Araani Fire Guard

V4.03.05

USER- & INSTALLATION MANUAL

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Safety and regulatory information

Definition of symbols

Hazard statements

Danger:	Indicates a hazardous situation which, if not avoided, *will* result in serious injury or death.
Warning:	Indicates a hazardous situation which, if not avoided, *could* result in serious injury or death.
Caution:	Indicates a hazardous situation which, if not avoided, *might* result in moderate or minor injury.
Notice:	Indicates a situation which, if not avoided, might result in property damage or in an undesirable result or state.

Others

Information:	Indicates a shortcut or any other useful indication.
Attention:	Indicates an element which requires extra attention, not necessarily a hazard

Disclaimer

Danger:

The end user should be aware that fire safety is subject to strict standards and regulations.

Araani Fire Guard can never replace a mandatory fire detector. A solution equipped with Araani Fire Guard is also not intended to be linked with a fire alarm control panel. For such function, Araani refers to its certified solutions: SmokeCatcher Certified, FlameCatcher Certified and FireCatcher Camera.

Fire indications by Araani Fire Guard should only be raised after human verification.

Safety information

Attention:

Please read this document carefully before installing, using, or interacting with the Araani Fire Guard software or products running this software.

This document must be kept for future reference.

Liability

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Contact and support

Should you require any technical assistance, please contact your Araani reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response.

If you are a reseller, please contact your direct contact person, or contact our support staff via support@araani.com.

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Introduction

About this manual

This manual describes the installation and usage of the Araani Fire Guard software.

Please read this document carefully before installing, using, or interacting with the Araani Fire Guard software or products running this software.

The manual expects the reader to have some basic knowledge about video surveillance and the use of cameras.

Please refer to the camera documentation for any information that is related to the use, installation, or restrictions of the camera on which this software is or will be installed.

Information: Illustrations of Axis camera interface throughout this manual are taken from the new web interface. Your camera interface may have a slightly different layout or may be using the legacy interface. Still, all indicated functions will be valid; the interface does not affect the functionality.

Product description

Overview

Araani Fire Guard is an intelligent video fire monitoring solution, that will trigger an alarm if it recognizes smoke or flames.

Araani Fire Guard is an edge-based video analytics software that runs on an Axis® camera.

Although it cannot replace a primary fire detector, Araani Fire Guard does support control room operators, surveillance guards and security staff in preventing fires. Araani Fire Guard is typically used in situations where there is no obligation for fire detection or where there is already detection in place, but you nevertheless want to have an earlier warning.

Araani Fire Guard is an early warning system. By recognizing smoke and/or flames in a very early stage of a fire and raising an alarm on the surveillance display, operators can verify the situation and take preventive actions to limit the impact of an incident.

Araani Fire Guard runs on compatible Axis® cameras and analyses the image real-time for any indication of smoke or flames. When recognition is validated, it generates an alarm that can be overlaid on the screen as a text label as well as a dynamic zone border, highlighting the location of the alarm in the field of view.

How to install Araani Fire Guard

System requirements

CAMERA REQUIREMENTS

The Araani Fire Guard software is compatible with a broad range of Axis® cameras. To run the Araani Fire Guard, a camera with recent chipset and firmware is required. For proper recognition of smoke and flames, the camera needs to have sufficient resolution and light sensitivity.

The camera needs to comply with the following characteristics:

- **Brand**: Axis® (https://www.axis.com/).
- **Models:** An up-to-date list of compatible cameras is available online: https://www.araani.com/en/solutions/surveillance/araani-fire-guard/fire-guard-camera-compatibility/
- **Chipset**: ARTPEC-6, ARTPEC-7 or ARTPEC-8. (*).
- **Firmware**: Latest qualified Axis® LTS (= long-term support) >= 10.12.x!
  Firmware can be downloaded at https://www.axis.com/support/firmware.
  Refer to your camera manual on how to install firmware on the device or follow the steps under Camera firmware.
- **Resolution**: 1920 x 1080 or higher.
- **Aspect ratio**: 16:9, 4:3 or 10: 6 or rotated version of these (**).

Notice: Check the Araani Fire Guard release notes to verify what Axis software versions are compatible with your Araani Fire Guard software version. Using an incompatible or untested version may result in malfunction, errors or performance issues.

(*) **Information:** Araani Fire Guard is available in 3 versions: signed_FireGuard_Vx.xx.xx_artpec6.eap, signed_FireGuard_Vx.xx.xx_artpec7.eap and signed_FireGuard_Vx.xx.xx_artpec8.eap. Verify what ARTPEC chipset your camera has and select the correct Araani Fire Guard software.

(**) **Attention:** After changing the aspect ratio or rotating the image, a restart of the camera and Araani Fire Guard software is required.

Additional requirements may be applicable, depending on site- and cabling specifics. such as:

- External power supply availability or power over Ethernet (PoE).
- Environmental requirements, e.g., temperature, humidity, etc.
- Safety requirements, e.g., protected zone, ATEX, etc.
- Etc.

Consider all these requirements when selecting the appropriate camera type. Axis® offers a wide range of camera models to comply to specific field needs.

AXIS STREAMING LIMITATIONS

In setting up your system, pay attention to the fact that total streaming video capacity of an Axis® camera may be limited. For Araani analytics to work properly, the camera should be capable of delivering an application-specific video stream. In combination with other video streams for recording, visualization, etc., the total computational capacity of the camera could be exceeded which will result in failure of the analytics.

The amount and complexity of video streams that can be delivered simultaneously by an Axis camera is limited by the performance of the processor. The computational load of a stream is expressed in megapixels per second (mps) and is calculated using the following formula:

P_{stream} = horizontal resolution (pixels) x vertical resolution (pixels) x frame rate (fps = frames per second) /1.000.000

The total streaming capacity is obtained by adding the load of all unique streams. Only unique streams are counted for as requesting twice the same video stream (same resolution, frame rate, encoding type, compression, etc.) from a camera does not require separate encoding and as such does not increase the computational requirements.

$P_{CPU} = \Sigma$ unique P_{stream}

Araani fire monitoring analytics requests a video stream that depends on the aspect ratio of the maximum resolution of the camera at 12 frames per second:

Aspect ratio	Analytics stream resolution	P_{Araani}
16:9	1280 x 720 @ 12 fps	11 mps
16:10	1280 x 800 @ 12 fps	12,3 mps
4:3	1280 x 960 @ 12 fps	14,8 mps

This stream should be considered when calculating the total load.

The streaming load is practically independent of the encoding type (H264 versus H265).

The maximum capacity for a camera depends on the type of processor. Currently, three generations of processor are common in the Axis offering, named ARTPEC-6, ARTPEC-7 and ARTPEC-8. These are the limits for both processor types:

- ARTPEC-6 maximum total streaming capacity = approximately 310 mps.
- ARTPEC-7 maximum total streaming capacity = approximately 367 mps.
- ARTPEC-8 maximum total streaming capacity = approximately 498 mps.

In case of doubt, contact your supplier to know what processor type is used in your cameras.

As video stream compression is occurring in a dedicated part of the CPU, these limits are practically independent of other processor activities such as image optimization, mirroring or ACAP-based analytics.

For proper functioning of Araani fire monitoring analytics, make sure the total stream demand - including the required analytics stream - does not exceed this limit and preferably add some margin. If that limit is exceeded, the camera will lower the frame rate on ALL streams and as a result, Araani analytics will no longer work.

Example: A 4K CCTV system requires one high resolution stream for visualization and one HD resolution stream for recording. (3840 / 2160 = 16:9 aspect ratio)

Stream role	Resolution	P_{stream}
Visualization	3840 x 2160 @ 25 fps	207,4 mps
Recording	1920 x 1080 @ 25 fps	51,8 mps
Araani analytics	1280 x 720 @ 12 fps	11 mps
Total		**270,2 mps**

The total load in this example is well below the limit of both processor types, so this will work fine. Adding another HD recording stream with different settings for example would exceed the maximum performance of an ARTPEC-6 based camera and analytics will fail to run on such combination.

Notice: For performance reasons:

Do not exceed streaming limits of the processor!

- Do not use SD card recording!

Both can lead to malfunction of the algorithm.

Araani Fire Guard will automatically try to re-establish a video stream connection when it is lost.

Araani Fire Guard will generate FAULT status when the video stream is lost and reconnection fails a number of times.

LENS REQUIREMENTS

Selection of the lens depends on:

- Field of view to cover. Most lenses today are multifocal, allowing adaptation at installation time to fit the environment. Online lens calculators can help to select the proper focal range.
- Area of risk.
- Light conditions: day / night / seasons.
- Light stability / light changes.
- Uniformity of illumination.
- Interchangeability of the lens.
- Etc.

Consult with your camera supplier for proper selection of the lens type and specifications.

INSTALLATION GUIDELINES

The sensitivity and performance of the Araani Fire Guard system is impacted partially by the environment it is operating in. Consider these basic guidelines with each installation for optimal performance:

Light:

- For smoke recognition, there should be sufficient light 24/7 in the complete field of view. As a general guideline, fire recognition requires light from 5 lux onwards. However, the minimal required light level is dependent on the exact camera type.

⚠ Notice: Using (built-in) infrared illumination is possible but will disable the flame recognition as for flame recognition a colour image is required.

Contrast:

- Avoid the combination of very dark and extremely bright spots in the field of view. This will stress the dynamic range of the camera and make the image quality unstable, resulting in an overall darker image.
- The ratio between dark and bright is defined as the illumination ratio. The illumination ratio is the ratio between the brightness - usually measured in lux - in the brightest versus the darkest spot in the field of view. For proper functioning of the algorithms, this ratio should never exceed 500:1.
- There should be sufficient contrast in the field of view. Do not point the camera to white walls or large areas without contrast.

For indoor cameras:

- Do not point the camera to exterior windows or portals.
- Avoid the presence of direct light sources in the field of view. If this cannot be avoided, adjust the detection zone to mask these areas out.
- False triggers: avoid sources of dust, damp, or smoke (e.g., from operating machines) in the field of view during normal operation. These could lead to recurring false detections

For outdoor cameras:

- Avoid east or west orientation, where the sun gets low and potentially may blind the camera.

- Avoid having horizon in the field of view of the camera at all.
- Maximum brightness at any point should never exceed 120.000 lux.
- Avoid direct sunlight or bright reflections of the sun falling straight into the lens.

Outdoor notes:

Outdoor conditions are more susceptible to false alarms. For outdoor applications, try to control and stabilize environmental conditions as much as possible e.g., protecting the scene from varying weather conditions, apply stable lighting conditions, etc.

To further optimize the fire recognition or to avoid false triggering of alarms e.g., due to very dynamic or badly illuminated zones in the field of view, the monitoring can be restricted to certain zones in the field of view. These zones can be drawn in the app configuration screen in the browser itself, see section Configuring detection zones.

By default, the active area is the whole field of view. If detection zones are defined, this will override the default and fire monitoring will only occur only in the defined zones.

Adjust the sensitivity parameters of Araani Fire Guard if problems persist.

