license plate number to filter vehicles
- Select the required time frame
- Choose the desired list
- Click the Camera parameter to select the desired video analytics. In the pop-up window:
  - Check the boxes next to the required video analytics and folders
  - Click the Select Video Analytics button

- Click the Reset button to clear the filters

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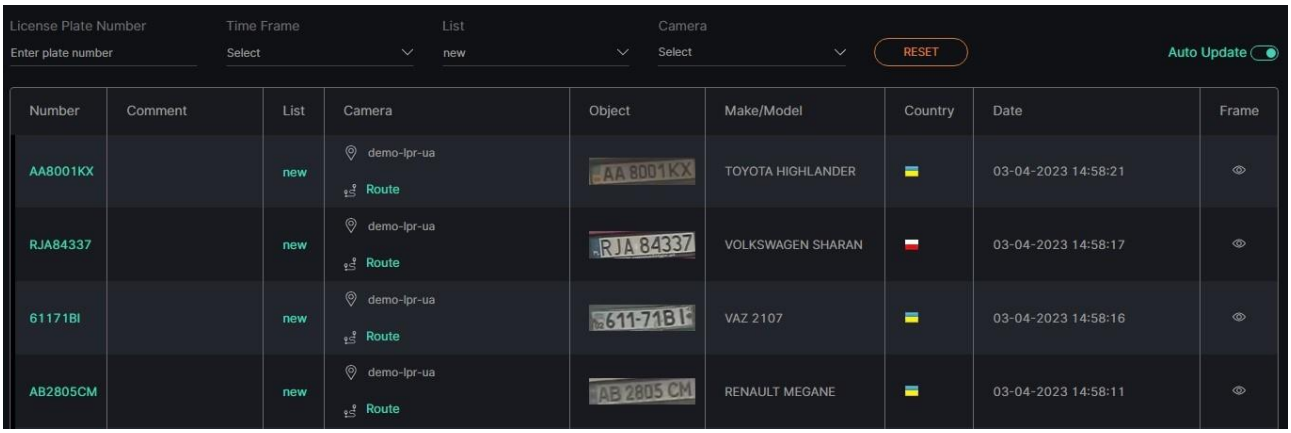
- Select the Auto Update toggle to enable or disable the events auto update

Once selected and filtered, in the event notifications:



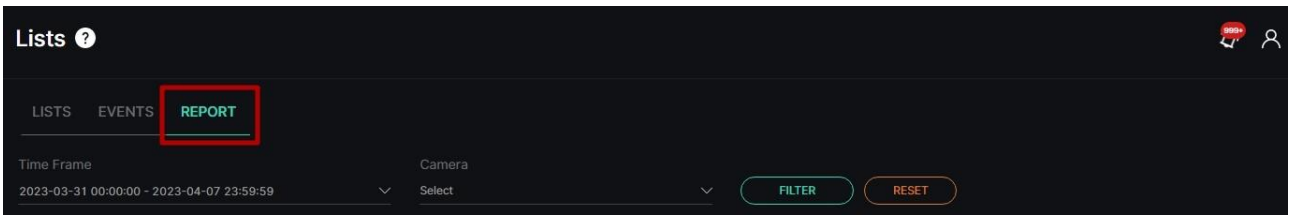
- Click the desired license plate number to open the License Plate Information Card item
- Read the message related to the recognized license plate number
- Click the list name to open the List View item or add a license plate number to the required list by clicking the Add to List button. In the pop-up window:
  - Write a comment to the license plate number in the Notes field
  - Select a required list
  - Click the Save button
- View the vehicle route and camera location on the map by clicking the corresponding icons in the Camera column
- View recognized vehicle data, date and time the license plate number has been recognized by the selected analytics
- Select the View icon to open the frame with the vehicle. To save the frame in the full size click the Save Image button in the pop-up window

Lists: Report

ⓘ This page describes the Report tab that allows viewing statistics for vehicles from the lists.

Overview

Select the Report tab in the tab's menu:



Use and Functionality

The Report tab functional menu includes:

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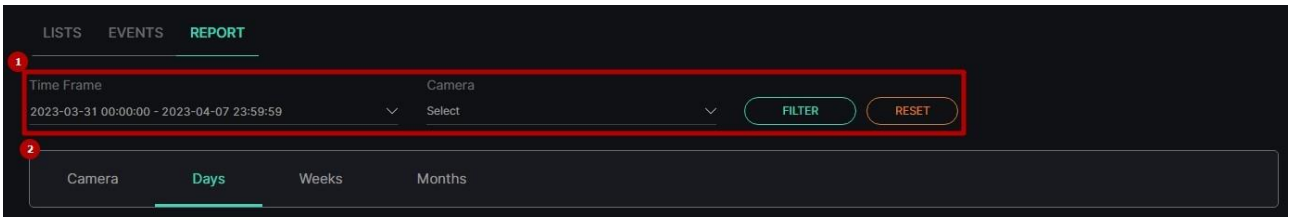
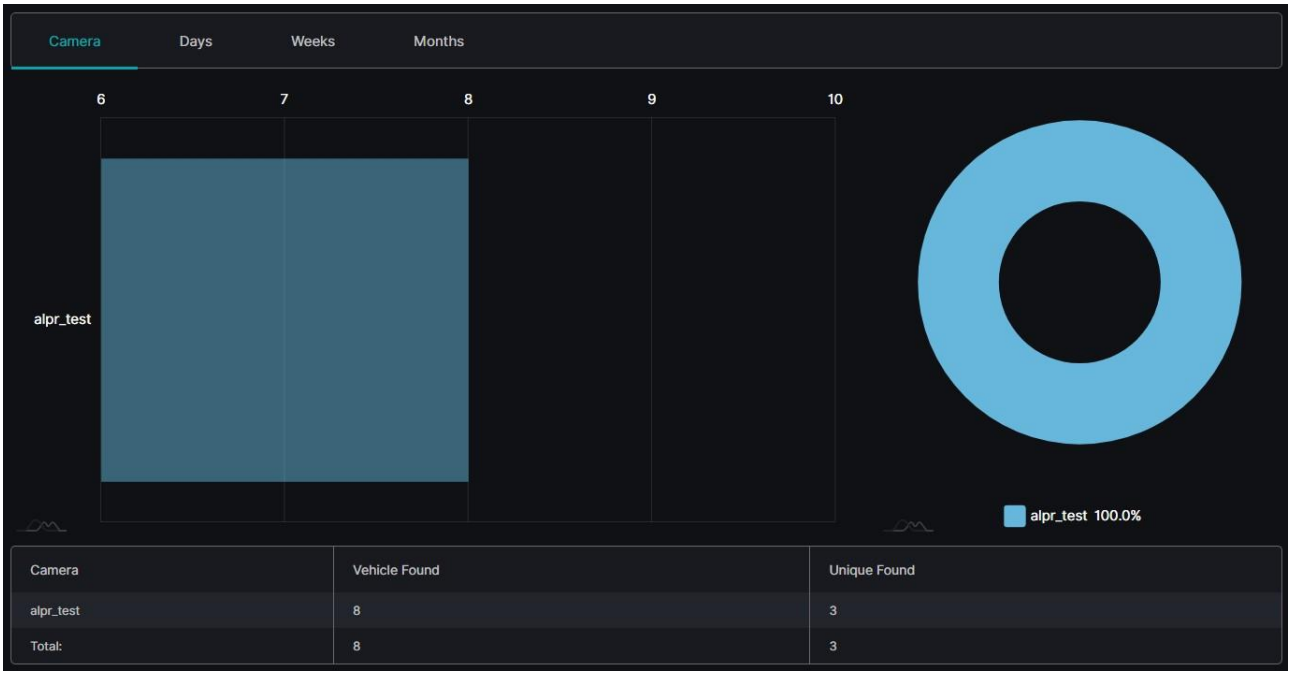


1. Filters to:
    a. Select the desired time frame to produce statistics
    b. Click the Camera parameter to choose the desired video analytics. In the pop-up window:
        i. Check the boxes next to the required video analytics and folders
        ii. Click the Select Video Analytics button
    c. Click the Filter button to start filtering
2. Tabs to filter statistics data by:
    a. Camera
    b. Days
    c. Weeks
    d. Months

> The Report tab opens with the Days tab by default.

Camera Tab

The Camera tab shows:



- Rectangular bars on the bar chart with lengths proportional to the vehicles from lists quantity detected by selected cameras
- Slices on the donut chart with the amount of the found by selected cameras vehicles from lists in percentage

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- Table columns by selected cameras, detected vehicles from lists, and unique vehicles (detected by the desired camera or by all cameras in general)

- Vehicle Found column counts every time the vehicle from the lists was detected by the camera.
- The Unique Found column counts only detected unique vehicle numbers from the lists. The unique vehicle number is counted only once for the selected time frame.

Days Tab

The Days tab shows:

Date	Added to List	Vehicle Found	Unique Found
31-03-2022	0	2	2
30-03-2022	0	6	3
23-02-2022	3	0	0
Total:	3	8	3

- Columns on the combo chart with heights proportional to the number of vehicles from the lists (scale with numbers to the left of the graph) detected within the required date
- Checkpoints on the combo chart by vehicles quantity (scale with numbers to the right of the graph) added to the list within the required date
- Slices on the donut chart with the amount of the total found and unique vehicles from lists in percentage
- Table columns by date, number of vehicles added to the lists, detected vehicles from lists, and unique vehicles (detected by the desired camera or by all cameras in general)

Weeks and Months Tab

The Weeks tab shows:

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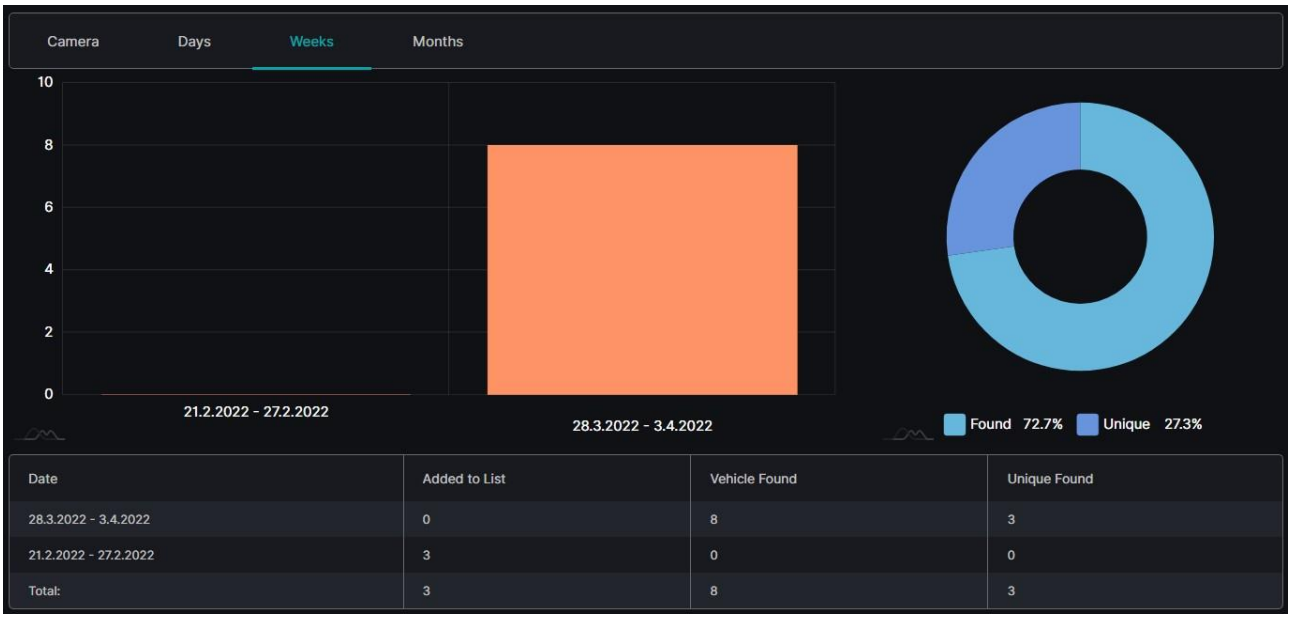

Date	Added to List	Vehicle Found	Unique Found
28.3.2022 - 3.4.2022	0	8	3
21.2.2022 - 27.2.2022	3	0	0
Total:	3	8	3

- Columns on the column chart with heights proportional to the number of vehicles from the lists detected within the required weeks
- Slices on the donut chart with the amount of the total found and unique vehicles from lists in percentage
- Table columns by weeks, number of vehicles added to the lists, detected vehicles from lists, and unique vehicles (detected by the desired camera or by all cameras in general)

- Hover the mouse over the graphs to see the object quantity and amount.
- The Months tab content differs with the usage of month time intervals instead of weeks.

LPR: Vehicle Statistics

This page describes the Vehicle Statistics item that allows viewing statistics from the selected video stream.

