

3xLOGIC

VISIX Gen III Cameras

VCA Analytics Guide Ver1.0 / 2020.11



Simple. Scalable. Secure

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Introduction

This user guide will describe how to license, enable and configure 3xLOGIC's VISIX Gen III Camera Video Content Analysis (VCA) feature to allow for on-camera VCA rule creation. VCA rules can be used for detecting events of interest and triggering actions on-camera or within VIGIL Server to react to those events.

Getting Started

Video content analysis (VCA) is applied through the use of rules configured on individual cameras. Some basic VCA rules are included with VISIX Gen III cameras. These Base Analytics are detailed *here*.

For advanced analytics, a separate license must be purchased and applied before proceeding. When a camera is purchased with the advanced analytics license, no further activation should be required as the camera is shipped with the advanced license activated. If the license was purchased after the camera, the advanced license must be applied at the *VCA>License* page. Further details regarding licensing are given in the *License* section of this guide with Advanced Analytics detailed *here*.

Before continuing, ensure that you are familiar with the camera's interface and have the username and password available. See the VISIX Gen III User Guide for information on standard operation of VISIX Gen III cameras.

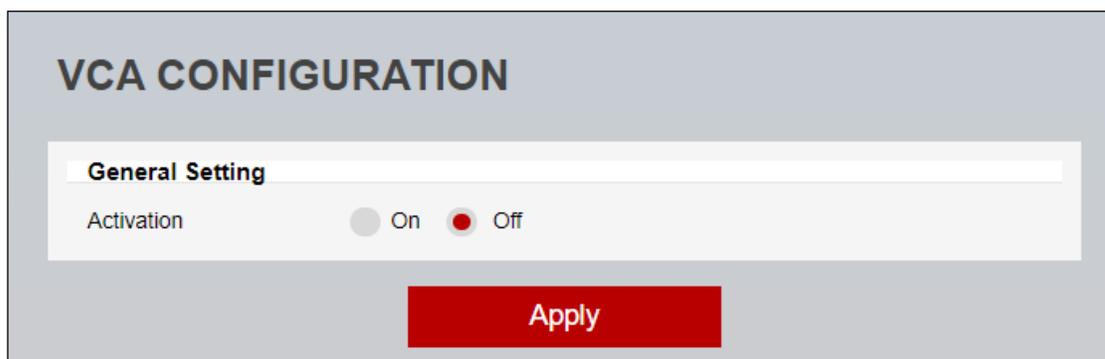
Proceed through the remaining sections of this guide for information on how to license, enable and configure the features the VISIX Gen III VCA video analytics. After creating VCA rules, always add the rules to VIGIL Server to ensure rule data is stored in the VIGIL database. See *How to Add a Rule to VIGIL Server* on page 7 for detailed instructions on this process.

Enable/Disable VCA

To begin, the VCA engine must be activated to start using VCA rules.

By default, VCA is disabled.

Activation



The screenshot shows a web interface titled "VCA CONFIGURATION". Under the "General Setting" section, there is an "Activation" label followed by two radio buttons: "On" (unselected) and "Off" (selected). Below this section is a prominent red "Apply" button.

Activation Settings

1. Login to your VISIX Gen III Camera and click the **Setup** button.
2. Using the left-hand menu, navigate to the *VCA > Enable* page, select **On** and **Apply** to turn VCA on. Select **Off** and **Apply** to turn the VCA off.

*Note: The menu system will reload after each **Apply** to reflect the features that are available, the availability will depend on the license that has been applied.*

Rule(s) Table

Navigate to *VCA > Rules* to view the Rules Table. The Rules table will show the VCA rules that have been defined on the camera.

- **Add** is used to add additional rules.
- **Modify** is used to change the settings on a selected rule.
- **Delete** is used to remove the selected rule.

Note: Rules cannot be deleted if they are linked to an action or counter. Remove these links before attempting to delete.

Rules

Rules are used to create reactions to events within a scene and trigger appropriate actions. To manage rules, navigate to the *Rules* feature from the VCA menu.

The Rules page displays a live view from the camera and allows you to add, modify or delete rules.

The screenshot shows the 'RULES' interface. At the top is a live camera view of a road intersection with a red rectangular annotation box overlaid on the foreground. Below the camera view is a section titled 'Show Burnt-in Annotation for setup' with two red buttons: 'Start' and 'Stop'. Below that is a table titled 'Rule(s)' with the following data:

| Type | Rule Name | Action | Color |
|----------|-------------------|--------|-------|
| Presence | VCA-Presence P... | - | Red |

At the bottom of the interface are three red buttons: 'Add', 'Modify', and 'Delete'.

Rules Scree

Show Annotation

Use this option to show analytic data (zones, lines, counters) on the camera view. Select **Start** to show the data and **Stop** to hide the data.

Note: This does not affect the processing of analytic data.

How to Add a Rule to a Camera

1. Select **Add** to display the available rules.
2. Select the rule to be added.
3. Configure the rule accordingly.
4. Select **Save**.

How to Modify a Rule On Camera

1. Highlight the rule to be modified.
2. Select **Modify** to open the settings for the rule.
3. Modify the rule accordingly.
4. Select **Save**.

How to Delete a Rule From a Camera

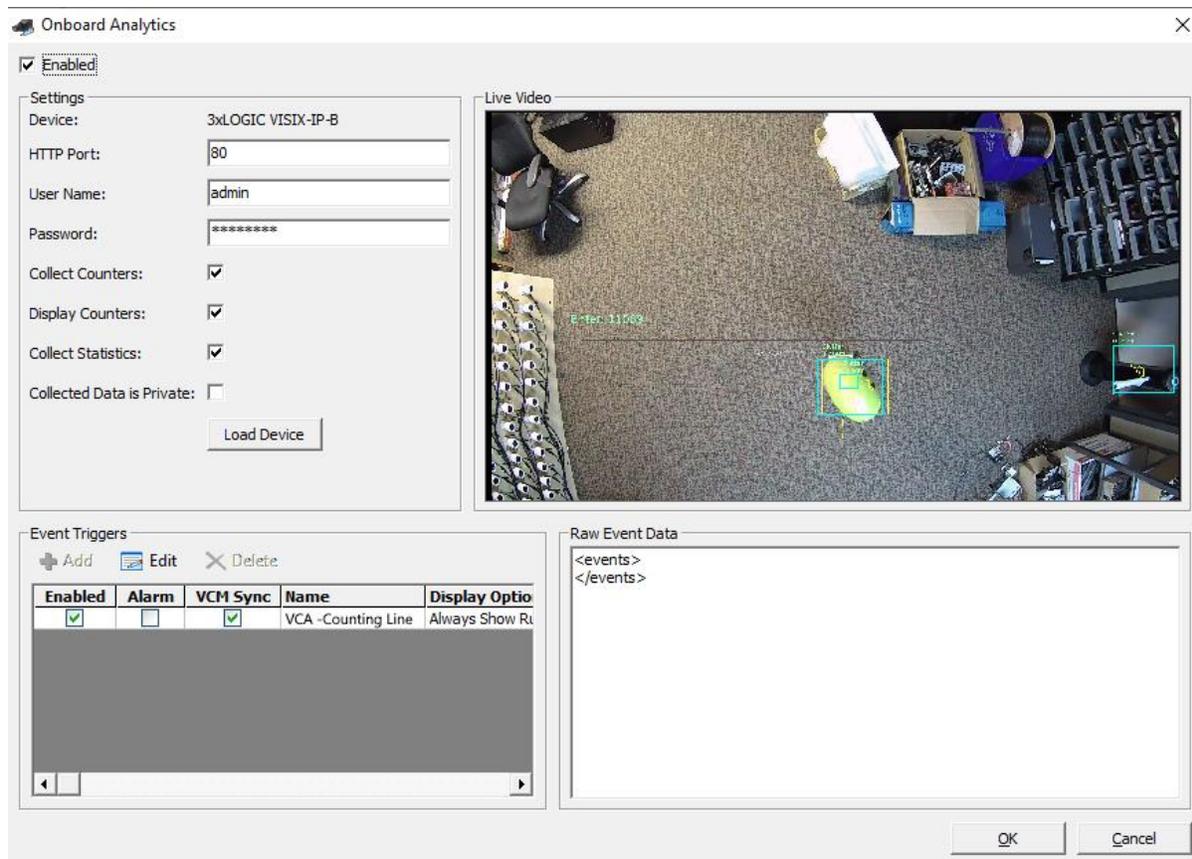
1. Highlight the rule to be deleted.
2. Select **Delete**.

