

NETWORK CAMERA

Analytic Interface

Manual

Ver. 04.14.2021

Before connecting, operating or adjusting this product,
read this instruction booklet carefully and completely

ganzsecurity.com

Chapter 1

Introduction

This is the user manual for the GXI video analytics plug-in.

This manual will describe how to license, enable and configure the features of our video analytics to detect events of interest and trigger actions to react to those events.

Chapter 2

Getting Started

The GXI plug-in is a set of analytical tools that can be loaded onto supported cameras. It provides the means to perform advanced analytics, reduce false alerts and customize when events occur. To get started, you will need to add a license, after which you can enable the GXI engine and start using the features.

Before continuing make sure you are familiar with the cameras interface and have the username and password available.

This manual will describe how to license, enable and configure the features of our video analytics to detect events of interest and trigger actions to react to those events.

Chapter 3

Enable/Disable

By default, the GXI plug-in is disabled. Activate it to enable the plug-in.



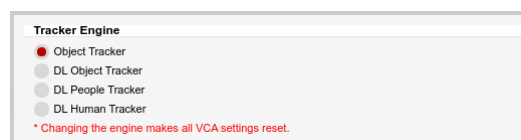
Enable Disable

3.1 General Setting

- **Enable:** Defines the current state of the plug-in features. Select **On** and **Apply** to turn the features on. Select **Off** and **Apply** to turn the features off.

3.2 Tracker Engine

The tracker engine setting is enabled depending on the hardware platform and active license.



tracker options

- **Object Tracker:** This is a motion based detection engine, based on changes detected in the image, the algorithm separates the image into foreground and background, tracking any foreground object that is moving above a set threshold.
- **Deep Learning People Tracker (DLPT):** designed to track people in situations where the camera field of view is relatively close. It is based on Pose Estimation technology, providing the location of a person in the field of view as well as additional key point metadata on the parts of the body.

- **Deep Learning Object Tracker (DLOT)** is designed for accurate detection and tracking of people, vehicles and other key objects in challenging environments where motion based tracking methods would struggle. It is based on a classification and detection model, providing the location of an object in the field of view

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

*Warning: If you change the tracker engine, all of settings are reset as the default setting.

Chapter 4

Rules

Rules are used to react to events within a scene and trigger actions. To manage the rules, navigate to the rules feature from the GXI menu.



Rules

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

4.1 Show Annotation

Use this option to show analytic data on the camera view, select **Start** to show the data and **Stop** to hide the data

Note: The burnt-in annotation feature needs to be enabled for this option to function, this does not effect the processing of analytics but the annotation requires more resource from the camera and is not on by default.

4.2 Rule(s)

The table will show the rules that have been defined for the camera, **Add** can be used to add additional rules, **Modify** is used to change the settings on a selected rule and **Delete** will 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.

4.3 Types of Rules Available

The type of rules available include:

- **Presence Polygon** - The presence polygon rule triggers an event when an object is first detected in a particular zone.
- **Presence Line** - The presence line rule triggers an event when an object is first detected crossing a particular line.
- **Enter** - The enter rule triggers an event when an object crosses from outside a zone to inside a zone.
- **Exit** - The exit rule triggers an event when an object crosses from inside a zone to outside a zone.
- **Appear** - The appear rule triggers an event when an object starts to be tracked from within a zone.
- **Disappear** - The disappear rule triggers an event when an object stops being tracked from within a zone.
- **Stopped** - The stopped rule triggers an event when an object has stopped in a particular zone for a pre-defined period of time.
- **Dwell** - The dwell rule triggers an event when an object is present in a particular zone for a pre-defined period of time.
- **Direction** - The direction rule triggers an event when an object crosses the detection line in a particular direction and within the acceptance parameters.
- **Removed** - The removed rule triggers an event when the area within a zone has changed for the specified time.
- **Abandoned** - The abandoned rule triggers an event when an object is left in a zone for the specified time.
- **Tailgating** - The tailgating rule triggers an event when objects cross over a line within quick succession of each other.
- **Counting Line** - The counting line triggers an event when an objects crosses the detection line in a particular direction regardless of the angle of the crossing.
- **Logical Rule** - Logical rules allows rules to be combined to form a complex filter for events to be checked against to help reduce false alerts.
- **Non-Detect Zone** - Non-detect zones can be used to exclude areas of the scene from being analysed. This can be used to reduce false triggers that can be caused by moving foliage or busy scenes.

*Note: **Abandoned** and **Removed** are available with **Object Tracker Engine**.

4.4 How to Add a Rule

- Select **Add** to display the available rules.
- Select the rule to be added.
- Configure the rule accordingly.
- Select **Save** to save the rule.

4.5 How to Modify a Rule

- Highlight the rule to be modified.
- Select **Modify** to open the settings for the rule.
- Modify the rule accordingly.
- Select **Save** to save the rule.

