AXIS License Plate Verifier

User manual

About the application

When installed on a compatible Axis camera, AXIS License Plate Verifier enables vehicles to access areas such as parking lots. The application reads the license plate captured by the camera and verifies it against an allowlist or blocklist stored in the camera.

Typical scenarios for AXIS License Plate Verifier:

-
-
-

Requirements

The application can be installed in compatible Axis network video devices that support AXIS Camera Application Platform. A complete list of compatible devices and firmware versions is available at *axis.com/products/axis-license-plate-verifier/support-and-documentation*

Find the device on the network

For more information about how to find and assign IP addresses, go to *How to assign an IP address and access your device*.

Browser support

You can use the device with the following browsers:

	Chrome™	Firefox®	Edge™	Safari®
Windows®	recommended	recommended	✓	
macOS ®	recommended	recommended	✓	✓
Linux®	recommended	recommended	✓	
Other operating systems	✓	✓	✓	✓*

*To use AXIS OS web interface with iOS 15 or iPadOS 15, go to
Settings > Safari > Advanced > Experimental Features and disable NSURLSession Websocket.

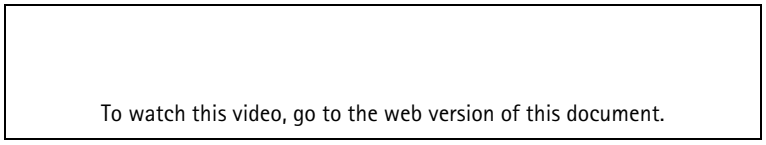
Access the device

1. Open a browser and enter the IP address or host name of the Axis device.
   If you do not know the IP address, use AXIS IP Utility or AXIS Device Manager to find the device on the network.
2. Enter the username and password. If you access the device for the first time, you must set the root password. See .
3. The live view page opens in your browser.

Set a new password for the root account

Important

The default administrator username is **root**. If the password for root is lost, reset the device to factory default settings. See



Support tip: Password security confirmation check

1. Type a password. Follow the instructions about secure passwords. See .
2. Retype the password to confirm the spelling.
3. Click **Create login**. The password has now been configured.

Secure passwords

Important

Axis devices send the initially set password in clear text over the network. To protect your device after the first login, set up a secure and encrypted HTTPS connection and then change the password.

The device password is the primary protection for your data and services. Axis devices do not impose a password policy as they may be used in various types of installations.

To protect your data we strongly recommend that you:

- Use a password with at least 8 characters, preferably created by a password generator.
- Don't expose the password.
- Change the password at a recurring interval, at least once a year.

Get started

Basic setup

These setup instructions are valid for cameras that are not sold as a kit with AXIS License Plate Verifier

1.
2.

These setup instructions are valid for all scenarios:

1.
2.
3.
4.
5.

Adjust the camera settings

To access the camera settings, go to .

1. Place a vehicle in the area of interest.
2. To make sure the license plate is big enough for the application to detect it, go to **System > Orientation** and select the pixel counter. Check that the width of the license plate equals at least 130 pixels for license plates with one row and at least 70 pixels for license plates with two rows.
3. Go to the camera's webpage, select the **Image** tab and do the following adjustments:

- Set the autofocus area on the license plate and click **Autofocus**. If the license plate is still not in focus, fine-tune using the manual focus.
- Turn off **Wide dynamic range**.
- Set **Local contrast** to 20. This reduces noise during nighttime, but still lights up the license plates enough to make them visible. A higher local contrast value makes the license plates more visible during nighttime, but increases noise.
- Set **Max shutter** to 1/500.
- Set **Max gain** to 24 dB to optimize the blur and noise trade-off in most scenes. If the license plate gets overexposed, adjust the max gain down to 9 dB.
- Turn off **Lock aperture**. This sets the iris to automatic mode, which we recommend especially if the vehicle faces direct sunlight.

4. Test the above settings by running through the scenario with a vehicle. For best results, test the settings in the darkest lighting conditions. This way, you get a good result both during nighttime and daytime.

Install the application

Note

To install the application on the device, you need administrator rights.

1. Go to the device's webpage.
2. Go to **Settings > Apps**.
3. Click **Add** to upload the application file (.eap) to the camera.

To activate the license, you need a license key that is generated by the license code and the Axis device serial number. If you don't have a license key on the computer, do the following:

1. Go to *axis.com/support/license-key-registration#/registration*
2. Enter the serial number and the license code.
3. Save the license key file on the computer. Browse to select the file and then click **Activate**.

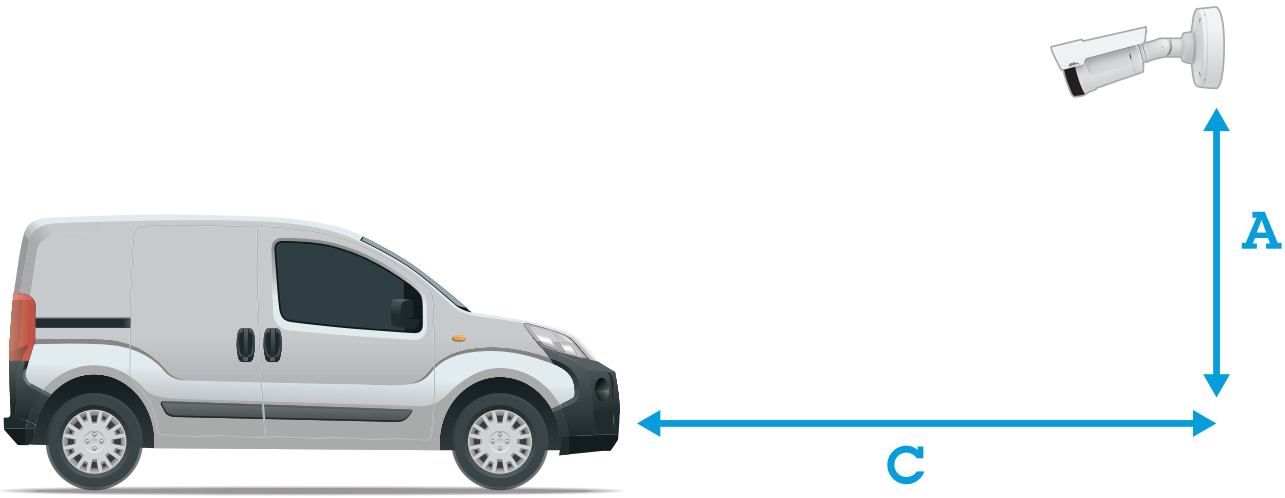
Access the application settings

1. In the camera's web interface, go to **Apps**, start the application and click **Open**.

1 Tabs
2 Live view
3 Latest event
4 Event log

Camera mounting recommendations

- When you select the mounting location, remember that direct sunlight can distort the image, for example, during sunrise and sunset.
- The mounting height for a camera in a **Access control** scenario should be half of the distance of that between the vehicle and the camera.
- The mounting height for camera in a **Free flow** (slow traffic license plate recognition) scenario should be less than half of the distance of that between the vehicle and the camera.



