



Servers Powered by DW Spectrum and IVA Ai Server

IVA AI Server Plugin User Manual

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Table of Contents

Description.....	1
IVA AI Server	1
Part 1: Architecture	1
IVA AI Server Plug-in	1
IVA AI Server Configuration Tool.....	1
System	2
Part 2: Prerequisites.....	2
Software Requirements.....	2
Part 3: Setting Up the DW IVA Server Configuration Tool	3
Logging in with the DW IVA Server Configuration Tool.....	3
Enable IVA AI Server Plugin	5
Part 4: Configure for DW Spectrum IPVMS.....	7
DW IVA Server	9
Part 5: Licenses.....	9
Active Licenses	10
New Licenses	10
How to Add a License with a Token.....	10
How to Add a License with an Activation Code	11
How to Remove License(s)	11
Part 6: Enabling the Analytic Plug-in (<i>Enable Tab</i>)	12
Part 7: Analytic Rules (<i>Rules Tab</i>)	13
Types of Rules Available	14
How to Add a Rule	18
How to Modify a Rule.....	19
How to Delete a Rule	19
Part 8: Camera Calibration (<i>Calibration Tab</i>)	20
Measured Values Description	21
Estimated Values Description.....	21
How to Calibrate a Camera	21
Part 9: Object Classification	26
Part 10:Tamper Detection.....	28
Part 11:Advanced	29

Analytics Processing Stream.....	30
Object Tracker	30
Scene Change	31
Display Information.....	31

Description

This user guide will describe the features and options of a DW IVA AI Server for use with DW Spectrum IPVMS. This software comes pre-installed on DW Blackjack Ai Servers.

Part 1: IVA AI Server Architecture

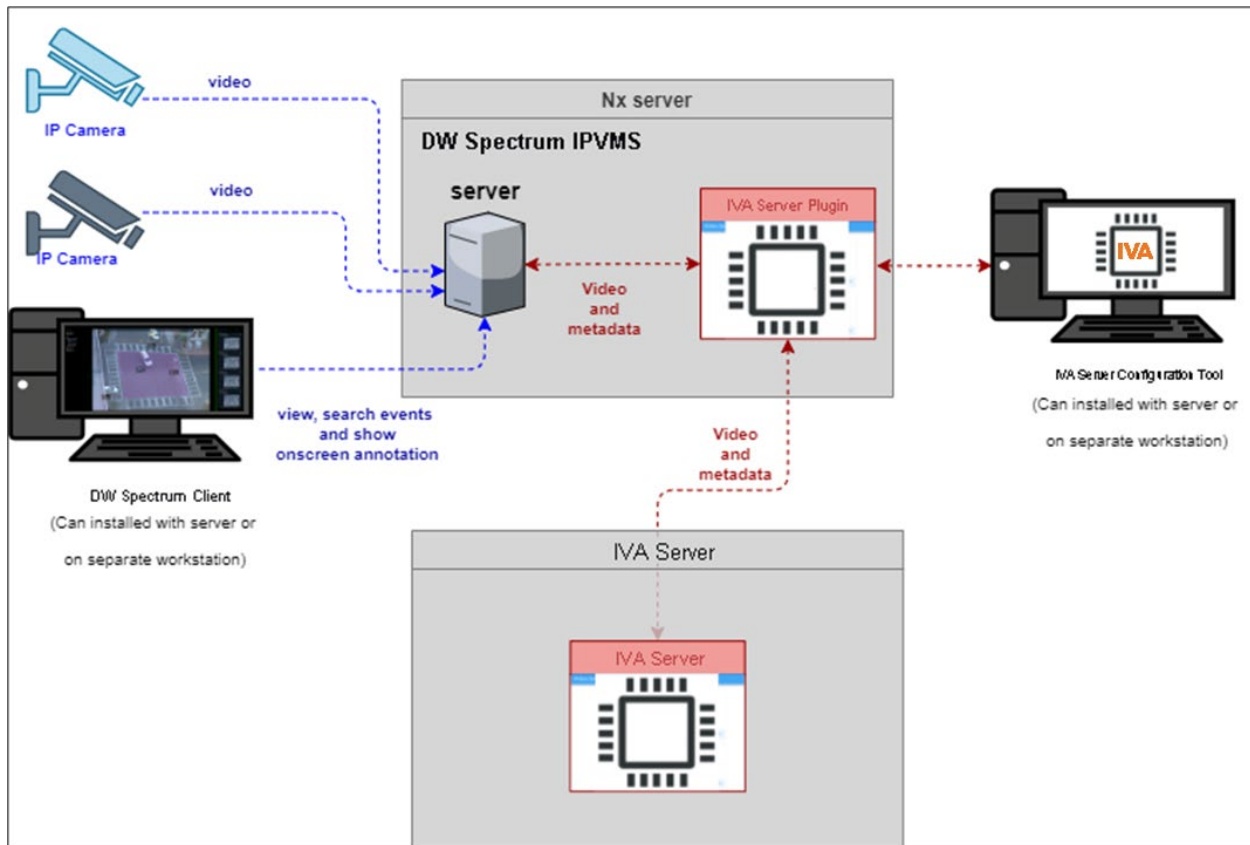
IVA AI Server Plug-in

The IVA AI Server plug-in consists of two components:

- **IVA AI Server Plug-in:** The *IVA AI Server Plug-in* is installed alongside the DW Spectrum IPVMS and provides a link to the IVA AI Server.
- **IVA AI Server:** The *IVA AI Server* component receives the encoded video from DW Spectrum IPVMS, then decodes and processes the video through the analytics engines and rules. It then feeds the metadata back to the IVA AI Server Plug-in to be integrated into the video streams of DW Spectrum IPVMS. This component can be managed with the *IVA AI Server Configuration Tool*.

IVA AI Server Configuration Tool

The *IVA AI Server Configuration Tool* is a standalone application, designed to provide a feature-rich experience when configuring a channel's video analytic features.



Part 2: System Prerequisites

The IVA AI Server component should be installed on a dedicated hardware platform.

Software Requirements

- Supported OS: Ubuntu 18.04 LTS Desktop / Windows 10 / Windows Server 2016 or higher
- Latest GPU drivers (at least 460.73 or higher)
- CUDA Toolkit 11.1