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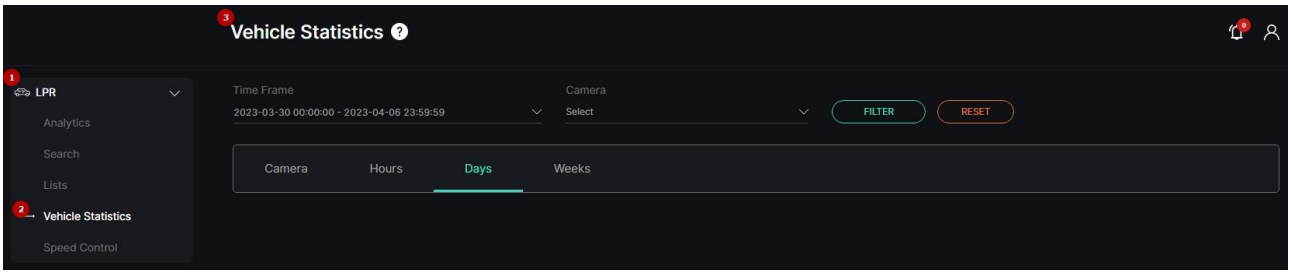
Overview

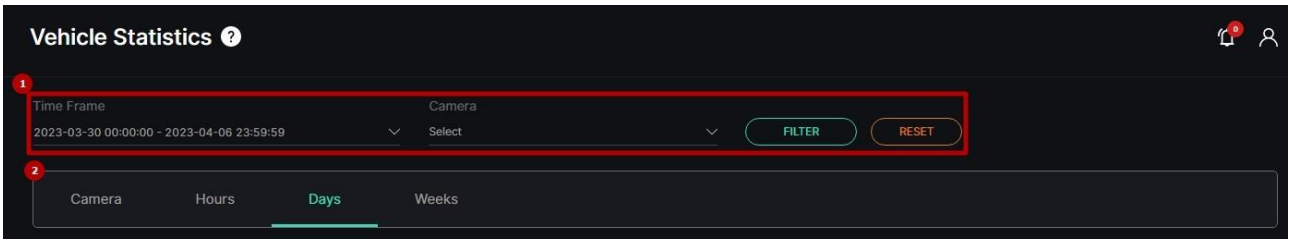
To open the Vehicle Statistics item, in the left menu:



1. Select LPR section
2. Choose Vehicle Statistics item
3. See statistics

Use and Functionality

The Vehicle Statistics functional menu includes:



1. Filters to:
    a. Select the desired time frame to produce statistics
    b. Click the Camera parameter to choose the desired video analytics. In the pop-up window:
        i. Check the boxes next to the required video analytics and folders
        ii. Click the Select Video Analytics button
    c. Click the Filter button to start filtering
2. Tabs to filter statistics data by:
    a. Camera
    b. Hours
    c. Days
    d. Weeks

The Vehicle Statistics item opens with the Days tab by default.

Camera Tab

The Camera tab shows:

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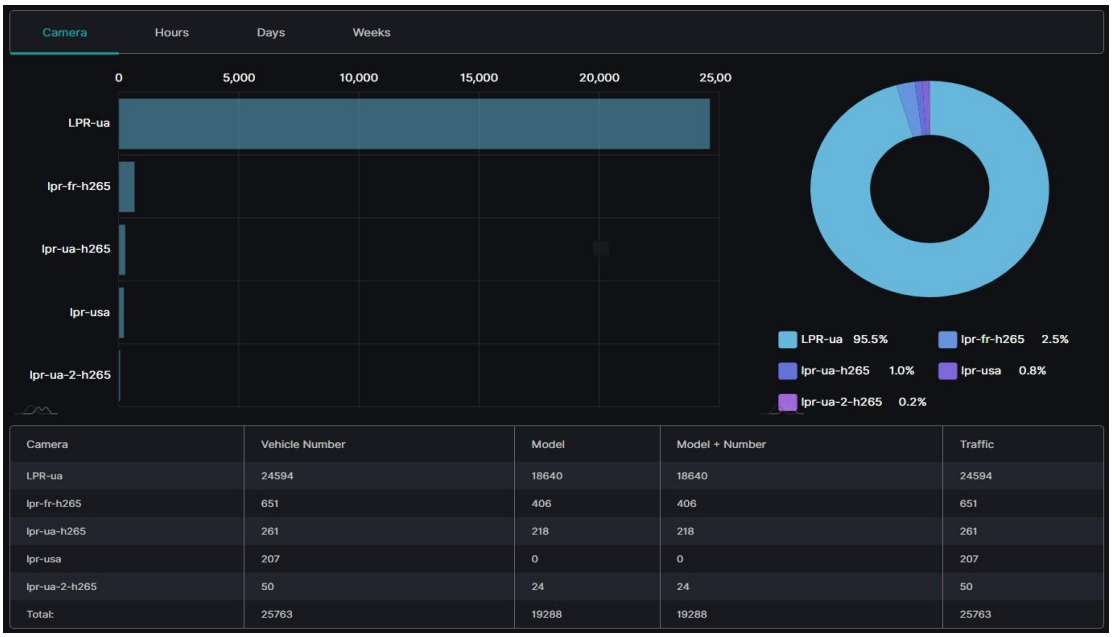


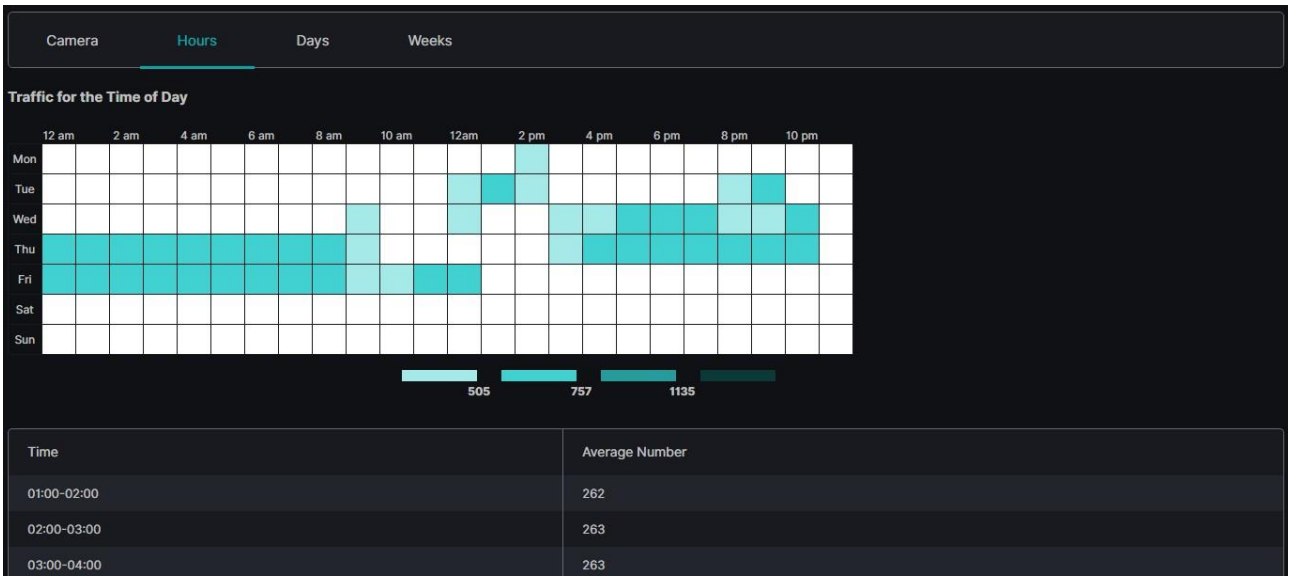
Camera	Vehicle Number	Model	Model + Number	Traffic
LPR-ua	24594	18640	18640	24594
lpr-fr-h265	651	406	406	651
lpr-ua-h265	261	218	218	261
lpr-usa	207	0	0	207
lpr-ua-2-h265	50	24	24	50
Total:	25763	19288	19288	25763

Rectangular bars on the bar chart with lengths proportional to the vehicle quantity detected by selected cameras
Slices on the donut chart with the amount of the found by selected cameras vehicles in percentage
Table columns by selected cameras, detected vehicle number and model, as well as their total number detected by the desired camera or by all cameras in general

Hover the mouse over the donut chart's slices to see the found vehicle quantity and amount by a required camera.

Hours Tab

The Hours tab shows:



Time	Average Number
01:00-02:00	262
02:00-03:00	263
03:00-04:00	263

- Table chart with the number of the vehicles by hours and days of a week
- Table with Time and Average Number columns

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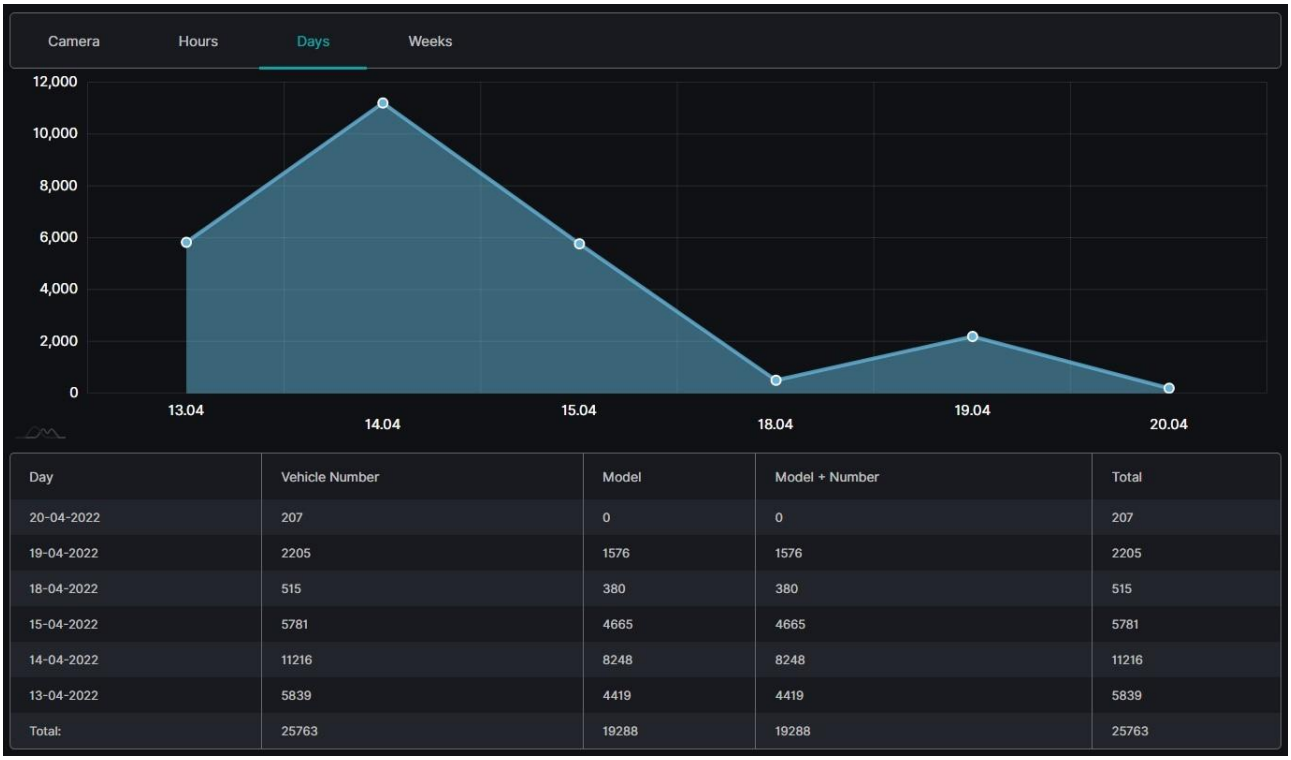
Hover the mouse over the colored squares to see the found vehicle quantity for the required time interval.

Days Tab

The Days tab shows:



Day	Vehicle Number	Model	Model + Number	Total
20-04-2022	207	0	0	207
19-04-2022	2205	1576	1576	2205
18-04-2022	515	380	380	515
15-04-2022	5781	4665	4665	5781
14-04-2022	11216	8248	8248	11216
13-04-2022	5839	4419	4419	5839
Total:	25763	19288	19288	25763

- Checkpoints on the area chart by found vehicle quantity and date
- Table columns by date, detected vehicle number and model, as well as their total number for a specific day or for a required time frame in general

Hover the mouse over the checkpoints to see the found vehicle quantity for a required date.