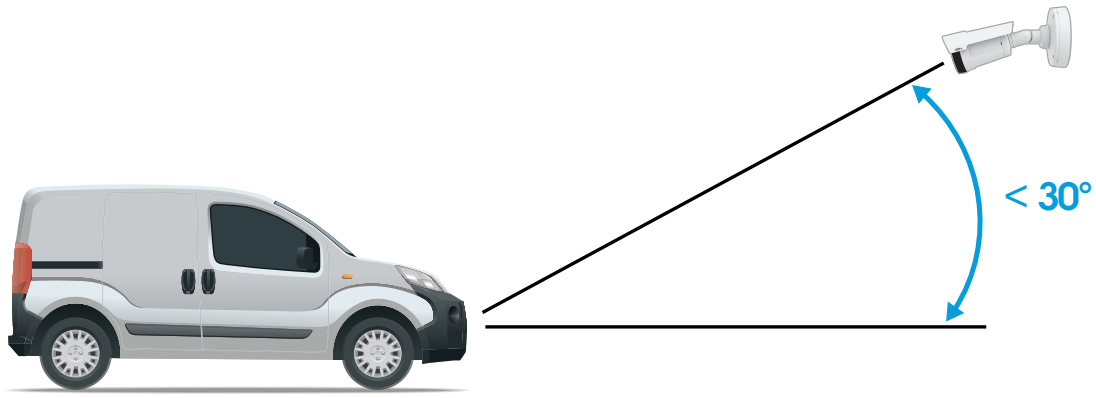
Access control capture distance: 2–7 m (6.6–23 ft). This example is based on the AXIS P3265–LVE-3 License Plate Verifier kit.

Capture distance: (C)	Mounting height (A)
2.0 m (6.6 ft)	1.0 m (3.3 ft)
3.0 m (9.8 ft)	1.5 m (4.9 ft)
4.0 m (13 ft)	2.0 m (6.6 ft)
5.0 m (16 ft)	2.5 m (8.2 ft)
7.0 m (23 ft)	3.5 m (11 ft)

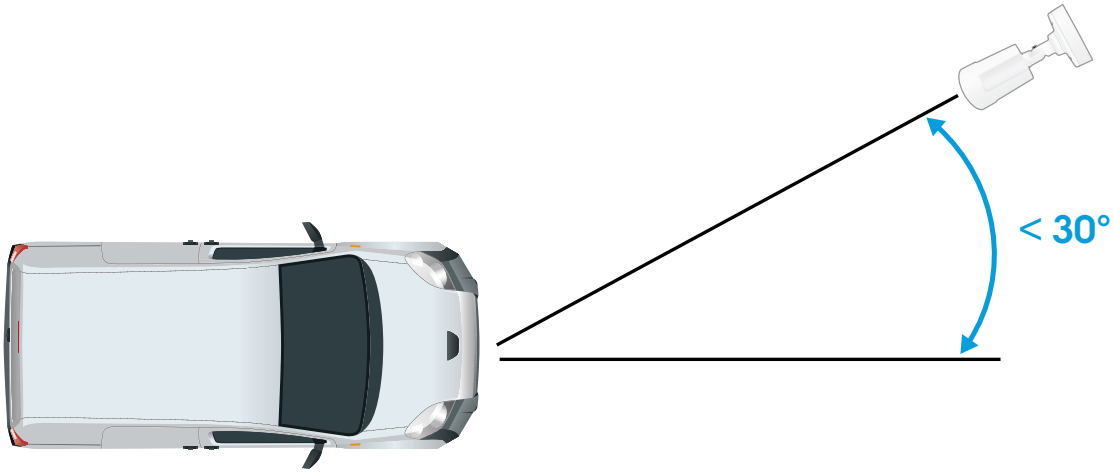
Free flow capture distance: 7–20m (23–65 ft). This example is based on the AXIS P1465–LE-3 License Plate Verifier kit.

Capture distance (C)	Mounting height (A)
7.0 m (23 ft)	3.0 m (9.8 ft)
10.0 m (33 ft)	4.0 m (13 ft)
15.0 m (49 ft)	6.0 m (19.5 ft)
20.0 m (65 ft)	10.0 m (33 ft)

- The camera's mounting angle should not be larger than 30° in any direction.

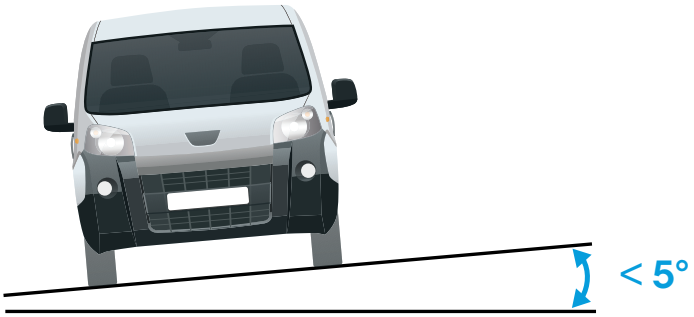


Mounting angle from the side.



Mounting angle from above.

- The image of the license plate should not tilt more than 5° horizontally. If the image is tilted more than 5°, we recommended that you adjust the camera so that the license plate is displayed horizontally in the live stream.



Roll angle.

Setup assistant

When you first run the application, set up **Free flow** or **Access control** using the setup assistant. If you want to make changes later on, it can be found in the **Settings** tab under **Setup assistant**.

Free flow

In Free flow, the application can detect and read license plates in slow speed traffic on larger access roads, city centers and enclosed areas like campuses, ports or airports. This allows for LPR-forensic search and LPR triggered events in a VMS.

1. Select **Free flow** and click **Next**.
2. Select the image rotation that corresponds to how your camera is mounted.
3. Select the number of areas of interest. Note that one area can detect plates in both directions.
4. Select the region where the camera is located.
5. Select capture type.
   - **License plate crop** saves only the license plate.
   - **Vehicle crop** saves the entire captured vehicle.
   - **Frame downsized 480x270** saves the entire image and reduces the resolution to 480x270.
   - **Full frame** saves the entire image at full resolution.
6. Drag the anchor points to adjust the area of interest. See .
7. Adjust the direction of the area of interest. Click the arrow and rotate to set the direction. The direction determines how the application registers vehicles entering or exiting the area.
8. Click **Next**
9. In the **Protocol** drop-down list, select one of the following protocols:
   - TCP
   - HTTP POST
10. In the **Server URL** field, type the server address and port in the following format: `127.0.0.1:8080`
11. In the **Device ID** field, type the name of the device or leave as is.
12. Under **Event types**, select one or more of the following options:
    - **New** means the first detection of a license plate.
    - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
    - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
13. To turn on the feature, select **Send event data to server**.
14. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
15. Click **Next**.
16. If you already have a list of registered plates, choose to import as either a **blocklist** or **allowlist**.
17. Click **Finish**.