Part 3: Setting Up the DW IVA Server Configuration Tool

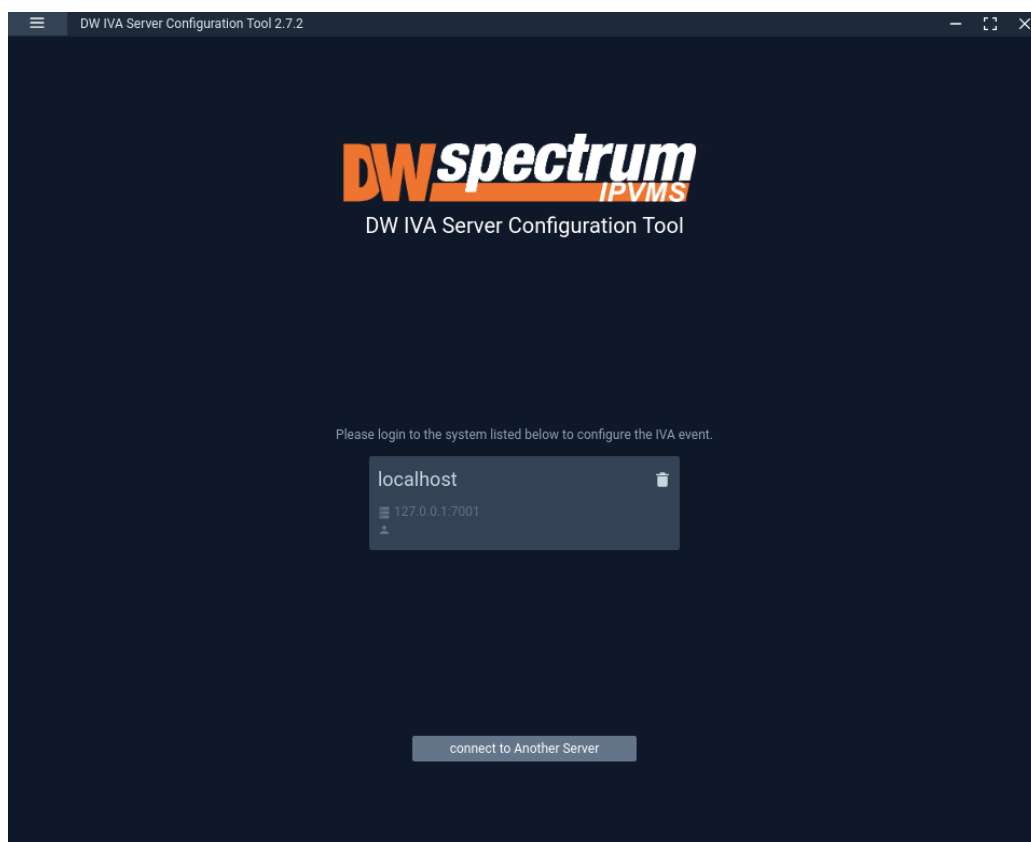
Although some cameras' settings can be configured through the DW Spectrum IPVMS Client, the *DW IVA Server Configuration Tool* can be used to provide a complete IVA user experience during the configuration process of the IVA Server.

Logging in with the DW IVA Server Configuration Tool

After installing, launch the *DW IVA Server Configuration Tool*. There is an application shortcut on the desktop.

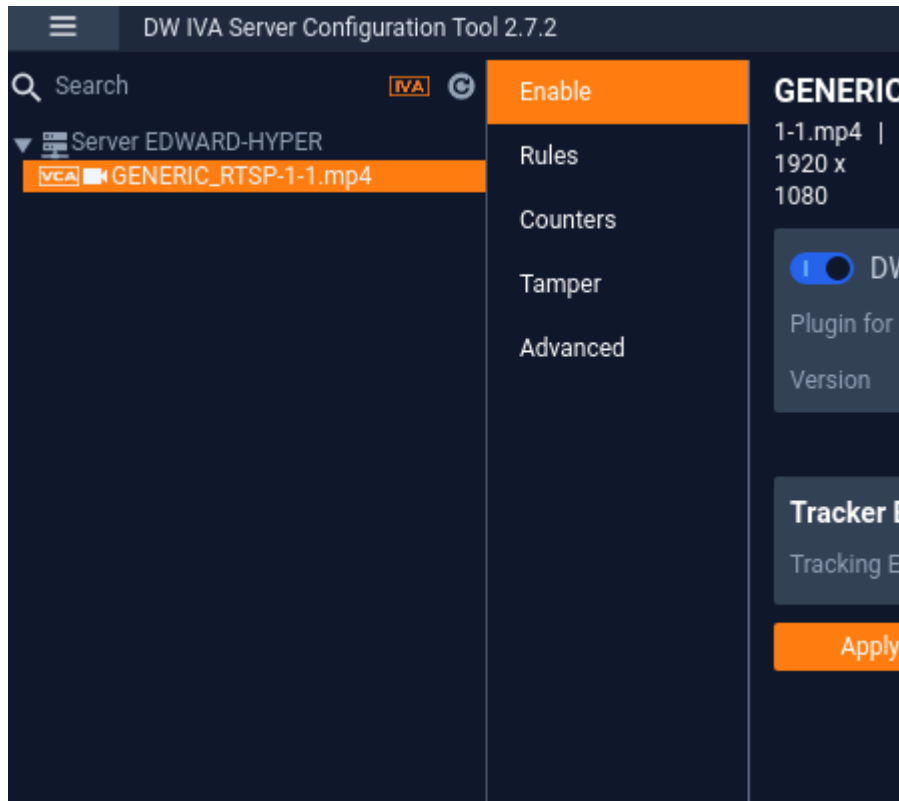
The *DW IVA Server Configuration Tool* displays a visually similar interface to the DW Spectrum IPVMS Client.

- 1) Select the DW Spectrum IPVMS Server that you want to connect with and log in.



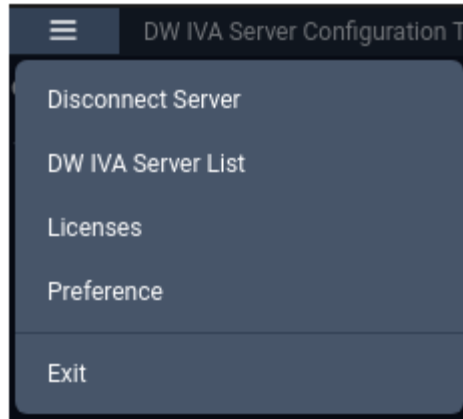
- 2) Once you are logged in and connected to the DW Spectrum Server through the *DW IVA Server Configuration Tool*, a list of the cameras will show all cameras in the left-side panel.

To view cameras that have the IVA AI Server plug-in enabled, enable the “IVA” toggle button.



In the left-side panel, you will find the following features:

- **Search:** This search box can be used to filter the camera list based on the entered device name.
- **IVA:** The IVA button toggles the camera list between showing all cameras on the DW Spectrum System or just the cameras that have the plug-in enabled.
- **Refresh:** This button refreshes the list of cameras from DW Spectrum IPVMS when it is clicked.



Select the **Main Menu** to display the menu options:

- **Disconnect Server:** Disconnects the current session with your DW Spectrum IPVMS Server.
- **DW IVA Server List:** Displays a list of the IVA AI Server(s) your DW Spectrum system is configured to use.
- **Licenses:** Displays a list of the licenses available from the DW IVA Servers.
- **Preference:** Displays a list of the DW IVA Server Configuration Tool's advanced options.

Enable IVA AI Server Plugin

This option shows the status of the plug-in against the selected camera. From here you can change the license type and deep learning features.

- **IVA AI Server Plugin:** Toggle to enable/disable the plug-in for the selected camera.
- **Version:** Shows the current plugin version of IVA AI Server being used.
- **License:** Select the license type that will be used for the camera. This will control which features are available.
- **Tracking Engine:** Defines the tracking engine that will be used for analytics.
 - **Object Tracker:** When selected the tracker will need to 'learn the scene' to determine background from moving foreground objects. Whilst learning the scene the following message will be displayed in the live view, and no objects will be tracked during this time.