Weeks Tab

The Weeks tab shows:

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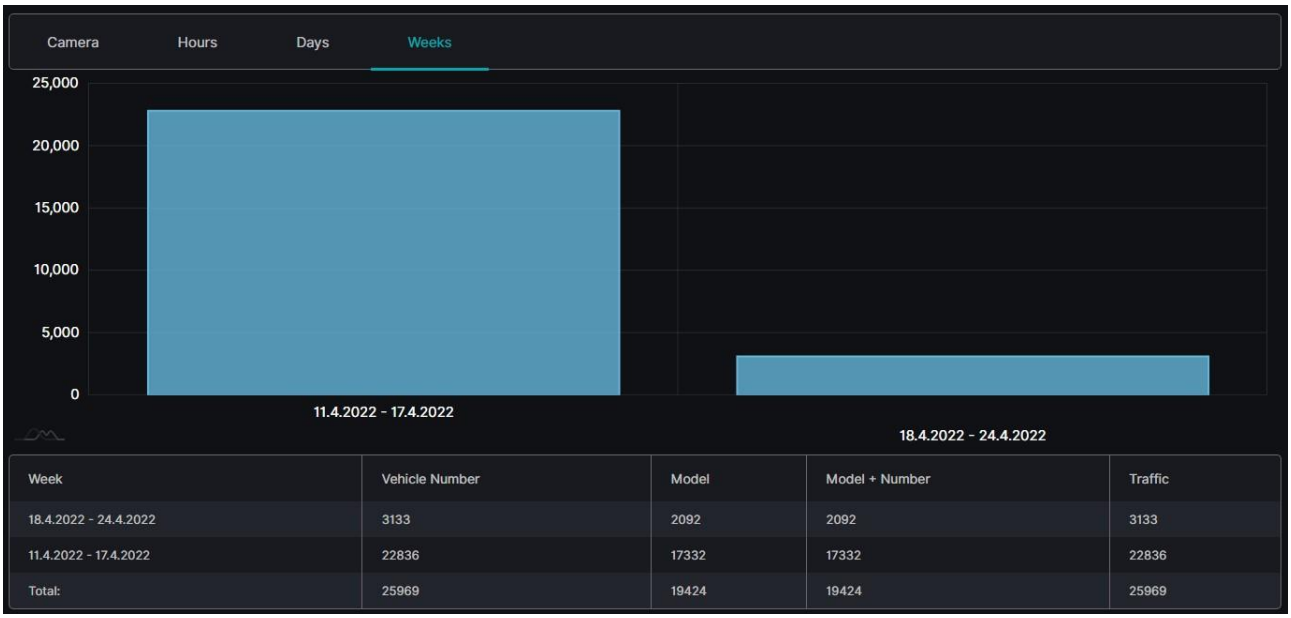

Week	Vehicle Number	Model	Model + Number	Traffic
18.4.2022 - 24.4.2022	3133	2092	2092	3133
11.4.2022 - 17.4.2022	22836	17332	17332	22836
Total:	25969	19424	19424	25969

- Columns on the column chart with heights proportional to the vehicle quantity detected during the required weeks
- Table columns by weeks, detected vehicle number and model, as well as their total number for a specific week or for a required time frame in general

Hover the mouse over the chart columns to see the found vehicle quantity for a required week.

LPR: Speed Control

This section describes the Speed Control item that allows managing speed rules and viewing events and statistics on the recognized vehicles' average speed by selected rules.

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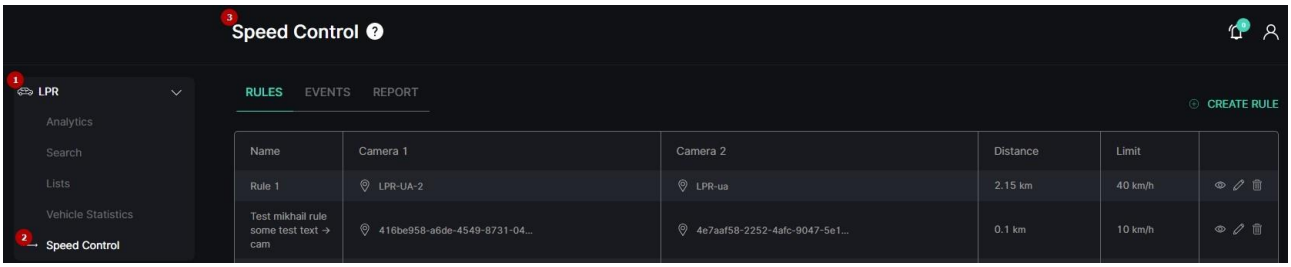
Overview

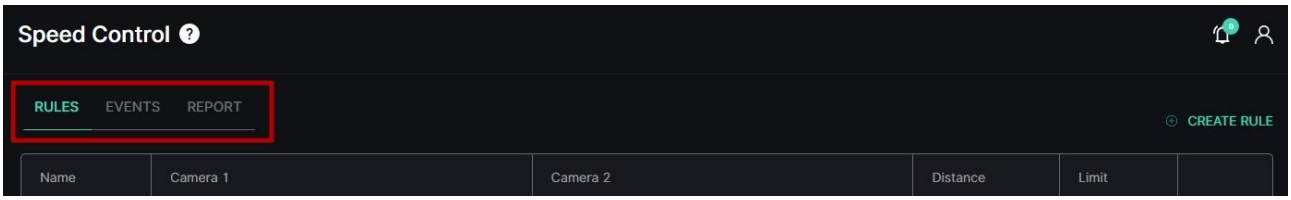
To open the Speed Control item, in the left menu:



1. Select LPR section
2. Choose the Speed Control item
3. See the speed control navigational menu

Use and Functionality

The Speed Control navigational menu consists of 3 tabs:



- Speed Control item opens with the Rules tab by default.
- The selected tab is always highlighted.

Speed Control: Rules

This page includes the Rules tab overview and options to set the rules for average vehicle speed counting.

Overview

Select the Rules tab in the tab's menu:

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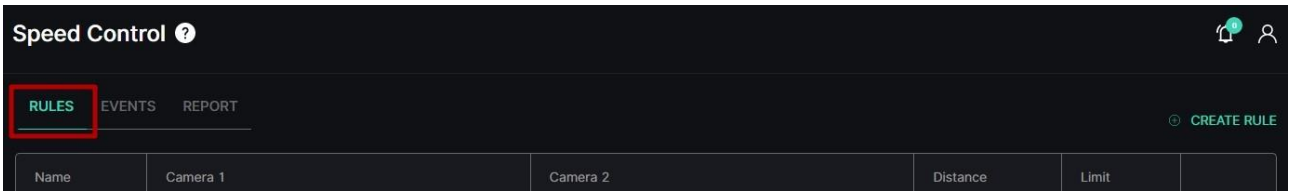
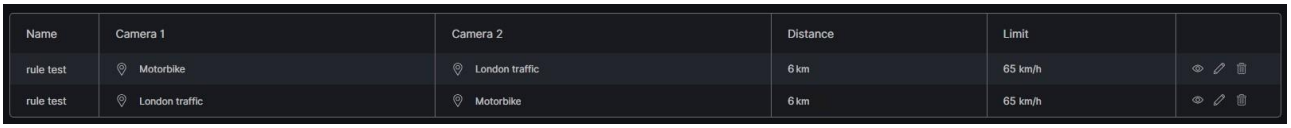


Use and Functionality

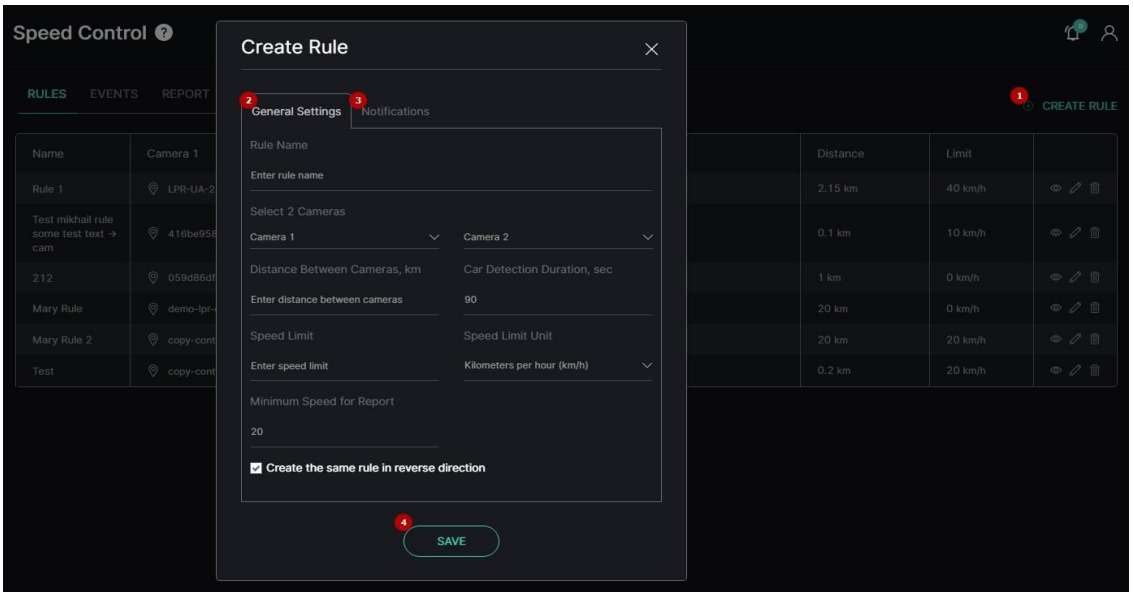
See the list of rules in the table. It holds:



- Rule name
- Pair of selected cameras for vehicle recognition
- Road distance between the selected cameras
- Speed limit, exceeding which triggers an event notification
- Toolbox includes:
    - View Events icon to see all events related to the selected rule
    - Edit icon to change the selected rule settings
    - Delete icon to remove the selected rule

Create Rule

To create a new rule:



1. Click the Create Rule button
2. Set the required parameters in the General Settings tab:
    a. Enter the new rule name
    b. Select cameras for vehicle recognition
    c. Enter the distance between the selected cameras in kilometers
    d. Enter the maximum time in seconds for which the vehicle is supposed to overcome the distance between the selected cameras
    e. Enter the vehicle speed limit, exceeding which triggers a speeding record in the Events tab

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f. Select speed units (km/h or mi/h) from the drop-down list
g. Enter the minimum vehicle speed for displaying in the Report tab
h. Check the Create the Same Rule in Reverse Direction box to create one extra rule with the same parameters but with the reverse route between the selected cameras

3. Check the Send Events to Event Manager box in the Notifications tab to allow the system to send all rule events notifications to the Event Manager and then to external resources
4. Click the Save button to apply settings

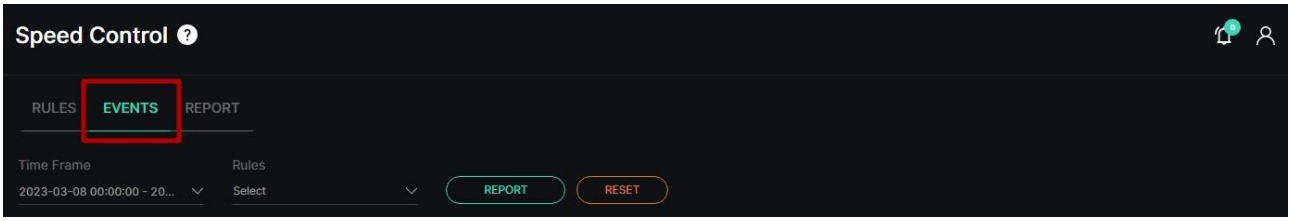
The Edit Rule pop-up window allows editing the same parameters, except for the Create the Same Rule in Reverse Direction checkbox.

Speed Control: Events

This page describes the Events tab that allows viewing the average speed of the recognized vehicles by the selected rule.