Access control

Use the setup wizard for quick and easy configuration. You can choose to **Skip** to leave the guide at any time.

1. Select **Access control** and click **Next**.
2. Select the type of access control to use:
   - **Internal I/O** if you want keep list management in the camera. See .

- **Controller** if you want to connect a Door controller. See .
- **Relay** if you want to connect to a relay module. See .

3. In the **Barrier mode** drop-down list, under **Open from lists**, select **Allowlist**.
4. In the **Vehicle direction** drop-down list, select **out**.
5. In the **ROI** drop-down-list, select the area of interest you would like to use, or if you would like to use all.
6. Click **Next**.

On the **Image settings** page:

1. Select the number of areas of interest.
2. Select the region where the camera is located.
3. Select capture type. See .
4. Drag the anchor points to adjust the area of interest. See .
5. Adjust the direction of the area of interest. The direction determines how the application registers vehicles entering or exiting the area.
6. Click **Next**

On the **Event data** page:

Note

For detailed settings see: .

1. In the **Protocol** drop-down list, select one of the following protocols:
   - TCP
   - HTTP POST
2. In the **Server URL** field, type the server address and port in the following format: `127.0.0.1:8080`.
3. In the **Device ID** field, type the name of the device or leave as is.
4. Under **Event types**, select one or more of the following options:
   - **New** means the first detection of a license plate.
   - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
   - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
5. To turn on the feature, select **Send event data to server**.
6. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
7. Click **Next**

On the **Import list from a .csv file** page:

1. If you already have a list of registered plates, choose to import as either a **blocklist** or **allowlist**.
2. Click **Finish**.

Adjust the area of interest

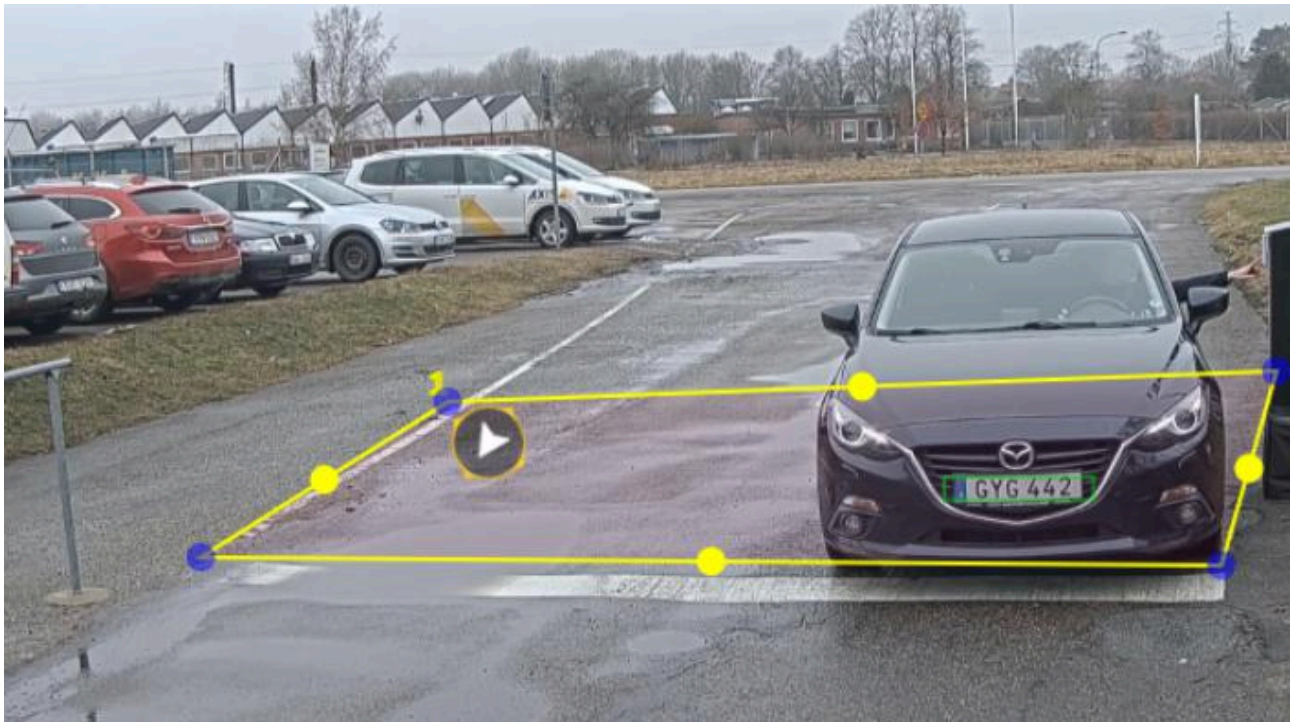
The area of interest is the area in the live view where the application looks for license plates. For optimal performance, keep the area of interest as small as possible. To adjust the area of interest, do the following:

1. Go to **Settings** .
2. Click **Edit area of interest**.
3. To improve verification and captured images, go to **Zoom** and adjust the slider to your needs.

4. To have the camera automatically focus on the vehicles, click **Autofocus**. To set the focus manually, go to **Focus** and adjust it with the slider.
5. To move the area of interest, click anywhere in the area and drag it to where the license plates are most visible. If you place the area of interest outside the live view, it will automatically jump back to default position. Make sure the region of interest stays in position after you have saved the settings.
6. To adjust the area of interest, click anywhere in the area and drag the anchor points highlighted in blue.
   - To reset the area of interest, right click within the area and select **Reset**.
   - To add anchor points, click the on one of the yellow anchor points. The anchor point will turn blue, showing it can be manipulated. New yellow points are automatically added next to the blue anchor point. The maximum number of blue anchor points is eight.
7. Click anywhere outside the area of interest to save your changes.
8. To get the correct direction feedback in the **Event log**, you need to turn the arrow to match the driving direction.
   8.1. Click the arrow icon.
   8.2. Select the anchor point and rotate the arrow so it aligns with the driving direction.
   8.3. Click outside the area of interest to save the changes.

Note that one area can detect plates in both directions. The direction feedback shows up in the **Direction** column.