Camera positioning

SITE ASSESSMENT

To maximize protection, it is recommended to perform a site survey before installing cameras with Araani Fire Guard. This allows you to identify risk areas and take those into account when positioning new cameras.

- Define the hot spots:
  What is the type of risk? Can the fire start at any location in the field of view or is there specific risk related to a machinery or a critical part of a scene?
- For smoke recognition, estimate the smoke flow:
  Estimate where smoke may flow in case of an incident. Dependent on this estimation, preferably select a camera position that will visualize the smoke in the fastest and largest way. Focus on where the smoke will flow, rather than the risk area.
  Will smoke ascend to the ceiling or will there be stratification?
  Will smoke be dispersed over the whole area by ventilation or forced air flow?
- System redundancy:
  To guarantee full coverage on very large areas, multiple cameras will be needed. To avoid blind spots, make sure the field of views of the cameras overlap with a minimum of 20%.

CAMERA POSITION / FIELD OF VIEW

Based on the site assessment, preferably select a camera position that maximizes the visualization of potential smoke or flames.

- With default settings, Araani Fire Guard algorithm will trigger alarm when smoke covers approximately 3 % of the field of view during 5 seconds at the same location in the field of view.
- With default settings, Araani Fire Guard algorithm will trigger alarm when the flame size exceeds 0,05 % of the field of view and the flame was seen for at least 10 seconds at the same location in the field of view.

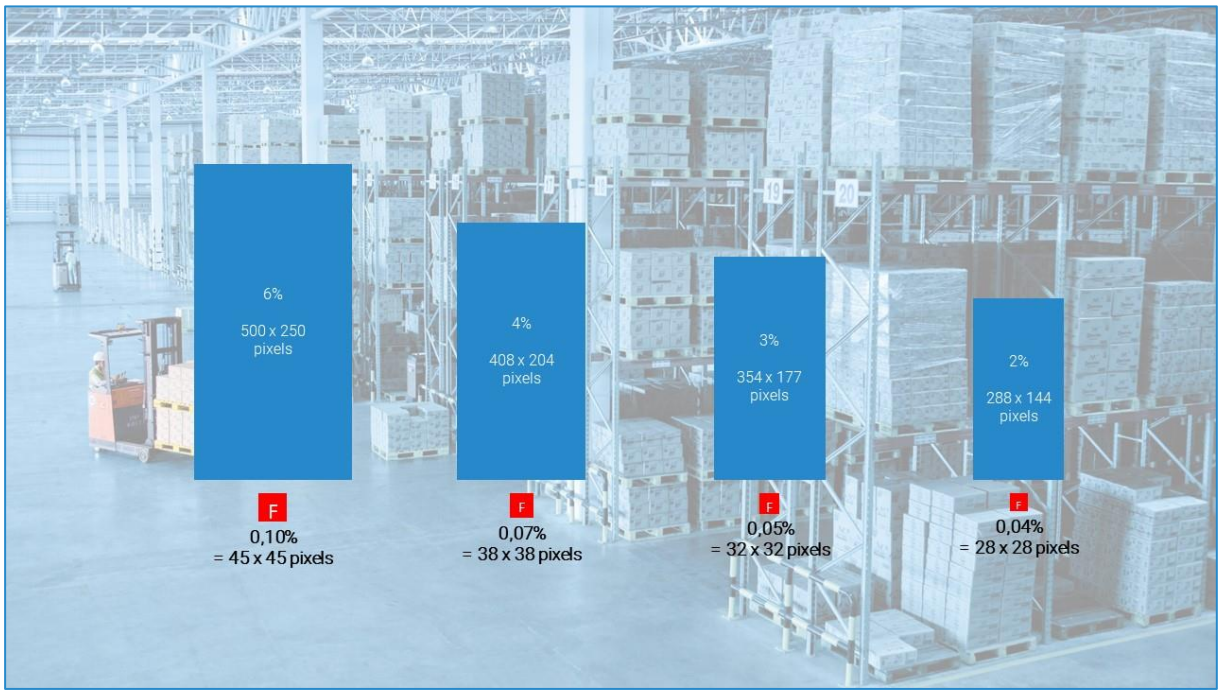
For a camera with 1920 x 1080 resolution, 3 % is a zone of 249 x 249 pixels and 0,05 % is a zone of 32 x 32 pixels.

As a result: the smaller the field of view, the higher the sensitivity, and the further away from the camera, the lower the sensitivity.

The minimum required coverage for smoke and flames to be recognized depend on the sensitivity setting as per table below.

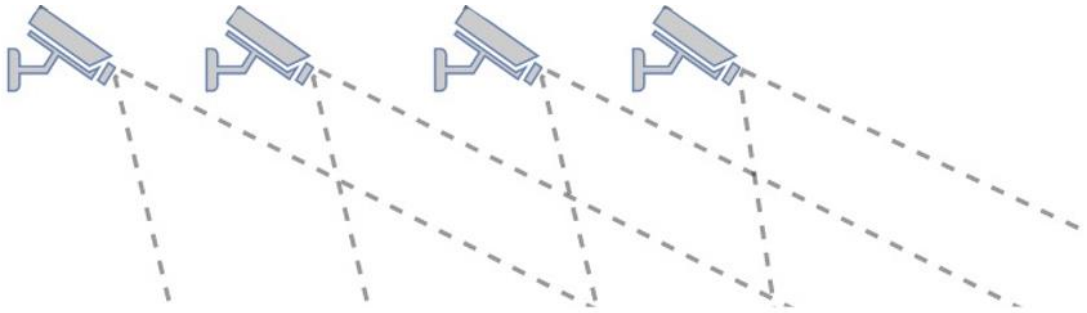
Sensitivity setting	Minimal smoke size (% of field of view)	Minimal flame size (% field of view)
1	6%	0,1 %
2	4%	0,07 %
3	3%	0,05 %
4	2%	0,04 %
5	2%	0,04 %

Below is a graphical representation of smoke and flame recognition threshold for different sensitivity settings on a 1920 x 1080 image, assuming a 1:2 aspect ratio of smoke clouds.

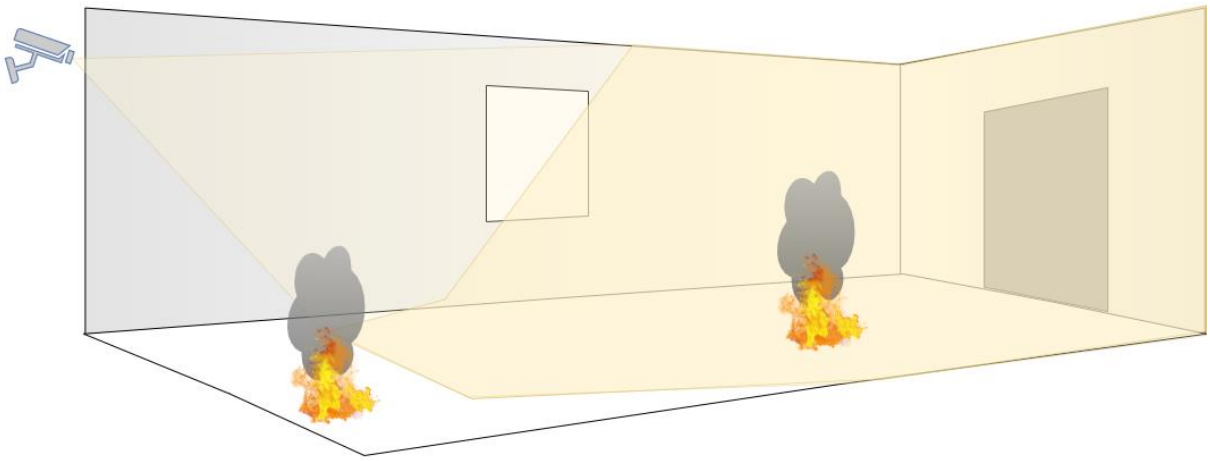


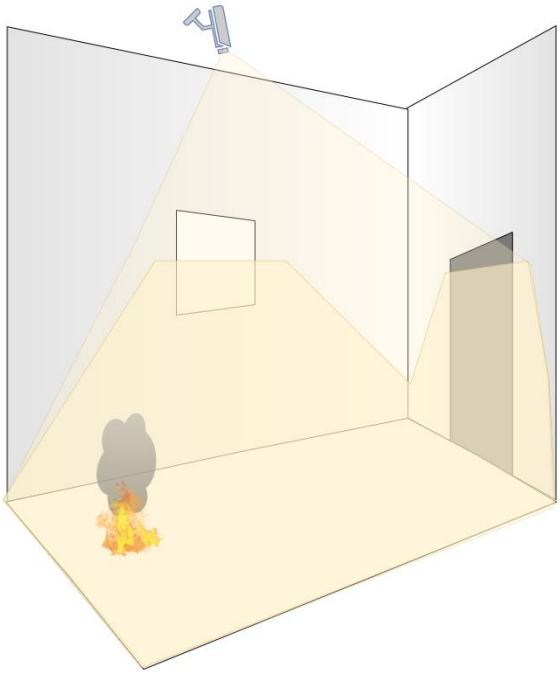
Adjust the zoom / focus of the camera lens according to the Axis® focus procedure as described in the camera manual. Do not forget to tighten the screws after setting up the focus and zoom to ensure they stay fixed.

Also consider the environment requirements described above when positioning the camera and adjusting the field of view. In large areas, you may consider providing redundant coverage by adjacent cameras.



Cameras can be either wall- or pole mounted with a horizontal field of view or ceiling mounted with a more vertical field of view. The vertical view could be interesting in heigh spaces, depending on the nature of the space:





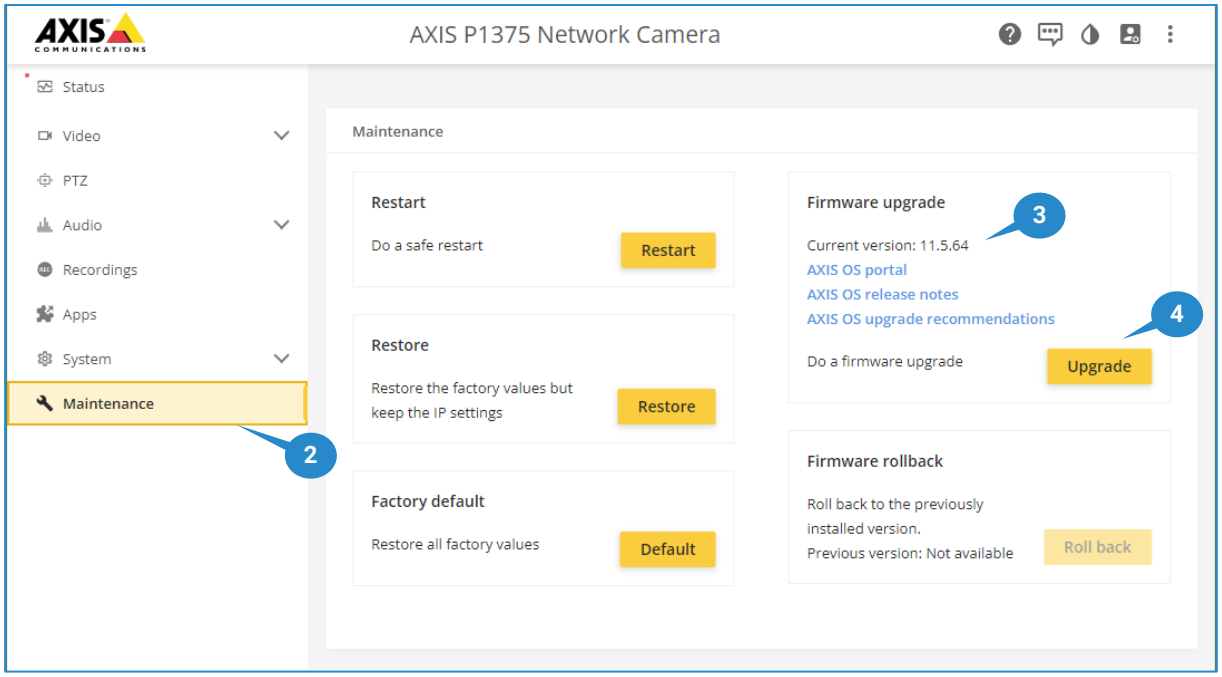
Information: Axis® provides a lens calculator tool on their website that assists in determining the field of view, based on lens type and focal length, mounting height, and distance in the scene.