4.6 How to Delete a Rule

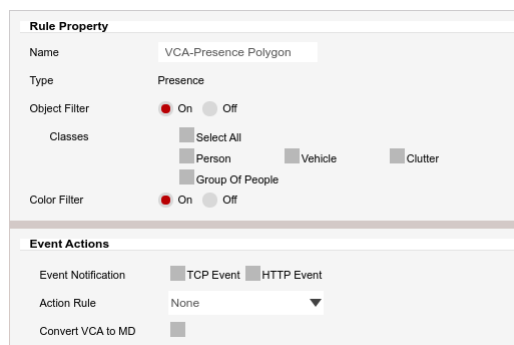
- Highlight the rule to be deleted
- Select **Delete** to delete the rule from the list.

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

4.7 Presence Polygon

The presence polygon rule triggers an event when an object is first detected in a particular zone.

Note: The presence polygon rule will trigger in the same circumstances as the Enter and Appear rule, the choice of which rule is most appropriate will depend on the scenario.



The screenshot shows the 'Rule Property' dialog box for a rule named 'VCA-Presence Polygon'. The 'Type' is set to 'Presence'. Under 'Object Filter', the 'On' radio button is selected. The 'Classes' section includes checkboxes for 'Select All', 'Person', 'Group Of People', 'Vehicle', and 'Clutter'. The 'Color Filter' section has the 'On' radio button selected. The 'Event Actions' section includes 'Event Notification' with 'TCP Event' and 'HTTP Event' checkboxes, 'Action Rule' set to 'None', and 'Convert VCA to MD' with an unchecked checkbox.

Presence Polygon

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.

4.7.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	person

4.7.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF.

4.7.3 Save

Click **Save** to save the current settings.

4.7.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.8 Presence Line

The presence line rule triggers an event when an object is first detected crossing a particular line.

Note: The presence line rule will trigger in the same circumstances as the direction and counting line rule, the choice of which rule is most appropriate will depend on the scenario.

The screenshot shows a configuration window with two main sections: 'Rule Property' and 'Event Actions'.

Rule Property:

- Name:** VCA-Presence Line
- Type:** Presence
- Object Filter:** On (selected), Off
- Classes:** Select All, Person, Vehicle, Clutter, Group Of People
- Color Filter:** On (selected), Off

Event Actions:

- Event Notification:** TCP Event, HTTP Event
- Action Rule:** None (dropdown menu)
- Convert VCA to MD:** (checkbox)

Presence Line

The 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, to remove a segment select the minus sign next to a red node.

4.8.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	person

4.8.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.8.3 Save

Click **Save** to save the current settings.

4.8.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.9 Enter

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

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

Enter

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.

4.9.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	person

4.9.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.9.3 Save

Click **Save** to save the current settings.

4.9.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.10 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.

Exit

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, to remove a segment select the minus sign next to a red node.

4.10.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	person

4.10.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.10.3 Save

Click **Save** to save the current settings.

4.10.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.11 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.

Rule Property	
Name	VCA-Appear
Type	Appear
Object Filter	<input checked="" type="radio"/> On <input type="radio"/> Off
Classes	<input type="checkbox"/> Select All <input type="checkbox"/> Person <input type="checkbox"/> Vehicle <input type="checkbox"/> Group Of People
Color Filter	<input checked="" type="radio"/> On <input type="radio"/> Off

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

Appear

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.

4.11.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.11.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.11.3 Save

Click **Save** to save the current settings.

4.11.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.12 Disappear

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

Note: The disappear rule detects objects that stop being tracked from within a zone.

Disappear

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.

4.12.1 Rule Properties

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.12.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.12.3 Save

Click **Save** to save the current settings.

4.12.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.13 Stopped

The stopped rule triggers an event when an object has stopped in a particular zone for a pre-defined period of time.

Note: The stopped rule does not detect abandoned objects. It only detects objects which have moved at some point and then become stationary.

Stopped

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.

4.13.1 Rule Properties

- **Name:** Defines the name of the rule.
- **Threshold:** Defines, in seconds, the period of time an object needs to have stopped in a zone to trigger an event.
- **Object Filter:** Allows the rule to be configured to only trigger based on an objects classification (e.g. person, vehicle), any combination of the available options is possible.

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.13.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.13.3 Save

Click **Save** to save the current settings.

4.13.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.14 Dwell

The dwell rule triggers an event when an object is present in a particular zone for a predefined period of time.

Dwell

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.

4.14.1 Rule Properties

- **Name:** Defines the name of the rule.
- **Threshold:** Defines, in seconds, the period of time 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 objects classification (e.g. person, vehicle), any combination of the available options is possible.

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.14.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.

- **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF.

4.14.3 Save

Click **Save** to save the current settings.

4.14.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.15 Direction

The direction rule triggers an event when an object crosses the detection line in a particular direction and within the acceptance parameters.

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"/> Select All <input type="checkbox"/> Person <input type="checkbox"/> Vehicle <input type="checkbox"/> Clutter <input type="checkbox"/> Group Of People
Color Filter	<input checked="" type="radio"/> On <input type="radio"/> Off

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

Direction

The 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, to remove a segment select the minus sign next to a red node.

4.15.1 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 angle that will still trigger an event.

Note: You can also adjust these settings using the on-screen controls. Click and hold inside the dotted circles and drag to your desired angle

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

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.15.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification

will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert VCA to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.15.3 Save

Click **Save** to save the current settings.