Note: Rules cannot be deleted if they are linked to an action or counter. Remove these links before attempting to delete.

How to Add a Rule to VIGIL Server

After creating a VCA rule on the camera, the rule must be added to VIGIL Server so that related data can be stored in the VIGIL database. To begin:

1. Login to VIGIL Server.
2. Open **Advanced Settings** and navigate to the **Camera Setup** tab.
3. Select the camera channel associated with the camera you have created the VCA rule on.
4. With the camera selected, open **Network Camera Settings**.
5. Click the **On-Board Analytics** button to launch the *On-Board Analytics Utility*. Click **Enabled** at the top of the utility to allow VIGIL to access VCA rules on the camera. This utility will display connection information for the camera (automatically populated by VIGIL Server) as well as VCA rules options. It will also list all VCA analytics rules that have been constructed on the camera. VCA rules will populate the *Event Trigger* list.



VIGIL On-Board Analytics Utility

6. Data collection options can be enabled at this time. *Collect Statistics* (allows for collection of rule metadata; required for *Presence Time in Line* rule) *Collect Counters* (collect count info from configured Counter rules), *Display Counters in VIGIL* (for on-screen display of counter data) and *Collected Data is Private* (prevent VCM from collecting rule data) options are available.
7. Enable the desired rules by toggling the **Enabled** checkbox for each rule, under the *Event Trigger* list.
8. When a rule is selected, click **Edit** to change the *Rule Name* or *Display Options* (*Never Show Rule*, *Always Show Rule*, *Show Rule When Alarmed*).
9. If desired, *Alarm* (the rule will trigger an alarm in VIGIL Server when activated) and *VCM Sync* (rule data will be synchronized to the VIGIL Central Management analytics database) options can also be enabled at this time.
10. Click **OK** to save the settings and add the enabled rules to VIGIL Server. Rule data will now be inserted into the VIGIL database.

Base Analytics – Available VCA Rules and Tools

Some basic rules are available with the camera without the need for an additional license. Base analytics rules and features available include:

Rules

- **Presence Polygon** - The Presence Polygon Rule triggers an event when an object is first detected in a selected zone or can be used as a Presence Time In Line which tracks how long objects are in the zone.
- **Presence Line** - The Presence Line Rule triggers an event when an object is first detected crossing a selected line.

Features

- **Tamper Detection** – The Tamper feature is intended to detect camera tampering events such as bagging, defocusing and moving the camera. This is achieved by detecting large persistent changes in the image.
- **Object Tracker** – Base analytics includes on-screen trackers around detected objects.

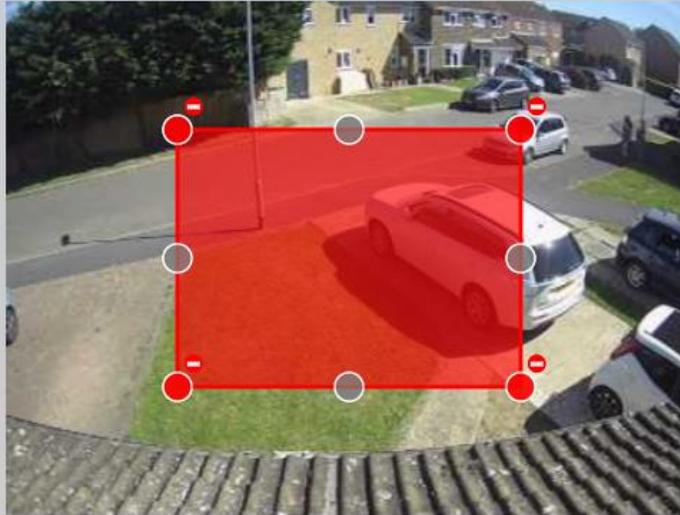
Please read through the proceeding sections of this guide for specific details pertaining to each individual rule or feature.

Presence Filters - Presence Polygon (Presence Time in Line)

The Presence Polygon Rule triggers an event when an object is first detected in a selected zone or can be used as a Presence Time In Line rule which tracks how long objects are in the zone.

Note: The Presence Polygon Rule will trigger in the same circumstances as the Enter and Appear Rules. The appropriate rule will depend on the scenario.

RULES



Rule Property

Name

Type

Object Filter On Off

Event Actions

Event Notification TCP Event HTTP Event

Action Rule

Convert VCA to MD

Save

Cancel

Presence Polygon

The Presence Polygon Rule will create a zone and overlay it on the live view. The zone can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. In order to remove a segment, select the **minus sign** next to a red node.

Rule Properties

- **Name:** Defines the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Click **Save** to save changes to the rule.

Presence Polygon as VIGIL Presence Time in Line – Setup Information

If using *Presence Polygon Rule as Presence Time in Line*, no configuration for counting is required camera-side. However, be sure **Collect Statistics** is enabled in the *VIGIL On-Board Analytics Utility* for the camera when adding the rule to VIGIL Server.

Onboard Analytics

Enabled

Settings

Device: 3xLOGIC VISIX-IP-B

HTTP Port: 80

User Name: admin

Password: *****

Collect Counters:

Display Counters:

Collect Statistics:

Collected Data is Private:

Load Device

This will ensure the utility collects then inserts the data for how long objects are within the zone into the VIGIL database where the Presence Time In Line can be used with VIGIL Advanced Reporting.

Presence Filters - Presence Line

The Presence Line Rule triggers an event when an object is first detected crossing a selected line.

RULES

Rule Property

Name: VCA-Presence Line

Type: Presence

Object Filter: On Off

Event Actions

Event Notification: TCP Event HTTP Event

Action Rule: None

Convert VCA to MD:

Save Cancel

Note: The Presence Line Rule will trigger in the same circumstances as the Direction and Counting Line Rules, the most appropriate rule will depend on the scenario.

Presence Line

The Presence Line Rule will create a line and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment.

Rule Properties

- **Name:** Define the name of the rule.
- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Tamper Detection

The Tamper feature is intended to detect camera tampering events such as bagging, defocusing and moving the camera. This is achieved by detecting large persistent changes in the image.

TAMPER DETECTION CONFIGURATION

Tamper Detection

Enable On Off

Duration Second(s) [1 ~ 60]

Area Threshold % [0 ~ 100]

Suppress Alarm on Light On Off

Event Actions

Enable TCP Event On Off

Enable HTTP Event On Off

Apply

Tamper

Tamper Detection Configuration

- **Enable:** Defines if the tamper detection feature will be on or off.
- **Duration:** Defines the length of time that the image must be persistently changed before the alarm is triggered.

- **Area Threshold:** Defines the percentage area of the image which must be changed for tampering to be triggered.
- **Suppress Alarm on light:** In scenarios where sudden changes in lighting such as switching on/off indoor lighting can cause false tamper events.

Note: The Tamper Detection option will reduce sensitivity to genuine alarms and should be used with caution.

Event Action

- **Enable TCP Event:** Defines if a TCP notification will be sent on tamper detection.
- **Enable HTTP Event:** Defines if a HTTP notification will be sent on tamper detection.