Camera configuration

CAMERA FIRMWARE

Before installing Araani Fire Guard software, verify if your camera has the required firmware (see: Camera requirements). To verify the firmware version of your camera, perform the following steps:

1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Maintenance” from the menu pane.
3. The current firmware version is displayed in the Firmware upgrade section of the maintenance screen, as indicated in the screenshot below.



If the version is not compliant to the camera requirements for Araani Fire Guard, you can download the required firmware from https://www.axis.com/support/firmware.

Proceed in the maintenance interface to upgrade the firmware version of your camera:

4. Select “Upgrade” and follow on-screen instructions.
5. Verify if the camera is properly upgraded by checking the version again in the maintenance menu.

Notice: In case the new (qualified LTS) firmware is a lower revision than the one that was installed, it is required to perform a factory restore (keeping IP-address/network information) after firmware downgrade to make sure that all settings are configured in a valid way.

CAMERA CONFIGURATION

For optimized smoke and flame recognition performance, the camera should be configured with following recommended settings (mandatory settings are followed by mandatory):

- Image
  - Wide dynamic range
    - **WDR**: recommended OFF to avoid image artefacts.
      Only use when required (e.g. environment with non-uniform lighting) and no artefacts are generated by WDR.
    - **Local contrast**: 50
    - **Tone mapping**: max 30 (mandatory)[1]
  - **White balance**:
    - **Light environment**: Automatic
  - **Day and night:**
    - **IR-cut filter**: ON or AUTO

      ⚠ **Notice:** When the IR-cut filter is on AUTO, the camera will switch to infrared mode when the light level is too low. This will disable the flame recognition as for flame recognition a colour image is required.
    - **Threshold**: Free to choose.
  - **Exposure:**
    - **Exposure mode:** Automatic (Flicker-free may be required with fluorescent lights)
    - **Exposure zone:** Automatic
    - **Maximum shutter:** 1/15s (mandatory)[1]
    - **Maximum gain:** max 24 dB [1]
    - **P-Iris lens**: make sure to select the correct lens
    - **Blur-noise trade-off:** Middle between 'low noise' and 'low motion blur'. In low light circumstances, set to 'low noise'.
    - **Lock aperture:** ON
    - **Target aperture:** Middle between 'open' and 'closed'.
    - **Exposure level:** 50
    - **Defog:** OFF (mandatory)
  - **Image correction:**
    - **Barrel distortion correction (BDC)**: only if necessary
    - **Electronic image stabilization (EIS)**: only if necessary
  - **Capture mode**: make sure that the aspect ratio is supported.
- Stream
  - **General:**
    - **Resolution:** always select a supported aspect ratio (mandatory)
    - **Frame rate:** > Recommended = 0 or 12 but higher is allowed within AXIS streaming limitations.
  - **H.264 and H.265 encoding:**
    - Free to choose
  - **Audio:**
    - Free to choose

In low light conditions with only smoke recognition (flame algorithm disabled), tone mapping may be set to 100 and blur-noise trade-off to low noise to improve the image.

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[1] If in low-light conditions the image does not reach the required image quality, please adjust in this order: 1. shutter time 2. gain 3. tone mapping. A higher shutter time may cause more motion blur, but this does not affect the algorithm. A higher gain will cause more noise in the image which may interfere with the algorithm. A higher tone mapping will change the colors and will influence the flame recognition.

Araani Fire Guard installation

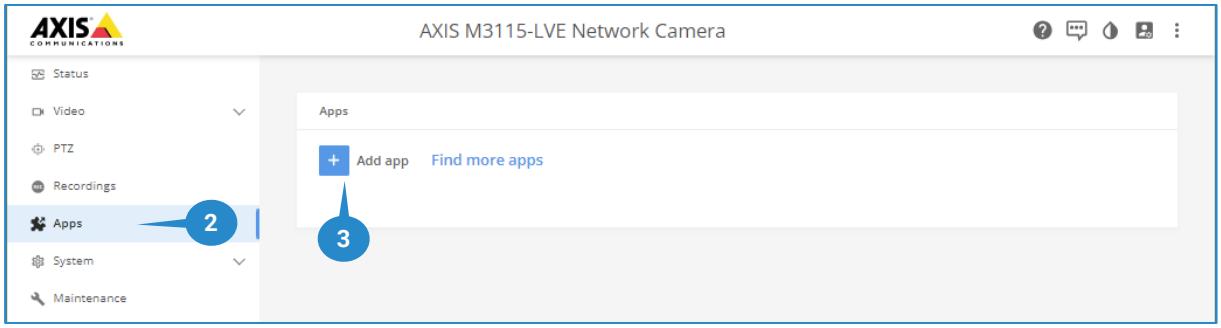
The Araani Fire Guard software comes as an ACAP (Axis® Camera Application Platform) compatible package. The ACAP platform allows Axis® Development Partners (ADP) to build smart applications that run on a wide range of Axis® cameras. Multiple applications can be installed and running on a camera simultaneously.

An ACAP application software package comes in the form of a single file with .eap extension. Installing the software on an Axis® camera involves uploading the file to the camera, activating the appropriate license, and potentially configuring the application parameters.

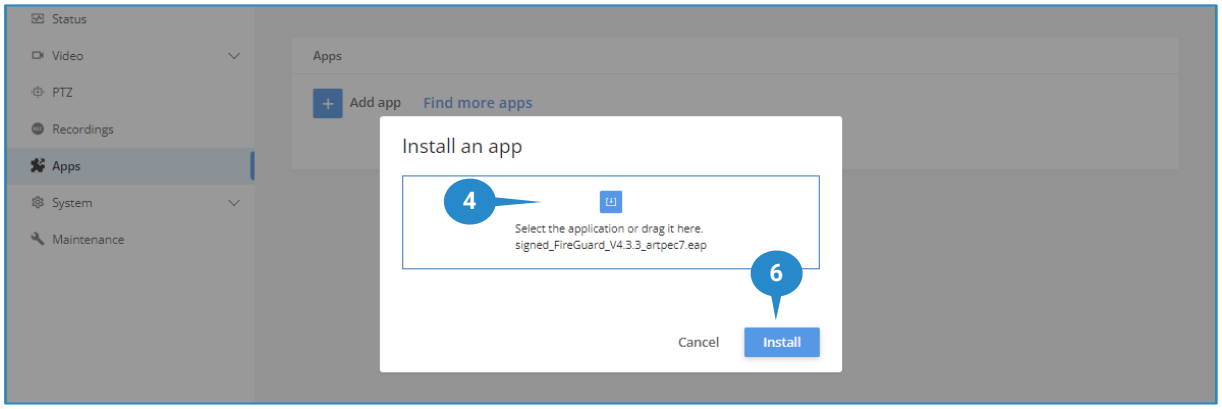
INSTALLING THE ARAANI FIRE GUARD ACAP

To install the Araani Fire Guard, perform the following steps:

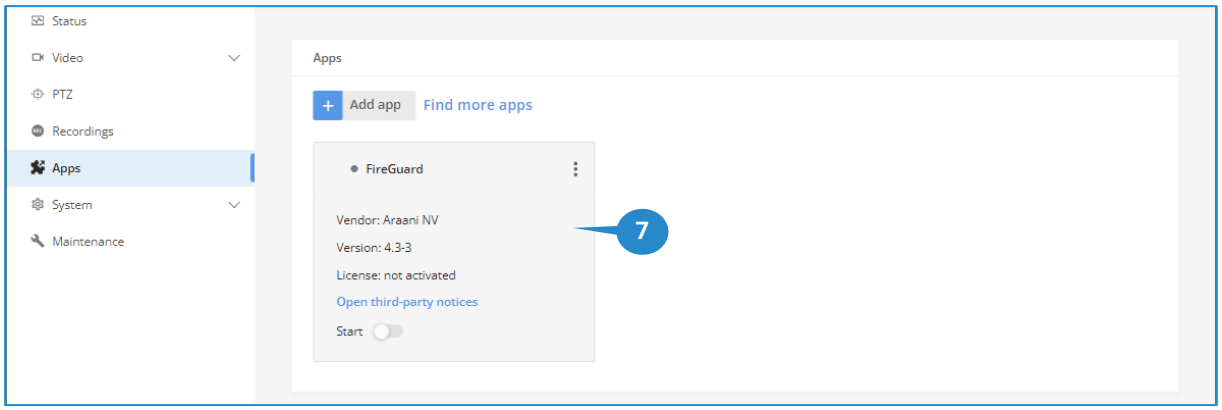
1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Select “Add App”.



4. Select the upload button to browse your local storage for the ACAP file.
5. Select Signed_FireGuard_*Vx.xx.xx*_artpec*x*.eap.
6. Select Install.



7. The application will start installing. This may take a few minutes. After successful installation, the Araani Fire Guard application should be visible in the “Apps” tab.



