



# Axis Perimeter Defender Analytics Configuration in CathexisVision

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Cathexis makes a best attempt to ensure that the equipment and license requirements of the third-party equipment are adequately specified. However, it is possible that the requirements of the third-party equipment may change over time, including the interface hardware/firmware and licensing. The reader is urged to clarify the latest requirements directly with the third-party equipment supplier.

# 1. Introduction

This document will guide the user through setup of Perimeter Defender on Axis cameras in CathesisVision and configuration of CathesisVision system events.

**Note:** This guide deals only with Axis Perimeter Defender and associated CathesisVision system events. For detailed information on CathesisVision analytics setup or CathesisVision system events setup, please consult the CathesisVision Setup Manual.

## 1.1 Requirements

### 1.1.1 General Requirements

- CathesisVision 2019.1 and later.
- Axis Perimeter Defender Software.
- Axis Perimeter Defender Software license (obtain from software manufacturer).

### 1.1.2 Licence Requirements

License Name	License Description
CLIC-2000	Network camera license.

#### A NOTE ON CAMERA CHANNELS

The CathesisVision software packages have **limits on camera channels**. A multi-sensor camera is physically a single device (camera) but it **requires a camera channel for each one of the internal cameras**. The same applies to an encoder: a 16-channel encoder will account for 16 camera channels on the CathesisVision software, even though it is a single device. Even when a camera or device only uses a single IP license, the camera channel limit will still apply.

## 1.2 Integration Components

All CathesisVision integrations have two component levels: **Device** and **Object**.

**Device** The device is CathesisVision software's interface, which handles all the interaction between CathesisVision and the integrated hardware. When an integration is added to the CathesisVision system, a device is added. The messages received from the device are called Device events.

**Objects** Objects are the individual pieces of hardware that comprise the integration. There may be multiple "object types" under the objects group. For example, the main controller and door nodes of an access control system are both objects. They are different types of objects.

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## 1.3 Features and Abilities

Axis Perimeter Defender is an add-on, edge-based analytics application that can be run on certain Axis cameras and can provide motion detection information to CathesisVision. Triggers received from these cameras can then be used to generate CathesisVision system events.

This section indicates the features/abilities of the Axis Perimeter Defender on-board, edge-based analytics application in CathesisVision.

### 1.3.1 General Features

- CathesisVision communicates with the Axis Perimeter Defender software via metadata TCP port 32305 to receive motion detection analytics information.
- Camera analytics and event triggers are configured in the Axis Perimeter Defender software and then uploaded to the camera.
- The camera is added as a standard IP camera to the CathesisVision software, and configured to send trigger messages which are used to trigger CathesisVision system events.

### 1.3.2 Supported Algorithms

- Intrusion Detection
- Zone crossing
- Loitering
- Conditional Zone crossing

### 1.3.3 Supported Overlays

- **Zone:** Shows the zones configured on the camera.
- **Actor:** Rectangles drawn around objects in the scene and identified as either person/car.
- **Alert:** Displays alarms.

### 1.3.4 CathesisVision System Events

- The above supported on-board algorithms can be used to generate standard CathesisVision system events.
- Multiple event actions may be taken as a result of received triggers, including recording trigger resources (cameras).
- All CathesisVision system events are automatically routed to a CathesisVision event database.

For more information on adding/configuring IP cameras and configuring CathesisVision system events and analytics, please consult the CathesisVision Setup Manual.

## 2. Configure Axis Perimeter Camera

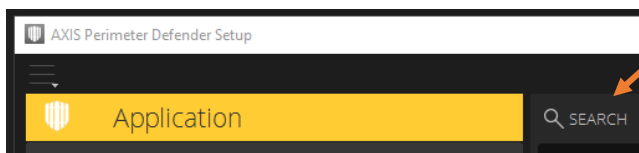
### 2.1 Download and Install

The Axis Perimeter Defender software must be downloaded from the Axis website (<https://www.axis.com>) and installed on a computer that can access the required camera. Please consult the Axis Perimeter Defender Setup Manual for more information on software installation.

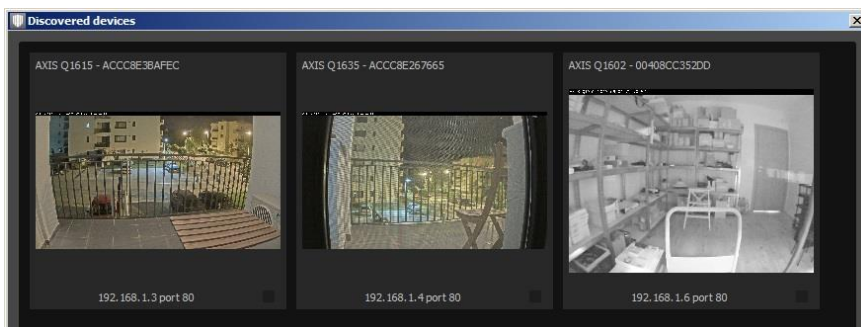
### 2.2 Add a Camera

Once installed, cameras (devices) must be added to the software. This can be done by searching for devices on the network, or manually adding the device using its details.

#### 2.2.1 Search the Network

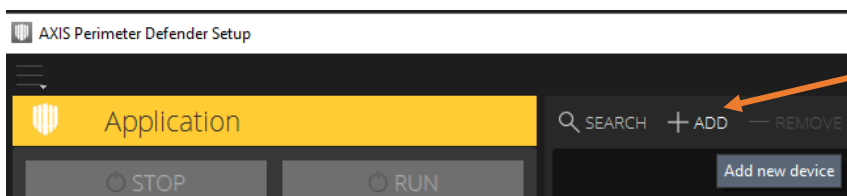


In the Application tab of the software, select the Search button to scan the network for cameras.



In the window that opens, select the relevant camera.

#### 2.2.2 Add Manually



To add a camera manually, click **ADD** in the Application tab of the Perimeter Defender software.

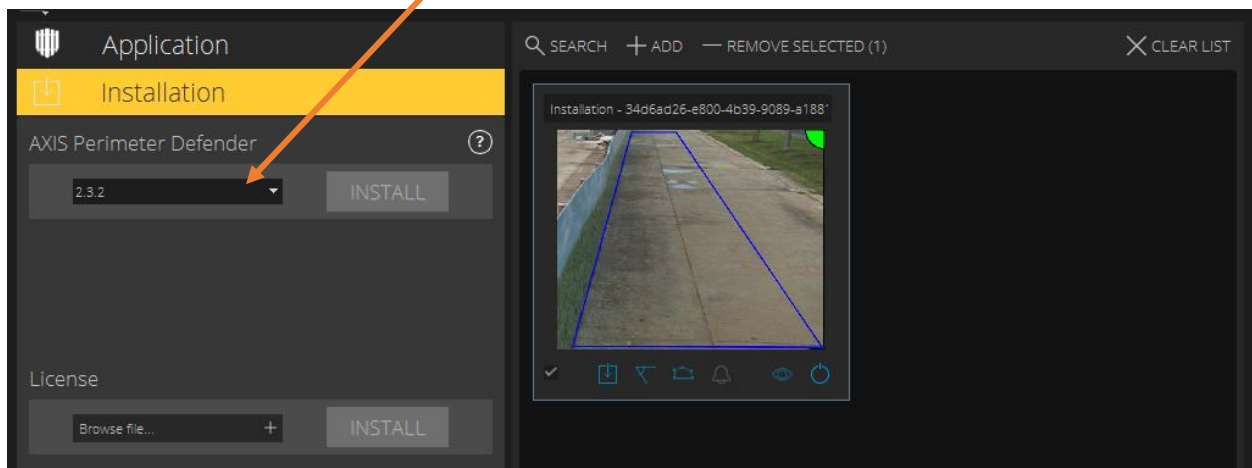
In the window that opens, enter the details of the camera.