4.15.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.16 Removed

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

The screenshot shows a configuration window with two main sections: 'Rule Property' and 'Event Actions'.
 In the 'Rule Property' section, the 'Name' field contains 'VCA-Removed' and the 'Type' is set to 'Removed'.
 In the 'Event Actions' section, there are three rows:
 - 'Event Notification' with checkboxes for 'TCP Event' and 'HTTP Event'.
 - 'Action Rule' with a dropdown menu currently showing 'None'.
 - 'Convert VCA to MD' with an unchecked checkbox.

Removed

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.

4.16.1 Rule Properties

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

4.16.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.

- **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert GXI to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.16.3 Save

Click **Save** to save the current settings.

4.16.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.17 Abandoned

The abandoned rule triggers an event when an object is left in a zone for the specified time.

The screenshot shows a configuration window with two main sections. The top section, titled 'Rule Property', contains a 'Name' field with the value 'VCA-Abandoned' and a 'Type' dropdown menu set to 'Abandoned'. The bottom section, titled 'Event Actions', contains three settings: 'Event Notification' with radio buttons for 'TCP Event' (selected) and 'HTTP Event'; 'Action Rule' with a dropdown menu set to 'None'; and 'Convert VCA to MD' with an unchecked checkbox.

Abandoned

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.

4.17.1 Rule Properties

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

4.17.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert GXI to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.17.3 Save

Click **Save** to save the current settings.

4.17.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.18 Tailgating

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

Tailgating

The 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, to remove a segment select the minus sign next to a red node.

4.18.1 Rule Properties

- **Name:** Defines the name of the rule.
- **Threshold:** Defines, in seconds, the maximum amount of time between each object crossing the line before triggering an event.
- **Object Filter:** Allows the rule to be configured to only trigger based on an objects classification (e.g. person, vehicle), any combination of the available options is possible.

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.18.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.

- **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert GXI to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF..

4.18.3 Save

Click **Save** to save the current settings.

4.18.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.19 Counting Line

The counting line rule triggers an event when an object crosses the line in the direction indicated.

Note: The counting line defers from the direction rule in that each segment of the line can have a different direction defined.

Rule Property	
Name	VCA-Counting Line
Type	Counting Line
Direction	<input checked="" type="radio"/> A <input type="radio"/> B <input type="radio"/> Both
Enable Width Calibration	<input checked="" type="radio"/> On <input type="radio"/> Off
Enable Shadow Filter	<input checked="" type="radio"/> On <input type="radio"/> Off

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

Counting Line

The 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, to remove a segment select the minus sign next to a red node.

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.

4.19.1 Rule Properties

- **Name:** Defines the name of the rule.
- **Direction:** Defines the direction that will be monitored for movement and for triggering events.
 - **A :** Defines that only direction A will be monitored across the counting line.
 - **B :** Defines that only direction B will be monitored across the counting line.
 - **Both :** Defines that both directions across the counting line will be monitored.

Note: The direction that will be used is shown on the screen as you select the options

- **Enable Width Calibration :** Turn the width calibration feature on or off.
 - **Width Calibration :** Defines the width calibration value, used to adjust the minimum and maximum width of objects crossing the line that will trigger an event.
- **Enable Shadow Filter :** Turn the shadow filter on or off, this attempts to compensate for shadows cast by objects.

Note: The object filtering feature is not available when using the counting line rule.

4.19.2 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert GXI to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF.

4.19.3 Save

Click **Save** to save the current settings.

4.19.4 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.20 Logical Rule

Logical rules extend the standard rules to allow various inputs to be combined using logical expressions, this helps to reduce false events.

Logical Rule

The rule allows you to combine other rules into a logical expression using the AND operator and can be used to filter and reduce false events.

4.20.1 Rule Properties

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

4.20.2 AND operator

The AND operator combines two or more rules and only fires events if all the rules have triggered. By default, a new logical rule allows two rules to be combined, for example, trigger an event when the presence polygon **AND** the presence line rules are true.

AND operator

4.20.3 WITHIN x seconds

This is the same as a PREVIOUS operator and holds the event as true for the defined period of time. It allows an object to trigger one of the rules and then trigger the next rule within x seconds to cause an event to occur. This is sometimes known as the double knock rule.

Previous operator

4.20.4 Object Filter

It allows the rule to be configured to only trigger based on an objects classification (e.g. person, vehicle), any combination of the available options is possible.

Note: The object filter of the rules that are included in the logical rule are disabled.

Note: The available classifiers are different depending on the hardware platform and the installed license.

- Hardware Platform or License that Tracker Engine Selection is not available

Calibration	Available classifiers of Object Filter
disabled	Not available (Object Filter Off)
enabled	the classifier defined in the classification

- Hardware Platform or License that Tracker Engine is selectable

Tracker Engine	Calibration	Available classifiers of Object Filter
Object Tracker	disabled	Not available (Object Filter Off)
Object Tracker	enabled	the classifiers defined in the classification
DL Object Tracker	-	person, cyclist, bicycle, motorcycle, car, van, truck bus, bag
DL People Tracker	-	Person

4.20.5 Colour Filter

It provides the ability to pick up objects based on an object's colour components that are grouped into 10 colours.