Advanced Analytics – Available VCA Rules and Tools

An advanced analytics license can be purchased and applied to the camera at any time to unlock additional analytic rules and features. Advanced analytics includes all base rules and tools plus the following:

- **Enter Rule** - The Enter Rule triggers an event when an object crosses from outside of a zone to inside of a zone.
- **Exit Rule** - The Exit Rule triggers an event when an object crosses from inside of a zone to outside of a zone.
- **Appear Rule** - The Appear Rule triggers an event when an object starts to be tracked from within a zone.
- **Disappear Rule** - The Disappear rule triggers an event when an object stops being tracked from within a zone.
- **Stopped Rule** – The Stopped Objects rules detects objects that are stopped inside a zone for longer than the defined amount of time and will trigger an event accordingly.
- **Dwell (Loitering) Rule** – The Dwell rules detects objects loitering (but not fully at a stop) inside a zone for longer than the pre-defined amount of time and will trigger an event accordingly.
- **Object Direction Rule** - The Direction rule triggers an event when an object crosses the detection line in a selected direction and within the defined parameters.
- **Removed Object Rule** – The Removed Objects rule can be used in conjunction with size-based object classification to monitor significant objects and trigger an event when an object is detected in a rule zone, outside of its expected placement.
- **Abandoned Object** - The Abandoned Object rule detects the abandoning of an object in a predefined zone e. g. a bag or suitcase left on the street.
- **Tailgating** –Object Tailgating rules detects when two objects cross a virtual line or zone within in a pre-defined time frame.
- **Counting Line (Tripwire / People Counting)** - The Counting line triggers an event when an object crosses the detection line in a selected direction, regardless of the angle of the crossing.
- **Logical Rules** - The logical rules option allows rules to be combined to form a complex filter for events to check against which can help to reduce false alerts.
- **Non-Detect Zone** – The non-detect zone option can be used to exclude areas of the scene from being processed.
- **Size Based Object Classification** – Classify objects based on their size. See the “Classification” section for more info.

Please read through the proceeding sections of this guide for specific details pertaining to each individual rule or feature.

Enter

The Enter rule triggers an event when an object crosses from outside of a zone to inside of a zone.

Note: The Enter rule detects already-tracked objects crossing the zone border from the outside to the inside.

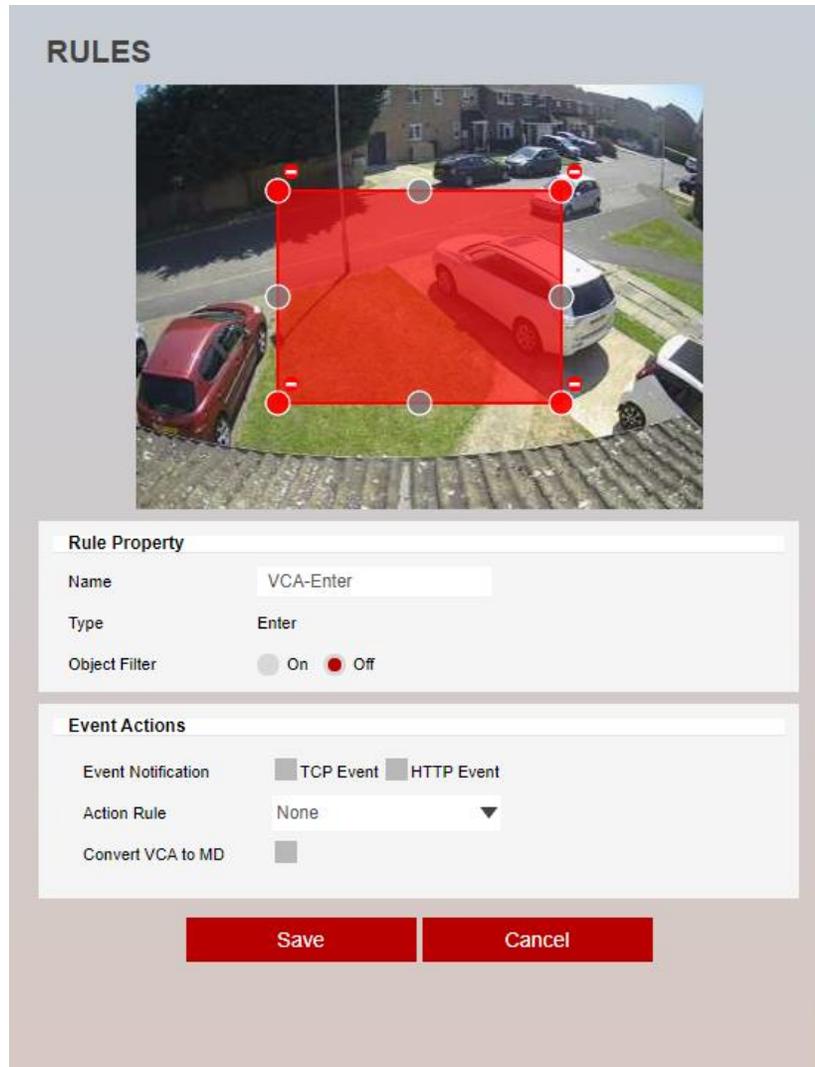


Image 4 – Enter Rule

The Enter rule will create a zone and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the minus sign next to a red node to remove a segment.

Rule Properties

- **Name:** Define the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Exit

The Exit rule triggers an event when an object crosses from inside a zone to outside a zone.

Note: The Exit rule detects already-tracked objects, crossing the zone border from inside to outside.

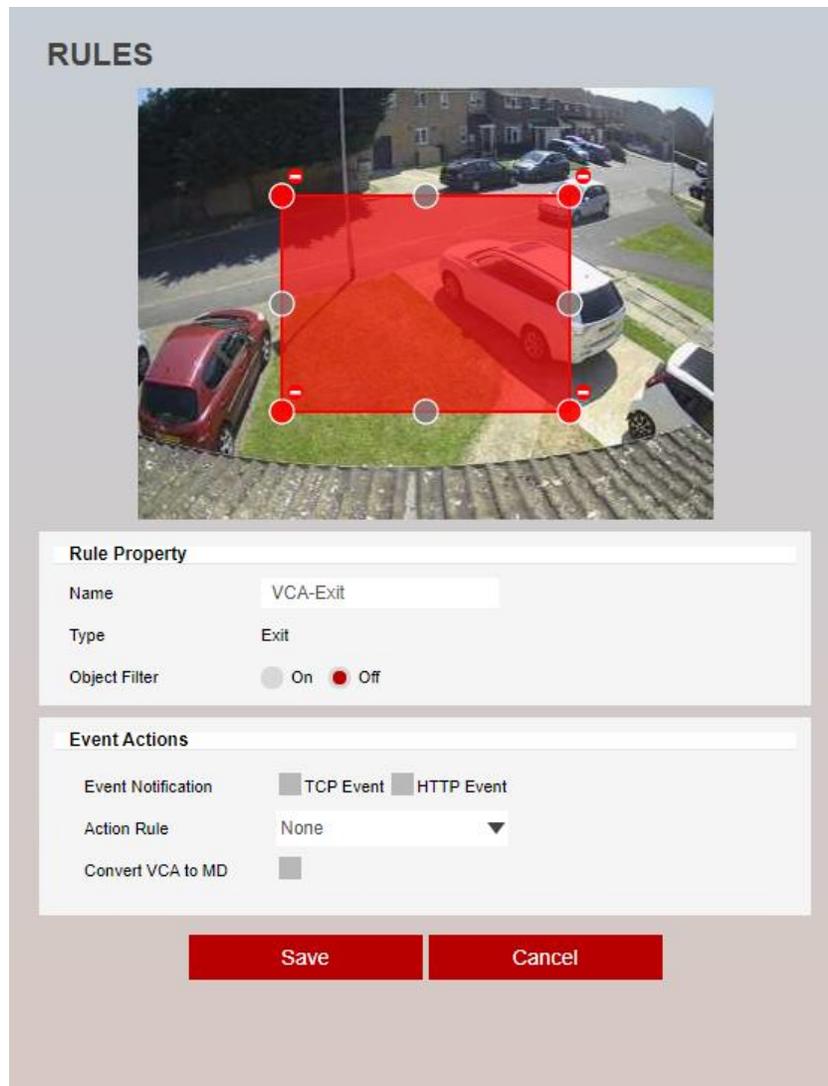


Image 5- Exit Rule

The Exit rule will create a zone and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment

Rule Properties

- **Name:** Define the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Appear

The Appear rule triggers an event when an object starts to be tracked from within a zone.