## 2.3 Install Analytics on Camera

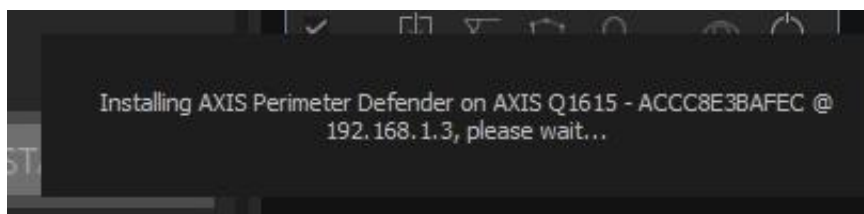
Once a camera has been added, the Perimeter Defender Analytics must be installed on the camera itself.

### 2.3.1 Install Perimeter Defender

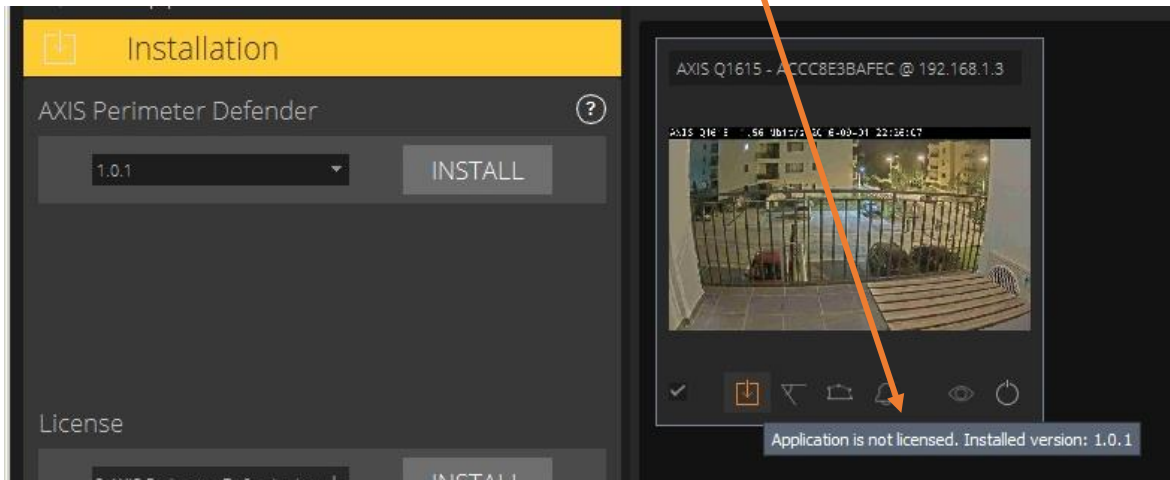
In the Installation tab, select the version of Axis Perimeter Defender to install. Then, click **INSTALL**.



An installation notification will be displayed:



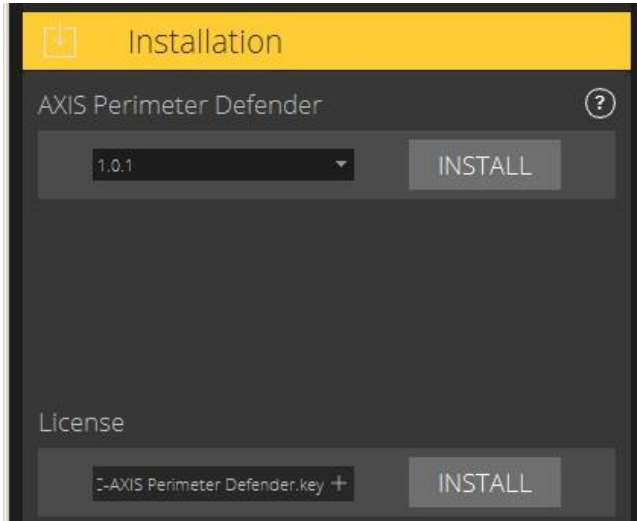
Once the Perimeter Defender application is installed, a notification will indicate that the application is not yet licensed.



To license, see below.

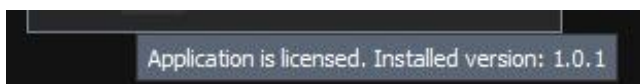
### 2.3.2 Install Perimeter Defender License

**Note:** A Perimeter Defender software license must be obtained from the software manufacturer.



To license the Perimeter Defender application, select the license file from the drop-down menu.

Select **INSTALL**.



A notification will show that the application is now licensed.



## 2.4 Calibrate Analytics

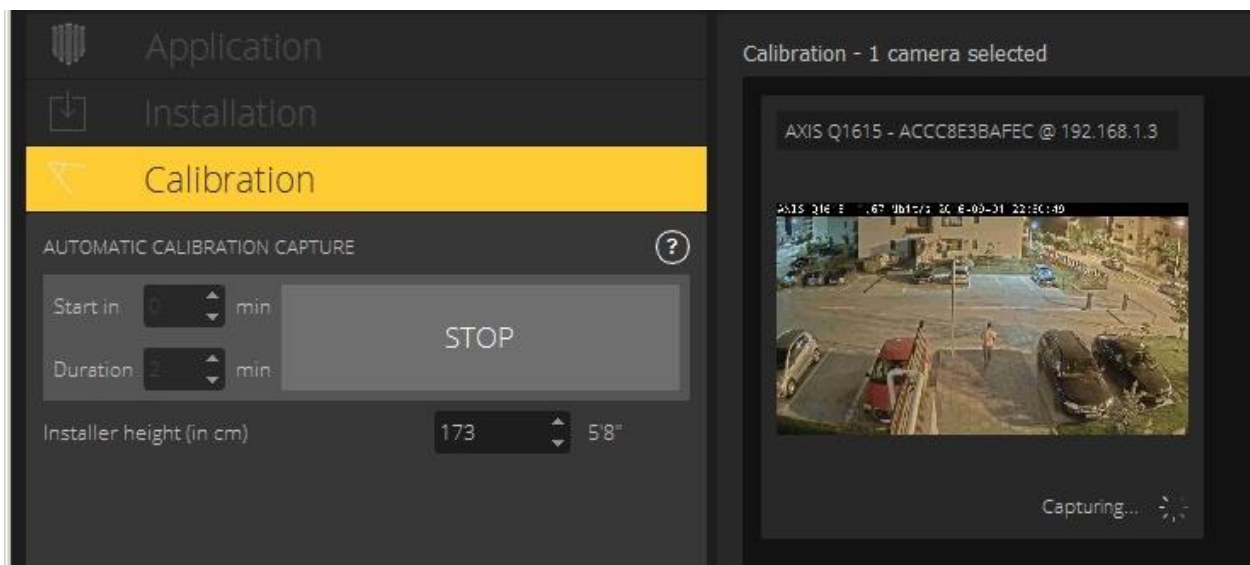
In the Perimeter Defender software, the analytics must be *calibrated* (using the relevant camera) and then *uploaded* to the camera itself (to reflect in CathesisVision).