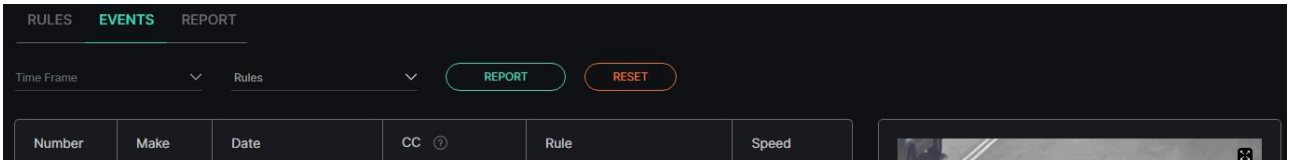
Overview

Select the Events tab in the tab's menu:



Use and Functionality

The Events tab functional menu allows to:



- Set the required time frame
- Select multiple rules from the drop-down list
- Click the Report button to start filtering
- Click the Reset button to clear the filters

Once selected and filtered, in the event notifications:

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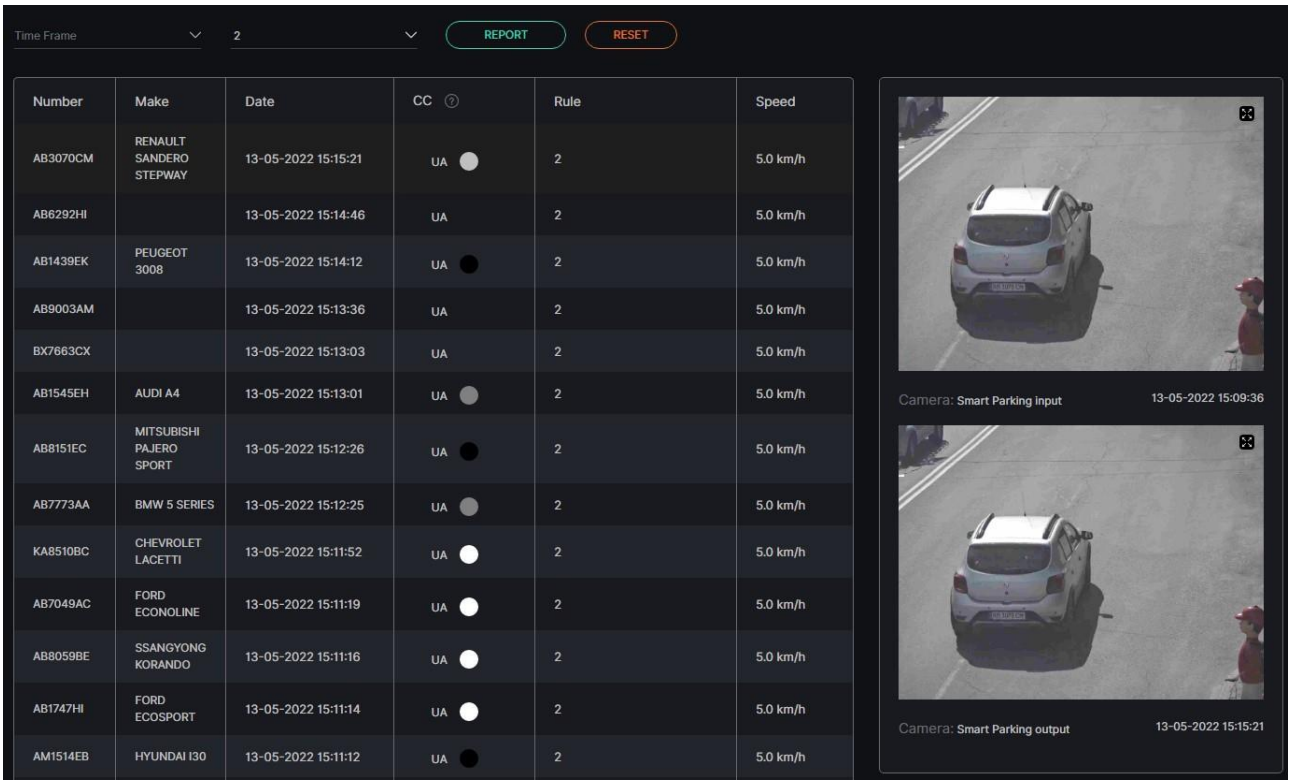


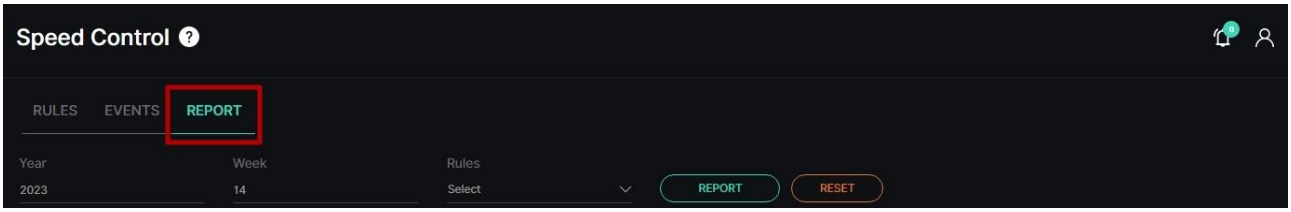
- View recognized vehicle data, date and time the vehicle has been recognized by the second selected camera in the rule, rule name, and average vehicle speed
- Click the row in the table with the desired license plate number to view the frame preview from the route entry and exit cameras in the selected rule
- Select the enlargement icon in the upper-right corner of the frame preview to open the image
- See the extended vehicle data in the pop-up window and save the image in the full-size

Speed Control: Report

This page describes the Report tab that allows viewing average speed statistics from the selected rule.

Overview

Select the Report tab in the tab's menu:



Use and Functionality

The Report tab functional menu includes:

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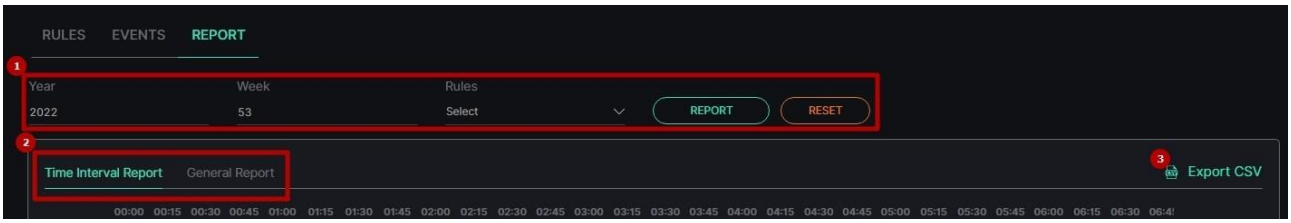

1. Filters to:
    a. Enter the required year and week
    b. Select multiple rules from the drop-down list
    c. Click the Report button to start filtering
    d. Click the Reset button to clear the filters
2. Tabs to display statistics in:
    a. Time Interval Report
    b. General Report
3. Export choice to download the speed report in the CSV format

- The Time Frame filter is enabled only for the General Report tab.
- The Export option is available only for the Time Interval Report tab.

Time Interval Report Tab

The Time Interval Report shows:

Period		00:00	00:15	00:30	00:45	01:00	01:15	01:30	01:45	02:00	02:15	02:30	02:45	03:00	03:15	03:30	03:45	04:00	04:15	04:30	04:45	05:00	05:15	05:30	05:45	06:00	06:15	06:30	06:45	07:00	07:15	07:30	Total
Mon	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Tue	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Wed	#Cars	10	34	10	54	43	10	55	70	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Thu	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Fri	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Sat	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8
Sun	#Cars	10	34	10	54	43	10	55	4	54	10	65	66	23	22	11	10	76	76	89	98	45	43	23	13	15	72	83	25	30	25	23	3 543
	Avg Speed (km/h)	36	34	36	67	45	46	36	37	37	39	40	35	36	38	36	36	36	33	40	37	36	36	39	39	35	36	35	35	43	38	39	36,8

- Table chart with the number of vehicles and average speed by 15 minutes time intervals and days of a week
- Table with columns by 15 minutes time intervals and rows by days of the week, number of vehicles, and average speed

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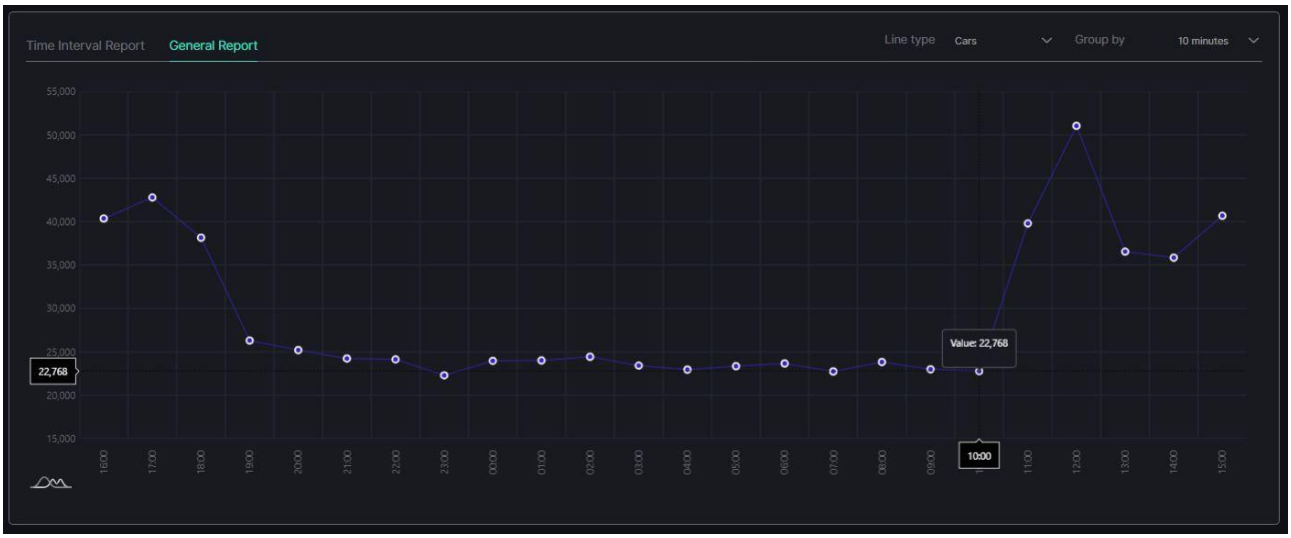
General Report Tab

The General Report allows to:



- Select the Line Type parameter from a drop-down list that the curve displays on the graph:
  - Average speed (km/h)
  - Average speed (mi/h)
  - Car's quantity
- Select the desired time intervals from a Group By drop-down list to set the intervals between the graph breakpoints
- Hover the mouse over the desired breakpoint on the graph to view the specific statistics data

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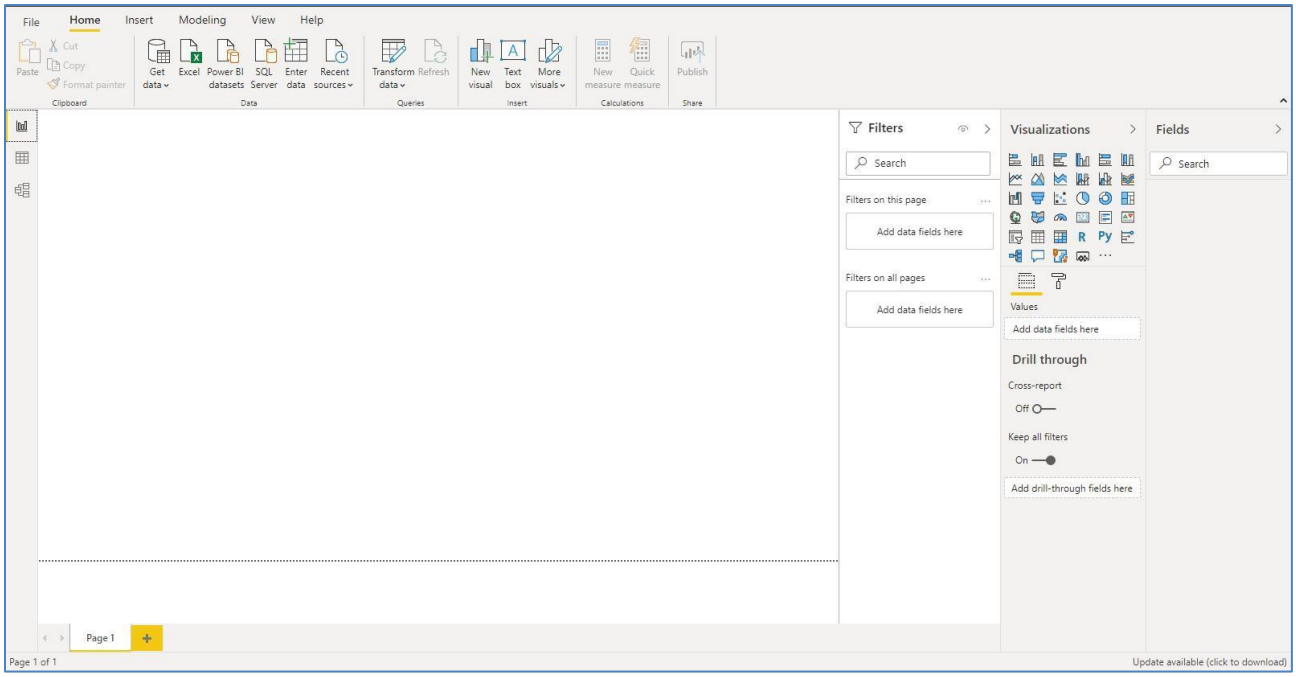
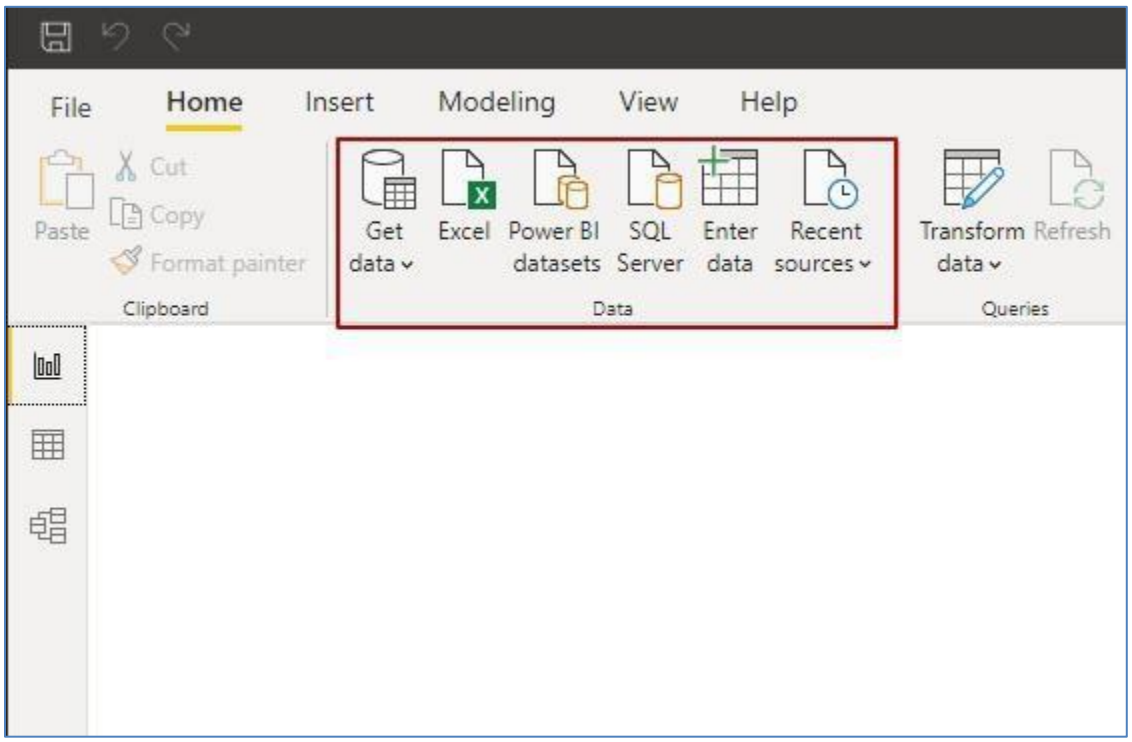
Microsoft Power BI