- To add a second area of interest, select **2** in the **Area of interest** drop-down menu.



Example with one area of interest.

Note

- If you are using a standalone camera, you can have the app set the recommended settings for license plate recognition.
  1. Click **Recommended LPR settings**. You will see a table where the current settings and the recommended settings differ.
  2. Click **Update settings** to have the app change the settings their recommended values.

Select region

1. Go to **Settings** > **Image**.

2. In the **Region** drop-down list, select your region.

Adjust the image capture settings

1. Go to **Settings** > **Image**.
2. To change the resolution of captured images, go to **Resolution**
3. To change the rotation of the captured image, go to **Image rotation**
4. To change how you save your captured images, go to **Save full frame**:
   - **License plate crop** saves only the license plate.
   - **Vehicle crop** saves the entire captured vehicle.
   - **Frame downsized 480x270** saves the entire image and reduces the resolution to 480x270.
   - **Full frame** saves the entire image at full resolution.

Set up event storage

An event consists of the captured image, the license plate, the area of interest number, vehicle direction, access, and the date and time.

This example use case explains how to store events of allowlisted license plate numbers for 30 days.

Requirements:

- Camera physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Internal storage or an SD card installed in the camera.

1. Go to **Settings** > **Events**.
2. Under **Save events**, select **Allowlisted**.
3. Under **Delete events after**, select **30 days**.

Note

To detect an inserted SD card when the app is running, you need to restart the app. If an SD card is installed in the camera, the app will automatically choose the SD card as the default storage.

AXIS License Plate Verifier uses the cameras internal memory to save up to 1,000 events, using license plate crops as the frame. If you use larger frames, it will vary the amount of events you can save.

To change the image capture settings, go to **Settings > Image**. An SD card can save up to 100,000 events using any type of frame.

Manage lists

Add detected license plate to list

A license plate can be added directly to a list after being detected by the application.

1. Click the **Event log** tab.
2. Go to **Latest Event**.
3. Click **Add to list** next to the license plate that you'd like to add.
4. Select the list you would like to add the license plate in the list drop down menu.
5. Click **Append**.

Add descriptions to license plates

To add a description to a license plate in the list:

- Go to **List management**.
- Select the license plate you want to edit and click the pen icon.
- Type the relevant information in the **Description** field at the top of the list
- Click the disk icon to save.

Customize list names

You can change the name of any of the lists to fit your specific use case.

1. Go to **List management**.
2. Go to the list menu of the list you want to change.
3. Select **Rename**.
4. Type the name of the list.

The new list name will be updated in any existing configurations.

Import allowlisted license plate numbers

You can import allowlisted license plate numbers from a .csv file on the computer. In addition to the license plate number, you can also add comments for each license plate number in the .csv file.

The structure of the .csv file must look like this: `license plate,date,description`

Example:
Only license plate: `AXIS123`

License plate + description: `AXIS123,,John Smith`

License plate + date + description: `AXIS123,2022-06-08,John Smith`

1. Go to **List management**
2. Go to the context menu next to **Allowlist** and select **Import from file**.
3. Browse to select a .csv file on the computer.
4. Click **OK**.
5. Check that the imported license plate numbers appear in the **Allowlist**.

Share license plate lists with other cameras

You can share the license plate lists with other cameras on the network. The synchronization will override all current license plate lists in the other cameras.

1. Go to **List management**.
2. Under **Camera synchronization**, type the IP address, username and password.
3. Click **+**.
4. Click **Camera synchronization**.
5. Check that the date and time under **Last sync** updates accordingly.

Schedule lists

Lists can be scheduled to only be active during certain times during certain days of the week. To schedule a list:

- Go to **List management**.
- Go the list menu of the list you want to schedule.
- Select **Schedule** in the pop-up menu.
- Select the start and end time, and the day when the list should be active.
- Click the button next to **Enabled**.
- Click **Save**.

Additional settings

Configure text overlay

A text overlay shows the following event information in the live view: `weekday, month, time, year, license plate number`.

1. Go to **Settings** > **Image**.
2. Activate **Text overlay**.
3. Set **Overlay duration** to a value between 1 and 9 seconds.
4. Select either date, time and license plate (**Datetime + LP**), or just the license plate (**LP**).
5. Check that the overlay appears in the live view.

Detect license plates in low-light conditions

Each detection gets a score by the algorithm, this is called the sensitivity level (confidence parameter). Detections that have a lower score than the selected level will not show up in the list of events.

For scenes with low lighting you can lower the sensitivity level.

1. Go to **Settings** > **Detection parameters**.
2. Adjust the slider under **Sensitivity level**. To avoid false detections, we recommend that you lower the threshold value with 0.05 at a time.
3. Check that the algorithm detects the license plates as expected.

Allow fewer characters on license plates

The application has a default minimum number of characters for a license plate to be detected. The default minimum number of characters is five. You can configure the application to detect license plates with fewer characters.

1. Go to **Settings** > **Detection parameters**.
2. In the **Minimum number of characters** field, type the minimum number of characters you want to allow.
3. Check that the application detects license plates as expected.

Allow only exact matches of license plates

The matching algorithm automatically allows a deviation of one character when matching the detected license plate against the allowlist or blocklist. However, some scenarios need an exact match of all characters of the license plate.

1. Go to **List management**.
2. Click to activate **Strict matching**.
3. Check that the application matches the license plates as expected.

Allow more than one character deviation when matching license plates

The matching algorithm automatically allows a deviation of one character when matching the detected license plate against the allowlist or blocklist. However, you can allow more than one character deviation.

1. Go to **Settings** > **Detection parameters**.
2. Under **Allowed character deviation**, select the number of characters that are allowed to be different.
3. Check that the application matches the license plates as expected.

Give limited access to operators

Operators can be given a limited access to the app using an URL. This way they only have access to the **Event log** and **List management**. The URL can be found under **Settings > User rights**.

Set up secure connection

To protect communication and data between devices, for example between the camera and the door controller, set up a secure connection with HTTPS using certificates.

1. Go to **Settings** > **Security**.
2. Under HTTPS, **Enable HTTPS**.
3. Select either **Self-signed** or **CA-signed**.

Note

Find out more about HTTPS and how to use it at .

Backup and restore app settings

You can backup and restore settings made in the app related to image capture, security, detection and integration. If something should go wrong, you can now restore the settings you have backed up.

To backup app settings:

- Go to **Settings > Maintenance**.
- Click **Backup configuration**.

A JSON file will be downladed to you downloads folder.

To restore app settings:

- Go to **Settings > Maintenance**.
- Click **Restore configuration**.

Select the JSON file containing the backup.