Below are some steps from the calibration and upload process, but for detailed information please consult the software manufacturer for support guides.

### 2.4.1 Automatic Calibration Computation

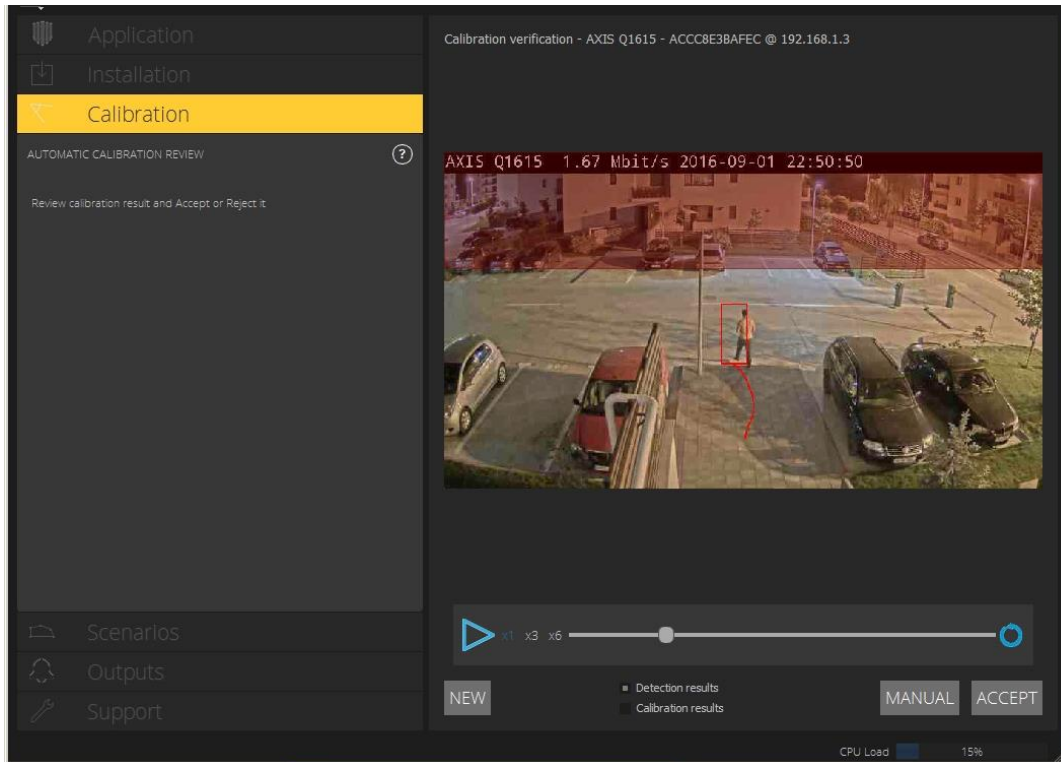
Analytics can be automatically calibrated for the selected camera by capturing the camera for a *defined time period* which allows the software to analyse the video, and then calibrate the analytics accordingly.

The user will be able to make some edits and then finally Accept or Reject the calibration.

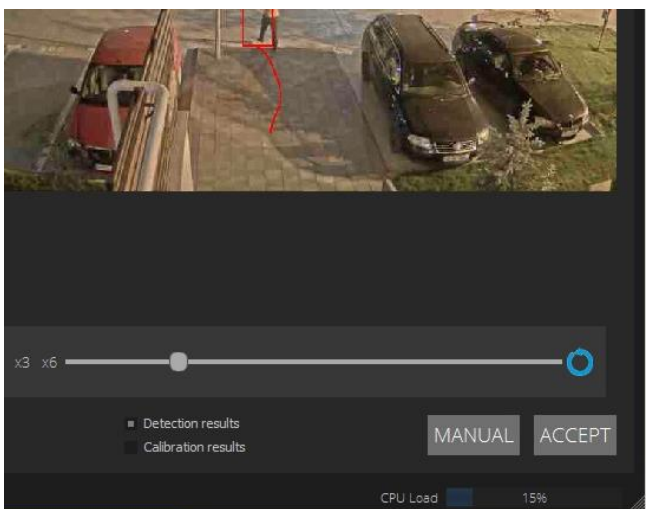


1. In the Calibration tab, select the relevant camera for which analytics should be configured.
2. Then, set the start and end time of the capture period, and enter the installation height of the camera.
3. Then select **CAPTURE**.

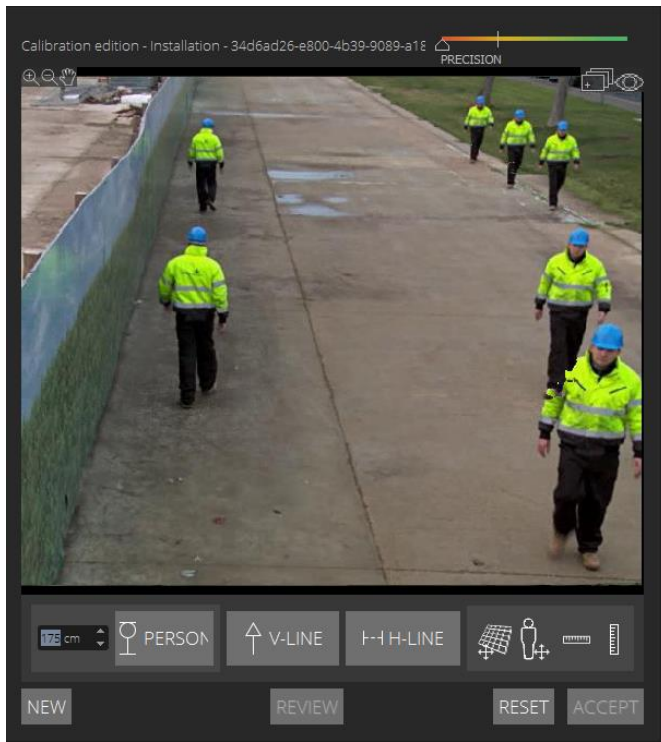
Once the video capture and calibration have been processed, review the calibration:



### 2.4.2 Edit Calibration



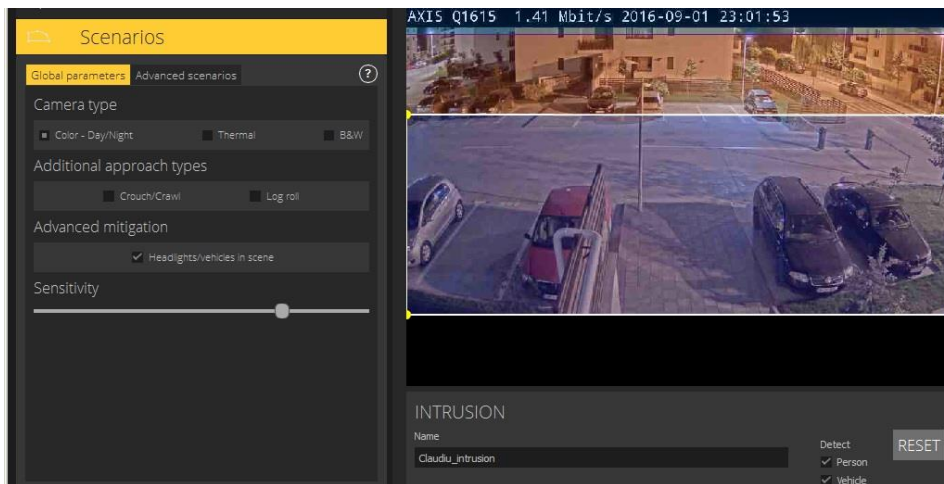
To edit the calibration, select **MANUAL**.



Use the tools to adjust the calibration, and then click Accept.

### 2.4.3 Configure Event/Scenario

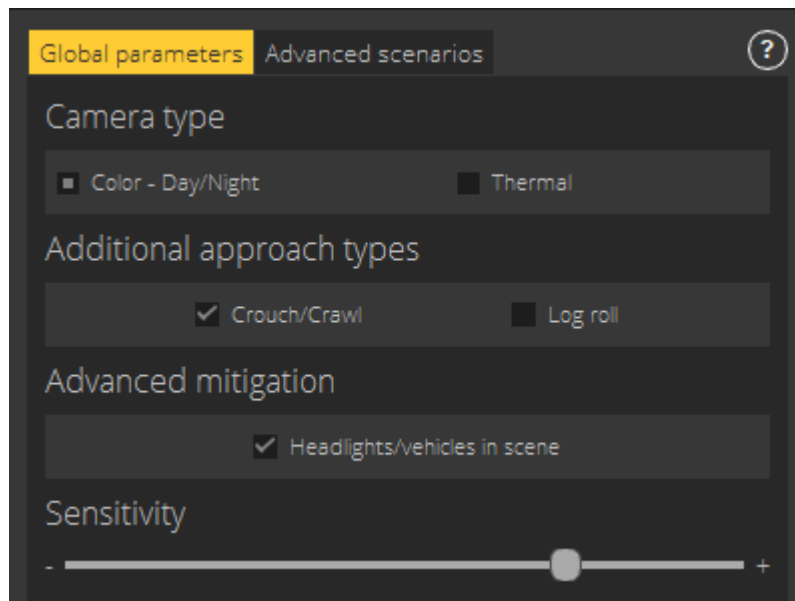
Events need to be configured on the camera, which will be queried for event information by CathexisVision.



Define further analytics parameters in the **Scenarios** tab.

### 2.4.3.1 Global Parameters

In the Global parameters tab, configure general scenario settings which will apply to all scenarios (which are configured in the Advanced scenarios tab).



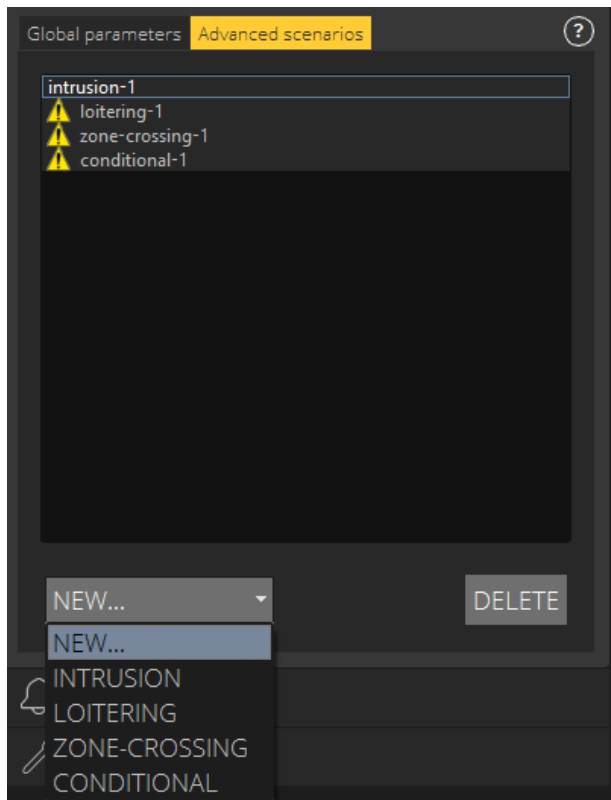
Use the checkboxes and the slider to adjust settings. See below.

- Select the **Camera Type**. For a colour camera, select Color – Day/Night. Thermal cameras are detected automatically.
- Select the **Additional Approach Types** to be covered in the scenario.  
**Note:** Crouch/crawl and log roll might generate false alarms. E.g. caused by animals.
- Enable **Advanced Mitigation** to account for vehicles, headlights, or headlight effects in a scene, such as reflections etc.  
**Note:** This may reduce performance in normal conditions. If another scenario has vehicle selected, headlight mitigation will be performed anyway.
- Set the **Sensitivity** of the system by sliding the slider left for lower sensitivity and right for increased sensitivity.

### 2.4.3.2 Advanced Scenarios

In the Advanced Scenarios tab, specific scenarios will be added and defined. The global parameters configured in the previous section will apply to all scenarios configured here.

#### Add New Scenario



To add a new scenario, click **NEW** at the bottom left of the tab and select the desired scenario.

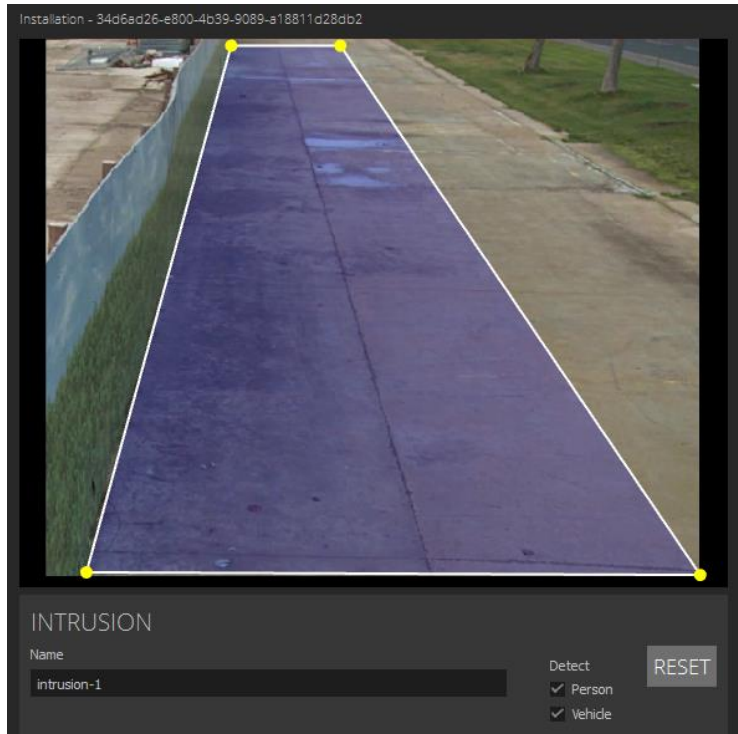
Click **DELETE** to delete.