Data Acquisition

To start working with Power BI you need to load data according to which it will be possible to create reports.



For this purpose find the section "Data" in the toolbar.



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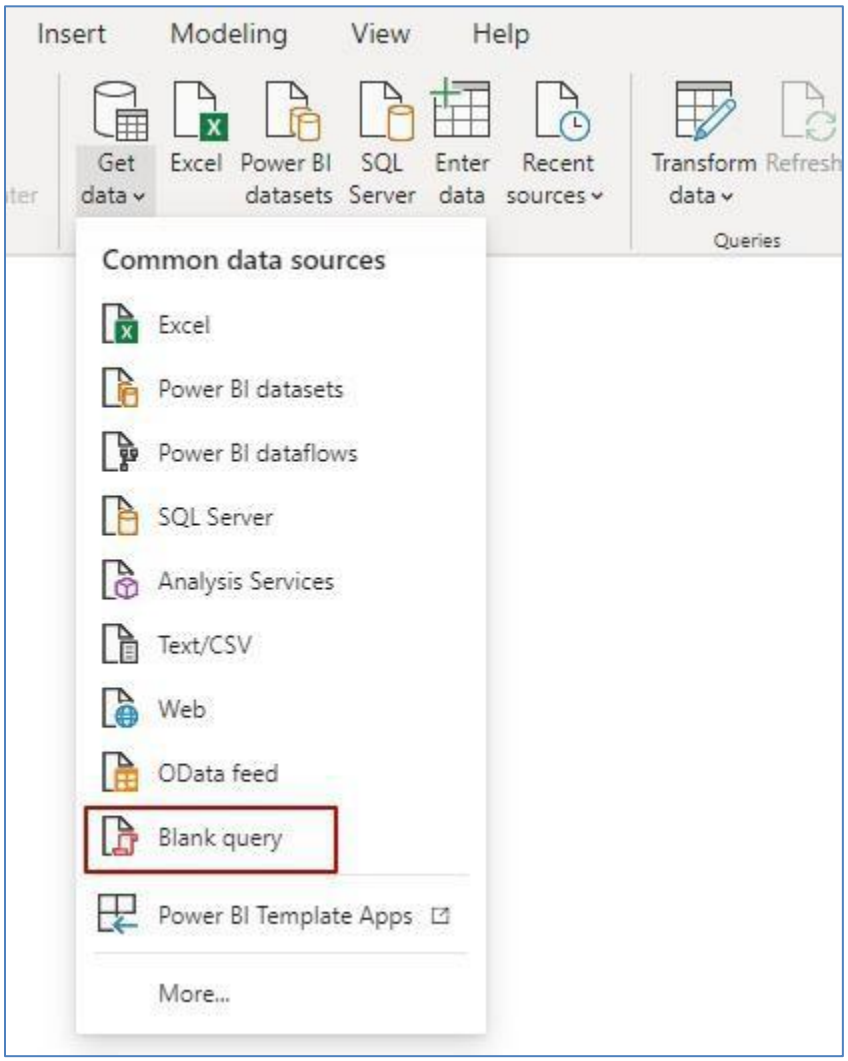
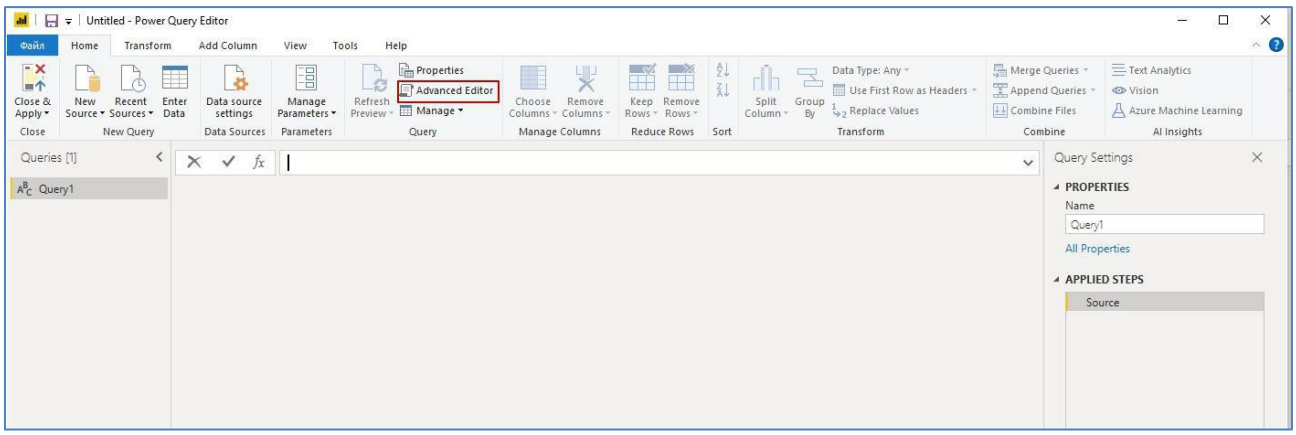
Press on "Obtain data" and choose "Empty request".



In the opened window press "Advanced Editor".



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Enter the request:

```
let
    Source = Web.Contents("[redacted]",
    [
        Headers=[
            #"Method"="POST",
            #"Content-Type"="application/json",
            #"Authorization"="Bearer [redacted]"
        ],
        Content=Text.ToBinary("{
                                ""query"":""query {
                                    traffic(start: \""24-05-2020 00:00:00\"", end: \""24-06-2020 00:00:00\"", vaId: 0) {
                                        date\n
                                        count\n
                                        type\n}\n
                                    }\n""
                            }")
    ]
    ),
    #"JSON" = Json.Document(Source),
    data = JSON[data],
    traffic = data[traffic],
    #"Converted to Table" = Table.FromList(traffic, Splitter.SplitByNothing(), null, null, ExtraValues.Error),
    #"Expanded Column1" = Table.ExpandRecordColumn(#"Converted to Table", "Column1", {"date", "count", "type"}, {"date", "count", "type"}),
    #"Calculated Absolute Value" = Table.TransformColumns(#"Expanded Column1",{{"count", Number.Abs, type number}}),
    #"Reordered Columns" = Table.ReorderColumns(#"Calculated Absolute Value",{"date", "type", "count"}),
    #"Grouped Rows" = Table.Group(#"Reordered Columns", {"date", "type"}, {{"Count", each List.Sum([count]), type number}}),
    #"Changed Type" = Table.TransformColumnTypes(#"Grouped Rows",{{"date", type datetime}})
in
    #"Changed Type"
```

For the creation of request the Web.Contents function is used ()

```
let
    Source = Web.Contents("[redacted]",
    [
```

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It is necessary to specify by the first argument of this function the resource from which data will be loaded. The template looks so:

```
"http://<server_address>:<port_number>/api/graphql"
```

On the screenshot, the example of input of the address is shown above.

```
Headers=[
    #"Method"="POST",
    #"Content-Type"="application/json",
    #"Authorization"="Bearer [redacted]"
],
```

The following argument which we give to functions is in braces "[]" after the comma.

In the beginning, it is necessary to prescribe Headers of HTTP of requests:
#"Method" – this field needs to appropriate POST value
"Content-Type" – this field needs to appropriate application/json value.
"Authorization" – for authorization is used by Bearer authorization, the token can be received

it is possible in the system. For this purpose come into Settings-> the General and copy API Token,
then it needs to be entered.

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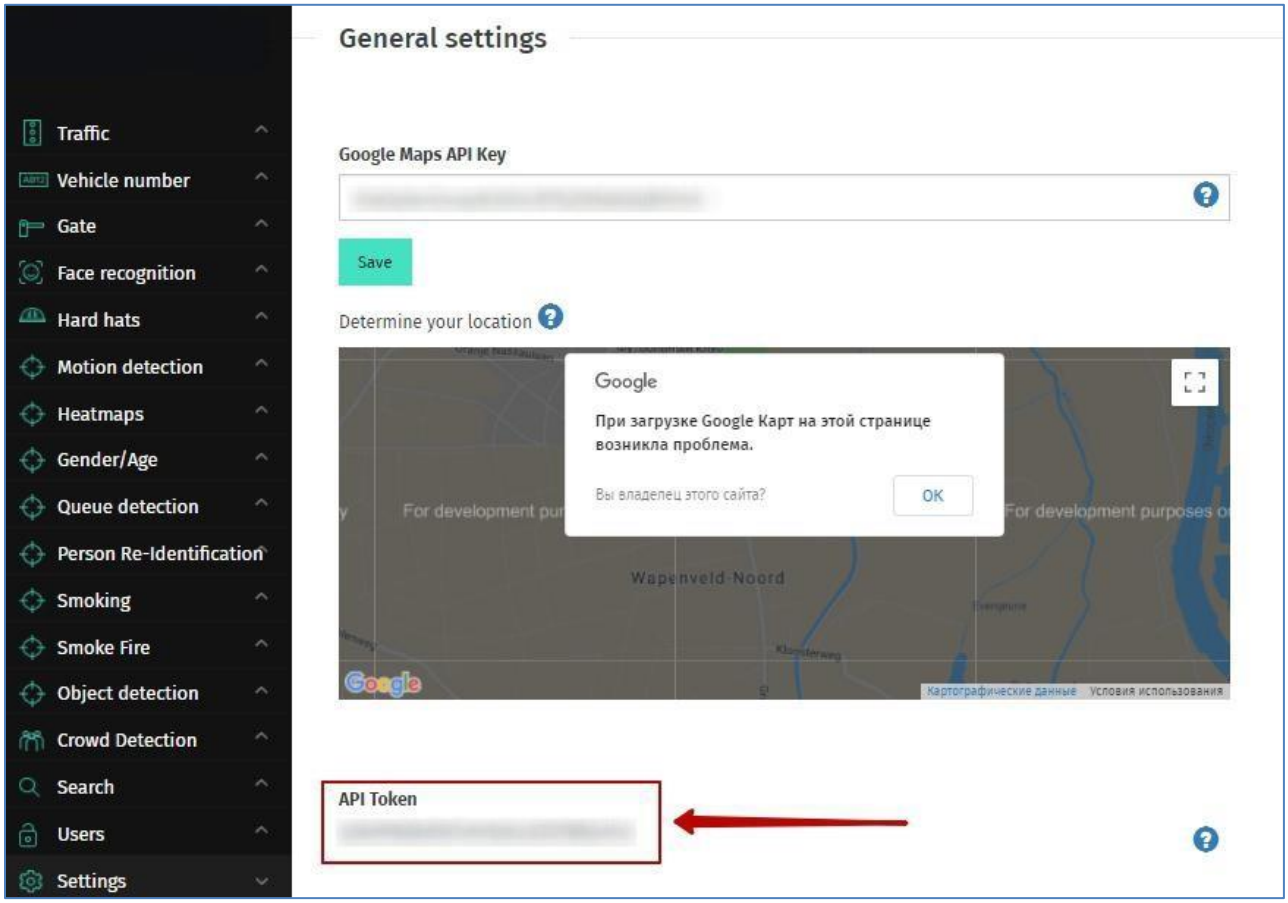


```
Content=Text.ToBinary("{
                        ""query"":""query {
                            traffic(start: \""24-05-2020 00:00:00\"", end: \""24-06-2020 00:00:00\"", vaId: 0) {
                                date\n
                                count\n
                                type\n}\n
                            }\n""
                    }")
]
),
```