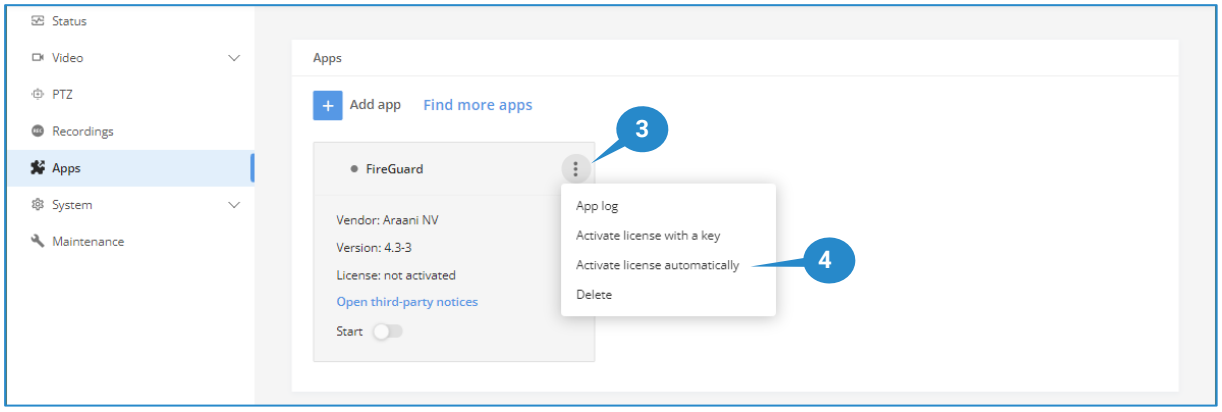
ACTIVATING THE ARAANI FIRE GUARD LICENSE

With the purchase of Araani Fire Guard, a **license activation code** is provided. This code is valid for a number of Araani Fire Guard installations, as purchased.

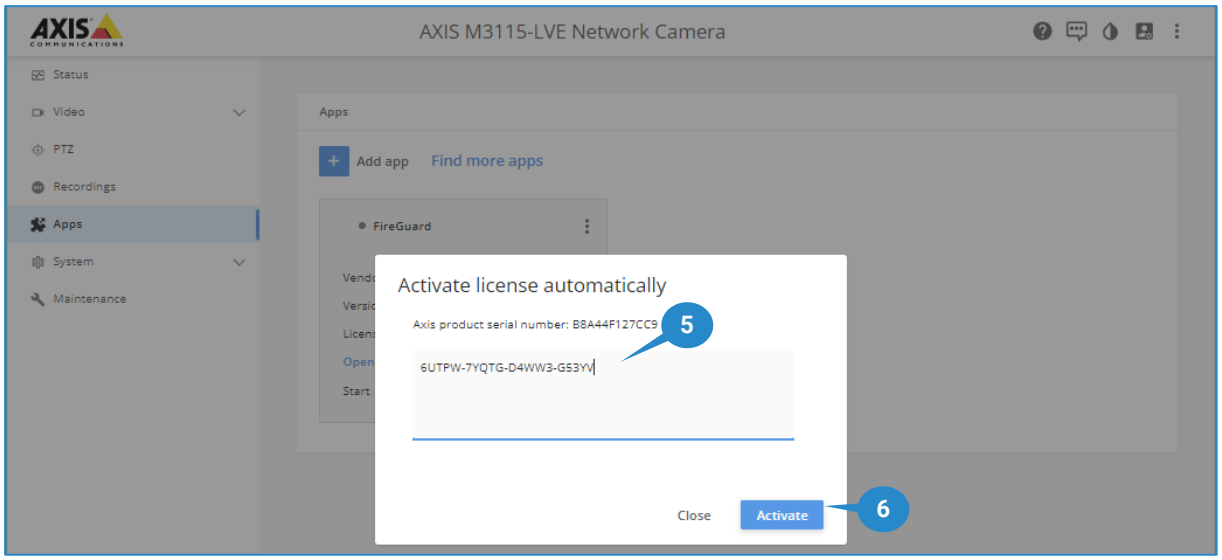
Case 1: the camera is connected to the internet

Perform the steps below to activate the Araani Fire Guard app directly on the camera.

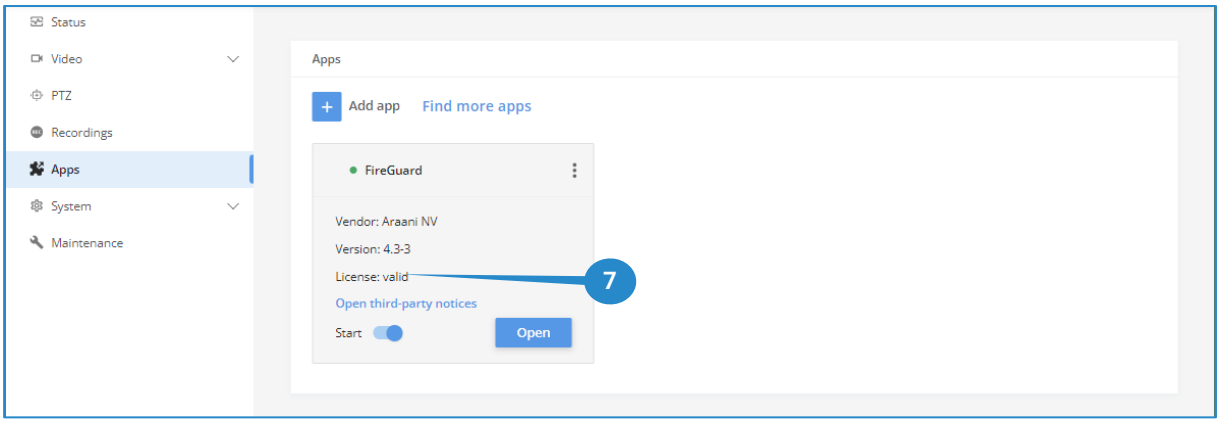
1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Select the Araani Fire Guard app menu button.
4. Select “Activate license automatically”



5. The license activation code can be directly entered in “Automatic license” field.
6. Select “Activate”
   The camera will connect to the Axis® licensing system. A license for this camera will be created and automatically installed on the device. The camera will be registered in the Axis® licensing system as being licensed, and the license will be linked to your license activation code and your camera.



7. When installed correctly with a valid license key, following screen should re-appear with FireCatcher License 'valid'.

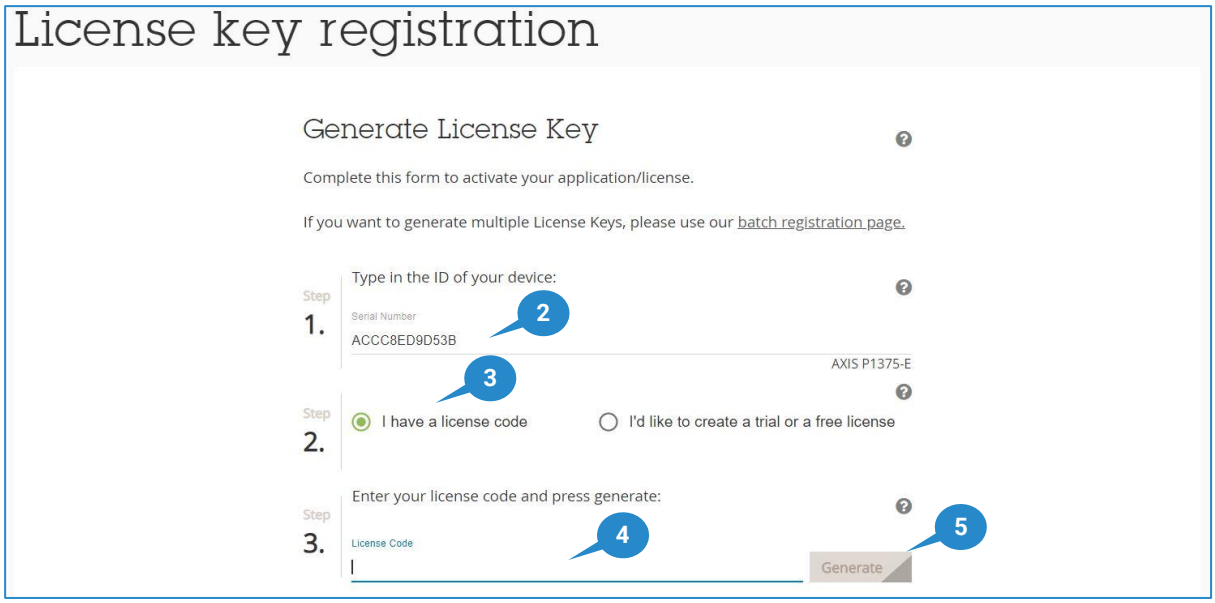


Case 2: the camera has no internet connectivity

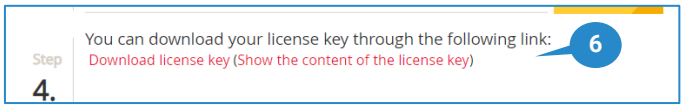
When the camera on which the Araani Fire Guard application is installed has no direct internet connection, a license key must be generated upfront on a computer with internet connection.

To create the license key, perform the steps below.

1. Using your internet browser, connect to https://www.axis.com/products/camera-applications/license-key-registration#/registration.
2. Fill in the serial number of your camera. The serial number can be found on the status page or on a sticker on your camera housing, indicated by "S/N".
3. Select "I have a license code".
4. Fill in the license activation code, received with your purchase.
5. Click "Generate".

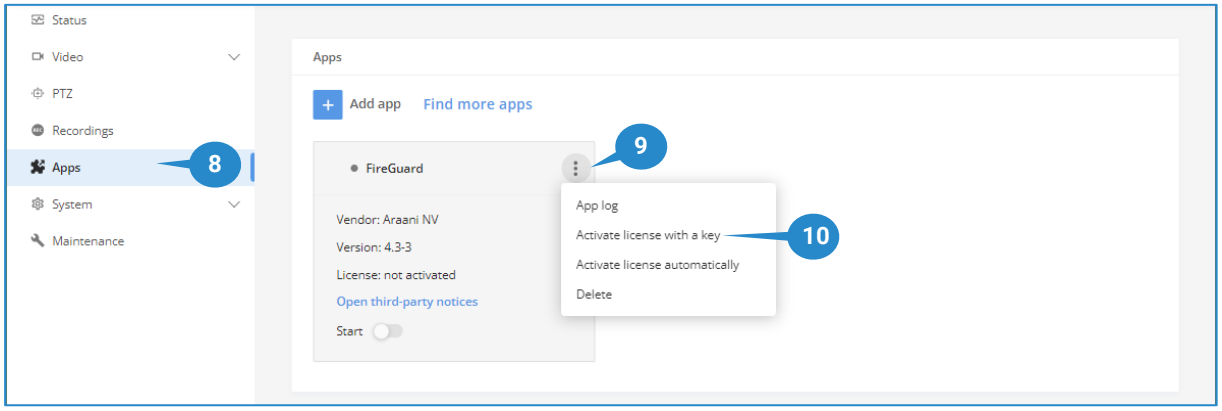


6. A message will appear from which you can download the license key to your local storage.

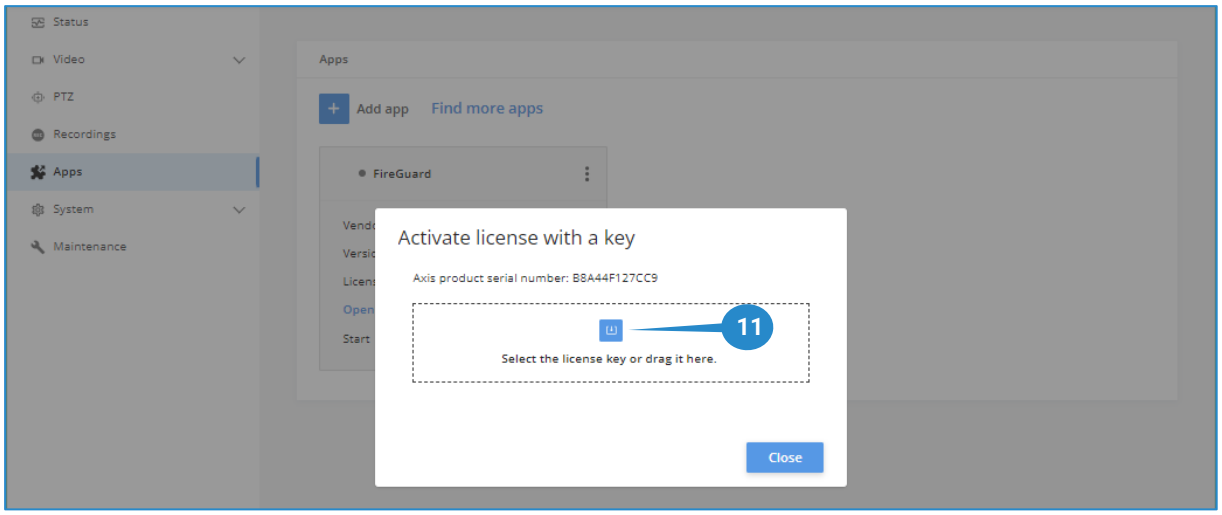


The license key, created in previous steps can now be uploaded and installed on the camera to activate the Araani Fire Guard app. Follow steps below to activate the app:

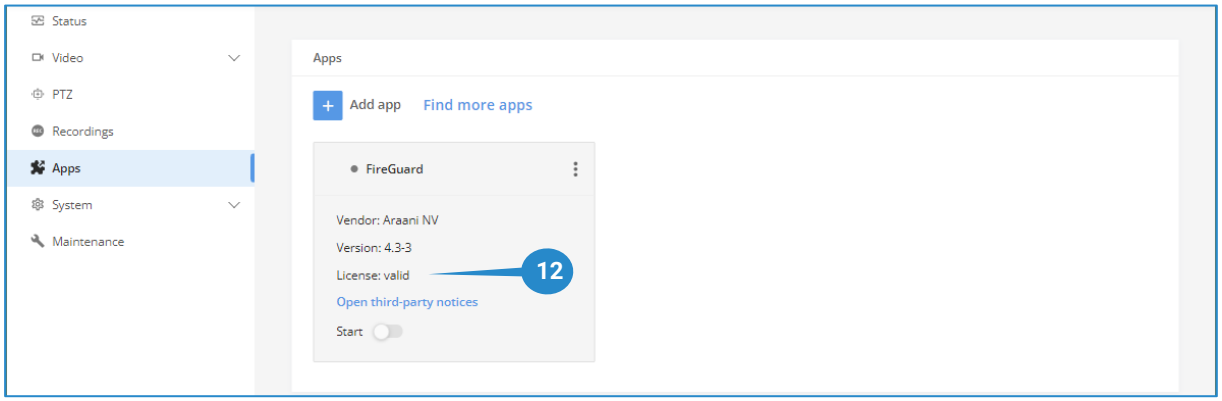
7. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
8. Select “Apps” from the menu pane.
9. Select the Araani Fire Guard app menu button.
10. Select “Activate license with a key”



11. Select the upload button to browse your local storage for the *serialnumber*-FireGuard.key file as downloaded in step 6. If the key file is valid, it will automatically be installed.



12. When installed correctly with a valid license key, following screen should appear:



ACTIVATE A TRIAL LICENSE FOR ARAANI FIRE GUARD

If you prefer to try out Araani Fire Guard before purchasing, follow the same steps as in Activating the Araani Fire Guard license case 2. In step 3, select "I'd like to create a trial or a free license". Provide a valid e-mail address if requested. Proceed with the rest of the procedure.

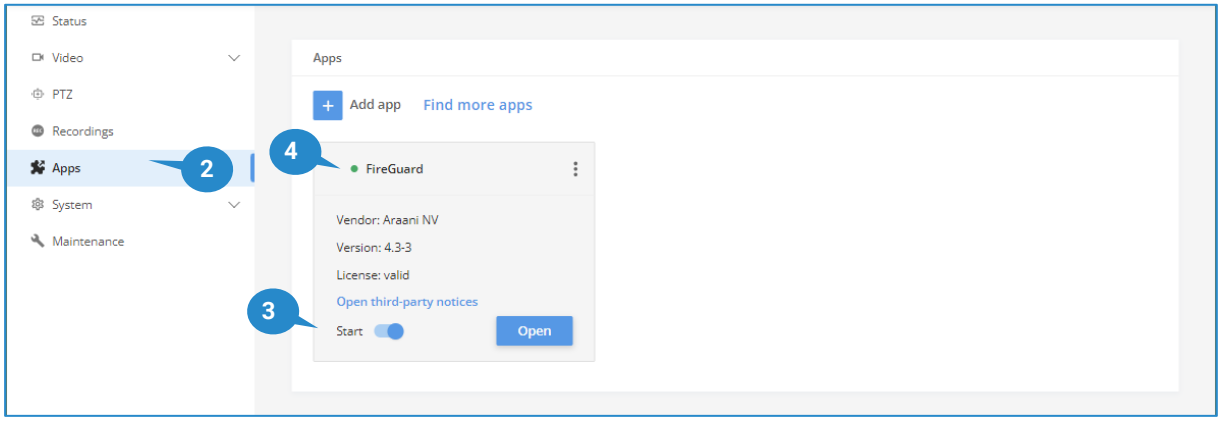
How to use Araani Fire Guard

Starting / stopping Araani Fire Guard

STARTING ARAANI FIRE GUARD

After installation, Araani Fire Guard needs to be started manually. To do so, follow the steps below.

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Select the Araani Fire Guard app Start switch button.
4. The Araani Fire Guard app button should change state and the status indicator should turn green.



START-UP BEHAVIOUR

At start-up, Araani Fire Guard needs to learn the background of the scene. This takes maximum 5 minutes. During this period, Araani Fire Guard is not fully operational yet. The default start-up state however is “Operational”-mode. The reason for this default behaviour is to prevent Araani Fire Guard to trigger a “Fault Signal” immediately after an upgrade. Within a maximum of 1 minute, Araani Fire Guard will either remain in this condition, or go to “Fault Signal” condition.

If the Araani Fire Guard application goes to fault condition after starting up, this can be due to:

- Not enough background contrast
- Scene too dark: the light level is less than the minimum light level

In both cases, review the installation of your camera, taking into account the requirements and recommendations in Environment requirements and Camera Position / Field of view.

STOPPING THE ARAANI FIRE GUARD APP

To stop the Araani Fire Guard app, perform the same steps as Starting Araani Fire Guard. When clicking the switch in step 3, the application will be stopped.

Configuring Araani Fire Guard

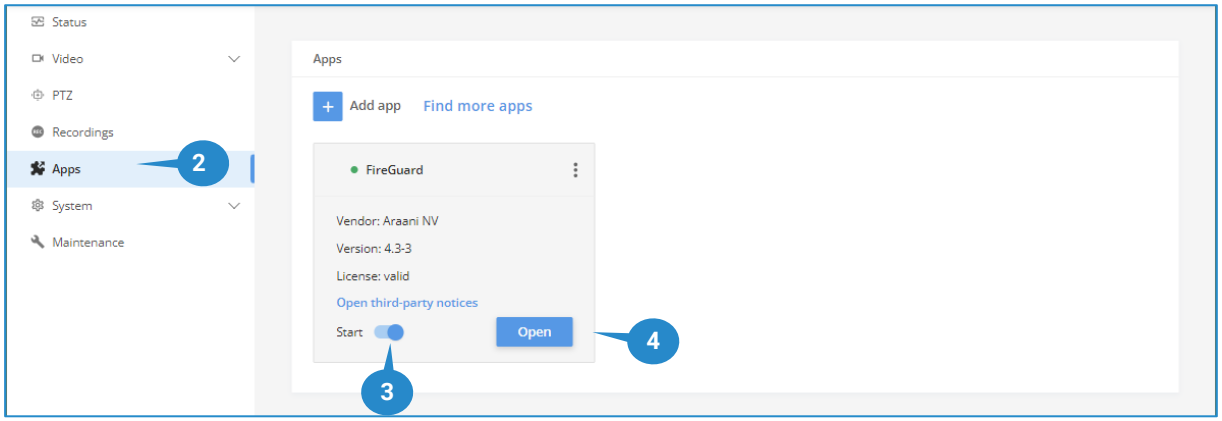
Notice: changing settings may affect detection performance. Only change from default settings if needed.

In most cases, default settings of Araani Fire Guard will work OK. If the performance is not satisfactory or too many false alarms occur, you may want to change some of these settings.

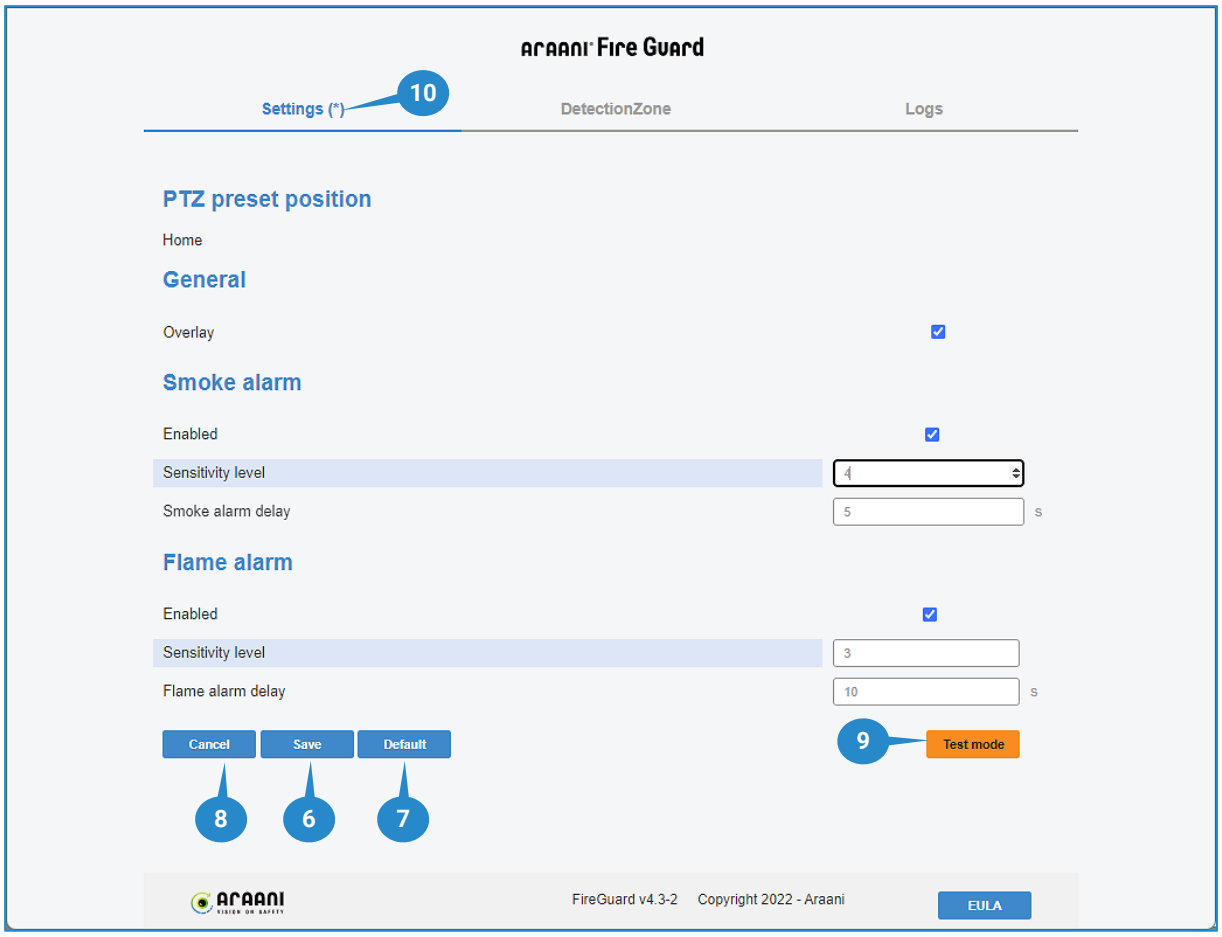
Accessing Araani Fire Guard configuration

To access the settings of your app on the camera, proceed with steps below.