The setting are restored automatically.

Clear all events

After you set up the app, it can be a good idea to clear the records of any images or captured plates from the setup process.

To clear all images and plates from the database:

Go to **Settings > Maintenance**.

- Click **Clear all recognition results**.
- Click **Yes**.

Use virtual ports to trigger actions

Virtual ports can be used together with access control to trigger any kind of action. This example explains how to set up AXIS License Plate Verifier together with the camera's I/O port to display a text overlay using a virtual port.

Requirements:

- Camera physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Cables connected between the barrier and the camera's I/O port.
- Basic setup done. See .

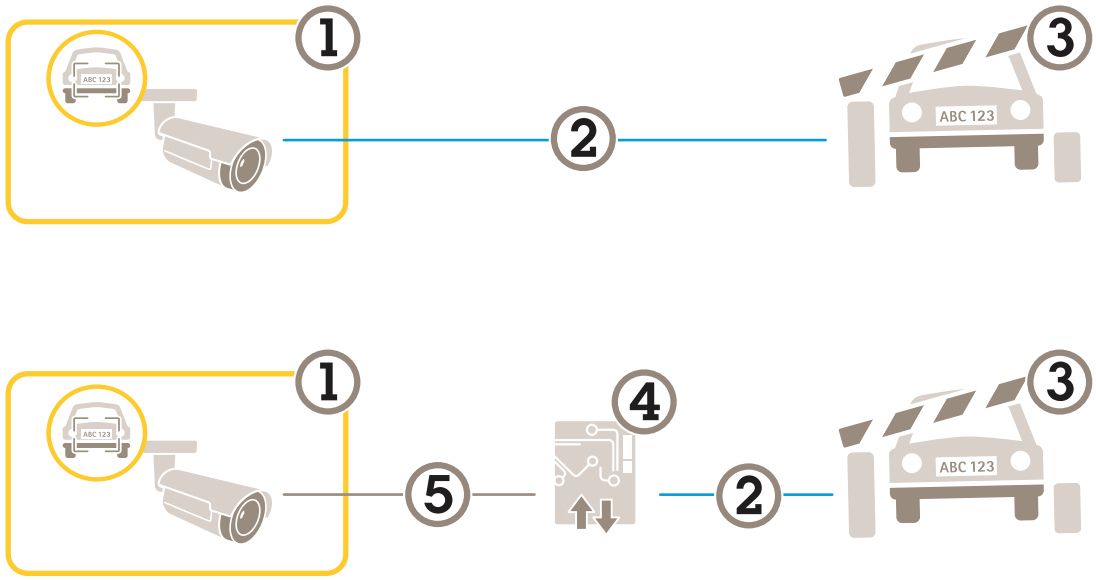
1. Go to the application's webpage and select the **Settings** tab.

2. Go to **Access control**.
3. Under **Access control** , select the **Type** drop-down list, select **Internal I/O**.
4. Select the **I/O output #**.
5. Select a port in the **Virtual port** drop-down list.
6. In the **Barrier mode** drop-down list, select **Open to all**.
7. In the **Vehicle direction** drop-down list, select **any**.
8. In the **ROI** drop-down-list, select the area of interest you would like to use, or if you would like to use all.
9. In the camera's webpage, go to **System > Events**.
10. Click **Add rule**.
11. Under **Condition** select **Virtual input is active** and the port number you have selected.
12. Under **Action**, select **Use overlay text**.
13. Select **Video channels**.
14. Type the text you want displayed.
15. Add the duration of the text.
16. Click **Save**.
17. Go to **Video > Overlays**.
18. Go to **Overlays**.
19. Select **Text** in the drop-down menu and click **+**.
20. Type `#D` or select the modifier in the **Modifiers** drop-down list.
21. Check that the text overlay is displayed when a vehicle enters the region of interest in the live view.

Vehicle entry and exit scenario

In the scenario for vehicle entry and exit, the application reads the vehicle license plate captured by the camera and verifies the license plate against a list of authorized or unauthorized license plate numbers stored in the camera.

This scenario requires the application embedded in a camera with I/O support or a connected I/O relay module to open and close the barrier.



Two possible setups for the vehicle entry and exit scenario.

1 *Axis camera with AXIS License Plate Verifier*
2 *I/O communication*
3 *Barrier*
4 *Axis I/O relay module*
5 *IP communication*

Open a barrier for known vehicles using a relay module

This example use case explains how to set up AXIS License Plate Verifier together with a relay module to open a barrier for a known vehicle driving through a specific region of interest (ROI) into, let's say a parking area.

Requirements:

- Camera physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Cables connected between the barrier and the relay module.
- Basic setup done. See .

1. Go to the camera's webpage, select **Settings** and open AXIS License Plate Verifier.
2. Go to the relay module's webpage and make sure the relay port is connected to the camera's I/O port.
3. Copy the relay module's IP address.
4. Go back to AXIS License Plate Verifier.
5. Go to the **Settings > Access control**
6. Go to **Type** and select **Relay** in the drop-down list.
7. In the **I/O output** drop-down list, select the I/O port that is connected to the barrier.
8. In the **Barrier mode** drop-down list, select **Open from lists** and then check **Allowlist**.
9. In the **Vehicle direction** drop-down list, select **in**.
10. In the **ROI** drop-down list, select the area of interest that covers the traffic lane.

11. Enter the following information:
    - the IP address for the relay module in format `192.168.0.0`
    - the username for the relay module
    - the password for the relay module
12. To make sure the connection works, click **Connect**.
13. To activate the connection, click **Turn on integration**.
14. Go to the **List management** tab
15. Enter the license plate number in the **Allowlist** field.

Note

The physical input ports 1 to 8 on the relay module correspond to ports 1 to 8 in the drop-down list. However, the relay ports 1 to 8 on the relay module correspond to ports 9 to 16 in the drop-down list. This is valid even if the relay module only has 8 ports.

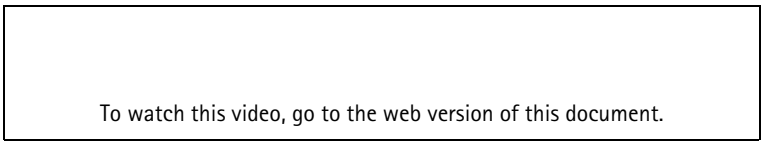
16. Check that the application identifies the license plate number in the allowlist as a known vehicle and that the barrier opens as expected.

Open a barrier for known vehicles using the camera's I/O

This example explains how to set up AXIS License Plate Verifier together with the camera's I/O port to open a barrier for a known vehicle entering, for example, a parking area.

Requirements:

- Camera physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Cables connected between the barrier and the camera's I/O port.
- Basic setup done. See .