- **DL Object Tracker:** When selected the tracker uses the GPU to detect and track objects in a scene.
 - When the tracking engine is set to use “**Object Tracker**”, the objects can be classified using either deep learning models or by using properties extracted from an object in a calibrated scene. If the *Deep Learning Filter* is not used, camera calibration is required to detect the object class.
- **DL People Tracker:** When selected the tracker uses the GPU to detect and track people in a scene.
- **Deep Learning Filter:** Defines the Deep Learning filter settings for the camera.
 - **Not use:** Disable the Deep Learning filter for the selected camera.
 - **Use:** Use the Deep learning filter for classification.
- **Apply:** Apply changes to the selected camera.

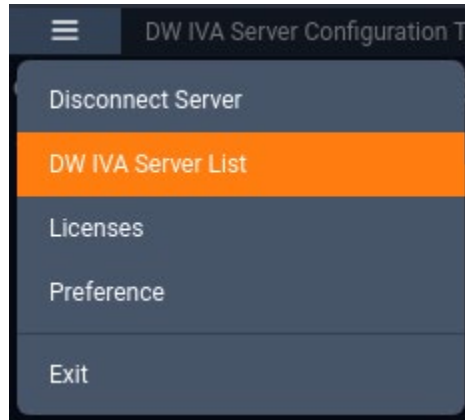
NOTE: The calibration and classification features are not displayed when using the Deep Learning filter, DL Object Tracker, or DL People Tracker. To show the available options, Select the tracker and click Apply.

NOTE: When first selected, the DL trackers will run a model generation process. This optimizes the DL models to run on the available GPU hardware. Irrespective of which tracker is selected, the DL People tracker model, DL Object Tracker model and the DL Filter model will all be optimized in one go. This process can take up to 10 minutes per model and may increase with different GPU configurations. The process will not need to be run again unless the GPU hardware is changed. Whilst optimization is performed a message will be displayed in the live view, and no objects will be tracked during this time.

Part 4: Configure for DW Spectrum IPVMS

The DW IVA Server will need to be configured for DW Spectrum IPVMS:

- 1) Open the *IVA AI Server Configuration Tool* and connect with the DW Spectrum Server.
- 2) After connecting with the DW Spectrum Server, click on the menu icon in the top left, then select **IVA AI Server List**.



- 3) Click **Add**.
- 4) Enter the IP address of the DW IVA Server.
- 5) Leave the port set to **3030**
- 6) Click **OK** to return to the previous menu.
- 7) Click **Apply** to save your changes.
- 8) Click **Close** to close and return to the previous menu.

NOTE: You can define up to four (4) IVA AI Servers at a time.

DW IVA Server List

Name	Address	Port	Actions	
Server #1	192.168.50.103	3030	Edit	Delete
Server #2	192.168.50.209	3030	Edit	Delete
Server #3	192.168.50.167	3030	Edit	Delete

Add

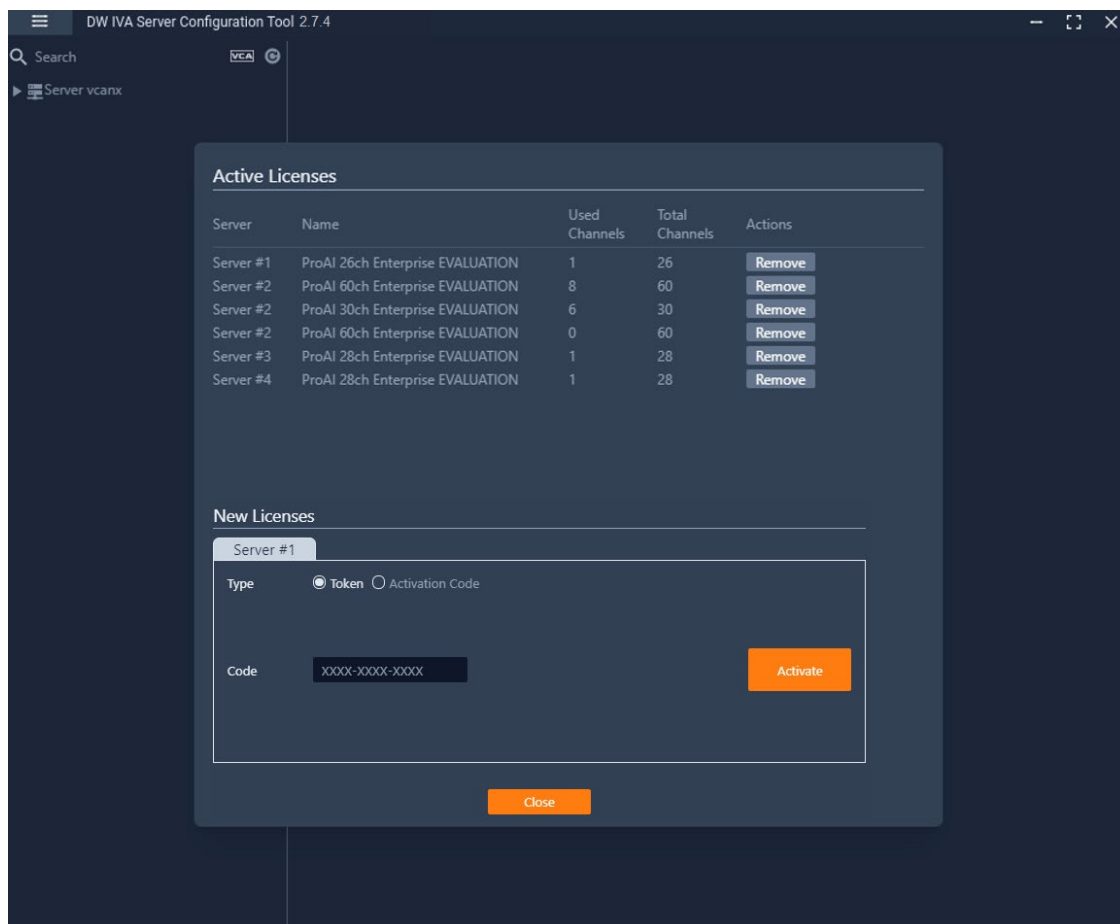
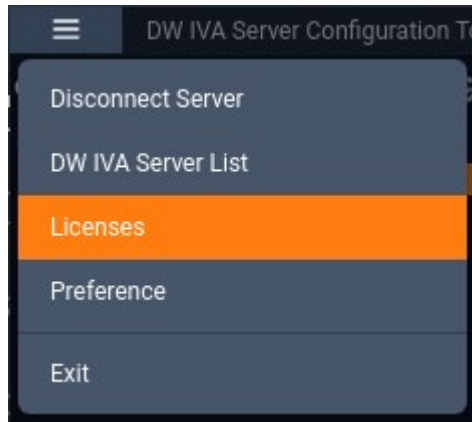
Apply

Close

Part 5: DW IVA Server Licenses

To use the analytic features of a DW IVA AI Server, a license is required. Licenses can be managed through the DW IVA Server Configuration Tool program.