Note: The Appear rule detects objects that start being tracked from within a zone.

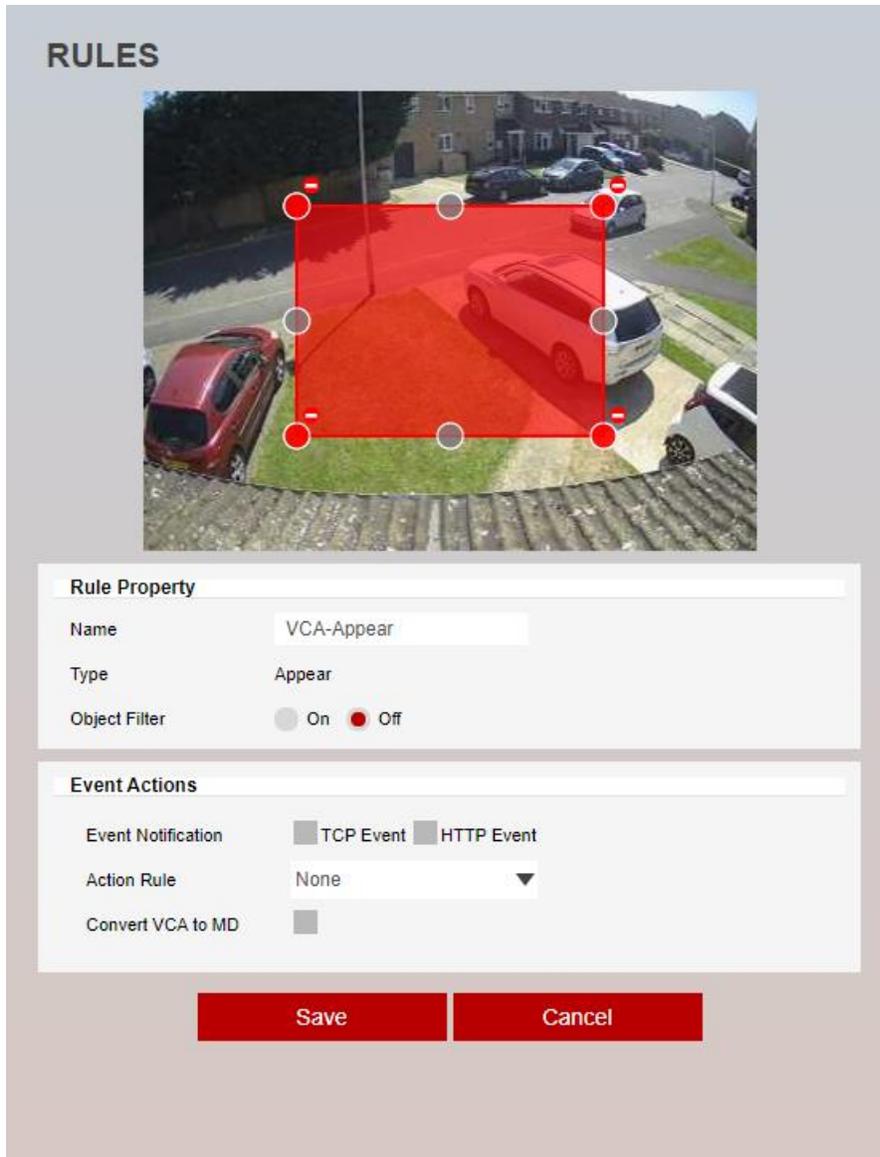


Image 6 – Appear Rule

The Appear Rule will create a zone and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to the red node to remove a segment.

Rule Properties

- **Name:** Defines the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

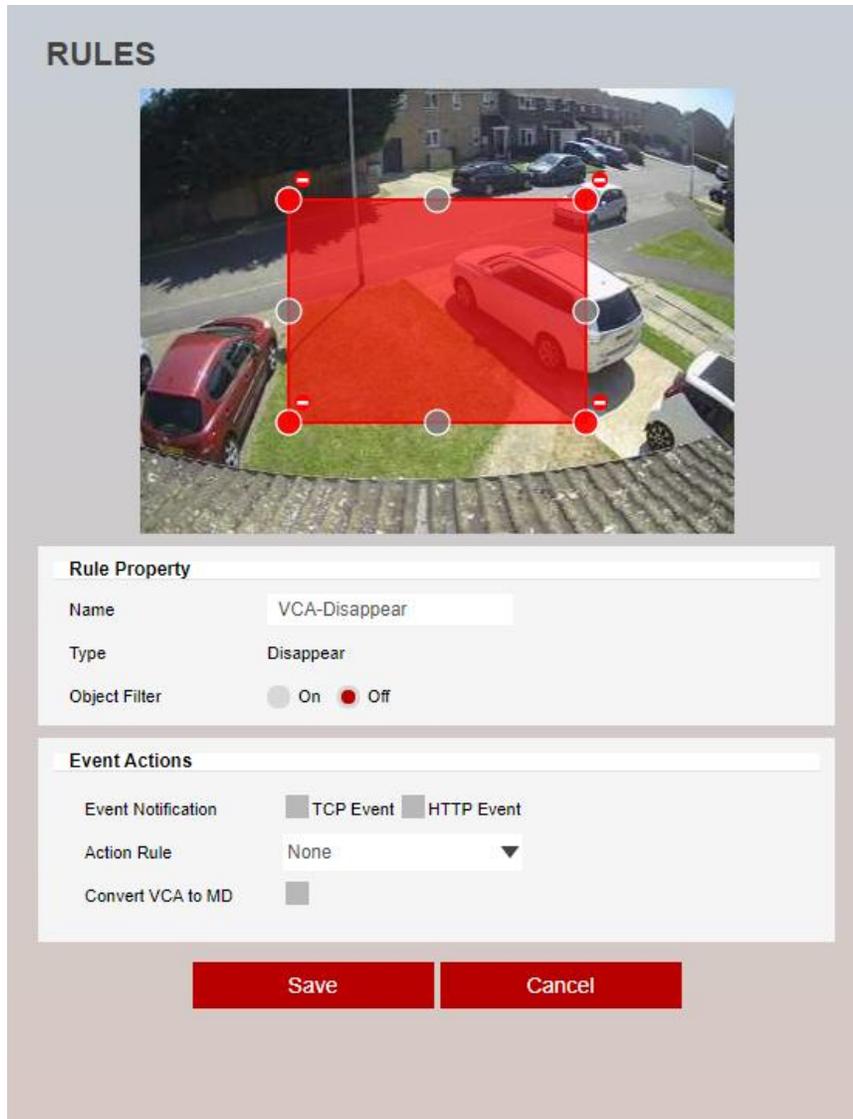
- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Disappear

The Disappear rule detects objects that stop being tracked within a defined zone.



The Disappear Rule will create a zone and overlay it on the live view; the line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment.

Rule Properties

- **Name:** Defines the name of the rule.
- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Stopped

The stopped rule detects objects which are stationary inside a zone for longer than the specified amount of time.

RULES

Rule Property

Name: VCA-Disappear

Type: Disappear

Object Filter: On Off

Event Actions

Event Notification: TCP Event HTTP Event

Action Rule: None

Convert VCA to MD:

Save Cancel

The rule will create a zone and overlay it on the live view; the line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment.