Note: The colour filter of the rules that are included in the logical rule are disabled.

*Note: If **object colour** is turned on at **BURNT-IN ANNOTATION** menu, the top four colours which make up more than 5% of the object are represented by the colour swatch attached to the object.*

4.20.6 Event Actions

- **Event Notifications:** Define the action that will occur on an event being triggered.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

The following applies for the notification methods selected.

- **Triggered By:** Define when the notification will be sent.
 - **Object:** Send notification for each object triggering the rule. Choose between the **begin** of the object triggering the rule, as it enters the zones. and/or the **end** of the object triggering the rule, as it leaves the zone. A notification will be sent for each object triggering the rule.
 - **Rule:** Send a notification every time the rule is triggered, from the **begin** point of the first object to trigger the rule to the **end** point of the last object to trigger the rule. A notification will be sent for each triggering of the rule, regardless of the number of objects triggering at any one time.

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

- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
- **Convert GXI to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF.

4.20.7 Save

Click **Save** to save the current settings.

4.20.8 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

4.21 Non-detect zone

The non-detect zone can be used to exclude areas of the scene from being analysed. This can be used to reduce false triggers that can be caused by moving foliage or busy scenes.

Rule Property	
Name	VCA-Non-detect Zone
Type	Non-Detect Zone

Non-detect zone

The 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, to remove a segment select the minus sign next to a red node.

4.21.1 Rule Properties

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

4.21.2 Save

Click **Save** to save the current settings.

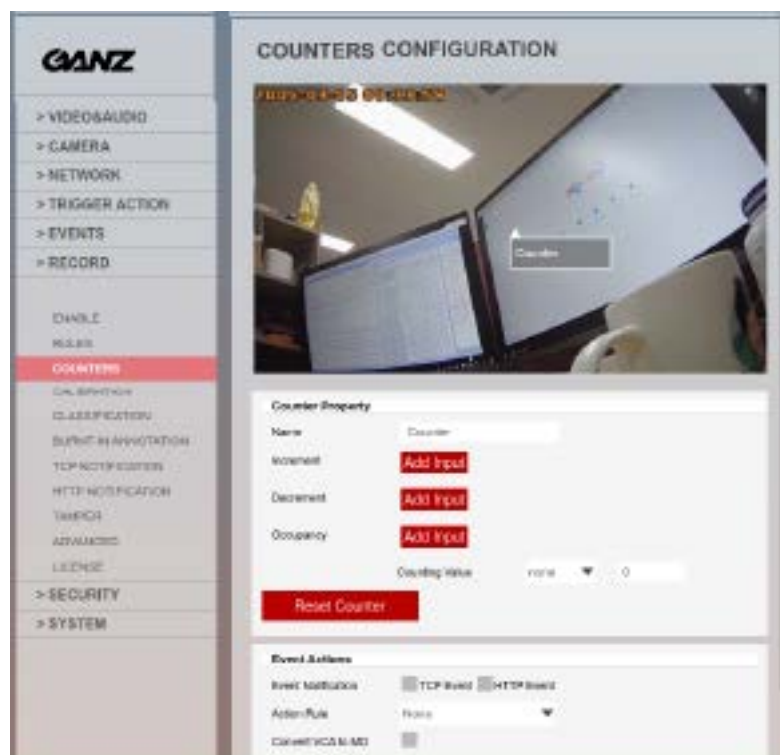
4.21.3 Cancel

Click **Cancel** to return to the rules screen without saving any changes.

Chapter 5

Counters

Counters can be configured to count the number of times a rule is triggered, for example the number of people crossing a line.



Counters

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

5.1 Show Burnt-in Annotation for setup

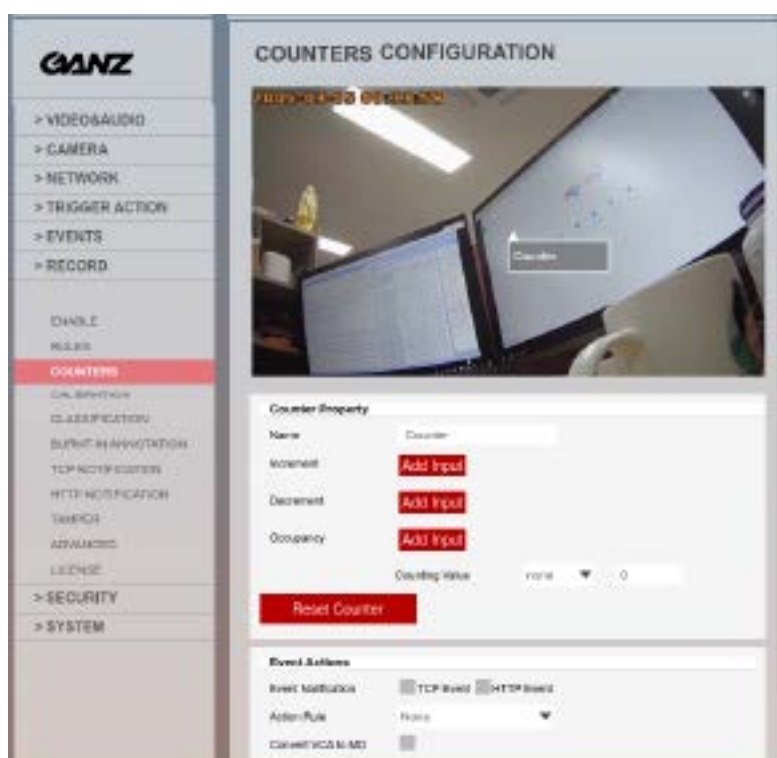
Use this option to show analytic data on the camera view, select **Start** to show the data and **Stop** to hide the data