To view and edit the licenses, select “**Licenses**” from the *Main Menu* in the DW IVA Server Configuration Tool.



Active Licenses

The *Active Licenses* area of the menu provides a list of all available licenses from the configured IVA AI servers, it also displays which licenses are currently allocated.

- **Remove:** Click this button to remove the selected license from the server.

New Licenses

The *New Licenses* area of the menu, server tabs (Server #) are created for each IVA AI server. Select a server tab to view the license activation interface.

- **Type** Specifies the activation method that will be used for your license activation request.
 - **Token** Allows the activation token to be entered to apply further licenses.
 - **Code** Type or paste the token which format into XXXX-XXXX-XXXX where X is an alphanumeric character.
 - **Activation code** Provides the HW GUID to allow further licenses to be applied.
 - **HWGUID:** This is the unique code for the system. Use the HWGUID to obtain an activation code.
 - **CODE:** Type or paste the activation code into the space provided and select Activate.
 - **Copy to clipboard:** Copies the HWGUID to the clipboard.
- **Activate:** Click this button to validate the entered Code. The license will then be applied to the selected IVA AI Server.
- **Close:** Click this button to close the *Licenses* page and return to the previous screen.

How to Add a License with a Token

- 1) In the *Licenses* menu, select the *Server #* tab of the desired server.
- 2) Enter the code into the **CODE** section.
- 3) Click **Activate** to validate the code and apply it to the server.

How to Add a License with an Activation Code

- 1) In the *Licenses* menu, select the *Server #* tab of the desired server to view its **HWGUID**.
- 2) Obtain an activation code.
- 3) Enter the activation code into the **CODE** section.
- 4) Click the **Activate** button to validate the code and apply it to the server.

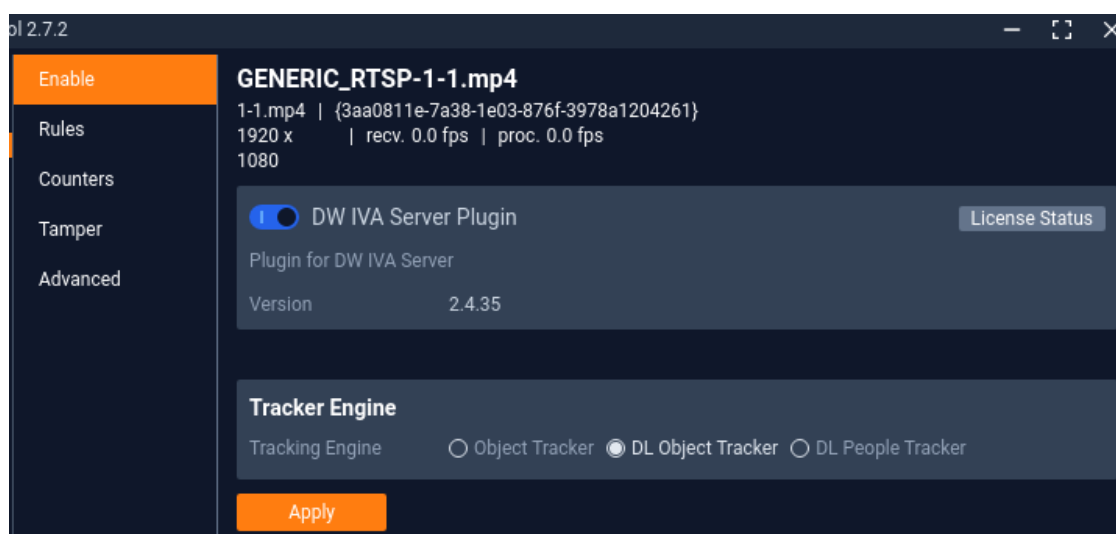
How to Remove License(s)

To delete a license, click the **Remove** button that appears next to the license you would like to remove.

Part 6: Enabling the Analytic Plug-in (Enable Tab)

To set up analytics on the DW IVA AI Server, select a camera from the left-side panel. Select the *Enable* tab and enable the *DW IVA Server Plugin* for each camera that you want to apply video analytics for.

- 1) Open the *IVA AI Server Configuration Tool* and connect to the DW Spectrum Server.
- 2) In the left-side panel, click on the **IVA** filter to show all cameras.
- 3) Select the camera from the list and enable the **DW IVA Server Plugin** toggle for the camera. Repeat this for each camera as needed.
- 4) In the *Tracker Engine* section, select the type of tracking that the analytics will be used for (*Object Tracker*, *DL Object Tracker*, *DL People Tracker*)

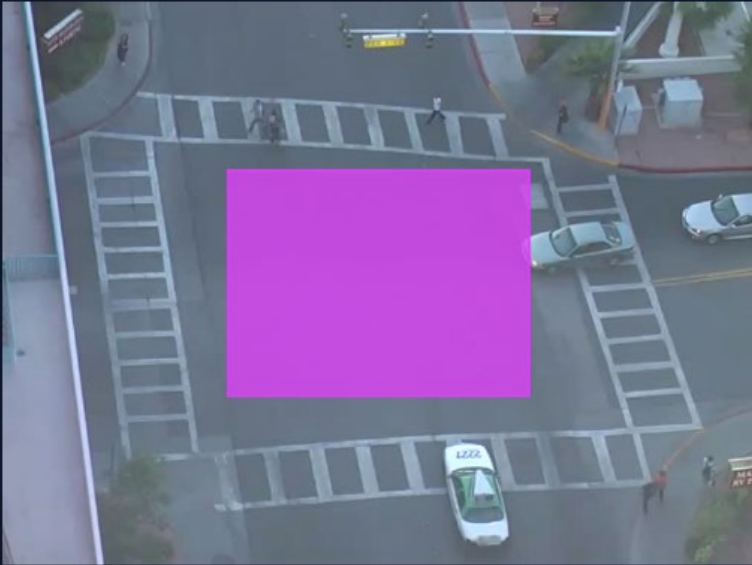


Part 7: Analytic Rules (Rules Tab)

After selecting a camera in the *DW IVA Server Configuration Tool*, select the *Rules* menu tab. All of the analytic rules that have been configured for the selected camera will display.

From this menu, analytic rules can be created/modified or deleted as required. A snapshot of the camera will display on the screen to allow rule areas to be defined and visually drawn.

VCA Camera 1
1 | {093b96af-222e-9acf-fceb-4824752f7344}



Type	Name	Color
Enter	Enter	<div></div>
Loitering	Loitering	<div></div>
Disappear	Disappear	<div></div>
Enter	2nd Enter	<div></div>

Add Modify Delete

You can create, edit, or remove rules with the available features:

- **Add:** Click to add a new rule.
- **Modify:** Click to modify the highlighted rule.
- **Delete:** Click to delete the highlighted rule.