Rule Properties

- **Name:** Defines the name of the rule.
- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

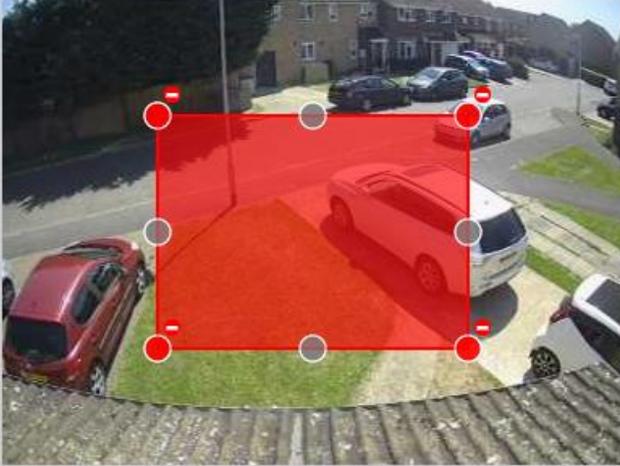
Note: Remember to configure actions in the camera settings for this feature to function.

Convert VCA to MD: Allows events to use the cameras ONVIF framework.

Dwell

The Dwell Rule triggers an event when an object is present in a selected zone for a predefined time period.

RULES



Rule Property

Name:

Type: Dwell

Threshold: Second(s) [1 ~ 300]

Object Filter: On Off

Event Actions

Event Notification: TCP Event HTTP Event

Action Rule: ▼

Convert VCA to MD:

The Dwell Rule will create a zone and overlay it on the live view; the line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment.

Rule Properties

- **Name:** Defines the name of the rule.
- **Threshold:** Defines, in seconds, the time period an object needs to be present in a zone to trigger an event.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

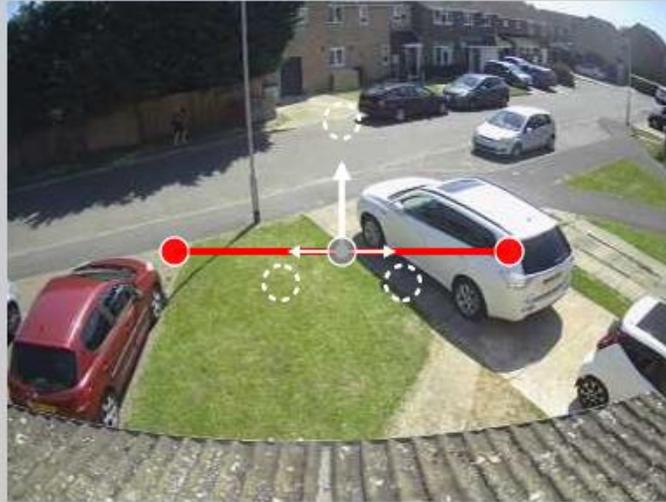
Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Direction

The Direction Rule triggers an event when an object crosses the detection line in a selected direction and within the acceptance parameters.

RULES



| Rule Property | |
|---------------|--|
| Name | VCA-Direction |
| Type | Direction |
| Angle | 0 Degrees [0 ~ 360] |
| Acceptance | 90 Degrees [0 ~ 90] |
| Object Filter | <input checked="" type="radio"/> On <input type="radio"/> Off |
| Classes | <input type="checkbox"/> Person <input type="checkbox"/> Vehicle <input type="checkbox"/> Clutter <input type="checkbox"/> Group Of People |

| Event Actions | |
|--------------------|--|
| Event Notification | <input type="checkbox"/> TCP Event <input type="checkbox"/> HTTP Event |
| Action Rule | None ▼ |
| Convert VCA to MD | <input type="checkbox"/> |

Direction Rule

The Direction Rule will create a zone and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **minus sign** next to a red node to remove a segment.

Rule Properties

- **Name:** Defines the name of the rule.

- **Angle:** Defines the direction the objects move in order to trigger an event.
- **Acceptance:** Defines the allowed variance each side of the direction that will still trigger an event.
- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

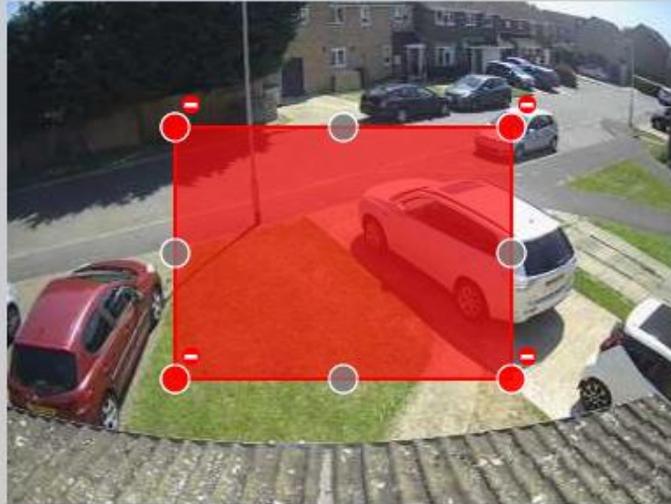
Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Removed

The Removed Rule triggers an event when the area within a zone has changed for the specified time.

RULES



Rule Property

Name

Type

Object Filter On Off

Classes Person Vehicle Clutter Group Of People

Event Actions

Event Notification TCP Event HTTP Event

Action Rule ▼

Convert VCA to MD

Save

Cancel

Removed Rule

The rule will create a zone and overlay it on the live view, the zone can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape, to remove a segment select the **minus** sign next to a red node.

Rule Properties

- **Name:** Defines the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

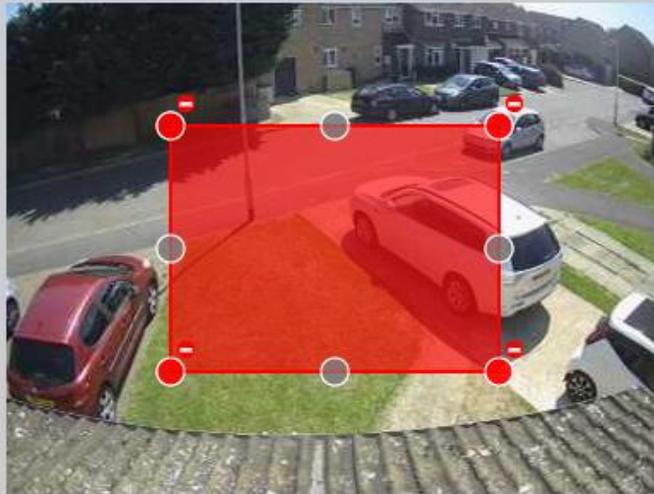
Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Abandoned

The abandoned rule triggers an event when an object is left in a zone for the specified time. It works in a similar way to the removed rule in that the scene is monitored for change and measured against the conditions defined in order to produce an event.

RULES



Rule Property

Name

Type

Object Filter On Off

Event Actions

Event Notification TCP Event HTTP Event

Action Rule ▼

Convert VCA to MD

Save

Cancel

Abandoned Rule

The rule will create a zone and overlay it on the live view, the zone can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape, to remove a segment select the **minus** sign next to a red node.

Rule Properties

- **Name:** Defines the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

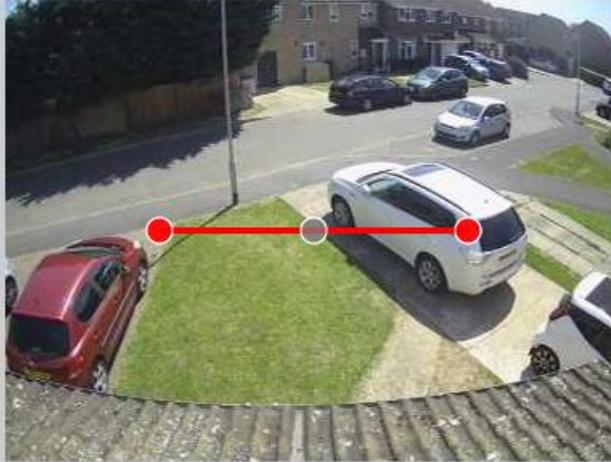
Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Tailgating

The tailgating rule triggers an event when objects cross over a line within quick succession of each other.