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Make sure the application is running, otherwise start Araani Fire Guard.
4. Select the Araani Fire Guard app Open button.



5. A new browser window will appear that contains the basic settings to configure Araani Fire Guard.



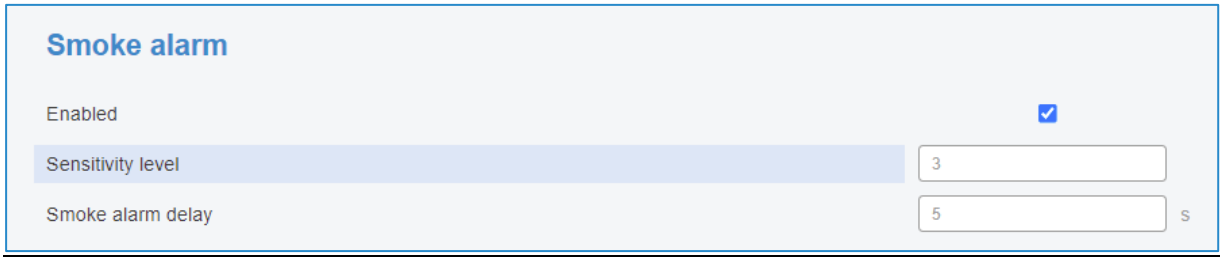
Refer to next sections for detailed information on all available settings.

6. Select “Save” to register the new settings in the app.
7. “Default” can be used to return all settings to default.
8. “Cancel” can be used when changes to the settings have been done (but not saved) and one wants to return to the setting as is in the camera.
9. The “Test mode” button will switch to the fire simulator for testing purposes.
10. When settings are changed, an asterisk will appear in the tab header of the configuration page. This indicates that the changed setting is not yet saved. When trying to leave the page without saving, a pop-up warning will appear.

Configuring smoke recognition

Notice: changing sensitivity settings may affect performance. Only change from default settings if needed.

The smoke recognition algorithm detects the presence of smoke in the image. The following settings are available to control the algorithm behaviour:



Name	Range	Unit	Default value	Meaning
Enabled	on - off		on	Enable or disable smoke recognition.
Sensitivity level	1 - 5		3	Sensitivity of the smoke recognition. A higher value represents a higher sensitivity.
Smoke alarm delay	2 - 60	Seconds	5	The minimum duration that smoke must be seen continuously before raising alarm.

The sensitivity level determines how easily a smoke alarm is triggered. The higher the value, the more sensitive the algorithm becomes. Lower values may be used to avoid erroneous triggering of alarms but can also lead to non-recognition of real events. Higher values may be used to facilitate recognition of smoke clouds but can also lead to false alarms.

As a guideline:

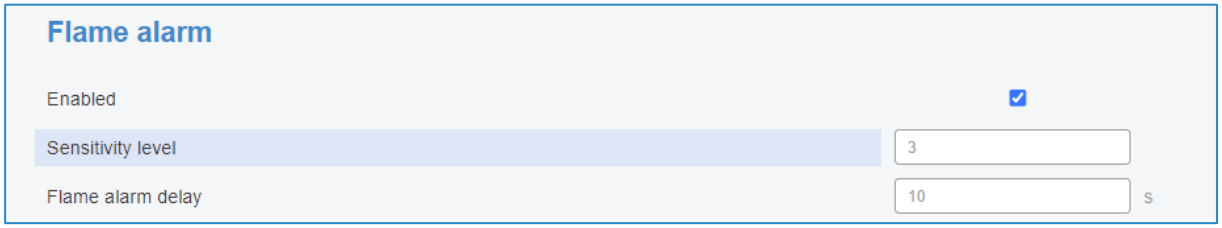
- For stable environments with little disturbances, the sensitivity can be increased for a higher probability of smoke recognition.
- For very dynamic scenery or outdoor application, the sensitivity may be decreased to avoid excessive triggering of alarms by smoke-like phenomena.

To avoid erroneous triggering of smoke alarms due to short disturbances or transitional events in the scenery, an alarm will only be triggered after it has been identified for a certain amount of time at a certain location in the field of view. This is called the alarm delay.

Configuring flame recognition

Notice: changing sensitivity settings may affect performance. Only change from default settings if needed.

The flame recognition algorithm detects presence of flames in the image. The following settings are available to control the algorithm behaviour:



Name	Range	Unit	Default value	Meaning
Enabled	on - off		on	Enable or disable flame recognition.
Sensitivity level	1 - 5		3	Sensitivity of the flame recognition. A higher value represents a higher sensitivity.
Flame alarm delay	3 - 60	Seconds	20	The minimum duration that a flame must be seen continuously before raising alarm.

The sensitivity level determines how easily a flame alarm is triggered. The higher the value, the more sensitive the algorithm becomes. Lower values may be used to avoid erroneous triggering of alarms but can also lead to non-recognition of real events. Higher values may be used to facilitate recognition of flames but can also lead to excessive false alarms.

As a guideline:

- For stable environments with little disturbances, the sensitivity can be increased for a higher probability of flame recognition.
- For very dynamic scenery or outdoor application, the sensitivity may be decreased to avoid excessive triggering of alarms by flame-like phenomena.

To avoid erroneous triggering of fire alarms due to short disturbances or transitional events in the scenery, an alarm will only be triggered after it has been identified for a certain amount of time at a certain location in the field of view. This is called “alarm delay”.

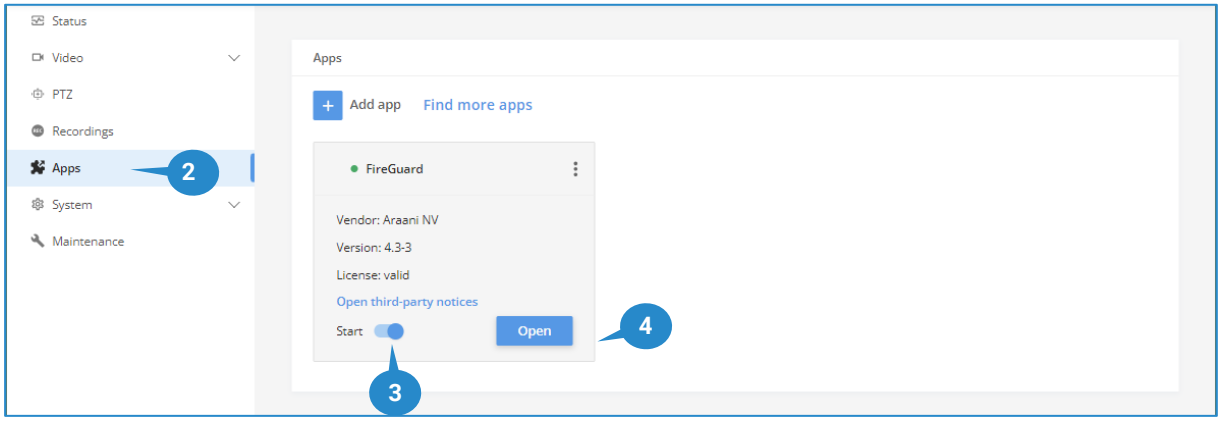
Configuring detection zones

To further optimize the fire monitoring or to avoid false triggering of alarms, e.g., due to very dynamic or badly illuminated zones in the field of view, the monitoring can be restricted to certain zones in the field of view. These zones can be drawn in the app configuration screen in the browser itself.

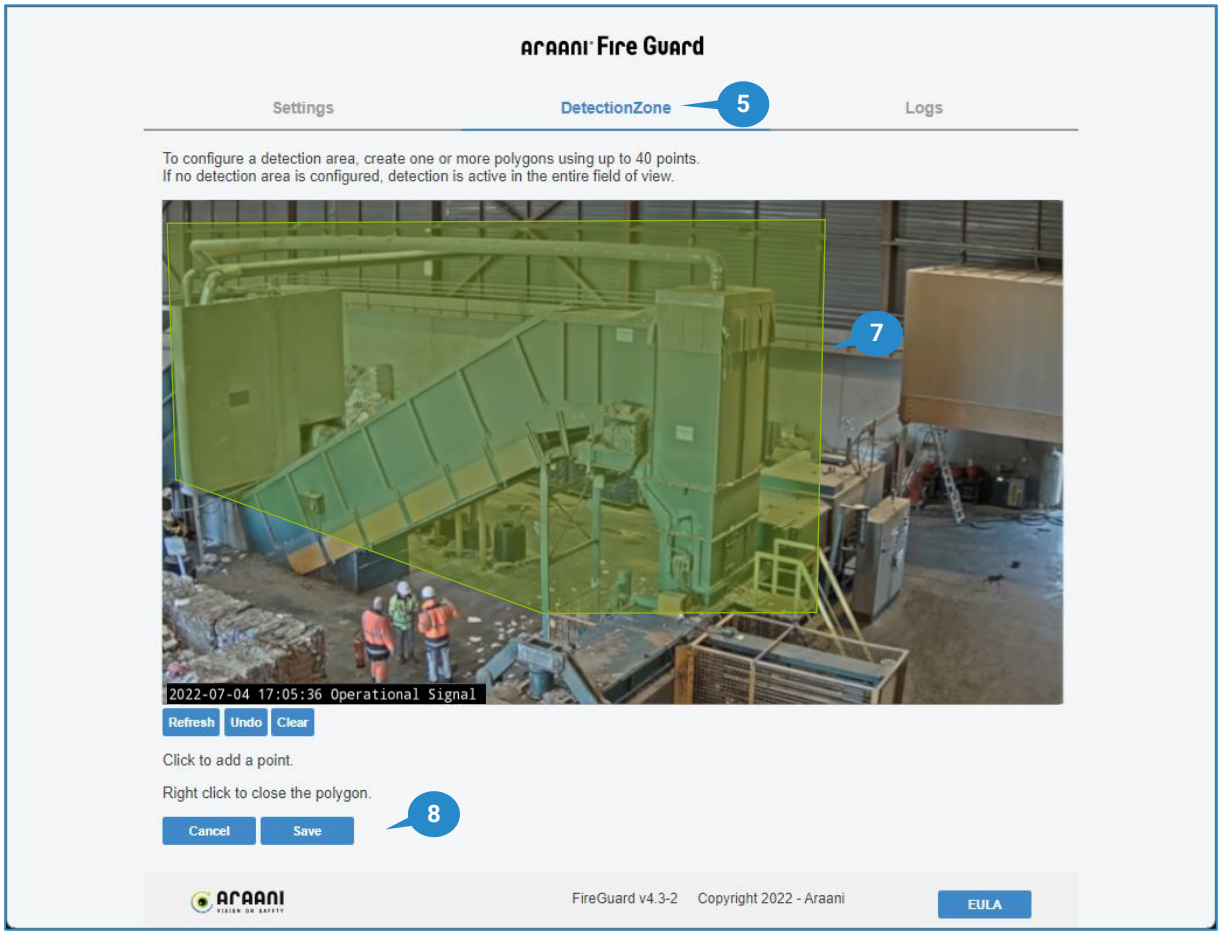
By default, the active area is the whole field of view. If detection zones are defined, this will override the default and monitoring will only occur only in the defined zones.