Types of Rules Available

Analytic Area Rules

Analytic area rules mark a survey zone for the IVA AI to monitor and to track people and objects. Area rule types include:

- **Intrusion:** The *Intrusion* rule triggers an event when an object is first detected and has begun to be tracked within a zone
- **Enter:** The *Enter* rule triggers an event when a tracked object crosses the border from outside of a zone to inside the zone.
- **Exit:** The *Exit* rule triggers an event when an object crosses the zone border, moving from inside the zone to outside
- **Loitering:** The *Loitering* rule triggers an event when an object remains present within a zone for a pre-defined period.
- **Appear:** The *Appear* rule triggers an event when an object suddenly starts to be tracked from within a zone.
- **Disappear:** The *Disappear* rule triggers an event when an object suddenly stops being tracked (disappears) from within a zone.
- **Abandoned:** The *Abandoned* rule triggers an event when an object is left in a zone for a specified time.
 - NOTE: The *Abandoned* object threshold time is a global setting and can be found in the *Advanced* section.
- **Removed:** The *Removed* rule triggers an event when the area within a zone has changed for the specified time.
 - NOTE: The *Removed* object uses the same threshold as the *Abandoned* rule, the *Abandoned* threshold time is a global setting and can be found in the *Advanced* section.
- **Stopped:** The *Stopped* rule triggers an event when an object has remained stationary in a particular zone for a pre-defined period.
 - NOTE: The *Stopped* rule does not detect abandoned objects. It only detects objects which were moving and then became stationary within the zone.



Analytic Line Rules

Analytic line rules mark a survey line for the IVA AI to monitor and to track people and objects. Line rule types include:

- **Line Crossing:** The *Line Crossing* rule triggers an event when an object is first detected crossing the line.
 - NOTE: *Line Crossing* rule will trigger in the same circumstances as the *Direction Violation* rule. The choice of which rule is most appropriate will vary depending on the scenario.
- **Counting Line:** The *Counting Line* triggers an event when movement is detected crossing a detection line in a particular direction, regardless of the angle of the crossing. Additional specifications that can be defined include the required direction of travel and the minimum width of passing objects to trigger the rule.

- **NOTE:** *Counting Line* differs from the *Direction* rule in that it does not use the *IVA Object Tracker*. Instead, it detects motion that moves past the line. The *Object Filter* feature is not available when using the counting line rule.
- **Tailgating:** The *Tailgating* rule triggers an event when objects cross over a line within quick succession of each other, within the defined time.
- **Direction Violation:** The *Direction Violation* rule triggers an event when an object crosses the detection line in a specified direction, angle, etc.
 - **NOTE:** You can also adjust the rule settings using the preview overlay. Click and hold inside the dotted circles and drag the line to the desired angle.



Analytic Filtering Rules

Analytic filtering rules can be applied to reduce false-positives and unwanted analytic triggering.

- **Logical Rule:** A *Logical Rule* extends the standard analytic rules to allow various inputs to be combined using logical expressions. This allows rules to be combined to form a complex filter of events to help reduce false alerts.
 - NOTE: Not all standard rules are available for *Logical* rules.
- **None Detection:** The *None Detection* rule will create an exclusion zone that can be used to map areas of the scene from being analyzed. This can be used to reduce false triggers that might be caused by moving foliage or busy backgrounds by telling the engine to ignore certain areas.

VCA Camera 1
1 | {093b96af-222e-9acf-fceb-4824752f7344}



Name Logical Rule 1

Type Logical Rule

Enter is triggered Change

☒ Then within 5 s ⬇

Loitering is triggered Change

Add a clause

Apply Cancel

How to Add a Rule

When configuring an AREA rule, the engine will overlay a zone on a snapshot image of the camera's view.

When configuring a LINE rule, the engine will overlay a line on a snapshot image of the camera's view.

Click-and-drag the major and minor nodes to reshape the detection zone or to reorient the detection line as needed. Clicking on a minor node will split the segment and create a more complex shape.

To remove a segment, right-click on a major node and select "Delete".

The configuration options for rules include (varies by type):

- **Name:** Define a name for the rule.
- **Threshold:** Define, in seconds, the period an object needs to be present within a zone to trigger an event.
- **Object Filter:** Defines if the objects will be filtered before triggering an event.
- **Zone Color:** Select a color for the zone.
- **Apply:** Apply to save the rule and return to the previous menu.
- **Cancel:** Cancel changes and return to the previous menu.
- **Direction** Define the direction that objects will be monitored for movement for triggering detection line events.
 - **A:** Only direction **A** will be monitored across the counting line.
 - **B:** Only direction **B** will be monitored across the counting line.
 - **Both:** Both directions across the counting line will be monitored.
- **Enable Width Calibration:** Turn the object width calibration feature on or off.
 - **Width Calibration:** Define the width calibration value; used to adjust the minimum and maximum width of target objects for triggering an event when crossing the detection line.
- **Enable Shadow Filter:** Turn the shadow filter on or off, this attempts to compensate for shadows cast by objects.
- **Counter:** Toggle to enable or disable a tally counter for this line.
 - **Reset:** Click to reset the counter.
- **Angle:** Define the direction that objects must move to trigger a *Direction Violation* event.

- **Acceptance:** Define the allowed variance each side of the angle that will still trigger a *Direction Violation* event
- **Select Rule:** Define the first and second rules that will be used in the *Logical* rule.
 - **Then within:** Define the period between which the standard rules must occur to trigger the *Logical* rule.
- **Add a clause:** Add an additional rule to the logical rule, this displays a new "*Then within*" field for the rule.

To create a new rule:

- 1) Select **Add** to display the available rules.
- 2) Select the rule type to be added.
- 3) Configure the rule accordingly.
- 4) Select **Apply** to save the rule and return to the previous menu.

NOTE: The *Object Filter* option is only available when the standard object tracker and Deep Learning Object tracker are selected. Filter option availability will change depending on which tracker is being used.

How to Modify a Rule

- 1) Highlight the rule to be modified.
- 2) Select **Modify** to open the settings for the rule.
- 3) Modify the rule accordingly.
- 4) Select **Apply** to save the rule and return to the previous menu.

How to Delete a Rule

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

Part 8: Camera Calibration (*Calibration Tab*)

Camera calibration is required for object identification and classification to occur. If the height, tilt, and vertical field-of-view of the camera position are known, then these can be entered as parameters for the analytic engine.

However, if you do not know the exact values, then you can use the *Auto-calibration Tool* feature to determine suggested suitable values.

Select the *Calibration* menu tab to calibrate the camera.

- **Enable:** Toggle to enable/disable the *Calibration* feature.

VCA Camera 1
1 | {093b96af-222e-9acf-fceb-4824752f7344}

Click one among selected snapshots

☐ Enable

Measured Values

Object
Height 1.8 m

Camera
Height 28 m

☐ VFoV 40 deg

☐ Roll 0 deg

Estimated Values

Height of Objects
Mean 0 m
Standard Deviation 0 cm

Camera Information
Height 28 m
Tilt 19 deg
VFoV 40 deg
Roll 0 deg

Calculate Apply

0/5
Capture

Measured Values Description

In this section of the *Calibration* menu, you may manually enter the calibration information that will be used by the system to determine the sizing of objects. This information should include the hardware installation information of the camera.