RULES



Rule Property

Name

Type

Threshold Second(s) [1 ~ 300]

Object Filter On Off

Event Actions

Event Notification TCP Event HTTP Event

Action Rule ▼

Convert VCA to MD

Save

Cancel

Tailgating Rule

The rule will create a zone and overlay it on the live view, the zone can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape, to remove a segment select the **minus** sign next to a red node.

Rule Properties

- **Name:** Defines the name of the rule.

- **Object Filter:** Allows the rule to be configured to only trigger based on an object's classification (e.g. person, vehicle). Any combination of the available options is possible.

Note: The calibration process must be completed before object filtering is available. The available classes are defined in the Classification section of the menu.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

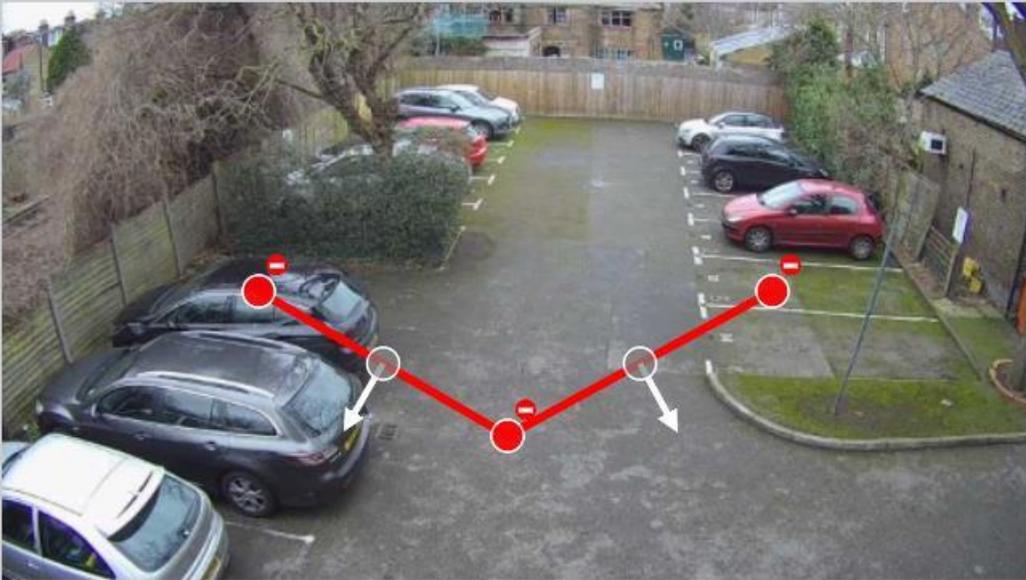
- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Counting Line (Tripwire / People Counting)

The Counting Line Rule triggers an event when an object crosses the line in the direction indicated.

Note: The Tripwire Rule defers from the Direction Rule. Each segment of the line can have a different direction defined.

RULES



| Rule Property | |
|---------------|--------------------------|
| Name | VCA Rule - Counting Line |
| Type | Counting Line |

| Event Actions | |
|---------------|--|
| Event Type | <input type="checkbox"/> TCP Event <input type="checkbox"/> HTTP Event |

Save **Cancel**

Counting Line Rule

The Tripwire Rule will create a zone and overlay it on the live view. The line can be reshaped accordingly. Selecting a grey node will split the segment and create a more complex shape. Select the **Minus Sign** next to a red node to remove a segment.

The direction indicator shows the direction objects must take to cause an event to be triggered. Segments can be configured to point in any direction required.

Rule Properties

- **Name:** Defines the name of the rule.

Note: The object filtering feature is not available when using the Tripwire Rule.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

Counters

Counters can be configured to count the number of times a rule is triggered, for example the number of people crossing a line. The Counter Rule is designed to be utilized in the following way:

- **Increment:** The counter is incremented on each trigger of an event.
- **Decrement:** The counter is decremented on each trigger of an event.
- **Occupancy:** The counter reflects the number of objects that are currently triggering a rule.

COUNTERS CONFIGURATION

Counter

Counter Property

Name: Counter

Increment:

Decrement:

Event Actions

Event Notification: TCP Event HTTP Event

Action Rule: None

Convert VCA to MD:

Counters

More than one rule can be assigned to any of a counter's three inputs. This allows, for example, the occupancy of two rules to be reflected in a single counter or more than one entrance/exit gate can update a single counter.

Rule Properties

- **Name:** Defines the name of the rule.
- **Increment:** The rule which, when triggered, will add one to the counter.
- **Decrement:** The rule which, when triggered, will subtract one from the counter.

Select **Add input** to show a list of available rules that can be added. To remove rules from the counter, select the **cross** next to the rules already added.

Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.

Note: Remember to configure the TCP/HTTP notification actions for this feature to function. Any combination of the available options is possible.

- **Action Rule:** Allows actions from the camera to be triggered when an event occurs.

Note: Remember to configure actions in the camera settings for this feature to function.

- **Convert VCA to MD:** Allows events to use the cameras ONVIF framework.

How to Create a Counter

The method is the same, regardless of the intended use of the counter.

- Position the counter on the screen.

Note: This is just for reference and does not affect the counter feature.

- Define a name for the counter.
- Select **Add Input** against the desired action (increment, decrement or occupancy).
- Select the rule that the counter will link to.
- When the rule triggers an event, the counter will change its value accordingly.

Calibration

Camera calibration is required for object identification and classification to occur. If the height, tilt and vertical field-of-view are known, these can be entered as parameters in the appropriate fields. However, if these parameters are not known then using the camera, a grid can be overlaid on the image and mimics can be created to adjust expected object sizing and effectively allow you to test the accuracy of your settings.

Calibration

- **Enable Calibration:** Used for turning the calibration feature on or off.
- **Height:** Defines the height on the camera.
- **Tilt:** Defines the tilt of the camera.
- **Vertical Field of View (VFOV):** Defines the vertical field of view of the camera.
- **Unit:** Defines the unit measure that will be displayed.
 - **Metric**
 - **Imperial**

3D Graphics Overlay

During the calibration process, the features in the video image need to be matched with a 3D graphic overlay. The 3D graphic overlay consists of a green grid that represents the ground pane. Several 3D mimics (people-shaped figures) are placed on the ground plan, that represent the dimensions of a person with the current calibration parameters.

The mimics are used to verify the changes that you make to the calibration settings and represent a person 1.8 meters tall. The mimics can be moved around the scene to line up with people or objects of a known size, to aid in the calibration process.

How to Calibrate a Camera

1. Use the mimics to match against people.

Position the mimics on top or near people within the camera scene.

Note: During the calibration process, as you change settings, you may need to reposition the mimic

2. Enter the VFOV.

Entering the correct VFOV is important for accurate calibration. The following table shows pre-calculated values for VFOV for different sensors.

| | Focal Length(mm) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 30 | 40 | 50 |
|----------------------|-----------------------|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|
| CCD Size (in) | CCD Height(mm) | | | | | | | | | | | | | | | |
| 1/6" | 1.73 | 82 | 47 | 32 | 24 | 20 | 16 | 14 | 12 | 11 | 10 | 7 | | | | |
| 1/4" | 2.40 | 100 | 62 | 44 | 33 | 27 | 23 | 19 | 17 | 15 | 14 | 9 | 7 | | | |
| 1/3.6" | 3.00 | 113 | 74 | 53 | 41 | 33 | 28 | 24 | 21 | 19 | 12 | 11 | 9 | 6 | | |
| 1/3.2" | 3.42 | 119 | 81 | 59 | 46 | 38 | 32 | 27 | 24 | 21 | 16 | 13 | 10 | 7 | | |
| 1/3" | 3.60 | 122 | 84 | 62 | 48 | 40 | 33 | 29 | 25 | 23 | 20 | 14 | 10 | 7 | 5 | |
| 1/2.7" | 3.96 | 126 | 89 | 67 | 53 | 43 | 37 | 32 | 28 | 25 | 22 | 15 | 11 | 8 | 6 | |
| 1/2" | 4.80 | 135 | 100 | 77 | 62 | 51 | 44 | 38 | 33 | 30 | 27 | 18 | 14 | 9 | 7 | 5 |
| 1/1.8" | 5.32 | 139 | 106 | 83 | 67 | 56 | 48 | 42 | 37 | 33 | 30 | 20 | 15 | 10 | 8 | 6 |
| 2/3" | 6.60 | | 118 | 95 | 79 | 67 | 58 | 50 | 45 | 40 | 37 | 25 | 19 | 13 | 9 | 8 |
| 1" | 9.60 | | 135 | 116 | 100 | 88 | 77 | 69 | 62 | 56 | 51 | 35 | 27 | 18 | 14 | 11 |
| 4/3" | 13.50 | | | 132 | 119 | 107 | 97 | 88 | 80 | 74 | 68 | 48 | 37 | 25 | 19 | 15 |

If the table does not contain the relevant parameters, the VFOV can be estimated by viewing the extremes of the image at the top and bottom.