Open a barrier for known vehicles using the camera's I/O

1. Go to the application's webpage and select the **Event log** tab and add detected license plates to a list. See
2. To edit the lists directly, go to the **List management** tab.
3. Enter the authorized license plate numbers in the **Allowlist** field.
4. Go to the **Settings** tab.
5. Under **Access control** , select the **Type** drop-down list, select **Internal I/O**.
6. Select the **I/O output #**.
7. In the **Barrier mode** drop-down list, select **Open from lists** and then check **Allowlist**.
8. In the **Vehicle direction** drop-down list, select **in**.
9. In the **ROI** drop-down-list, select the area of interest you would like to use, or if you would like to use all.
10. Check that the application identifies the license plate number in the allowlist as a known vehicle and that the barrier opens as expected.

Note

You can change the name of any of the lists to fit your specific use case.

Get notified about an unauthorized vehicle

This example explains how to set up the application so that an event that triggers a notification can be created in the camera.

Requirements:

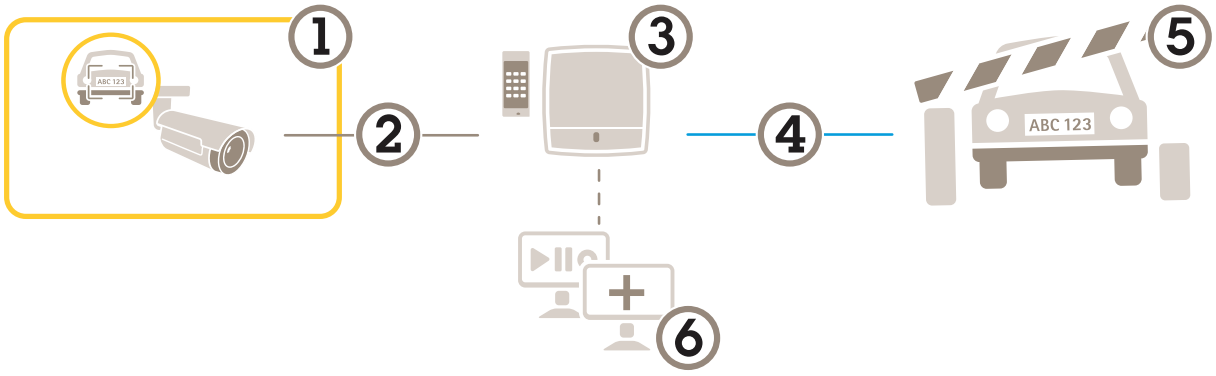
- Basic setup done. See .

1. Go to **List management**.
2. Enter the license plate number in the **Blocklist** field.
3. Go to the camera's webpage.
4. Go to **Settings** > **Events** and set up an action rule with the application as a condition and with a notification as an action.
5. Check that the application identifies the added license plate number as an unauthorized vehicle and that the action rule runs as expected.

Vehicle access control scenario

In the scenario for vehicle access control, the application can be connected to an Axis network door controller to configure access rules, create schedules for access times, and handle vehicle access not only for employees, but also, for example, visitors and suppliers.

For backup, use an access system involving a door controller and card reader. To set up the door controller and the card reader, see the user documentation at *axis.com*



1 *Axis camera with AXIS License Plate Verifier*
2 *IP communication*
3 *Axis network door controller with card reader*
4 *I/O communication*
5 *Barrier*
6 *Optional third-party software*

Connect to a door controller

In this example we connect the camera to a network door controller which means the camera works as a sensor. The camera forwards the information to the controller which in turn analyzes the information and triggers the events.

Note

When switching between the AXIS License Plate Verifier and AXIS Entry Manager, make sure to refresh the webpages to get access to all parameters.

Requirements:

- Camera and door controller physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- Basic setup done. See .

To watch this video, go to the web version of this document.

How to get the application up and running with AXIS A1001 Door Controller.

Hardware configuration in AXIS Entry Manager

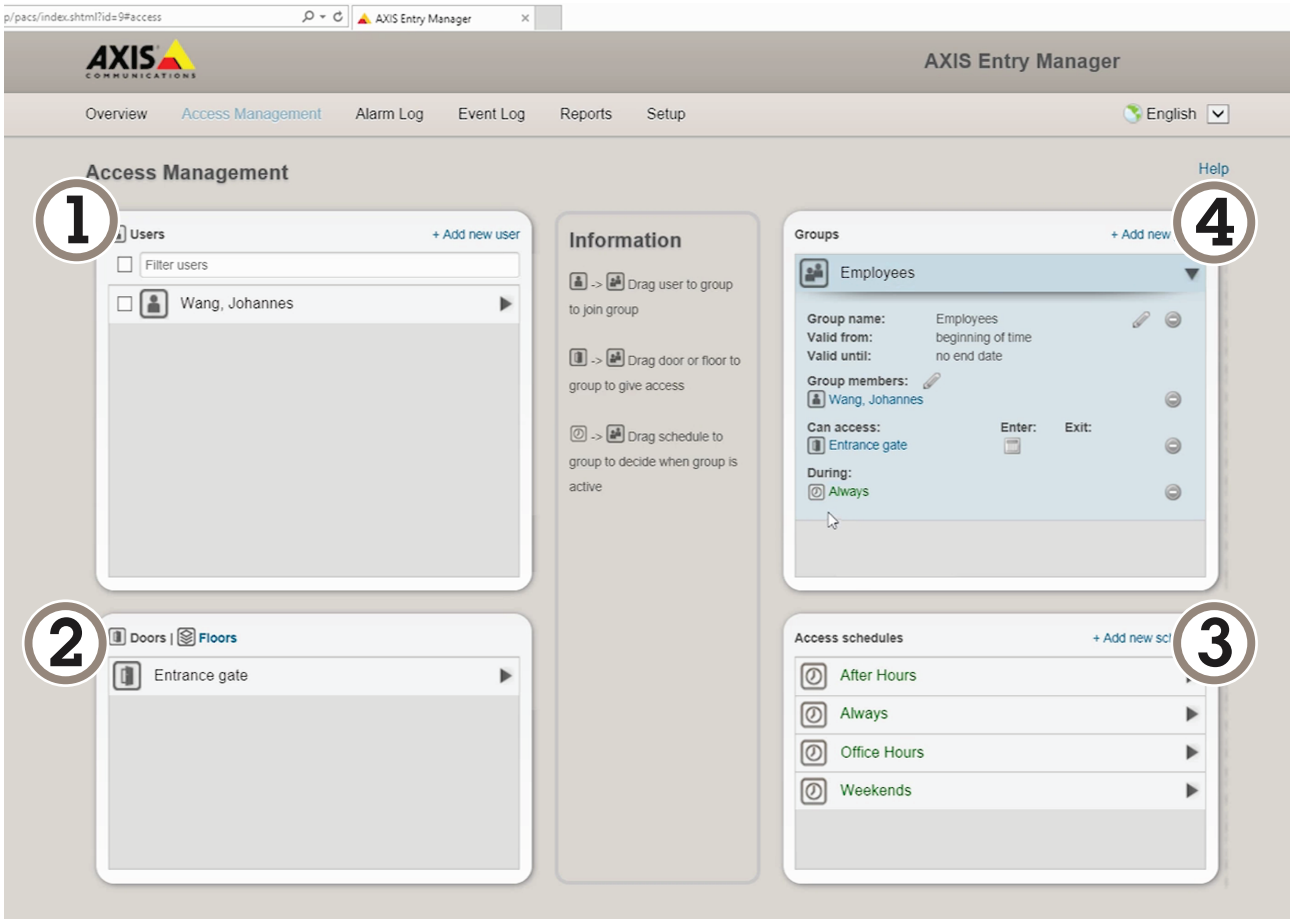
1. Go to AXIS Entry Manager and start a new hardware configuration under **Setup**.
2. In the hardware configuration, rename the network door controller to "Gate controller".
3. Click **Next**.
4. In **Configure locks connected to this controller**, clear the **Door monitor** option.
5. Click **Next**.
6. In **Configure readers connected to this controller**, clear the **Exit reader** option.
7. Click **Finish**.