Note: The burnt-in annotation feature needs to be enabled for this option to function, this does not effect the processing of analytics but the annotation requires more resource from the camera and is not on by default.

5.2 Counter(s)

The table will show the counters that have been defined for the camera, **Add** can be used to add a counter, **Modify** is used to change the settings on a selected counter and **Delete** will remove the selected counter

5.3 Counter



Counter

The counter will create a counter field and overlay it on the live view, the counter can be repositioned on the screen as required.

*Note: A counter position can only be modified by selecting the counter and clicking **modify**.*

A counter is designed to be utilised in the following way:

- **Increment:** Whereby the counter is incremented on each trigger of an event.
- **Decrement:** Whereby the counter is decremented on each trigger of an event.
- **Occupancy:** whereby the counter reflects the number of objects that are currently triggering the attached rule(s). It is available for a rule that links to a polygon zone.

More than one counting line rule can be assigned to a counter input. This allows, for example, the occupancy of two counting lines to be reflected in a single counter or more than one entrance / exit gate to be assigned to a counter.

Note: counters should not be used for occupancy and increment / decrement at the same time.

5.3.1 Counter Property

- **Name:** Defines the name of the counter.
- **Increment:** The counting line rule which, when triggered, will add to the counter.
- **Decrement:** The counting line rule which, when triggered, will subtract from the counter.
- **Occupancy:** Sets counter to current number of the rule's active triggers.

Select **Add input** to show a list of available counting lines that can be added. Select the cross next to rules already added to remove them from the counter.

- **Counting Value:** Defines to counter threshold that will cause an event to be triggered.
 - **None:** None
 - **>=:** Greater than or equal to
 - **>:** Greater than
 - **=:** Equal to
 - **<=:** Less than or equal to
 - **<:** Less than

Note: events created by a counter will not trigger the Deep-Learning Filter, even if enabled on the channel.

5.3.1.1 Reset Counter

Resets the counter value to zero.

5.3.2 Event Actions

- **Event Type:** Define the action that will occur on an event being triggered.
- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.
 - **TCP Event:** Enables/disables the triggering of the TCP notification when an event occurs.
 - **HTTP Event:** Enables/disables the triggering of the HTTP notification when an event occurs.

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

- **Convert GXi to MD:** Allows the event to be passed to the cameras event engine which is compatible with ONVIF.

5.3.3 Save

Click **Save** to save the current settings.

5.3.4 Cancel

Click **Cancel** to return to the counters screen without saving any changes.

5.4 How to Create a Counter

- Click **Add**.
- Position the counter on the screen, this is just for reference and does not effect the counter feature.
- Define a **name** for the counter.
- Select **Add Input** against the desired action (increment or decrement) and select the counting line rule that the counter will link to.
- When the counting line rule triggers an event the counter will change its value accordingly.
- Click **Save** to save the counter.

5.5 How to Modify a Counter

- Select a counter from the list.
- Click **Modify** to open up the settings for the selected counter.
- Modify the counter accordingly.
- Click **Save** to save the counter.

5.6 How to Delete a Counter

- Select a counter from the list.
- Click **Delete**.
- Confirm the action.

Chapter 6

Calibration

Camera calibration is required in order for object identification and classification to occur. If the height, tilt and vertical field-of-view are known then these can be entered as parameters in the appropriate fields. If however, these parameters are not known then we can overlay a grid to aid in the process and provide mimics to allow you to check your settings.



6.1 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.

VFOV: Defines the vertical field of view of the camera.

Note: A correct value for the camera vertical field of view is important for accurate calibration and classification.

Unit: Used for changing the unit values between **metric** or **imperial**.

6.1.1 Advanced Calibration Parameters

Pan and **Roll** allow the ground plane to be panned and rolled without affecting the camera calibration parameters. This can be useful to visualize the calibration setup if the scene has pan or roll with respect to the camera.

Note: The pan and roll advanced parameters only affect the orientation of the 3D ground plane so that it can be more conveniently aligned with the video scene, and does not actually affect the calibration parameters.

6.2 Apply

Saves any changes that have been made.

6.3 3D Graphics Overlay

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

The mimics are used for verifying the changes you make to the calibration settings and represent a person 1.8 metres 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.

6.4 How to Calibrate a Camera

- 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 mimics.

- Enter the VFOV (Vertical Field Of View).