Note: Without the correct VFOV, it may not be possible to get the mimics to match people at different positions in the scene.

3. Enter the camera height.

Enter the camera height, if it is known. If the height is not known then it is recommended to obtain an accurate reading, otherwise estimate based on known object heights in the scene.

Note: A correct camera height measurement is required for accurate video analytics.

4. Enter the camera tilt angle.

Enter the tilt angle of the camera if it is known. If the tilt angle is not known, estimate it and use the mimics as a guide to confirm and change as required.

5. Verify and change as required.

The objective is to ensure the mimics match people or other known objects in the scene. Both the height and angle of the mimic should represent the objects in the scene and adjustment of the height. Tilt and VOFV may be required to achieve this.

Select **Apply** to save your changes.

Classification

Detected objects are assessed and assigned to one of the classifiers listed in the classification configuration settings. This section has been pre-programmed with the most commonly used classifiers however, users that have purchased the advanced analytics license for their camera can add, modify or delete size classifications as desired.

Use the **Add**, **Modify** and **Delete** options to change these settings.

Note: The calibration process must be completed before objects can be classified.

CLASSIFICATION CONFIGURATION

| Object classification | | | | |
|-----------------------|-----------|-----------|------------|------------|
| Name | Min. area | Max. area | Min. Speed | Max. speed |
| Person | 0.5 sqm | 2 sqm | 0 kmh | 20 kmh |
| Vehicle | 4 sqm | 100 sqm | 0 kmh | 200 kmh |
| Clutter | 0 sqm | 0.4 sqm | 0 kmh | 50 kmh |
| Group Of People | 2.1 sqm | 3.9 sqm | 0 kmh | 20 kmh |

Add **Modify** **Delete**

Classification

How to Add a New Classifier

- Select **Add**.
- Define the parameters for the new classifier.
- Select **Save**.

CLASSIFICATION CONFIGURATION

Classification Property

| | |
|------------|-------------------------------------|
| Name | <input type="text" value="Object"/> |
| Min. Area | <input type="text" value="0"/> sqm |
| Max. Area | <input type="text" value="1"/> sqm |
| Min. Speed | <input type="text" value="0"/> kmh |
| Max. Speed | <input type="text" value="10"/> kmh |

Save **Cancel**

Classification- New Classifier

- **Name:** Defines the name of the new classifier.
- **Min. Area:** Defines the minimum area for the new classifier.
- **Max. Area:** Defines the maximum area for the new classifier.
- **Min. Speed:** Defines the minimum speed for the new classifier.
- **Max. Speed:** Defines the maximum speed for the new classifier.

Note: When creating or modifying classifiers, avoid overlapping parameters with other classifiers as this will cause the analytics engine to incorrectly identify objects.

Burnt-in Annotation (OSD)

The Burnt-in Annotation feature allows analytical data to be burnt into the raw video stream of the camera and displayed on-screen. Annotations can include tracked objects, counters and system messages.

BURNT-IN ANNOTATION CONFIGURATION

Burnt-in Annotation

Activation On Off

Display on Main Stream Sub Stream 3rd Stream

*The BIA can only be displayed when the stream resolution is lower than 1920x1080.

BIA Setup

Display zones On Off

Display objects On Off

Object classification On Off

Object height On Off

Object speed On Off

Object area On Off

Display event message On Off

Display system message On Off

Display line counter On Off

Display counter On Off

Apply

Burnt-in Annotation

Note:

- *To display object parameters such as speed, height, area and classifications, the device must be calibrated.*
- *The stream intended for use with burnt-in annotation must have a resolution lower than 1920x1080.*

How to Enable Burnt-in Annotation

- Turn on the feature by select **ON** next to **Activation**.
- Select the stream that will have the annotation.

Note: The streams resolution must be lower than 1920x1080.

- Select the metadata that will appear on the stream.

Note: The calibration process must be completed for information such as speed, height, area and classification to appear.

TCP Notification

The TCP notification sends data to a remote TCP server when triggered. The format is configurable with a mixture of plain text and tokens. Tokens are used to represent the metadata event that will be included when a rule is triggered.

TCP NOTIFICATION

General Setting
 On Off

TCP Settings
Host url
Port (0 ... 65535)

Message

| | |
|---------|-------------------------|
| Rule | <input type="text"/> |
| Counter | Select a token to add ▼ |
| | <input type="text"/> |
| Tamper | Select a token to add ▼ |
| | <input type="text"/> |
| | Select a token to add ▼ |

TCP Notification

General Setting

- **On:** Turns the action on.
- **Off:** Turns the action off.

Note: Changing this setting will turn on/off any of the rules' abilities to send notifications through this action. Rules can still show a link to this action, but the action will not occur when the rule triggers.

TCP Settings

- **Host URL:** The IP address or hostname of the remote TCP server, where the event data should be transmitted.
- **Port:** The port where the TCP notification should be sent.

Message

- **Rule:** Defines the message body of the TCP notification, when linked to rules. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.
- **Counter:** Defines the message body of the TCP notification, when linked to counters. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.
- **Tamper:** Defines the message body of the TCP notification, when linked to the tamper feature. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.

Note: See the token's topic for full details about the token system and example templates.

How to Enable TCP Notification

- Select **On** to enable.
- Define the **Host URL** (Remote server URL/IP that will be receiving this notification).
- Define the **Port** where the notification will be sent.
- Define the body of the message to be sent with the notification. This can be a combination of plain text and tokens. Tokens will be replaced with event-specific data at the time an event is generated.
- Select **Apply** to save the notification.

Note: The available tokens can be selected from the drop-down menu below the query window.

HTTP Notification

The HTTP notification sends a text/plain HTTP request to a remote endpoint when triggered. The URL, HTTP header and message body are all configurable with a mixture of plain text and tokens. Tokens are used to represent the event metadata that will be included when a rule is triggered.

The screenshot shows the 'HTTP NOTIFICATION' configuration page. It is divided into three main sections: 'General Setting', 'HTTP Settings', and 'Query'.
1. **General Setting:** A toggle switch is set to 'On'.
2. **HTTP Settings:** Includes fields for 'URL' (http://), 'Method' (GET), 'User ID', and 'Password'.
3. **Query:** Contains a 'Rule' field with a complex token-based URL, three 'Counter' and 'Tamper' fields with 'Select a token to add' dropdowns, and an 'Enable URL encoding' toggle set to 'Off'.
At the bottom, there is a red 'Apply' button.

HTTP Notification

General Setting

- **On:** Turns the action on.
- **Off:** Turns the action off.

Note: Changing this setting will turn on/off any of the rules ability to send notifications through this action. Rules can still show a link to this action, but the action will not occur when the rule triggers.

HTTP Settings

- **URL:** The remote URI to request when executing the HTTP action. The URI can contain tokens, which will be replaced with event-specific data at the time an event is generated.
- **Method:** The HTTP request method, this can be, **GET, POST or Milestone.**
- **User ID:** The username to use for authentication.
- **Password:** The password to be used for authentication.