To define detection zones, perform following steps:

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select the “Apps” tab in the control panel.
3. Make sure the application is running, otherwise start Araani Fire Guard.
4. Select the Araani Fire Guard app “Open” button.



5. A new browser window will appear that contains all available settings to configure Araani Fire Guard. Select the “DetectionZone” tab.
6. A live picture is shown to assist in configuring the detection zones.
7. To draw a polygon detection zone on the visual image:
    a. Left click in the image to add a point.
    b. Right click to close the polygon (you need at least 3 points).
    c. Select “Undo” to undo the last action. Multiple actions can be undone.
    d. Select “Clear” to clear all drawn zones.
    e. Select “Refresh” to refresh the picture with the current live camera image.



8. Select “Save” to save the configuration of detection zones.

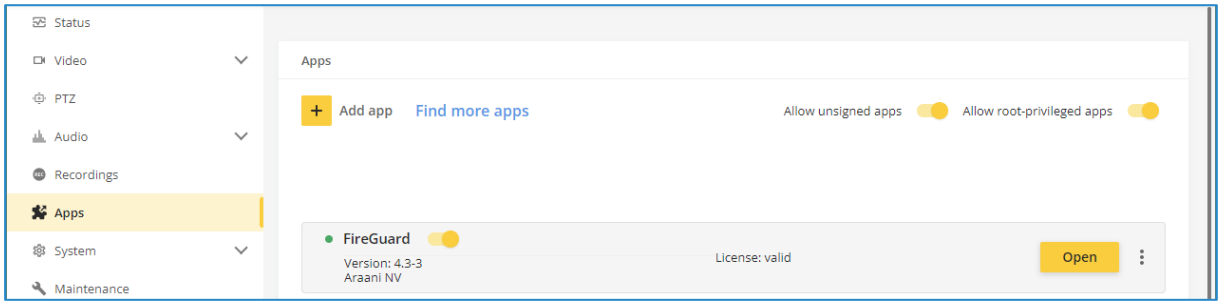
Up to 40 points can be used to draw the detection zones. An individual zone must be minimum of 2% of the full image. The sum of the detection zones must be at least cover 25% of the full image. If smaller zones are drawn, a warning pop-up box will appear. Zones may overlap. For fire monitoring, the aggregated area is considered.

Working with PTZ cameras

Araani Fire Guard is capable of working on pan tilt zoom cameras. This includes cameras with motorized lenses that only allow changes in zooming.

Attention: PTZ support is not intended for guard tour applications. As the analytics program needs to learn the background image after every move and smoke dispersion is a rather slow phenomenon, this may not function well in a guard tour application. PTZ support is provided for convenience and to avoid faults when occasional zoom or position changes are needed. A minimum stay of 10 minutes is recommended for each preset for the analytics to work as expected.

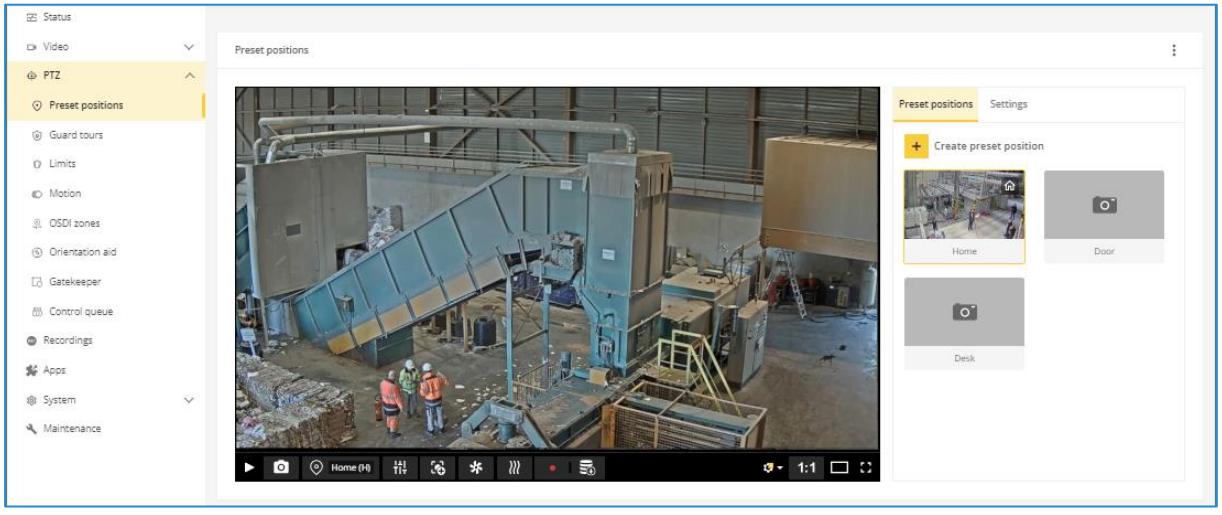
Attention: On cameras with Axis OS firmware >= 11.5, 'Allow root-privileged apps' must be enabled to allow Araani Fire Guard to work in PTZ mode. This can be verified in the Apps setup page:



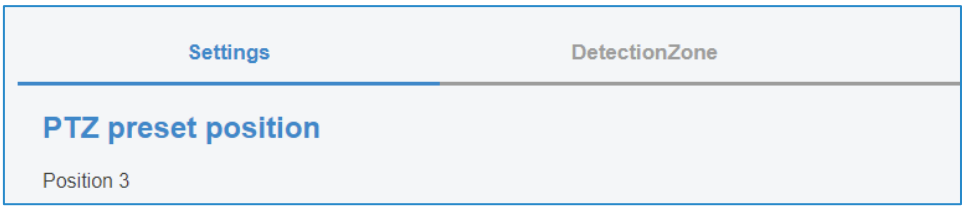
For each of the configured preset positions, a separate configuration is created. Up to 10 preset positions (and related settings) are supported. These individual configurations include all sensitivity settings and detection zones.

While moving or when the camera is positioned out of any preset position, the fire recognition algorithm is stopped (status 'STOPPED'). When the camera is returned to one of the named preset positions, the algorithm recognizes that position, automatically loads the correct configuration and starts learning the background again (status 'RECALIBRATING').

The camera presets and associated names are configured in the camera setup interface as illustrated below. Refer to your camera manual for details on PTZ preset configuration.



After moving to any of the configured presets, the associated configuration is loaded and the preset name is shown in the Araani Fire Guard settings interface in the 'PTZ preset position' section as illustrated below.



Notice: Make sure all relevant PTZ positions are properly configured and named. Even for a camera with motorized lens that remains in fixed position after initial configuration, this position should be named (e.g. 'home'). Unnamed positions will not be identified, and fire recognition will not start.

Configuring display options

To visualize Araani Fire Guard alarms inside the video stream, two options are available:

- Adding text overlay that displays the Araani Fire Guard status.
- Enabling overlay in the app to dynamically draw bounding boxes around the incident zone. A flame incident will be marked with a red bounding box while a recognized smoke cloud will be marked with an orange bounding box.

VIEW ARAANI FIRE GUARD STATUS

The Araani Fire Guard app status is one of following:

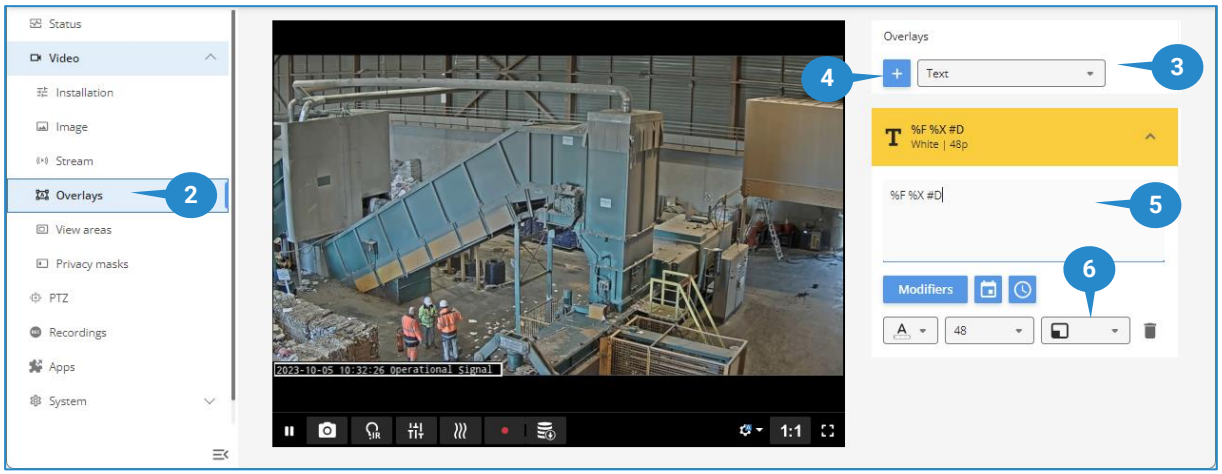
- OPERATIONAL SIGNAL: the app is running; no incident is seen, and conditions are ok.
- FAULT SIGNAL: contrast or light level are not sufficient for proper smoke recognition; flame is still active.
- FIRE ALARM: an incident condition is raised, either smoke or flame is seen.
- RECALIBRATING: the app is (re-)learning the background (after a reset or position change of a PTZ camera).
- STOPPED: the app stopped monitoring. This occurs while a PTZ camera is changing position or when the new position is not recognized as a preset position.

Attention: When a FAULT SIGNAL occurs, there is a delay of 10 seconds before the fault status is released after the cause of fault has ended.