Entering the correct vertical field-of-view is important for accurate calibration, the following table shows pre-calculated values for vertical field-of-view for different sensors. If the table does not contain the relevant parameters, use the mimics to adjust the settings.

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

	Focal Length(mm)	9	10	15	20	30	40	50
CCD Size (in)	CCD Height(mm)							
1/6"	1.73	11	10	7				
1/4"	2.40	15	14	9	7			
1/3.6"	3.00	19	12	11	9	6		
1/3.2"	3.42	21	16	13	10	7		
1/3"	3.60	23	20	14	10	7	5	
1/2.7"	3.96	25	22	15	11	8	6	
1/2"	4.80	30	27	18	14	9	7	5
1/1.8"	5.32	33	30	20	15	10	8	6
2/3"	6.60	40	37	25	19	13	9	8
1"	9.60	56	51	35	27	18	14	11
4/3"	13.50	74	68	48	37	25	19	15

- Enter the Camera Height.

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

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

- Enter the Cameras Tilt Angle.

If the tilt angle of the camera is known, then it can be entered. If the tilt angle is not known then estimate it and use the mimics as a guide to confirm and change as required.

- 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 vertical field-of-view may be required to achieve this.

Click **Apply** to save your changes.

Chapter 7

Classification

When the calibration features have been defined, objects that are detected are assessed and assigned to one of the classifiers listed in the classification section. It has been preprogrammed with the most commonly used classifiers but these can be added to or deleted as the scenario requires.

Use the **add**, **modify** and **delete** options to change these settings.

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



Classification

7.1 How to Add a New Classifier

- Click **Add**.



Classification- New Classifier

- Define the parameters for the 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.

- Click **Save** to save 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.

Chapter 8

Burnt-in Annotation

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



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, this is a limitation of the camera hardware. - In order for the **show annotation** function of Rules and Counters to work, the burnt-in annotation feature must be **on** and configured.*

8.1 Burnt-in Annotation

- **Activation:** Defines the status of the feature, select between **On** and **Off**.
- **Display on:** Defines the camera channel that will display the burnt-in annotation. Select between **Main Stream**, **Sub Stream** and **3rd Stream**.

8.2 BIA Setup

- **Display zones:** Displays the zone outline on the video feed.
- **Display objects:** Displays the object bounding boxes on the video feed.
 - **Object classification:** Displays the classifier for objects on the video feed.
 - **Object height:** Displays the height for objects on the video feed.
 - **Object speed:** Displays the speed for objects on the video feed.
 - **Object area:** Displays the area for objects on the video feed.
 - **Object ID:** Displays the unique ID of each tracked objects.
 - **Object Dwell Time:** Displays the elapsed time since the object started being tracked.
 - **Object Colour:** Displays the top four colours that which make up more than 5% of the object are represented.
- **Display event message:** Displays event messages on the video feed.
- **Display system message:** Displays the system messages on the video feed.
- **Display line counter:** Displays the line counter information on the video feed.
- **Display counter:** Displays the counters on the video feed.

8.3 How to Enable Burnt-in Annotation

- Turn on the feature by select **ON** next to **Activation**.
- Select the **stream/channel** that will display the burnt-in 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.

Chapter 9

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 event metadata that will be included when a rule is triggered.

TCP Notification

9.1 General Setting

- **On:** Enables the notification.
- **Off:** Disables the notification.

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

9.2 TCP Settings

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

9.3 Message

- **Rule:** Define the body of the TCP notification that will be sent when a rule is triggered. This can be a combination of free text and tokens available from the drop-down menu.
- **Counter:** Define the body of the TCP notification that will be sent when a counter is triggered. This can be a combination of free text and tokens available from the drop-down menu.
- **Tamper:** Define the body of the TCP notification that will be sent when a tamper event occurs. This can be a combination of free text and tokens available from the drop-down menu.

Note: Tokens are replaced with event-specific data at the time an event is generated and includes information of the event that triggered the notification.

*Note: See the section titled **Tokens** for full details about the token system and example templates.*

9.4 How to Enable TCP Notification

- Click **On** to enable.
- Define the **Host URL** (Remote server URL/IP that will be receiving this notification).
- Define the **Port** that the notification will be sent to.
- Define the appropriate **message** body to be sent with the notification (Rule, counter or tamper), 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.

Chapter 10

HTTP Notification

The HTTP notification sends a 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. On the left is a sidebar with various system settings. The 'HTTP NOTIFICATION' option is selected and highlighted in red. The main panel on the right is titled 'HTTP NOTIFICATION' and contains the following sections:

- General Setting:** A toggle switch for 'On' (selected) and 'Off'.
- HTTP Settings:**
 - URL:** A text field containing 'http://192.168.50.157:8080'.
 - Method:** A dropdown menu set to 'GET'.
 - User ID:** An empty text field.
 - Password:** A text field with a password icon on the right.
- Query:**
 - Rule:** A text area containing a complex token-based rule string.
 - Counter:** A dropdown menu labeled 'Select a token to add' with 'Counter' selected.
 - Tamper:** A dropdown menu labeled 'Select a token to add' with 'Tamper' selected.
- Apply:** A red button at the bottom right.