Query

- **Rule:** Defines the message body of the HTTP notification, when linked to rules. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.
- **Counter:** Defines the message body of the HTTP notification, when linked to counters. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.
- **Tamper:** Defines the message body of the HTTP notification, when linked to the tamper feature. You can include tokens from the list available, token values will be replaced with the event metadata when triggered.
- **Enable URL encoding:** Defines if the notification will use URL encoding.
 - **On**
 - **Off**

Note: See the tokens topic for full details about the token system and example templates.

How to Enable HTTP Notification

- Select **On** to enable.
- Define the URL (HTTP server that will be receiving this notification).
- Define the method to be used.
- Define the user ID used to authenticate the notification.
- Define the password used to authenticate the notification.
- Define the contents of the query to be sent with the notification. This can be a combination of plain text and tokens (tokens will be replaced with event-specific data at the time an event is generated).
- Define if URL encoding will be used.
- Select **Apply** to save the notification.

Note: The available tokens can be selected from the drop-down menu below the query window.

Advanced Settings

The Advanced section contains settings relating to how the analytics engine tracks objects.

Note: In most installations the default configuration will apply.

The screenshot shows a web interface for advanced settings. At the top, the word "ADVANCED" is displayed in a bold, dark font. Below this, there are two main sections: "Tracker" and "Scene Change".

The "Tracker" section contains three settings:

- Stationary Hold-on Time:** A text input field with the value "60" and a unit label "Second(s) [1 - 600]".
- Minimum Object Size:** A text input field with the value "10" and a unit label "Blob pixels [1 - 100]".
- Detection Point:** A dropdown menu currently set to "Auto". A dropdown menu is open, showing three options: "Auto", "Centroid", and "Midbottom".

The "Scene Change" section contains two settings:

- Duration:** A text input field with the value "10" and a unit label "Second(s) [1 ~ 60]".
- Area Threshold:** A text input field with the value "50" and a unit label "% [0 ~ 100]".

At the bottom of the settings area, there are two red buttons: "Apply" and "Clean Up".

Advanced

Tracker

- **Stationary Hold-on Time:** Defines the amount of time an object will continue to be tracked and classified once it becomes stationary.
- **Minimum Object Size:** Defines the size of the smallest object that will be considered for tracking.
- **Detection Point:** Defines the tracking point that will be used to evaluate objects against rules.
 - **Automatic:** The detection point is automatically set based on how the calibration is configured.
 - **Centroid:** The detection point for each object is located at the middle of the bounding box.
 - **Mid-bottom:** The detection point for each object is located along the bottom line of the bounding box, in the center.

Note: Changing the detection point that is used by the system can affect the point at which objects will trigger an event.

Scene Change

- **Duration:** Defines the period of time the scene needs to have changed before triggering the scene change process.
- **Area Threshold:** Defines the percentage area of the scene that must change in order to trigger the scene change process.

License

For 3xLOGIC VISIX Gen III Cameras, some VCA analytic features on a camera are pre-activated in the factory (see [Base Analytics](#) for more information), however further activation is necessary to enable additional advanced VCA rules and tools.

When purchasing a “-A” advanced analytics license for your VISIX Gen III camera, the provided activation code is linked to the camera's hardware configuration and is not transferable. This code can be entered on the VCA > License settings to unlock advanced VCA analytics.

To manage activation codes, navigate to the license feature from the VCA menu.

LICENSE

Activate License

Activation Type Token Activation code

Token ✕

Activate

Activated License(s)

| Assigned | License |
|----------|---------|
|----------|---------|

Assign **Delete**

License

Activate License

- **Activation Type:**
Token:

The screenshot shows a dialog box titled "Activate License". Under "Activation Type", the "Token" radio button is selected. Below it is a text input field labeled "Token" with a red 'X' icon to its right. At the bottom of the dialog is a red "Activate" button.

Where an activation token has been provided, it can be entered into the token field to apply a license model.

Activation code:

The screenshot shows the "Activate License" dialog box with the "Activation code" radio button selected. Below it is a text input field labeled "Activation code" with a red 'X' icon to its right. Above the "Activation code" field is a "HW GUID" field containing the code: 35292E228001E6FD05348BFC6D593B0E9BD2F3A8A453B C8B08562D23B2267BCA. To the right of the HW GUID field are two icons: a red square with a white document icon and a red square with a white download icon. At the bottom of the dialog is a red "Activate" button.

This displays a unique hardware code for this device, which is required to generate an activation code. When purchasing an advanced analytics license after already buying your camera, you will need to give 3xLOGIC or your reseller this code so they can generate the activation code for the license.

- **Activation code:** This is where you enter activation codes to apply licenses and enable features of the VISIX Gen III VCA plug-in.

Note: Multiple licenses can be installed but are generally not required for most applications.

Activated License(s)

- **Activated License(s):** This provides a list of the installed licenses with the option of deleting highlighted licenses
- **Assign:** Allows the user to define which license will be use with the camera.
- **Delete:** Allows the user delete the highlighted license

Note: A license cannot be deleted if it is being used by an analytical feature.

How to Apply licenses using Tokens

1. Type or paste the token code into the space provided and select **Activate**.
2. Verify the license has applied by confirming it is present in the activated license(s) section, and it is valid.

How to Apply licenses using HW GUID

3. Note the **HWCODE**. This will be required to obtain an activation code for a VISIX Gen III Advanced Analytics license from 3xLOGIC or your reseller. When purchasing the license,

be sure to include this code.

- **NOTE:** For cameras purchased at the same time as the advanced VCA license, the license will already be applied, and no further activation should be required.
4. The reseller or 3xLOGIC will send you an activation code after purchasing.
 5. Type or paste the activation code into the space provided and select **Activate**.
 6. Verify the license has applied by confirming it is present in the activated license(s) section, and it is valid.

How to Assign License(s)

- Highlight the license you would like to assign.
- Select **Assign** and confirm the action to assign the license.

How to Delete License(s)

- Highlight the license you would like to delete.
- Select **Delete** and confirm the action to delete the license.

Tokens

Tokens are used within actions events such as TCP and HTTP and are automatically filled in with the metadata for the event. This allows the details of the event to be specified in the message that the action sends, e.g. the location of the object, type of event, etc.

List of tokens - Below is a list of the available tokens along with a description of the data they will provide.

- `{{name}}` - The name of the event.
- `{{id}}` - The unique id of the event.
- `{{type}}` - The type of the event. This is usually the type of rule that triggered the event.
- `{{status}}` - The status of the event.
- `{{iso8601}}` - The event time in the ISO 8601 format. An example of this would be:
 - Start time (ISO 8601 format): `{{iso8601}}` Start time (ISO 8601 format): 2017-04-21T10:09:42+00:00
- `{{time}}` - The event time in Unix time stamp format. An example of this would be: time: `{{time}}`
time: 1582308244.376
- `{{ip}}` - The IP address of the device.
- `{{host}}` - The hostname of the device that generated the event.
- `{{datetime}}` - The event time in the format DD MM D HH:MM:SS YYYY 'Tue Jan 1 12:00:00 2019'. An example of this would be : time: `{{datetime}}` time: Tue Jan 1 12:00:00 2019
- `{{zoneid}}` - The zone ID of the event.
- `{{ruleid}}` - The rule ID of the event.
- `{{bb}}` - The bounding box of the object.
- `{{objectclass}}` - The object class of the object triggering the rule.
- `{{mac}}` - The MAC address of the device.

An example for using tokens is given below:

```
Event #{{id}}: {{name}} Event Actions: {{type}} Start time (ISO 8601
format): {{iso8601}} time: {{time}} Device: {{host}}: {{ip}}: {{mac}}
Object bounding box: {{bb}} Classification: {{objclass}}
```

This would produce the following text:

```
Event #350: My event name Event Actions: presence Start time (ISO 8601-
21T10:09:42+00:00
time: 1492769382 Device: Camera: 10.0.5.2: AB:CD:EF:GH:01:02 Object bounding box:
[45251:12069:14004:8563] Classification: Vehicle
```

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