Enter the actual height of an object that appears in the camera's view and the estimated height and angle orientation of the camera's installed location. The analytic engine will use this information when tracking objects.

- **Object Height:** Defines the typical height of the objects that will be used by the analytics as guide points (reference objects) in the image.
- **Camera Height:** Defines the height of the camera.
- **VFOV:** Defines the vertical field of view of the camera.
- **Roll:** Defines the tilt of the camera.

Estimated Values Description

The information in this section is populated by the measurement results when using the Calibration Tool. This information is based on snapshots (5 or more snapshots) and guide points defined by your measurements in the *Measured Values* section of the menu.

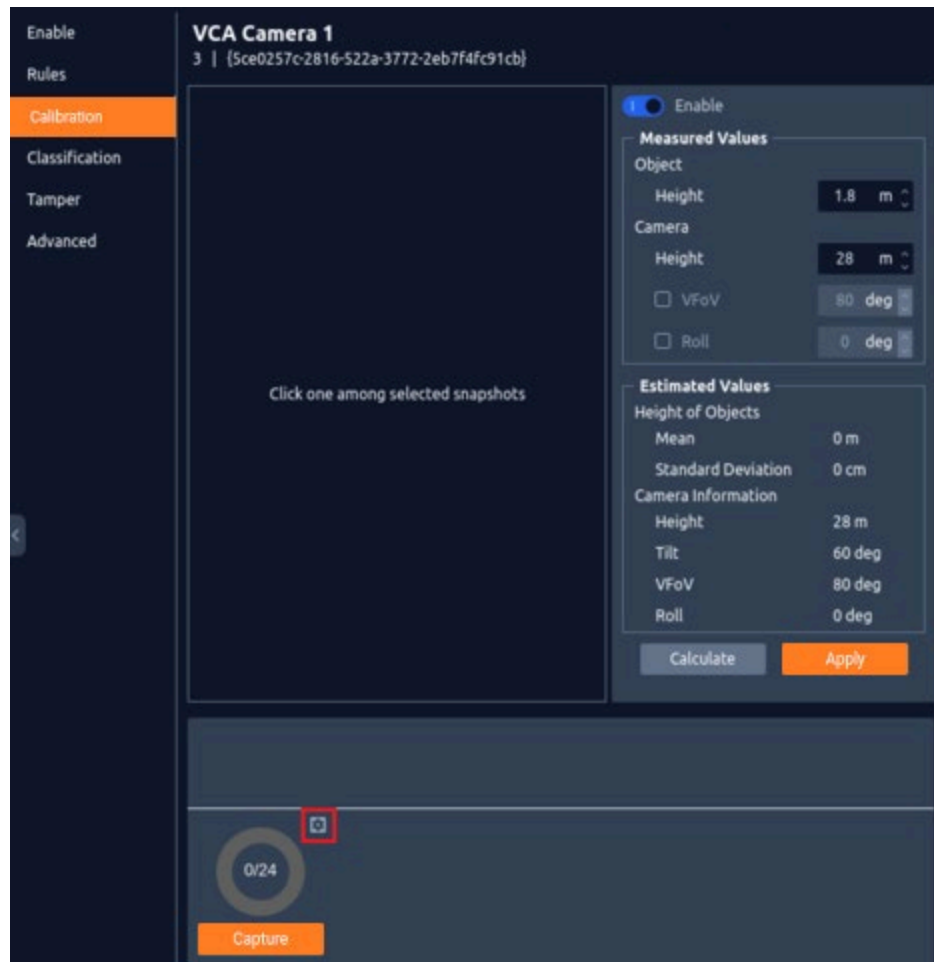
- **Calculate:** Activates the calibration tool and estimates the height, tilt, VFoV and roll based on the guide points defined in the snapshots.
- **Apply:** Saves any changes that have been made.
- **Capture:** Instructs the plug-in to capture a set number of images from the camera over the given interval period, as defined in the settings cog.

How to Calibrate a Camera

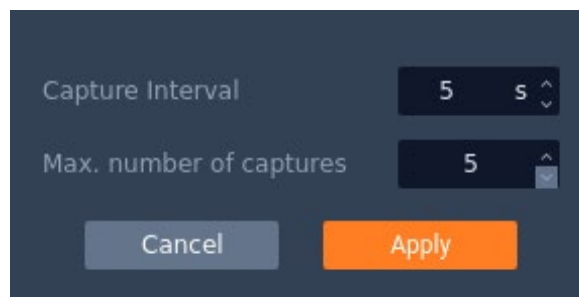
The IVA AI analytic engine uses still images, captured by the camera, when using the auto-calibration feature.

To calibrate a camera:

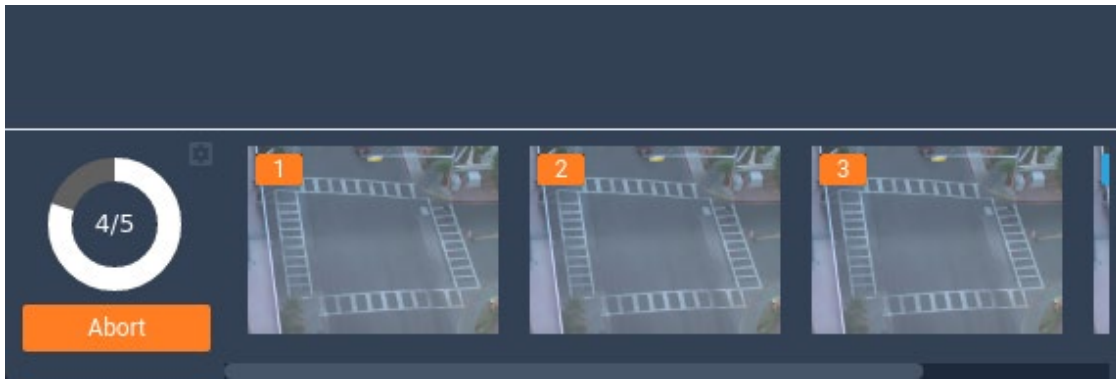
- 1) At the bottom of the *Calibration* menu, click the **cog icon** at the bottom of the window.



- 2) Define the number of images and the interval period for the image capture. The more images that are used, the more accurate the auto-calibration will be.

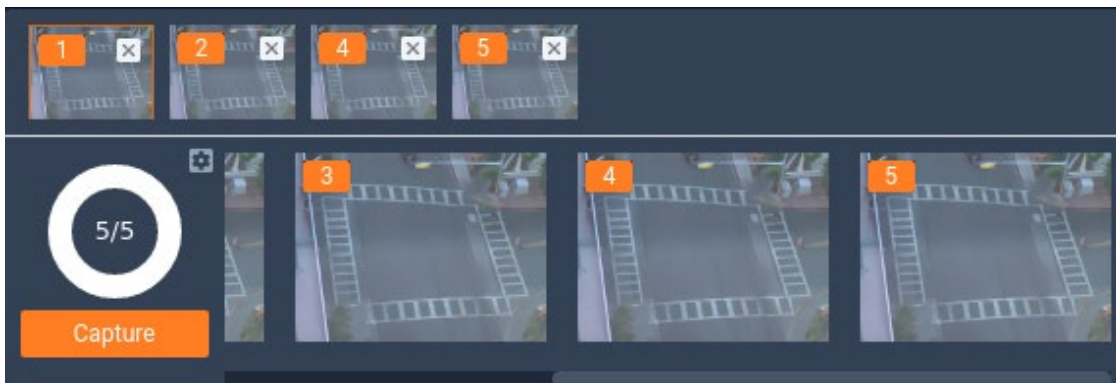


- 3) Click the **Capture** button to begin capturing images.