Once selected, scenarios will populate the list on the left.

**Select a scenario** to define it further on the right-hand side of the screen.

## Intrusion Scenario

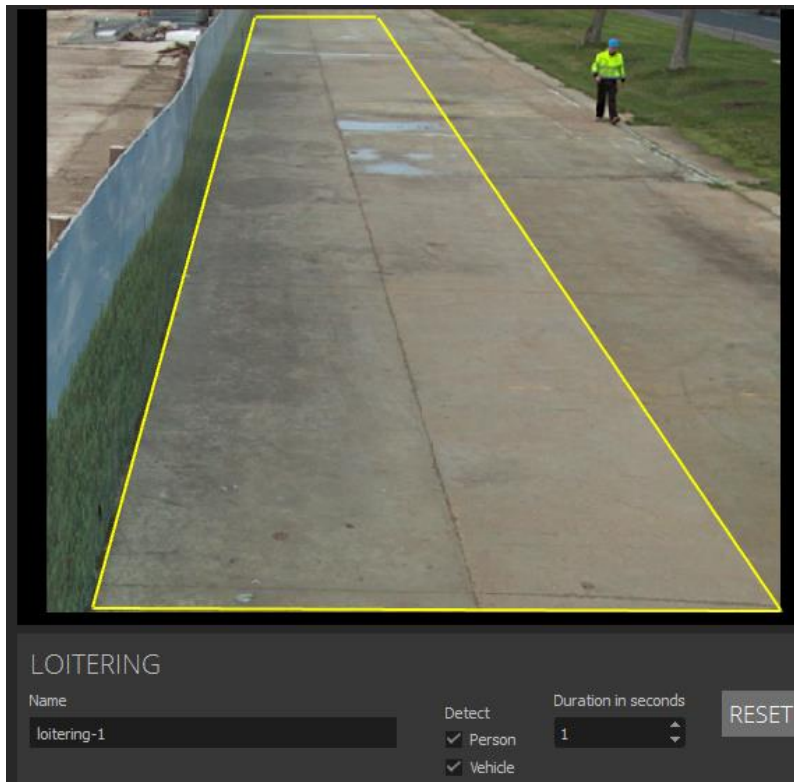
Select the Intrusion scenario from the list of added scenarios.



- **Create/Edit Zone:**
  - Create a zone for monitoring part of the area by left-clicking on the camera image and drawing the area.
  - Left-click to stop drawing and confirm zone.
  - Left-click on the zone to delete it.
- Give the scenario a **Name** to differentiate it from other scenarios.
- Select whether there are **people and/or vehicles** to be detected in the area.
- To configure a new scenario while retaining the current scenario's settings, simply select the scenario from the list.
- **CANCEL ALL:** Click to cancel all scenarios and return to Application tab.
- **ACCEPT ALL:** Click to accept all scenarios and return to Application tab.

## Loitering Scenario

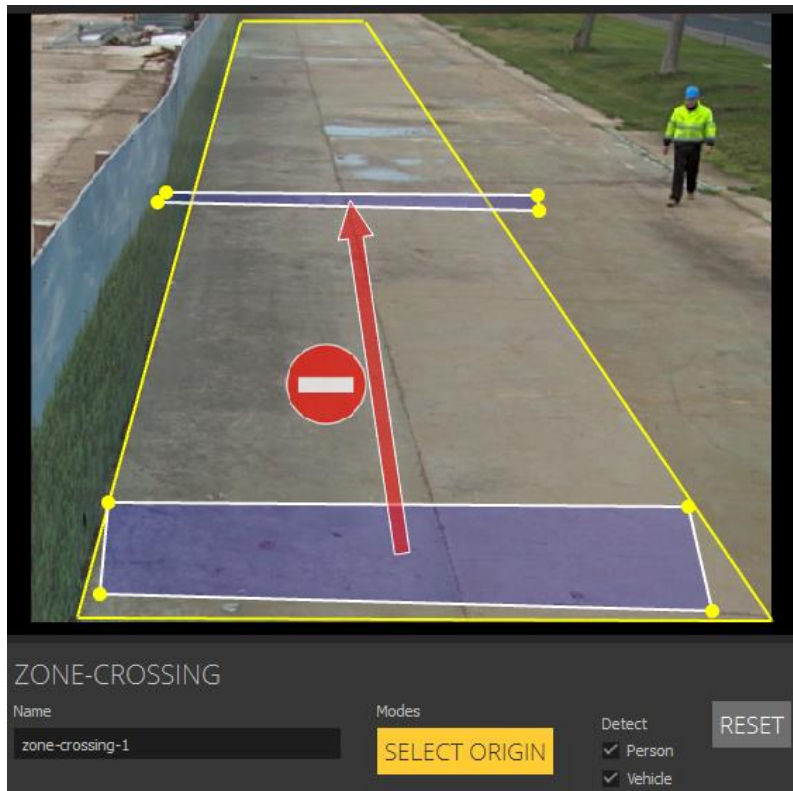
Select the Loitering scenario from the list of added scenarios.



- **Create/Edit Zone:**
  - Create a zone for monitoring part of the area by left-clicking on the camera image and drawing the area.
  - Left-click to stop drawing and confirm zone.
  - Left-click on the zone to delete it.
- Give the scenario a **Name** to differentiate it from other scenarios.
- Select whether there are **people and/or vehicles** to be detected in the area.
- Set the **Duration** of time that a target should remain in the zone before triggering an alarm.
- To configure a new scenario while retaining the current scenario's settings, simply select the scenario from the list.
- **CANCEL ALL:** Click to cancel all scenarios and return to Application tab.
- **ACCEPT ALL:** Click to accept all scenarios and return to Application tab.

## Zone Crossing Scenario

Select the Zone crossing scenario from the list of added scenarios.