Further, it is necessary to create a request. The problem of the request is to choose the necessary data for work. The request is written in the GraphQl language. The template of the request looks so:

```
Content=Text.ToBinary (" {
""query"": ""query { <type of request> {
<pole1>/n
<pole2>/n
.....
}\\n""
}")
```

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Parameters:

PARAMETERS	DESCRIPTION
start	is the beginning of the temporary period on which selection of records undertakes. Accepts the Date type start registers in the format ": \""DD-MM-GGGG of ChCh: MM: CC \"""
end	is the end of the temporary period on which selection undertakes. Accepts the Date type start registers in the format ": \""DD-MM-GGGG of ChCh: MM: CC \"""
vaId	is an analytics number. To choose everything analysts it is possible to specify 0 value or not to specify this parameter. Accepts the Int type and vaId registers in the format ": <id of analytics (stream)>".
streamId	is a number of the camera. To choose all cameras it is possible to specify 0 value or not to specify this parameter. Accepts the Int type and streamId registers in the format ": <id of the stream>".
alerted	accepts Boolean values. In the case of exposure of true value, only records of persons on which there were notices recover (those in the Events tab in the system). At the exposure of false values, all records of persons will be sent. alerted registers in the format ": <Boolean value>".
limit	is used for the restriction of a records number. In this parameter, the maximum number of records which will be returned by request is entered. If to pass this parameter, then will return 100 records. Accepts the int type and limit registers in the format ": <number of records>"
offset	allows passing the specified quantity of lines before removing the results of the request. Accepts the int type and offset registers in the format ": <the number of the missed records>".

Types of requests are given below:

```
type Query {

traffic (start: Date, end: Date, vaId: Int = 0): [Traffic]

alpr (start: Date, end: Date, streamId: Int = 0): [PlateStat]

alprAlerts (start: Date, end: Date, streamId: Int = 0): [AlertStat]

person (start: Date, end: Date, streamId: Int = 0, alerted: Boolean = false, limit:
Int = 100, offset:
Int = 0): [Person]

personNotification (start: Date, end: Date, limit: Int = 100, offset: Int = 0):
[PersonNotification]

}
```

In Square brackets after each type of request types which this request addresses are shown. In each type the set of fields that can be used. To choose the necessary fields it is necessary to specify them by the principle that is stated above.

Available fields by types of request are given below:

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```
scalar Date
enum TrafficType {
people
bike
car
motorcycle
bus
truck
}
```

```
enum Gender {
male
female
}
```

```
enum Gender {
male
female
}
```

```
type Traffic {
va_id: Int
date: Date
line: Int
count: Int
type: TrafficType
direction: Int
directionOne: Int
directionTwo: Int
}
```

```
type PlateStat {
stream_id: Int
date: Date
total: Int
countNumbers: Int
countMakeModel: Int
countBoth: Int
}
```

```
type AlertStat {
key: String
total: Int
createdCount: Int
foundUnique: Int
foundCount: Int
closedCount: Int
}
```


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```
type Person {
alerted: Boolean
streamId: Int
date: Date
age: String
gender: Gender
faceImage: String
frameImage: String
box: String
}
```

```
type PersonNotification {
name: String
age: String
gender: Int
distance: Float
date: Date
status: Int
box: String
streamId: Int
detected: String
detectedFrame: String
detectedObject: String
}
```

```
    #"JSON" = Json.Document(Source),
    data = JSON[data],
    traffic = data[traffic],
    #"Converted to Table" = Table.FromList(traffic, Splitter.SplitByNothing(), null, null, ExtraValues.Error),
    #"Expanded Column1" = Table.ExpandRecordColumn(#"Converted to Table", "Column1", {"date", "count", "type"}, {"date", "count", "type"}),
    #"Calculated Absolute Value" = Table.TransformColumns(#"Expanded Column1",{{"count", Number.Abs, type number}}),
    #"Reordered Columns" = Table.ReorderColumns(#"Calculated Absolute Value",{"date", "type", "count"}),
    #"Grouped Rows" = Table.Group(#"Reordered Columns", {"date", "type"}, {{"Count", each List.Sum([count]), type number}}),
    #"Changed Type" = Table.TransformColumnTypes(#"Grouped Rows",{{"date", type datetime}})
in
    #"Changed Type"
```

In the following part, it is necessary to create the received JSON in the table with which Power will be ready to work. The code is written in the Power Query M language. The Power Query M language

User Guide you can find following the link: https://docs.microsoft.com/ruru/powerquery-m/

Principle of writing:

#"<name" – the name of the field is written in such format. The name can be any, but it is desirable that it somehow described content. Everything written in such a format influences the final table. The value after the sign "=" is appropriated to Paul. For values it is possible to use ready functions of the Power Query M language.

#"JSON" = Json.Document(Source),
Data = (JSONdata)
traffic = data(traffic)

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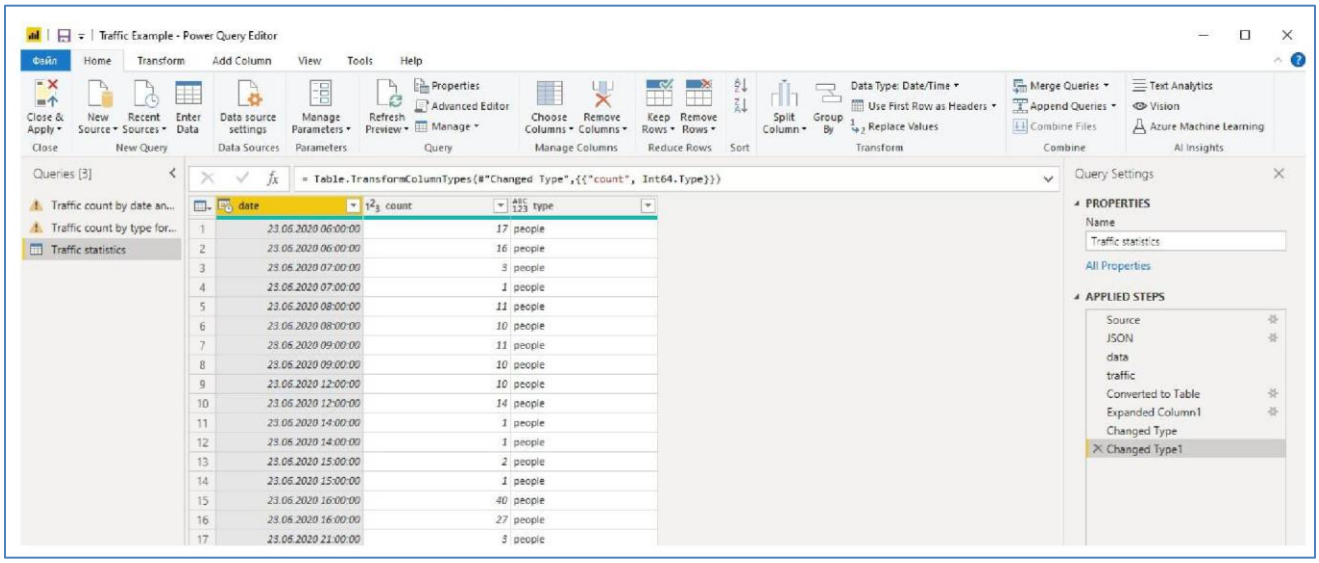
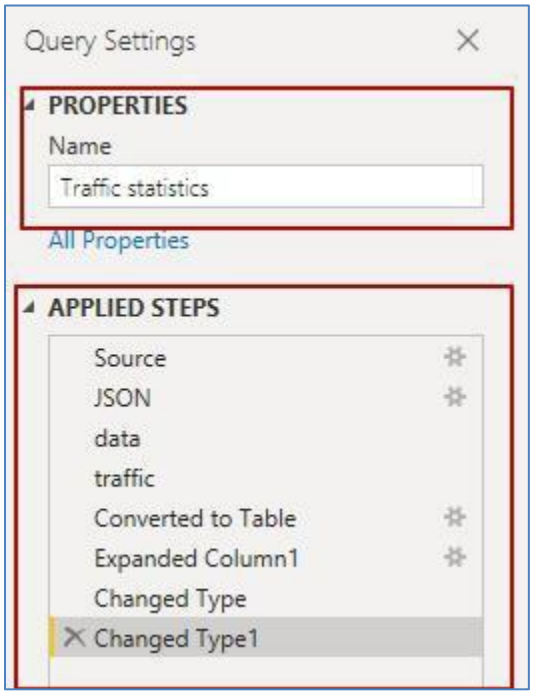
In the code above, the converted to the JSON document is described.

Everything that goes below is forming of the table with which Power bi can work. After input of request press the button "Ready".

In the editor, the table with data will appear.



In the right part, you can change the parameters of the request.
In Properties, you can change the name.
To add the description of the request press "All properties".
In "The applied steps" you can see all changes that happened to the table.
For this purpose that you will see the condition of the table on the certain step press it.



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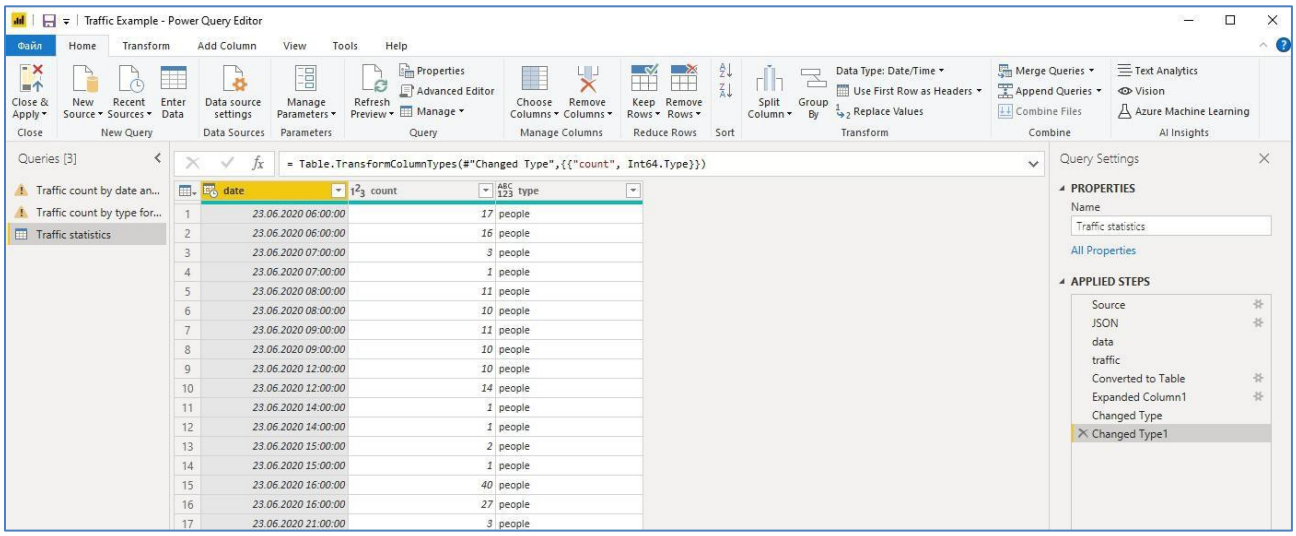
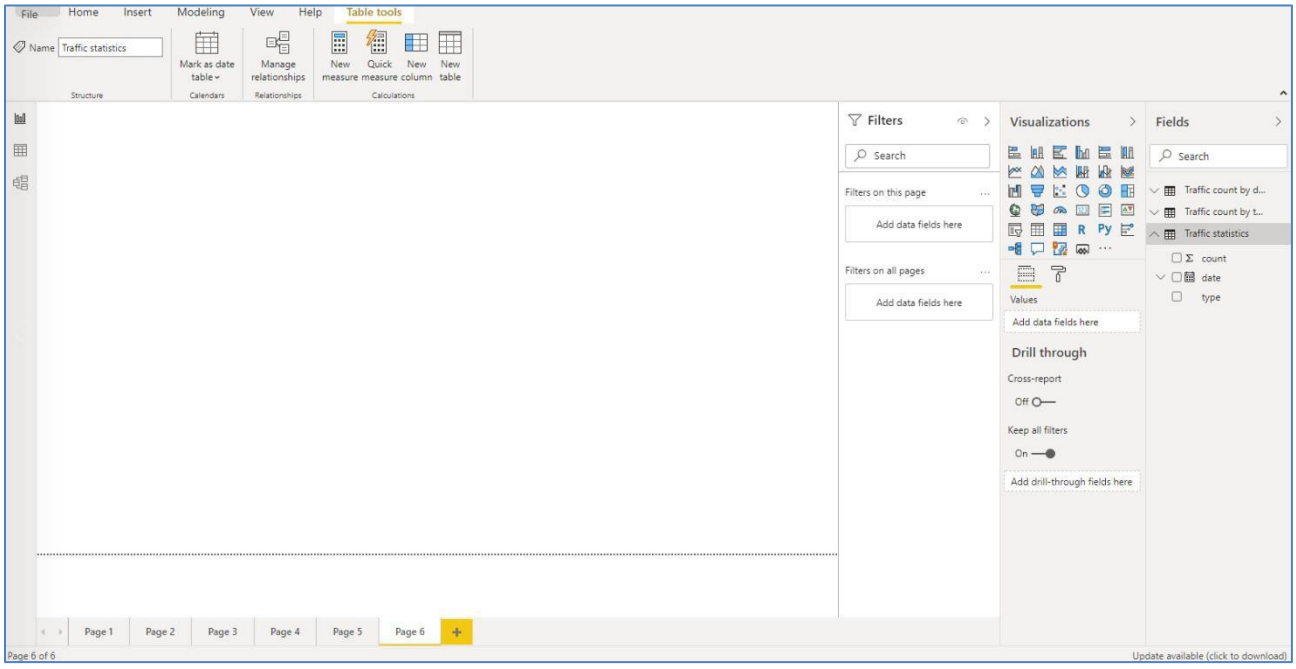
To keep the obtained data, press "Close and Apply" in the toolbar:



Creation of Visual Elements

After closing the editor you will pass to the page of creation of the report. After the successful request fields will be displayed in the right part of the area.



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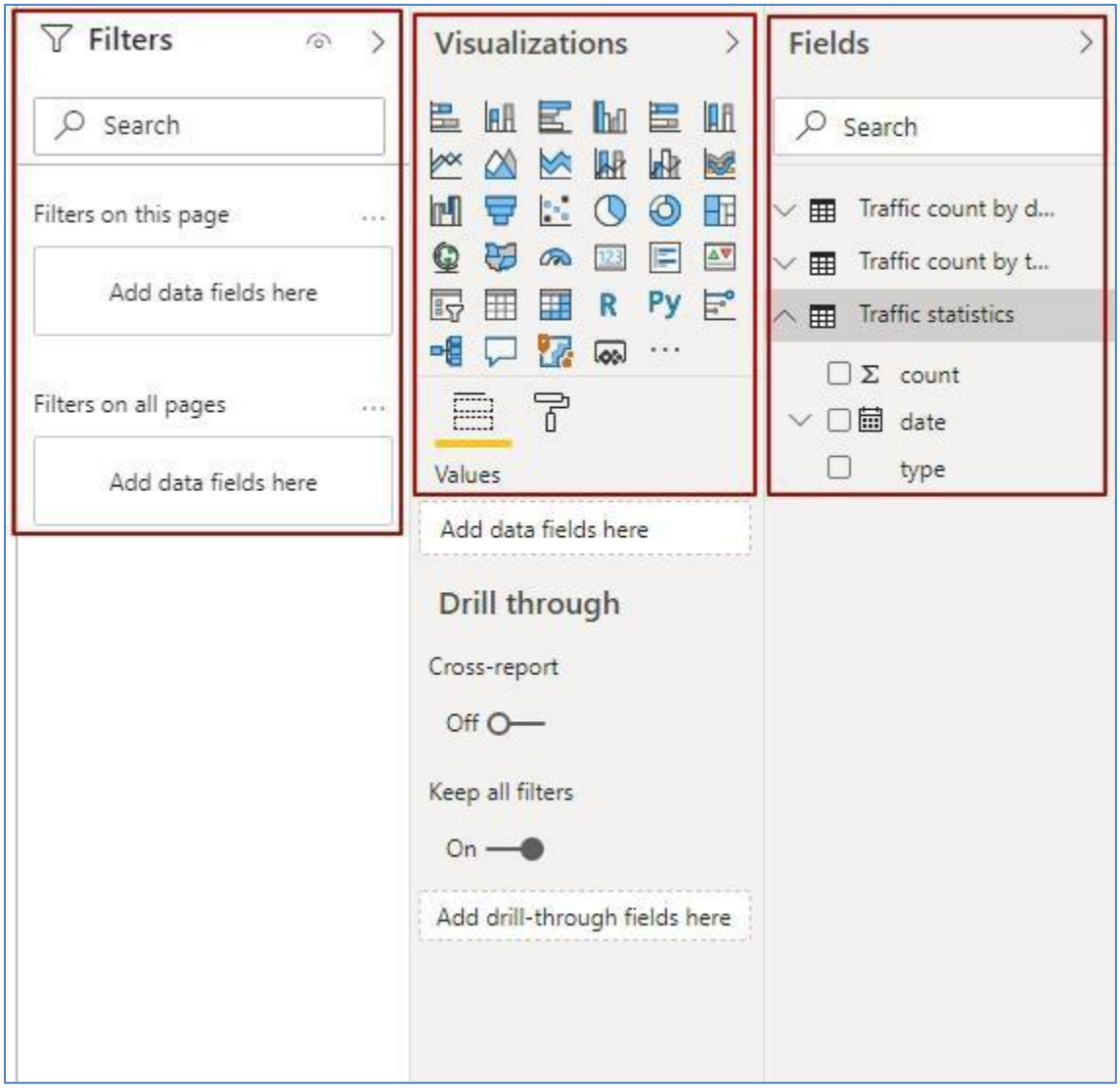
For the creation of the chart, it is necessary to choose in the section visualization the visual element (the chart, the schedule, the histogram) and to note fields that shall be displayed in the visual element. Undressed filters create the condition for the choice of elements – it allows to reduce the number of elements for display.



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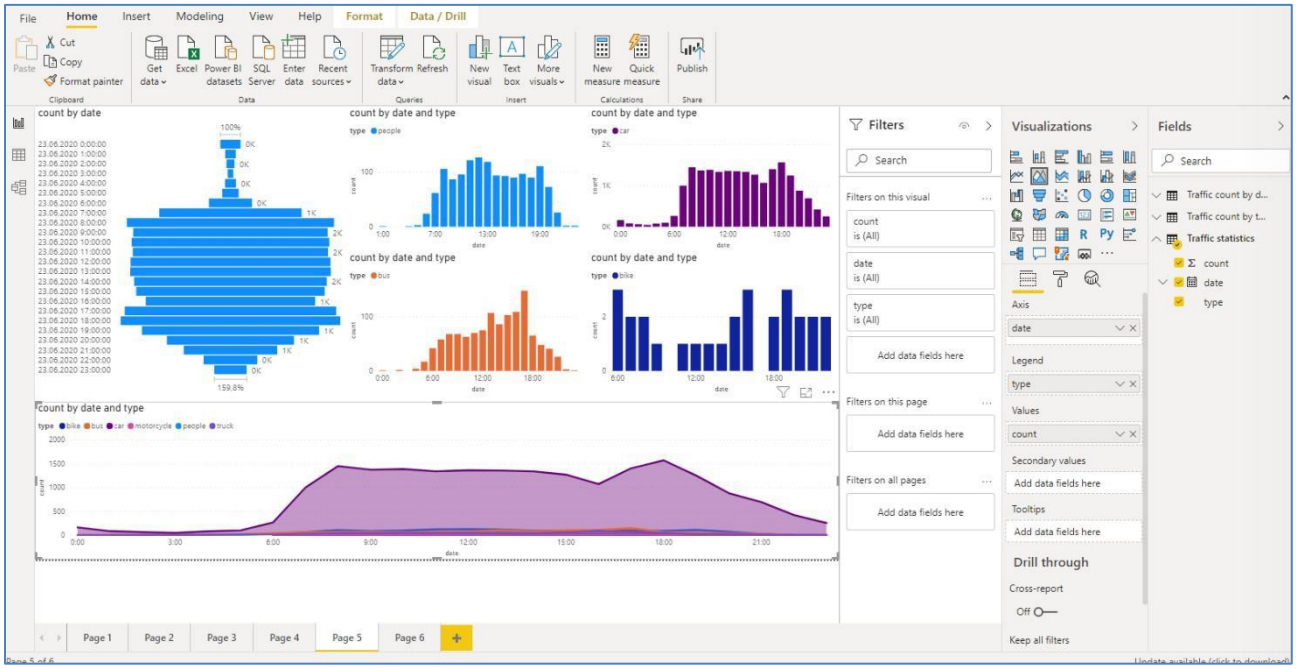
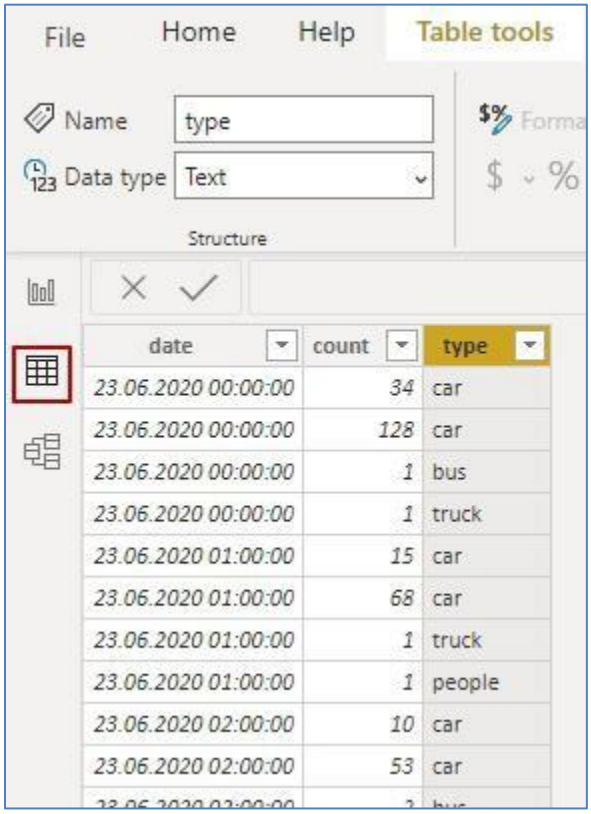
After the choice of the visual element, it will appear in the working area. After the selection of fields and filtration, the visual element will display data in the necessary format.



For data table viewing, execute the transition to the page of data having pressed the badge in the left part of the screen:



date	count	type
23.06.2020 00:00:00	34	car
23.06.2020 00:00:00	128	car
23.06.2020 00:00:00	1	bus
23.06.2020 00:00:00	1	truck
23.06.2020 01:00:00	15	car
23.06.2020 01:00:00	68	car
23.06.2020 01:00:00	1	truck
23.06.2020 01:00:00	1	people
23.06.2020 02:00:00	10	car
23.06.2020 02:00:00	53	car