HTTP Notification

10.1 General Setting

- **On:** Enables the notification.
- **Off:** Disables the notification.

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

10.2 HTTP Settings

- **URL:** The IP address or hostname of the remote HTTP server where the event data should be transmitted.
- **Method:** The HTTP request method.
 - **POST:** Used to send event data to the URL address.
 - **GET:** Used to request data from the URL address.
 - **Milestone:** Designed for use with the Milestone platform to send event specific data.
 - * **Server ID:** The unique identifier for the Milestone system.
 - * **Device ID:** The unique identifier for the camera device in the Milestone system, used to create a link for the incoming data and the camera object in Milestone.
- **User ID:** The username to use for authentication with the remote HTTP server.
- **Password:** The password to use for authentication with the remote HTTP server.

10.3 Query/Body

Specifies the body of the HTTP request, this can be a mixture of plain text and any supported tokens which will be replaced with event-specific data at the time an event is generated.

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

- **Content-Type:** Define the type of data being sent. Select from the available options.
- **Rule:** Define the body of the HTTP notification that will be sent when a rule is triggered. This can be a combination of free text and tokens available from the drop-down menu.
- **Counter:** Define the body of the HTTP notification that will be sent when a counter is triggered. This can be a combination of free text and tokens available from the drop-down menu.
- **Tamper:** Define the body of the HTTP notification that will be sent when a tamper event occurs. This can be a combination of free text and tokens available from the drop-down menu.

Note: Tokens are replaced with event-specific data at the time an event is generated and includes information of the event that triggered the notification.

*Note: See the section titled **Tokens** for full details about the token system and example templates.*

10.4 Snapshot

Attaches the snapshots in HTTP notification with POST method.

HTTP Notification Post Snapshot

- **Number of Image:** Set the number of snapshots to attach in a second.
- **Pre-Alarm Duration:** Set duration for pre-event snapshots.

- **Post-Alarm Duration:** Set duration for post-event snapshots.

10.5 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/body** 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).

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

- Select **Apply** to save the notification.

Chapter 11

Tamper

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: 20 [Seconds] (1 - 60)

Area Threshold: 40 % (0 - 100)

Success Alarm on Light: ☒ On ☐ Off

Event Actions

Enable TCP Event: ☒ On ☐ Off

Enable HTTP Event: ☒ On ☐ Off

Action Rule: None

Apply

Tamper

11.1 Tamper Detection

- **Enable:** Defines the current state of the plug-in features.
 - **On:** Enables the tamper feature.
 - **Off:** Disables the tamper feature.
- **Duration:** Defines the length of time, in seconds, 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.
 - **On:** Enables the suppressing feature.
 - **Off** Disables the suppressing feature.

*Note: The option will reduce sensitivity to genuine alarms and should be used with caution. Remember to **Apply** changes for them to take effect*

11.2 Event Action

- **Enable TCP Event:** Defines if a TCP notification will be sent when the tamper detection triggers.
 - **On:** Enables the TCP event feature.
 - **Off** Disables the TCP event feature.
- **Enable HTTP Event:** Defines if a HTTP notification will be sent when the tamper detection triggers.
 - **On:** Enables the HTTP event feature.
 - **Off** Disables the HTTP event feature.
- **Action Rule:** Allows actions, defined in the camera, to be triggered when an event occurs.

11.3 Apply

Click **Apply** to save the current settings.

Chapter 12

Advanced

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

Note: In most installations the default configuration will apply.

Note: Supported settings are different depending on the tracker engine.

Object Tracker	
Abandoned Threshold	5 Second(s) [5 - 60]
Stationary Hold-on Time	60 Second(s) [1 - 600]
Minimum Object Size	10 Blob pixels [1 - 100]
Sensitivity	4 Blob pixels [3 - 16]
Detection Point	Auto

Apply

Scene Change	
Duration	10 Second(s) [1 ~ 60]
Area Threshold	50 % [0 ~ 100]

Apply

Clean Up

Advanced

12.1 Object Tracker

- **Abandoned Threshold:** Defines the amount of time an object must be classed as abandoned or removed before an Abandoned / Removed rule will trigger.

- **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.
- **Sensitivity:** allows the object tracker to be tuned to ignore movement below a certain threshold. Combined with the Blob Map burnt in annotation, which visualises the area of the scene the object tracker is detecting movement, this value can be adjusted to filter out environmental noise. The default setting is 4.
- **Detection Point:** Defines the tracking point that will be used to evaluate objects against rules.
 - **Automatic:** In **automatic** mode the detection point is automatically set based on how the calibration is configured.
 - **Centroid** In **centroid** mode the detection point for each object is located at the middle of the bounding box.
 - **Mid-bottom** In **mid-bottom** mode the detection point for each object is located along the bottom line of the bounding box, in the centre.

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

12.2 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.

12.3 Confidence Threshold

- **Minimum detection confidence level:** Defines the minimum threshold to detect the objects.

12.4 Apply

Click **Apply** to save the current settings.

12.5 Clean up

Click **Clean up** to perform a clean up process.