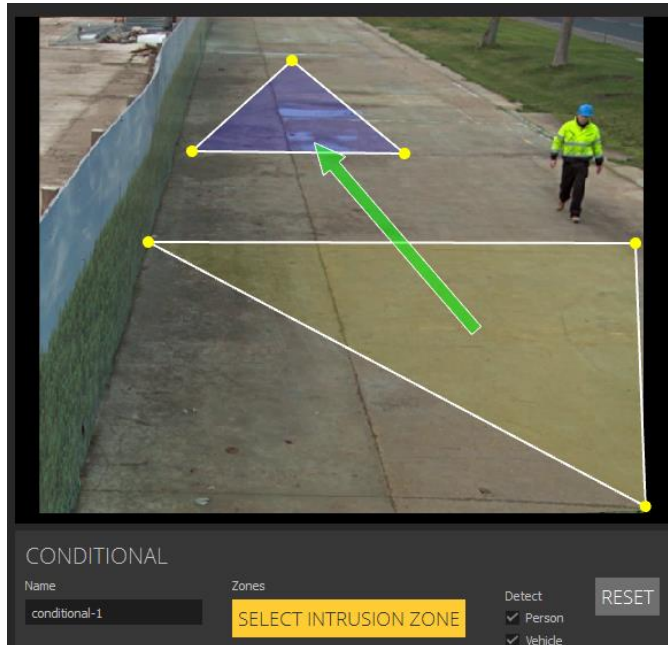


- **Create/Edit Zone:**
  - Create a zone for monitoring part of the area by left-clicking on the camera image and drawing the area.
  - Left-click to stop drawing and confirm zone.
  - Left-click on the zone to delete it.
- Give the scenario a **Name** to differentiate it from other scenarios.
- Select whether there are **people** and/or **vehicles** to be detected in the area.
- To select the **Origin** of the zone crossing (i.e., from which direction objects should originate and cross the zone to trigger the event), two zones must be created.
  - The **SELECT ORIGIN** button must then be clicked and the originating zone must be selected.
  - This will display the direction arrow of the algorithm.
- To configure a new scenario while retaining the current scenario's settings, simply select the scenario from the list.
- **CANCEL ALL:** Click to cancel all scenarios and return to Application tab.
- **ACCEPT ALL:** Click to accept all scenarios and return to Application tab.



## Conditional Scenario

Select the Conditional scenario from the list of added scenarios. This scenario is used to trigger events when an object enters a certain zone without first passing through another zone.

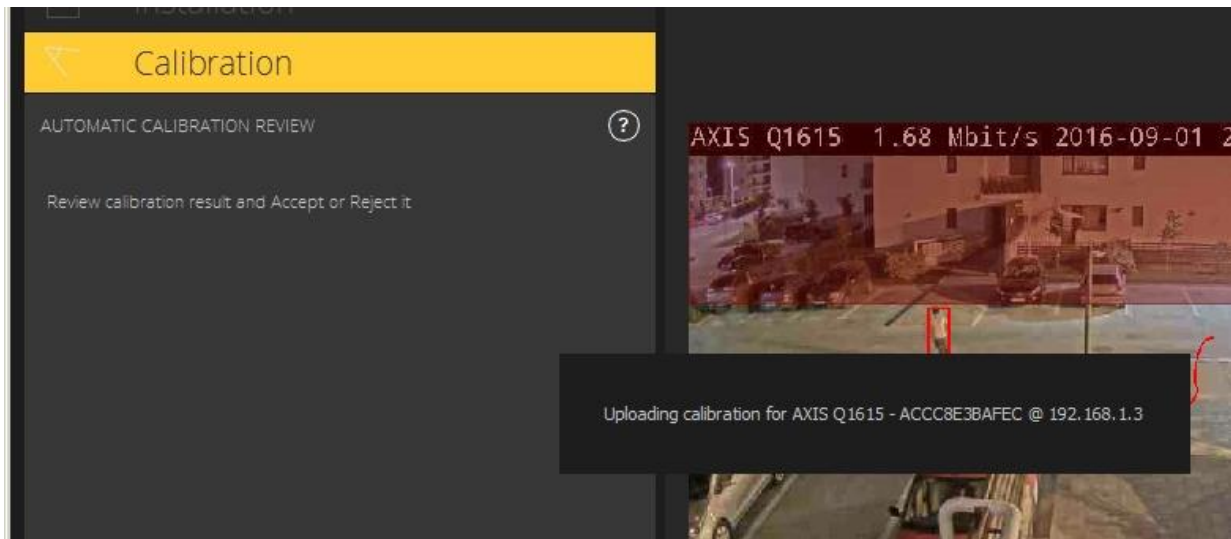


- **Create/Edit Zone**
  - Create a zone for monitoring part of the area by left-clicking on the camera image and drawing the area.
  - Left-click to stop drawing and confirm zone.
  - Left-click on the zone to delete it.
- Give the scenario a **Name** to differentiate it from other scenarios.
- Select whether there are **people** and/or **vehicles** to be detected in the area.
- To select the **Intrusion Zone** (i.e., which zone will trigger an event when an object enters it without first passing through another zone), two zones must be created. **SELECT INTRUSION ZONE** button must then be clicked and the originating zone must be selected. This will display the direction arrow of the algorithm.
- To configure a new scenario while retaining the current scenario's settings, simply select the scenario from the list.
- **CANCEL ALL**: Click to cancel all scenarios and return to Application tab.
- **ACCEPT ALL**: Click to accept all scenarios and return to Application tab.

Consult the software manufacturer for more instructions on editing the calibration.

## 2.4.4 Accept and Upload Calibration

To accept the calibration, select ACCEPT. The calibration will be uploaded to the camera.



## 2.5 Export Trigger Messages to CathesisVision

The camera does not need to be configured to forward events to the CathesisVision server, as CathesisVision will query the camera for information.

**Note:** For more information on the configuration of triggers and test alarms, please consult the Axis Perimeter Defender Setup Manual.

### 3. Configure Camera in CathesisVision

Next, the camera needs to be configured in CathesisVision in order for the desired trigger to be used for system events. The Axis Perimeter Defender analytics capabilities are:


- Intrusion detection
- Zone crossing
- Loitering
- Conditional Zone crossing.

In the CathesisVision Setup tab for the site to which the camera has been added, navigate to **Configure Servers / Cameras**, and either **double-click** on the relevant camera or **right-click / Properties**.