Configuration in AXIS License Plate Verifier

1. Go the AXIS License Plate Verifier webpage.
2. Go to the **Settings > Access control**.
3. Go to **Type** and select **Controller** in the drop-down list.
4. Enter the following information:
   - the IP address for the controller in format `192.168.0.0`
   - the username for the controller
   - the password for the controller
5. Click **Connect**.
6. If the connection is successful, "Gatecontroller" shows up in the **Network Door Controller name** drop-down list. Select "Gatecontroller".
7. In the **Reader name** drop-down list, select the reader connected to the door "Gatecontroller", for example "Reader entrance". These names can be changed in AXIS Entry Manager.
8. To activate the connection, select **Turn on integration**.
9. Enter one of the user's license plate number, or use the default, in the test field and click **Test integration**. Check that the test was successful.

Configure users, groups, doors, and schedules in AXIS Entry Manager

1. Go to AXIS Entry Manager.
2. Go to **Access Management**.
3. Go to **Doors > Add identification type**.
4. In the **Credentials needed** drop-down list, select **License plate only**.
5. To set limits for when the identification type can be used, drag and drop a **Schedule** to the door.
6. Add users and, for each user, add the credential **License plate**.
7. Click **Add credential** again and enter the license plate information.
8. Click **Add new group** and enter the information.
9. To add users to a group, drag and drop **Users** to the user group.
10. To give users access, drag and drop the **Door** to the user group.
11. To limit the access time, drag and drop a **Schedule** to the user group.



Overview of AXIS Entry Manager user interface.

1 *Users*
2 *Doors*
3 *Schedules*
4 *User groups*

Connect to AXIS Secure Entry

This example describes connecting an Axis door controller in AXIS Camera Station and AXIS Secure Entry with AXIS Licence Plate Verifier.

Requirements:

- Camera and door controller physically installed and connected to the network.
- AXIS License Plate Verifier up and running on the camera.
- AXIS Camera Station client version 5.49.449 and up.
- Basic setup done. See .

In **AXIS Camera Station**, see *Add a reader*.

In the **AXIS License Plate Verifier** app:

1. In the **Settings** tab, go to **Configuration wizard** and click **Start**.
2. Select **Access Control**.
3. Select **Secure Entry**, and click **Next**.

In **AXIS Camera Station**:

4. Type the IP address of the door controller, available in the device list in **AXIS Camera Station > Configuration > Other Devices**.
5. To add a Authentication key, go to **AXIS Camera Station > Configuration > Encrypted communication**.
6. Go to **External Peripheral Authentication Key** and click **Show authentication key**.

7. Click **Copy key**.

In the **AXIS License Plate Verifier** app:

8. Go to **Authentication key** in the configuration wizard and paste the key.
9. Click **Connect**.
10. Select the **Door controller name** in the drop-down menu.
11. Select the **Reader name** in the drop-down menu.
12. Check **Turn on integration**.
13. Click **Next**.
14. Adjust the area of interest. See .
15. Click **Next** twice and then **Finish**.

Search for specific events

Use the search feature to search for events using a number of criteria.

1. Go to the application's webpage and select the **Event log** tab.
2. Select the date in the **Start time** and **End time** calendar menus.
3. Enter the license plate in the **Plate** field, if you want to search for a plate.
4. Click the **ROI** drop down menu to select which region of interest, or if both should be relevant in the search.
5. select **Direction** to filter by entry or exit.
6. To filter out license plates that belong to either the allow- or blocklist, click the **Access** drop down menu.
7. Click **Search**.

To go back to the live updated log, click **Live**.

Note

Once a search has completed you can se a brief summary of statistics pertaining to that search.

To show any description related the license plates, click the settings icon and check **Show description**.

Export and share search results

To export any search result as a CSV file with the statistics at that time, click **Export** to save the results as a CSV file

To copy the API as a link which can be used to export data to third party systems, click **Copy search link**.

Integration

Use profiles to push events to multiple servers

With profiles, you can push an event to different servers using different protocols at the same time. To use profiles:

1. Select a profile in the **Profiles** drop-down menu.
2. Configure the rule. See .
3. Click Save.
4. Select a new profile in the **Profiles** drop-down menu.

Push event information to third-party software

Note

The application sends the event information in JSON format. For more information, *log in using your MyAxis account*, go to the *AXIS VAPIX Library* and select AXIS License Plate Verifier

With this feature you can integrate third-party software by pushing the event data through TCP or HTTP POST.

Before you start:

- The camera must be physically installed and connected to the network.
- AXIS License Plate Verifier must up and running on the camera.

1. Go to **Integration** > **Push events**.
2. In the **Protocol** drop-down list, select one of the following protocols:
   - TCP
   - HTTP POST
     - Type the user name and password.
3. In the **Server URL** field, type the server address and port in the following format: `127.0.0.1:8080`
4. In the **Device ID** field, type the name of the device or leave as is.
5. Under **Event types**, select one or more of the following options:
   - **New** means the first detection of a license plate.
   - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
   - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.
6. To turn on the feature, select **Send event data to server**.
7. To reduce bandwidth when using HTTP POST, you can select **Do not to send images through HTTP POST**.
8. Click **Save**.