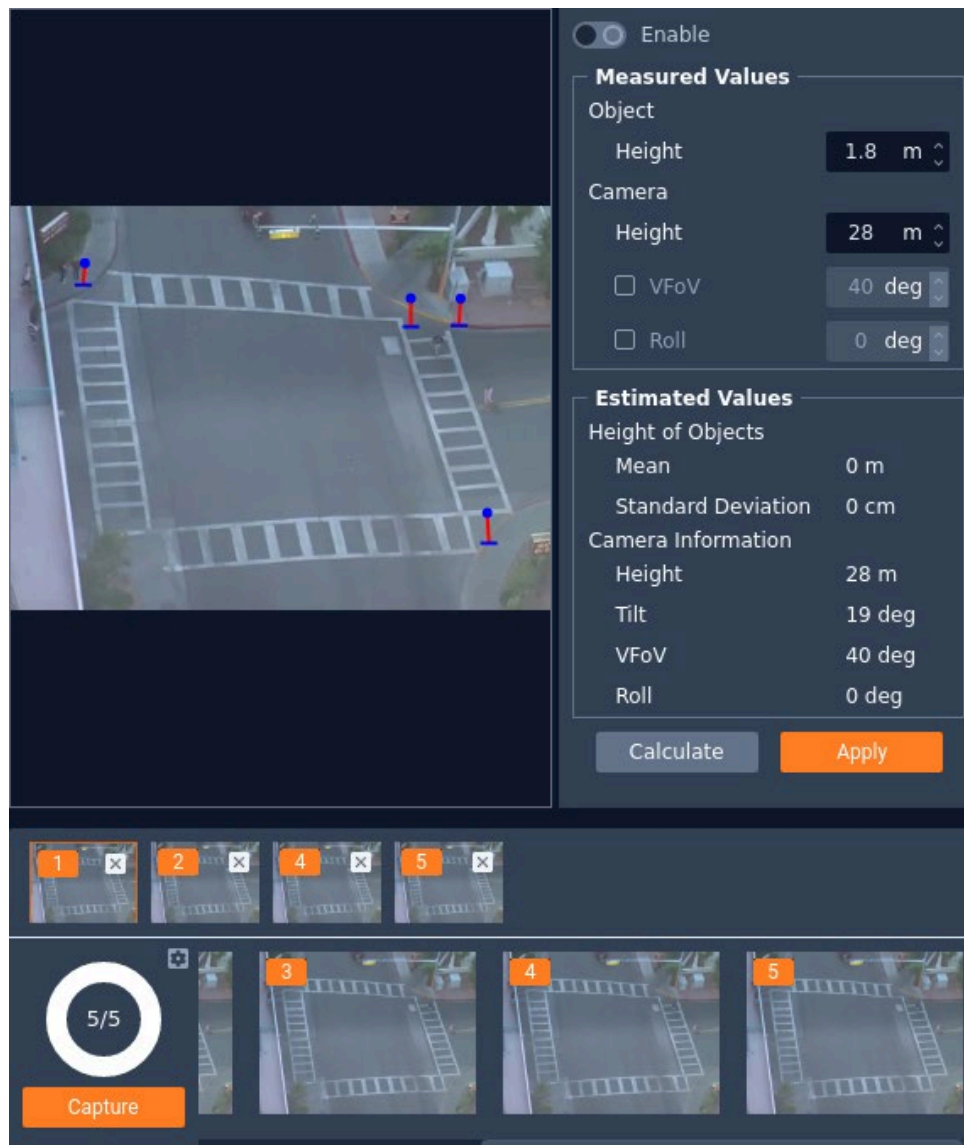
- 4) Select a minimum of 5 images to use in the calibration tool.

Click on the images to move them into a holding section. Images can be removed from the holding section by clicking the **X** in the top right.



- 5) Click on one of the images in the holding section to display it on the main view. Draw guide lines (reference points) in the image that the analytics can use when tracking objects.
- In the main view, click on the image to create guide points. At each guide point, draw a line showing the location and the approximate height of an object as it appears in the image. These guide points will be used by the calibration tool as references when estimating measurements.
 - Repeat this for each image in the holding section. When finished, you will have several guide points on the main view.

NOTE: The more images that you use, the more accurate the calibration tool will become.



- 6) After configuring the guide points for the selected images, click the **Calculate** button to begin the estimation process.

The plug-in will suggest estimated measurements for the height, tilt, VFoV and roll of the camera. Update the *Measured Values* settings accordingly.

Estimated Values

Height of Objects

Mean

1.8 m

Standard Deviation

47 cm

Camera Information

Height

28 m

Tilt

60 deg

VFoV

56 deg

Roll

0 deg

Calculate

Apply

7) Click the **Apply** button to save your changes.

Part 9: Object Classification

When the *Calibration* settings have been defined, objects that are detected can be assessed and assigned an object classifier that is listed in the *Classification* settings. The IVA AI has been preprogrammed with the most used classifiers but can adjusted if the scenario requires.

Such object classes include:

- **Clutter:** Defined as general objects that may be picked up by the analytics; these are typically smaller than an average human
- **Person:** Defined as a human moving through the camera's FoV
- **Group of People:** Defined as multiple humans, moving together through the camera's FoV
- **Vehicle:** Defined as cars, vans, trucks, etc.

The screenshot displays the 'VCA Camera 1' configuration window. At the top, it shows the camera ID '1' and a UUID '{093b96af-222e-9acf-fceb-4824752f7344}'. Below this, there are four expandable sections, each representing an object classifier. Each section contains 'Area' and 'Speed' settings, each with a 'Min' and 'Max' value set via a numeric input field and a dropdown arrow. The 'Clutter' section has Area (Min: 0, Max: 0.4) and Speed (Min: 0, Max: 50). The 'Person' section has Area (Min: 0.5, Max: 2) and Speed (Min: 0, Max: 20). The 'Group of People' section has Area (Min: 2.1, Max: 3.9) and Speed (Min: 0, Max: 20). The 'Vehicle' section has Area (Min: 4, Max: 100) and Speed (Min: 0, Max: 200). An orange 'Apply' button is located at the bottom left of the interface.

Classifier	Area Min	Area Max	Speed Min	Speed Max
Clutter	0	0.4	0	50
Person	0.5	2	0	20
Group of People	2.1	3.9	0	20
Vehicle	4	100	0	200

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

Adjust the settings of the classifiers by either manually overwriting the default settings of the object classifiers or by using the up/down arrows to change the settings. Area measurement is in meters.