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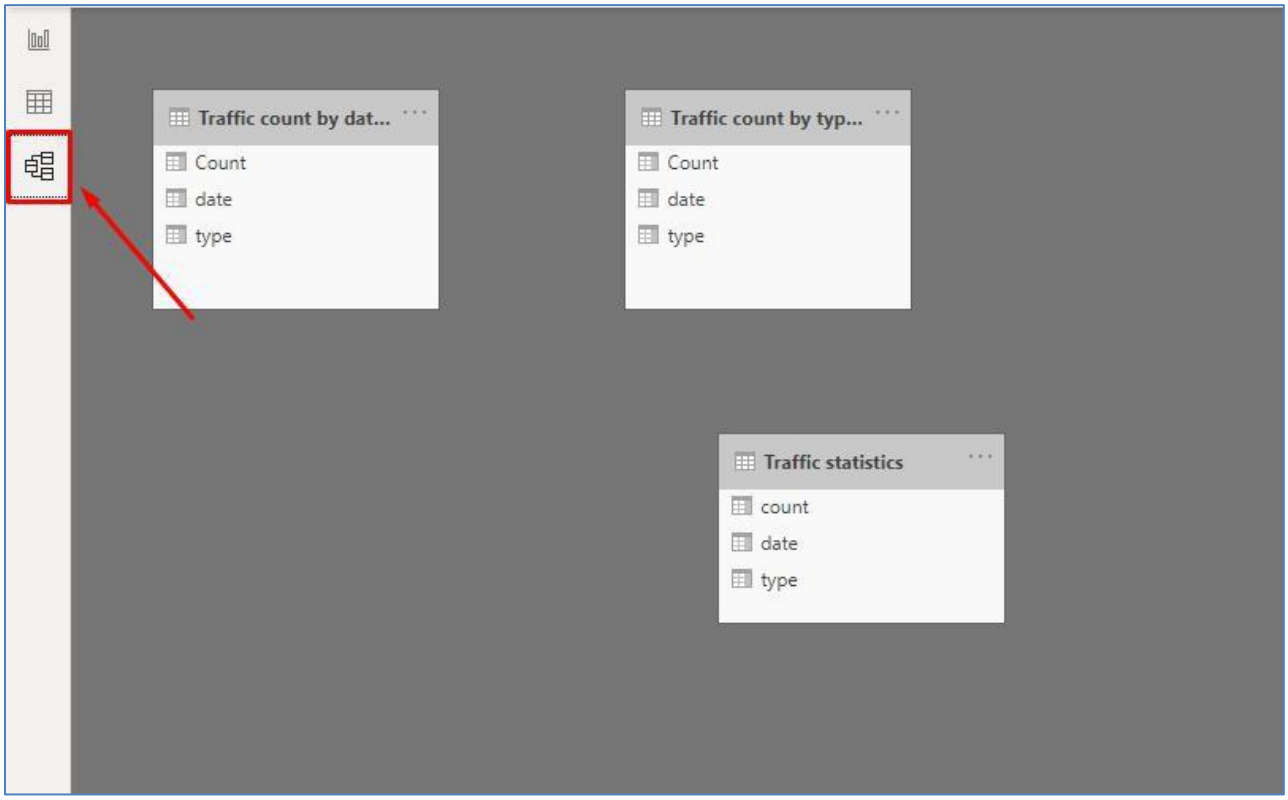
Having pressed icons opening of the list in the name of fields you can choose necessary data and sort them.

date	type	count
23.06.2020 00:00:00	car	34
23.06.2020 00:00:00	car	128
23.06.2020 00:00:00	bus	1
23.06.2020 00:00:00	truck	1
23.06.2020 01:00:00	car	15
23.06.2020 01:00:00	car	68
23.06.2020 01:00:00	truck	1
23.06.2020 01:00:00	people	1
23.06.2020 02:00:00	car	10
23.06.2020 02:00:00	car	53
23.06.2020 02:00:00	bus	2
23.06.2020 03:00:00	car	9
23.06.2020 03:00:00	car	36
23.06.2020 03:00:00	truck	1

To prescribe communication between tables, pass to the page of model, having pressed the icon in the left part:



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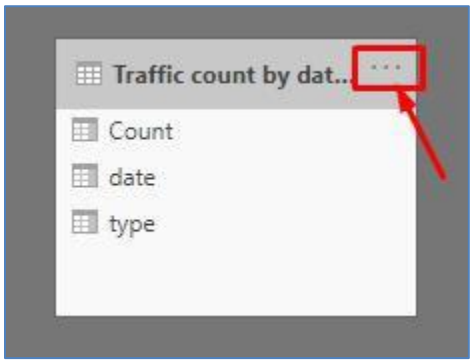
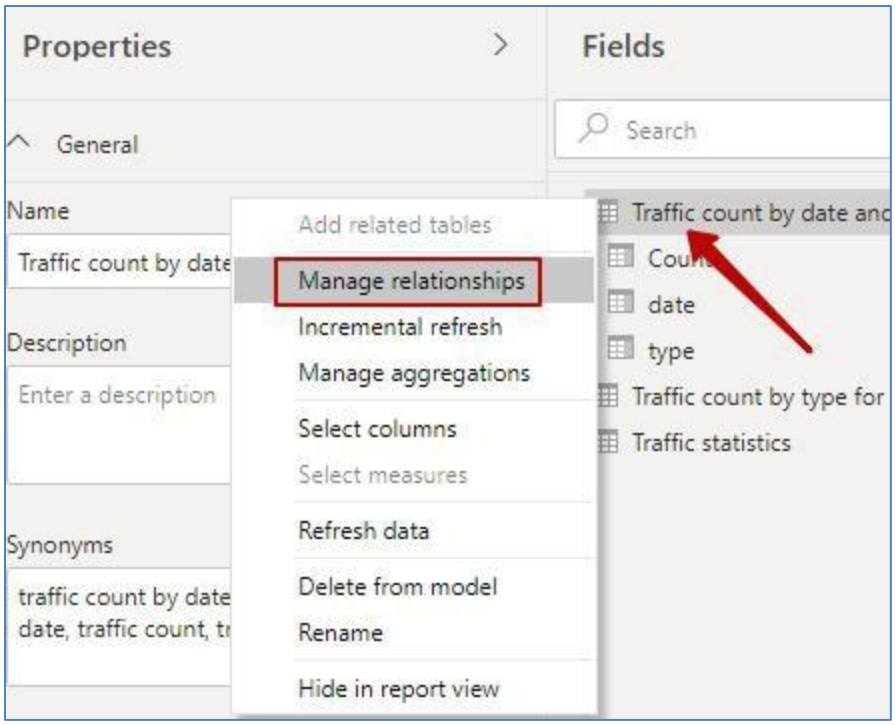
To open the window creation of communication:

1. Press the badge at the top of the table or in the partition of the field to right-click on the name of the table.



2) Press "Manage relationships".



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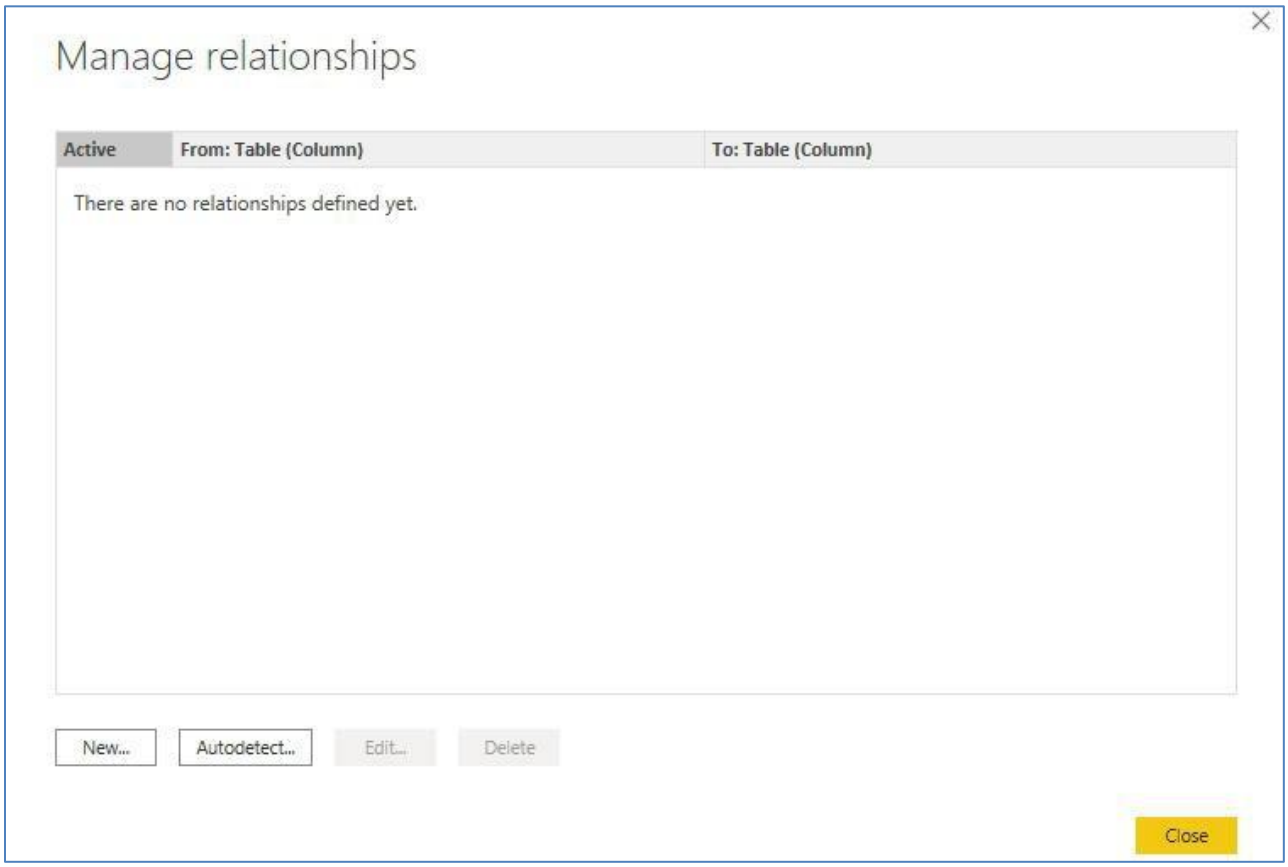
3) In the opened window press "Create communication". In this window, all existing communications will be shown.



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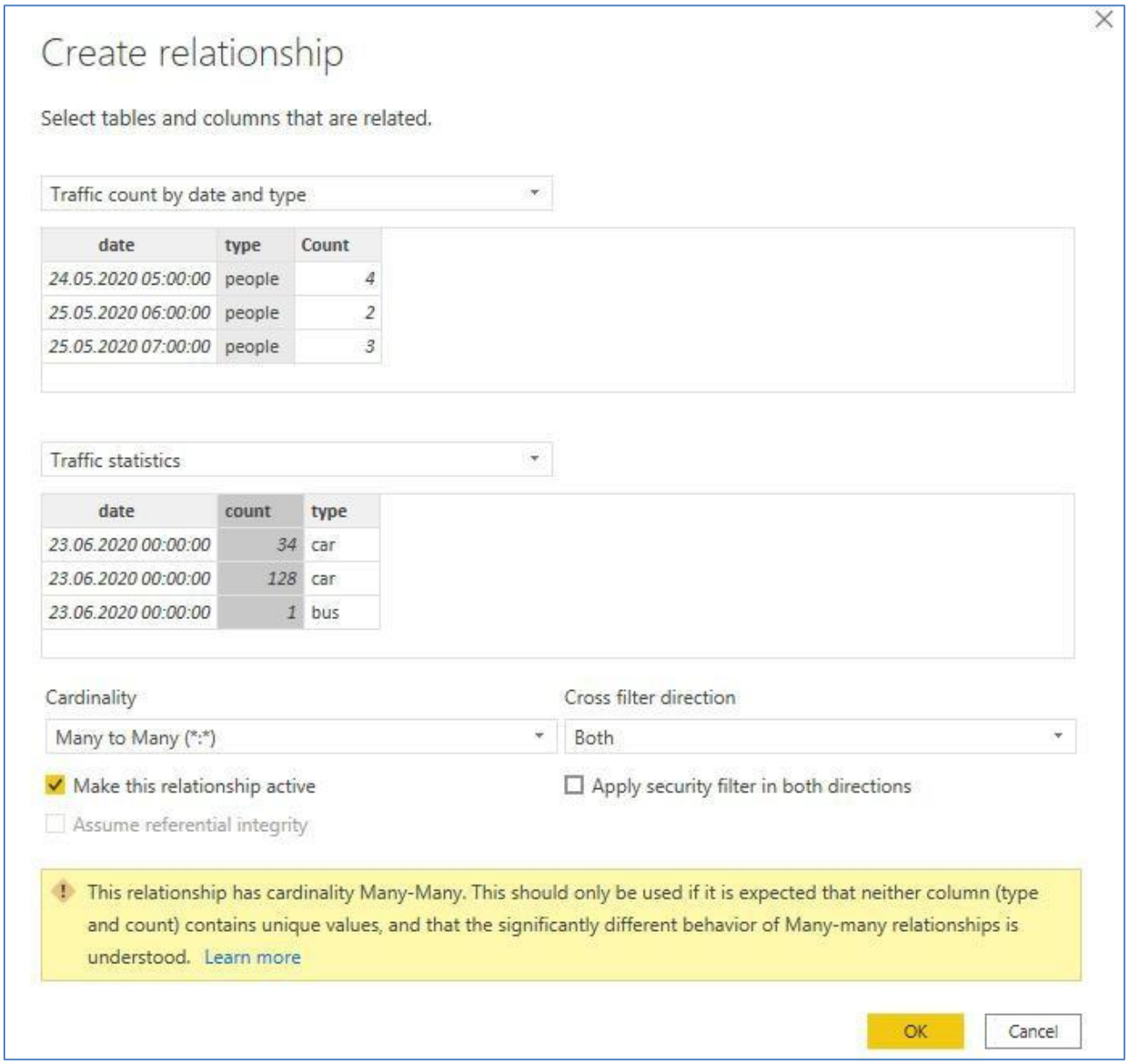
4) Choose necessary tables, specify fields and frequency rate. Press "Ok".



If everything is made correctly, then communication between tables will appear.

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