Chapter 13

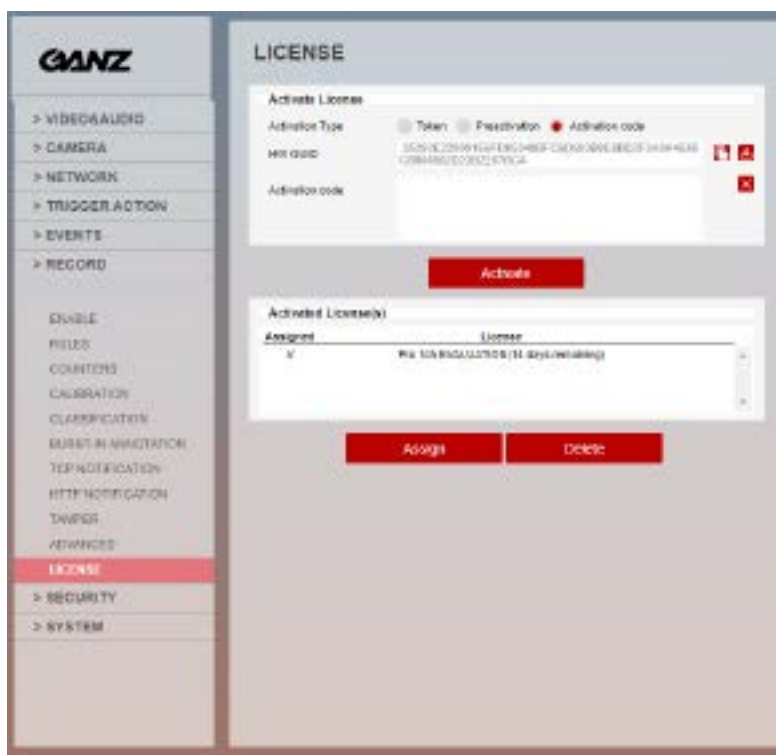
License

To take advantage of the GXI video analytic features a license is required.

In many cases, the GXI analytic features on a camera are pre-activated in the factory and further activation is only necessary to enable additional functionality. There are 3 different methods of activation, token, pre-activation and activation code.

An **activation code** is linked to the cameras hardware configuration and is not transferable.

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



License

13.1 Activate License

- **Activation Type:** Defines the method that will be used for your activation request.
 - **Token:** Allows the activation token to be entered to apply further licenses.
 - **Pre-activation:** Defines that software has been pre-licensed and no further action is required.
 - **Activation code:** Provides the HW GUID to allow further licenses to be applied.
 - * **HW GUID:** The unique hardware code for this device. This is required to generate an activation code.
 - * **Activation code:** This is where you enter activation codes to apply licenses and enable features of the GXI plug-in.

Note: Please refer to your license distributor for additional licenses.

13.2 Activated License(s)

- **Activated License(s):** This provides a list of the installed licenses with the option of deleting highlighted licenses

Note: Multiple licenses can be applied to a camera but only one license can be active at any one time.

13.3 Assign

Click **Assign** to assign the selected license for use with analytics.

Note: The menu system will reload to reflect any changes the license has applied. This may result in features not being available

13.4 Delete

Click **Delete** to delete the selected license from the camera.

Note: deleting the active license from the camera will remove all analytic features. Any configured rules will be available when a new valid license is applied.

13.5 How to apply a Token

- The reseller sends an activation token.
- Type or paste the activation token into the space provided and select **Activate**.
- Verify the license has applied by confirming it is present in the **activated license(s)** section and is valid.

13.6 How to apply Activation Codes

- Use the **HWCODE** to obtain an activation code for the license you would like to apply and send it to the hardware reseller.
- The reseller sends an activation token by return.
- Complete the instructions within the document to obtain the activation code.
- Type or paste the activation code into the space provided and select **Activate**.
- Verify the license has applied by confirming it is present in the **activated license(s)** section and is valid.

13.7 How to Delete License(s)

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

13.8 More Information

For more information on the complete range of additional features available, please visit ganzsecurity.com/gxi

Chapter 14

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.

14.1 List of tokens

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

14.1.1 {{name}}

The name of the event

14.1.2 {{id}}

The unique id of the event

14.1.3 {{type}}

The type of the event. This is usually the type of rule that triggered the event

14.1.4 {{status}}

The status of the event

14.1.5 {{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

14.1.6 {{time}}

The event time in Unix time stamp format. An example of this would be:

time: {{time}} time: 1582308244.376

14.1.7 {{ip}}

The IP address of the device

14.1.8 {{host}}

The hostname of the device that generated the event

14.1.9 {{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

14.1.10 {{zoneid}}

The zone ID of the event

14.1.11 {{ruleid}}

The rule ID of the event

14.1.12 {{bb}}

The bounding box of the object

14.1.13 {{objectclass}}

The object class of the object triggering the rule

14.1.14 {{mac}}

The MAC address of the device

An example for using tokens is given below:

Event #{{id}}: {{name}} Event type: {{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 type: presence Start time (ISO 8601 format): 2017-04-21T10:09:42+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