Needed classifier information includes:

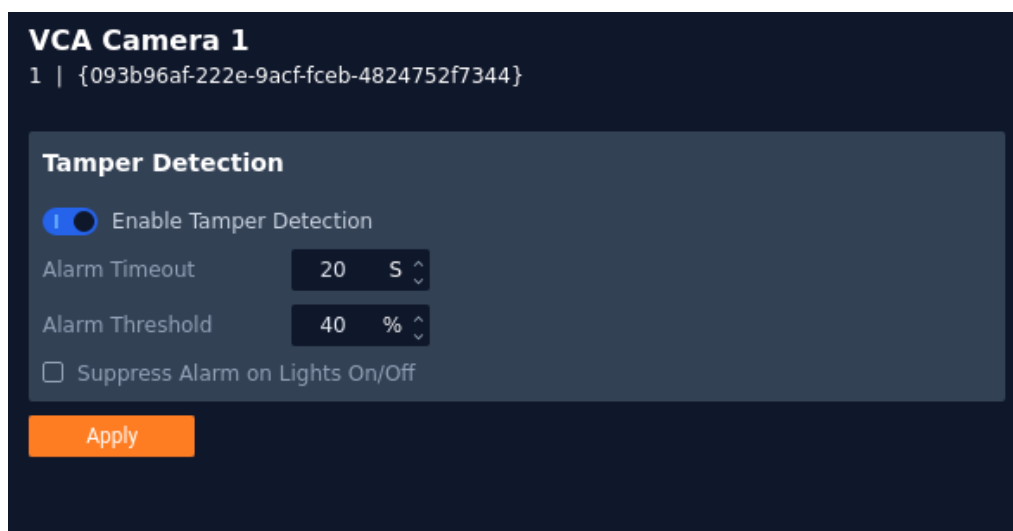
- **Min. Area:** Defines the minimum area that an object will occupy.
- **Max. Area:** Defines the maximum area that an object will occupy.
- **Min. Speed:** Defines the minimum movement speed for the new classifier.
- **Max. Speed:** Defines the maximum movement speed for the new classifier.
- **Apply:** Apply to save the changes and return to the previous menu.

NOTE: When modifying classifiers, avoid overlapping measurement parameters with other object classifiers as this will cause the analytics engine to incorrectly identify objects.

Part 10: Tamper Detection

The *Tamper Detection* feature is to detect when camera tampering events to obscure the camera view, such as bagging (physically blocking the camera lens), defocusing, or moving the camera, occur. This is achieved by the IVA AI automatically detecting large persistent changes in the image.

Select the *Tamper* menu tab to configure the *Tamper Detection* settings.



Configuration options include:

- **Enable Tamper Detection:** Toggle to enable/disable the *Tamper Detection* feature for the selected camera.
- **Alarm Timeout:** Defines the length of time, in seconds, that the image must be persistently changed before the alarm is triggered.
- **Alarm Threshold:** Defines the percentage area of the image which must be changed for the tampering to be triggered.
- **Suppress Alarm on light:** Toggle to enable/disable the feature. This feature mitigates scenarios where sudden changes in lighting such as switching on/off indoor lighting can cause false tamper events.
- **Apply:** Click **Apply** to save the current settings.

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

Part 11: Advanced

The *Advanced* camera menu contains settings relating to how the analytics engine tracks objects, such as the time threshold for the *Stationary Rule*.

In most installations the default configuration will be sufficient.

Select the *Advanced* menu tab to configure the advanced analytic settings.

VCA Camera 1
1 | {093b96af-222e-9acf-fceb-4824752f7344}

Analytics Processing Stream
Camera Stream ☒ Primary ☐ Secondary

Apply

Object Tracker
Stationary Hold-on Time 12 s
Minimum Object Size 10
Sensitivity 9
Abandoned Object Threshold 5 s
Detection Point Auto

Apply

Scene Change Detection
Area Threshold 50
Duration 10

Apply

Display Information
☒ Show object height
☒ Show object area
Display Unit ☒ Metric ☐ Imperial

Apply

Analytics Processing Stream

In the *Analytics Processing Stream* section, select which camera stream (Primary, Secondary) that the IVA AI analytics engine will use for object tracking and analytics.

In most installations, the default configuration will be sufficient.

Object Tracker

The *Object Tracker* section includes the settings used by the IVA AI when tracking objects for analytic rules.

Object Tracker settings include:

- **Stationary Hold-on Time:** Defines the amount of time an object will continue to be tracked and classified once it has stopped moving and has become stationary.
- **Minimum Object Size:** Defines the size of the smallest object that will be considered by the IVA AI engine for tracking.
- **Sensitivity:** Defines the tracker sensitivity. The lower the number, the more sensitive the tracker becomes. Recommended range for common use is **1~16**.
- **Abandoned Object Threshold:** Defines the amount of time used by the *Abandoned* and *Removed* rules before triggering.
- **Detection Point:** Defines the tracking point that will be used to evaluate object detection and pathing for analytic rules.
 - **Auto:** In *Auto* mode the detection point is automatically set based on how the calibration is configured.
 - **Mid bottom** In *Mid bottom* mode the detection point for each object is centered along the bottom line of the bounding box.
 - **Centroid** In *Centroid* mode the detection point for each object is located in the middle of the bounding box.
- **Require Initial Movement:** Toggle to track all object or moving object. It will prevent objects which have not moved from being tracked.
- **Apply:** Click to apply changes to the selected camera.

NOTE: Changing the *Detection Point* setting may affect the point at which objects will trigger an event, depending on the tracked objects pathing.

Scene Change

The *Scene Change* section includes the settings used by the IVA AI when monitoring changes to the camera for the *Tampering* settings.

Scene Change settings include:

- **Area Threshold:** Defines the percentage of the scene's area in which the camera must detect change in order to trigger the *Scene Change* process.
- **Duration:** Defines how long the scene needs to have been altered for before triggering the *Scene Change* process.
- **Apply:** Click to apply changes to the selected camera.

Display Information

The *Display Information* section includes the settings that determines how object tracking annotations will appear for users.

Display Information settings include:

- **Show object height:** Toggle to enable/disable the object height from being annotated on the camera image.
- **Show object area:** Toggle to enable/disable the object area from being annotated on the camera image.
- **Display Unit:**
 - **Metric:** Click to show all measurement units in metric system
 - **Imperial:** Click to show all measurement units in imperial system
- **Apply:** Click to apply changes to the selected camera.



Complete Surveillance Solutions

DW® East Coast office and warehouse: 5436 W Crenshaw St, Tampa, FL USA 33634
DW® West Coast office and warehouse: 16220 Bloomfield Ave, Cerritos, CA USA 90703

PH: 866-446-3595 | FAX: 813-888-9262

www.Digital-Watchdog.com

technicalsupport@digital-watchdog.com

Technical Support PH:

USA & Canada 1+ 866-446-3595

International 1+ 813-888-9555

French Canadian: 1+ 904-999-1309

Technical Support hours: Monday-Friday 9 a.m. to 8 p.m. Eastern Time