Note

To push events using HTTP POST, you can use an authorization header instead of a user name and password, go to the **Auth-Header** field, and add a path to an authentication API.

Send images of license plates to a server

With this feature you can push images of the license plates to a server through FTP.

Before you start:

- The camera must be physically installed and connected to the network.
- AXIS License Plate Verifier must up and running on the camera.

1. Go to **Integration** > **Push events**.

2. In the **Protocol** drop-down list, select **FTP**.
3. In the **Server URL** field, type the server address in the following format: `ftp://10.21.65.77/LPR`.
4. In the **Device ID** field, type the name of the device. A folder with this name will be created for the images. Images are created using the following format: timestamp_area of interest_direction_carID_license plate text_country.jpg.
5. Type the username and password for the FTP server.
6. Select the path and name modifiers for the filenames.
7. Click **Done**.
8. Under **Event types**, select one or more of the following options:
   - **New** means the first detection of a license plate.
   - **Update** is either a correction of a character on a previously detected license plate, or when a a direction is detected as the plate moves and is tracked across the image.
   - **Lost** is the last tracked event of the license plate before it exits the image. It also contains the direction of the license plate.

   Note

   Direction is only included in the filename when **Lost** or **Update** is selected.
9. To turn on the feature, select **Send event data to server**.
10. Click **Save**.

Note

Note that the image varies depending on what type of capture mode you have selected, see .

Note

If push events fail, the app will resend up to the first 100 failed events to the server.
When using FTP in push events to a Windows server, do not use %c for naming of images that gives you date and time. This is due to the fact that Windows does not accept the naming set by the function %c for date and time. Note that this is not an issue when using a Linux server.

Direct integration with 2N

This example describes direct integration with a 2N IP device.

Set up an account in your 2N device:

1. Go to 2N IP Verso.
2. Go to **Services** > **HTTP API** > **Account 1**.
3. Select **Enable account**.
4. Select **Camera access**.
5. Select **License plate recognition**.
6. Copy the IP address.

In the AXIS License Plate Verifier app:

1. Go to **Integration** > **Direct integration**.
2. Add the IP address or URL to the 2N device.
3. Select **Connection type**.
4. Select what the **Barrier is used for**.
5. Type your username and password.
6. Click **Enable integration**.
7. Click **Save**.

To check in the integration is working:

1. Go to 2N IP Verso.
2. Go to **Status** > **Events**.

Integrate with Genetec Security Center

This example describes setting up a direct integration with Genetec Security Center.

In Genetec Security Center:

1. Go to **Overview**.
2. Make sure that **Database**, **Directory** and **License** are online. If they're not, run all Genetec and SQLEXPRESS services in Windows.
3. Go to **Genetec Config Tool > Plugins**.
4. Click **Add an entity**.
5. Go to **Plugin** and select **LPR plugin**.
6. Click **Next**.
7. Click **Next**.
8. Click **Next**.
9. Select the LPR plugin you've added and go to **Data sources** .

Under **ALPR reads API**:

10. Check **Enabled**.
11. In **Name**, type: **Plugin REST API**.
12. In **API path prefix**, type: **lpr**.
13. In **REST port**, select **443**.
14. In **WebSDK host**, type: **localhost**.
15. In **WebSDK port**, select **443**.
16. Check **Allow self signed certificates**.

Under **Security Center events data source**:

17. Check **Enabled**.
18. In **Name**, type **Security Center Lpr Events**.
19. In **Processing frequency**, select **5 sec** in the drop-down menu.
20. Go to the **Data sinks** tab.
21. Click **+**.
22. In **Type**, select **Database**.
23. **Select and configure the database:**.
    - Check **Enabled**.
    - In **Source**, check **Plugin REST API** and **Native ALPR Events**.
    - In **Name**, type **Reads DB**.
    - In **Include**, check **Reads**, **Hits** and **Images**.
    - Go to the **Resources** tab.
    - Click **Delete the database** and then **Create a database**.

Create an API user:

24. Go to **Config Tool > User Management**.
25. Click **Add an entity**.

26. Select **User**.
27. Type a username and password. Leave the other fields unchanged.
28. Select the added user and go to the **Privileges** tab.
29. Check to allow everything under **Application privileges**.
30. Check to allow **Third-party ALPR reads API**.
31. Click **Apply**.

In the **AXIS License Plate Verifier** app:

1. Go to the **Integration** tab.
2. Select **Genetec Security Center** in the drop-down list.
3. In **URL/IP**, type your address according to this template: `https://server-address/api/V1/lpr/lpringestion/reads`.
4. Type in your Genetec username and password.
5. Click **Enable integration**.
6. Go to the **Settings** tab.
7. Under **Security > HTTPS**.
8. Select **Self-signed**, or **CA-signed** depending on the settings in Genetec Security Center.

In Genetec Security Center:

1. Go to **Genetec Security desk**.
2. Under **Investigation**, click **Reads**.
3. Go to the **Reads** tab.
4. Filter the result to your needs.
5. Click **Generate report**.

Note

You can also read Genetec's documentation on integrating third party ALPR plugins. *You can do that here (requires registration)*.

Troubleshooting

Unknown vehicles are marked as accepted

If the application lets in vehicles with license plates that are not in the allowlist, one probable reason is that the comparison allows a deviation of one character.

For example, if **AXI S1234** is in the allowlist the application accepts **AXI SI234**.

Similarly, if **AXIS 1234** is in the allowlist the application accepts **AXI 1234**.

Go to to set the characters allowed.

The connection between the application and controller or relay module doesn't work

Make sure the controller, or relay module, allows data traffic through HTTP. To find out how to change this setting, go to the user manual for the corresponding device.

For users of AXIS Camera Station

Set up AXIS License Plate Verifier

When a device is configured with AXIS License Plate Verifier, it is considered as an external data source in the video management system. You can connect a view to the data source, search for the license plates that are captured by the device, and view the related image.

Note

- It requires AXIS Camera Station 5.38 or later.
- AXIS License Plate Verifier requires a license.

1. Download and install the application on your device.
2. Configure the application. See *AXIS License Plate Verifier user manual*.
3. For an existing AXIS Camera Station installation, renew your server certificate that is used to communicate with the client. See *Certificate renewal*.
4. Turn on time synchronization to use AXIS Camera Station server as the NTP server. See *Server settings*.
5. Add the device to AXIS Camera Station. See *Add devices*.
6. When the first event is received, a data source is automatically added under **Configuration > Devices > External data sources**.
7. Connect the data source to a view. See *External data sources*.
8. Search for license plates that are captured by the device. See *Data search*.
9. Click  to export the search results to a .txt file.

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