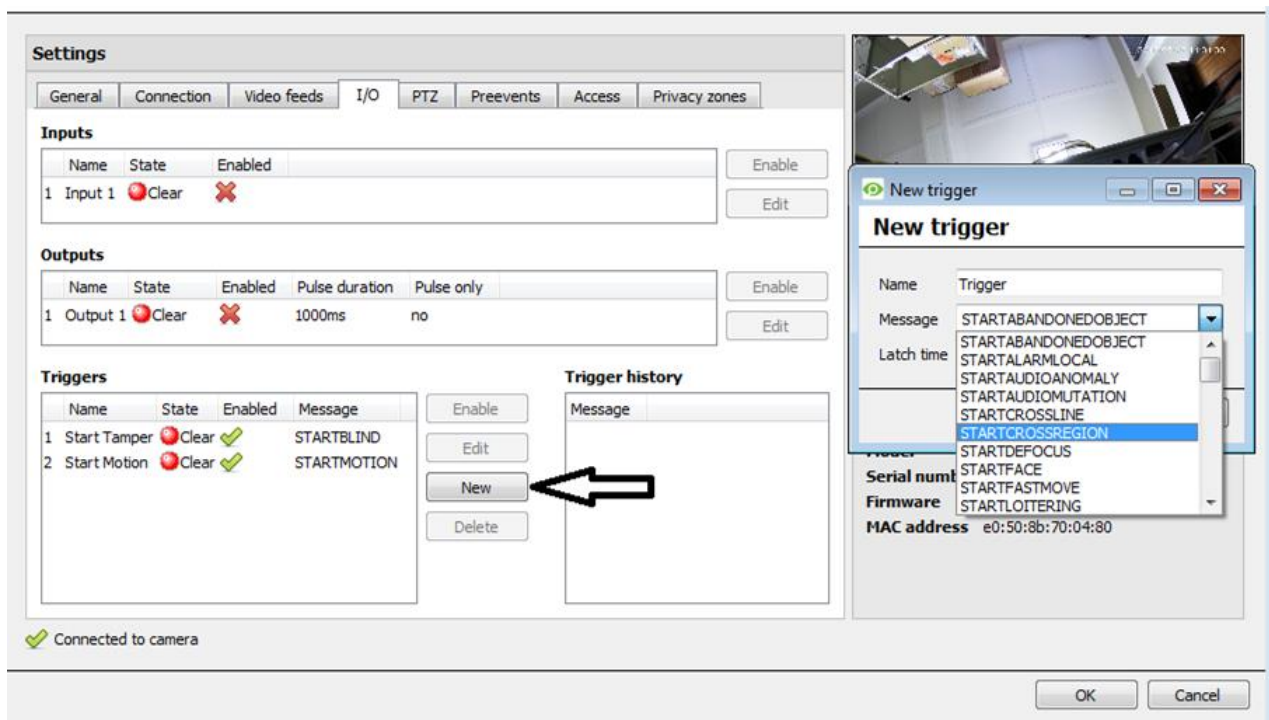
Open the **I/O tab** of the Camera configuration window that opens.

#### 3.1 New Trigger

In the I/O tab, add a new trigger in the Triggers section.

 Click the New button.

Select the appropriate trigger from the drop-down list in the New Trigger window that opens.



### 3.1.1 Trigger Types

The Axis Perimeter Defender triggers that can be selected here are:

- PERIMETER\_DEFENDER
- PD\_INTRUSION
- PD\_LOITERING
- PD\_ZONE\_CROSSING

PERIMETER\_DEFENDER will trigger whenever an alert is present, while the others will trigger depending on the type of alert received.

**Note:** The Perimeter Defender application must be running on the camera to get the above triggers in the drop-down list.

### 3.1.2 Event Triggered

When this event triggers, the object for the selected trigger will change from red to green.

The screenshot displays the 'Settings' window for a camera, specifically the 'I/O' tab. It features several sections:

- Inputs:** A table with columns for Name, State, and Enabled. Two inputs are listed: 'Input 1' and 'Input 2', both with a red state indicator and disabled.
- Outputs:** A table with columns for Name, State, Enabled, Pulse duration, and Pulse only. One output is listed: 'Output 1', with a green state indicator and enabled.
- Triggers:** A table with columns for Name, State, Enabled, and Message. One trigger is listed: 'Start Motion', with a green state indicator and enabled. Buttons for 'Enable', 'Edit', 'New', and 'Delete' are present.
- Trigger history:** A table with a 'Message' column containing the text 'STOPMOTION'.
- Camera information:** A sidebar on the right showing details like Driver, IP address, Model, Serial number, Firmware, and MAC address.

At the bottom left, a green checkmark indicates 'Connected to camera'. At the bottom right, there are 'OK' and 'Cancel' buttons.

## 3.2 Configure Overlays

When adding a camera with Perimeter Defender configured on it, overlays will be enabled by default and pulled through automatically. No additional steps are required to enable overlays. However, overlays may be edited/disabled in the Video Feeds tab of camera setup window (pictured above).

The table below lists the supported overlays, a description of the overlay, and a list of configurable settings for each overlay:

Overlay	Description	Configurable Settings
<b>Zone</b>	Shows the zones configured on the camera.	<ul style="list-style-type: none"> <li>• Overlay colour.</li> <li>• Overlay text display.</li> <li>• Overlay text size.</li> </ul>
<b>Actor</b>	Draw rectangles around objects in the scene and identify objects as either person/car.	<ul style="list-style-type: none"> <li>• Overlay colour.</li> <li>• Overlay text display.</li> <li>• Overlay text size.</li> </ul>
<b>Alert</b>	Displays alarms.	<ul style="list-style-type: none"> <li>• Overlay text colour.</li> <li>• Overlay text size.</li> <li>• Overlay position.</li> <li>• Draw box (on/off).</li> <li>• Fill background (on/off).</li> <li>• Overlay background colour.</li> <li>• Overlay background alpha.</li> </ul>

## 4. Configure CathesisVision System Event

A CathesisVision system event, which will use the camera's edge analytics trigger (configured above), needs to be set up next.

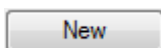
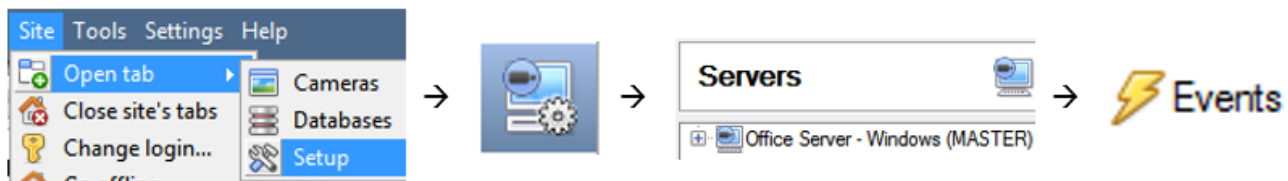
### 4.1 Event Window

Events in CathesisVision are set up via the Event Window, which has four tabs.

- In the **General Tab**, an event is given a name, description, schedule and priority.
- In the **Triggers Tab** the trigger/s for the event is defined.
- In the **Actions Tab** the action/s which the event takes, is defined.
- In the **Resources Tab** the various site resources which can be used as part of an event are defined.

### 4.2 Create New Event

Navigate to the Events management area by following the sequence: **Open Tab / Setup / Servers / Master Server / Events**. This is shown below.



Once in Events management area, click the **New** icon at the bottom of the screen. This will open up the **New Event window**. Alternatively, right-click and select **New**.

The new event window has four tabs which can be used to set up the event: General, Triggers, Actions, and Resources.

### 4.3 General Tab

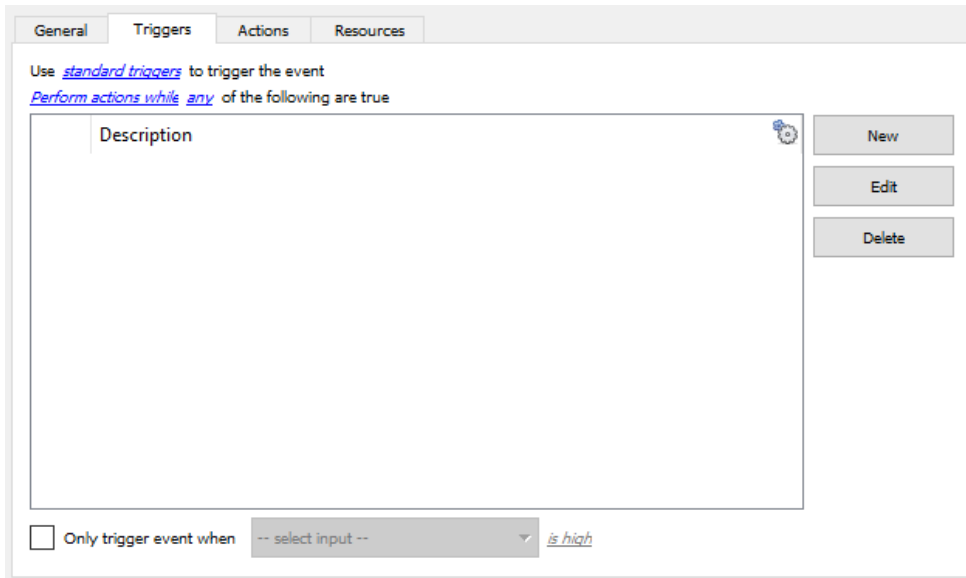
Create a new event under the General tab by filling in the fields.

General	Triggers	Actions	Resources
Name	New event		
Description			
Schedule	Always		
Priority	Low		
<input type="checkbox"/> Allow zone isolation			

- Give the event a **descriptive name** (optional).
- Give the event a **description** (optional).
- Give the event a **schedule** which defines the times during which this event will be active.
- Give the event a **priority** which categorises event alarms received by operators.
- Enable **Zone isolation** to allow the operator to prevent the alarm from popping up on his/her workstation (useful in the case of repeat false alarms).

## 4.4 Triggers Tab

In the triggers tab, a **Standard Trigger** type must be selected in order to use the camera's edge analytics event to trigger the CathesisVision event.

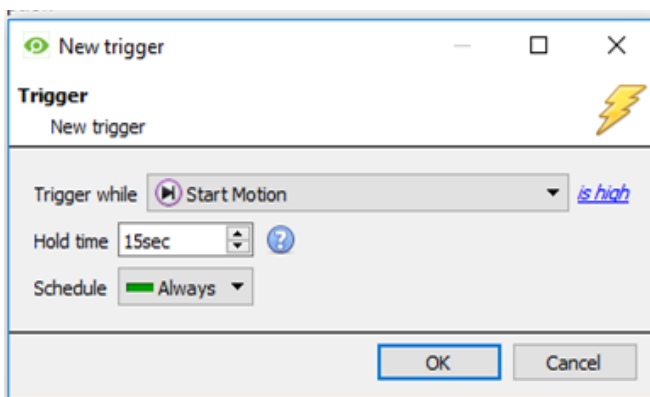


Select the **Standard Trigger** type by clicking on the first blue hyperlink.

Click **New** to add a trigger to this event.

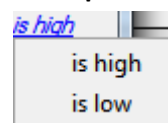
### 4.4.1 New Trigger

**Note:** The camera's edge analytics event must already be configured on the camera, and the trigger must already have been selected for the camera in CathesisVision in order for it to be available for selection at this point.



**Trigger while:** Select the camera event to use to trigger the CathesisVision system event.

**State options:**



The hyperlink to the right of the trigger will show all the state options of this trigger. Click the hyperlink to access the options.


**Hold time:** Extend the event for set time after the trigger terminates.

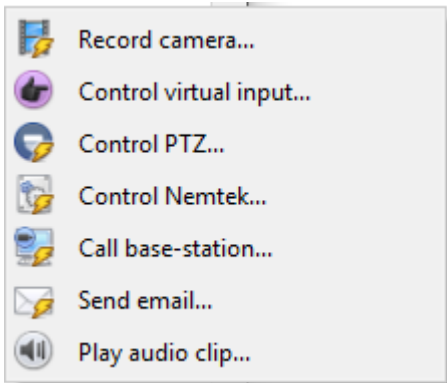
**Schedule:** Define when this trigger is active within the event schedule.

**Note:** For **when/while** and **any/all** variable information, please consult the CathesisVision Setup Manual.

## 4.5 Actions Tab

Add an action that the system event will take when the camera event trigger is received.

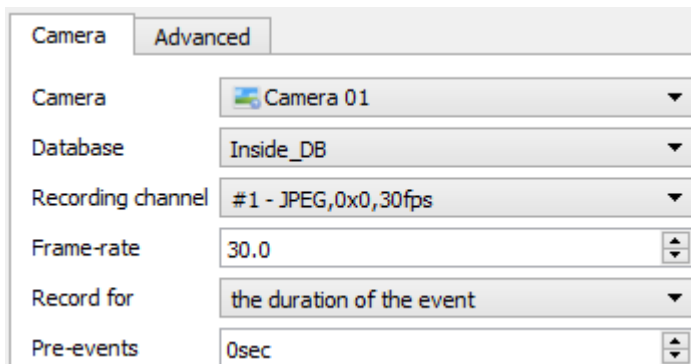
 To add an event action, click New in the Actions tab.



A list of available actions will appear. The drop-down contains all the available action types.

**Select an option**, for example, Record Camera.



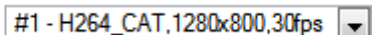

### 4.5.1 Record Camera



Click the drop-down menus to see more options.

Click to select the appropriate option.

See the table below for more information.

Drop-down Menu Option	Description
Database 	Select a preconfigured database onto which the camera will be recorded. The user may select multiple databases to record the same event, on multiple servers.
Camera 	Select a preconfigured camera to record to the specified database. The drop-down menu will contain all cameras on the system.
Channel 	If more than one video feed is coming from the camera (perhaps one for recording and one for Video Analytics) then select the relevant feed for the recording.
Frame-rate 	Select the required frame rate at which the video will be recorded.



<p>Pre-events <input type="text" value="0sec"/></p>	<p>Setting a pre-events timeframe will set the recording to start a few seconds before the event actually triggered.</p> <p><b>Note:</b> Pre-events need to be set up in the camera addition process, under the pre-events tab.</p>
<p>Camera <b>Advanced</b></p> <p>Schedule <input type="checkbox"/> <input checked="" type="checkbox"/> Every day <input type="text" value=""/></p>	<p>When setting up recording, the <i>Advanced Tab</i> offers the option to schedule when this recording is active <b>within</b> this event.</p> <p>This schedule does not impact on anything beyond this specific setting.</p>

## 4.6 Resources Tab

**Cameras**

Use trigger resources

**Audio input** ?

**Audio output**

Send up to 8 cameras, an audio output, and an audio input.

This will broadcast to all operators viewing this site.

The **Use trigger resources** option will automatically send resources that have been associated with the trigger.

? Click the question mark icon for more information about when the resources set here will be sent.

## 5. Conclusion

This document was designed to deal specifically with this aspect of the software.

For further information about the CathesisVision software please consult the main manual (<http://cathesisvideo.com/>).

For support please contact [support@cat.co.za](mailto:support@cat.co.za).

### USEFUL LINKS

To view tutorial videos on CathesisVision setup, visit <https://cathesisvideo.com/resources/videos>

Find answers to Cathesis Frequently Asked Questions: <https://cathesis.crisp.help/en/?1557129162258>