This status can be visualized in the video stream by using the Axis® camera overlay capabilities. To visualize the Araani Fire Guard status on screen, follow these steps:

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Overlays” from the menu pane.
3. Select “Text”.
4. Select The “+” button to create a new overlay.
5. In text box that appears, one can create a custom overlay text by using codes. The available Araani Fire Guard status codes are dependent on your Axis OS version:
    a. For Axis OS firmware < 11.2.16
        i. Add #D to the overlay definition to add the Araani Fire Guard status.
    b. For Axis OS firmware >= 11.2.16
        i. Add #D1 to the overlay definition to add the Araani Fire Guard status.

    This can be combined with other custom fields such as date (%F) and time (%X) in the example below. Refer to your camera manual for all available options.
6. In the dropdown box, select the location where you want the overlay to appear in the image. This should always be bottom left or bottom right, to not influence the detection. Font, colour and size are customizable.
7. Leaving the menu item will automatically save the overlay and create it.

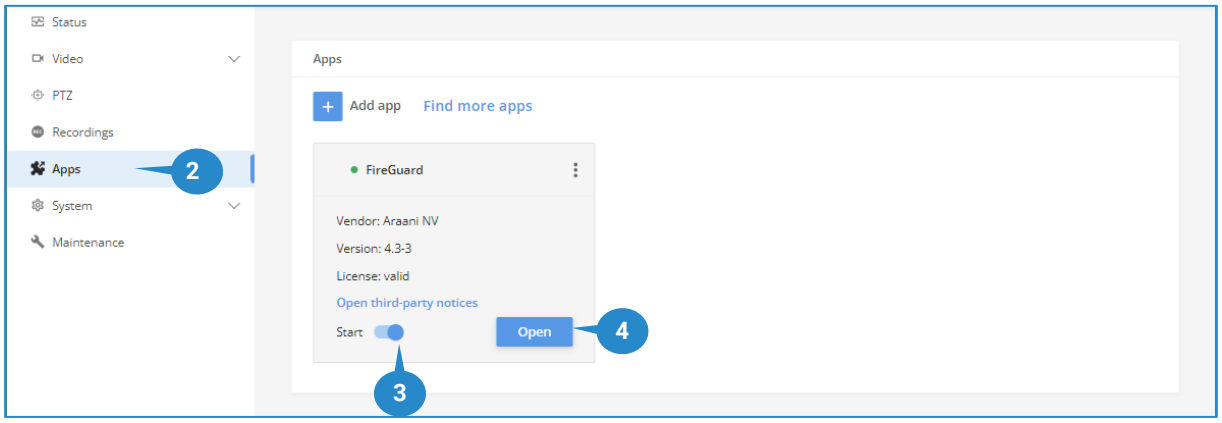


Attention: It is strongly discouraged to add other overlay elements such as the company logo or company name, as this can hide starting fires from being detected.

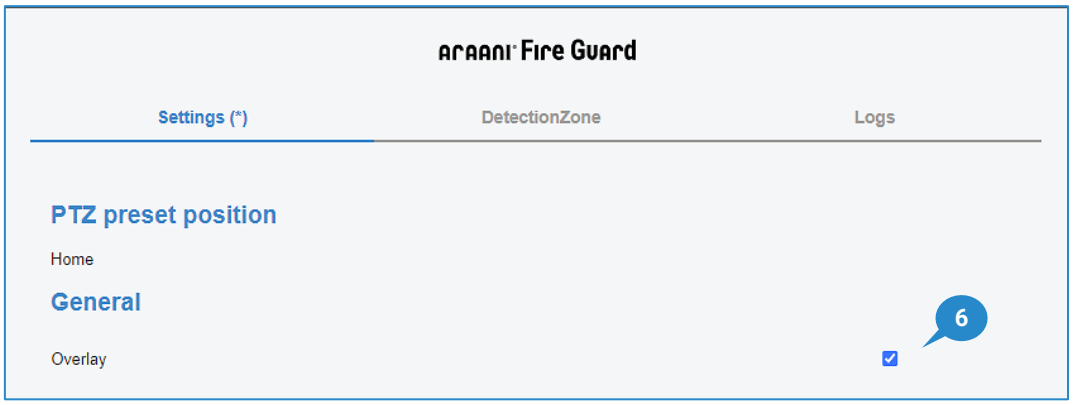
VIEW BOUNDING BOX

When smoke or flame is recognized, the app can draw a bounding bow around the incident in the video stream. This box dynamically changes as the incident zone grows or shrinks. To enable the drawing of this bounding box, it must be enabled in the Araani Fire Guard configuration. Follow steps below to do this:

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Make sure the application is running, otherwise start Araani Fire Guard.
4. Select the Araani Fire Guard app Open button.



5. A new browser window will appear that contains all available settings to configure Araani Fire Guard.
6. Select “Overlay” to enable the bounding box in the streaming image.



7. Select “Save” to register the new settings in the app.
8. A bounding box will now appear on the image when an incident is recognized.

How to test Araani Fire Guard

The goal of testing the Araani Fire Guard system is:

- to verify the correct installation and functioning of the application.
- to verify correct camera setup and lightning condition (no FAULT SIGNAL should occur at startup).
- to verify alarm propagation to VMS or other connected systems.

Attention: This testing is NOT intended to measure or verify analytics performance. Due to the large diversity of environments, it is not possible to guarantee recognition in all circumstances. Use Araani certified products if performance criteria need to be met.

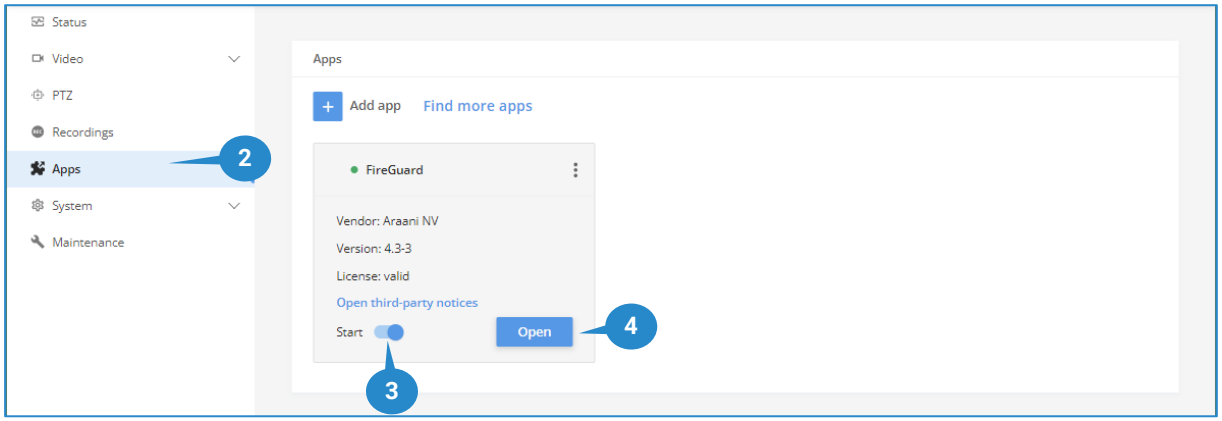
Araani Fire Guard test mode

To test alarm display and optional propagation to a VMS, Araani Fire Guard provides a built-in simulator test mode. This simulator allows to force the status of detection to operational signal, fault signal or fire alarm. A built-in timer makes sure that the Araani Fire Guard returns to operational mode, even if the test mode is not terminated manually.

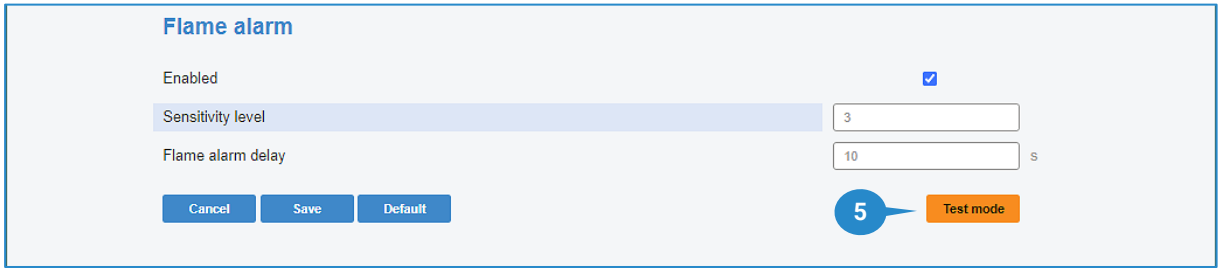
STARTING TEST MODE

To start the simulator:

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Make sure the application is running, otherwise start Araani Fire Guard.
4. Select the Araani Fire Guard app Open button.



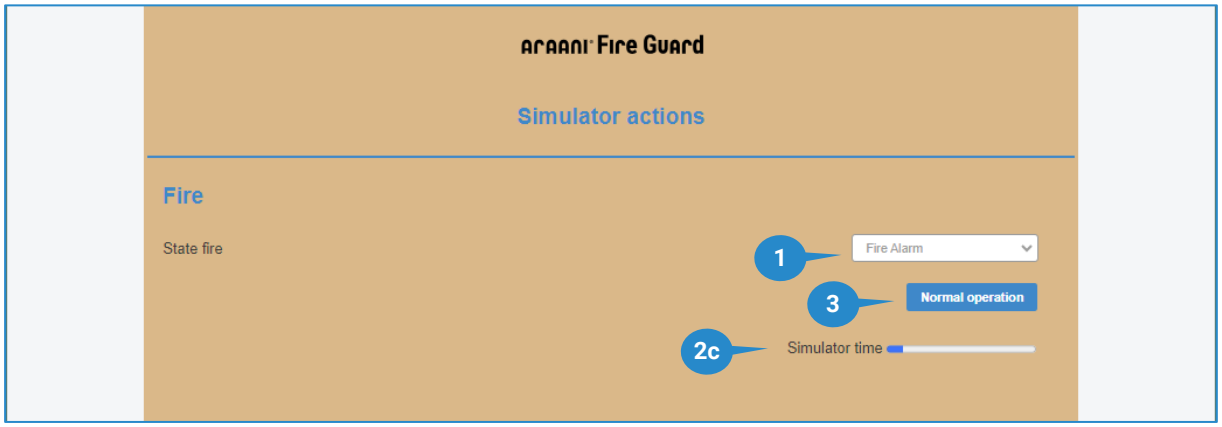
5. Select the “Test mode” button in the bottom right of the basic setup page.



USING TEST MODE TO VERIFY STATUS DISPLAY AND PROPAGATION

The simulator actions page allows to force the status of the detection algorithms as follows:

1. Select the desired state to be tested.
2. As soon as a state gets assigned:
    a. display status overlay will be adapted.
    b. an alarm will be sent to potentially connected VMS clients.
    c. a built-in timer of 5 minutes will start or re-start. When the timer finishes, all states will be reset to the live situation and Araani Fire Guard will stop test mode automatically. Progress of the time can be seen in the simulator time bar.
3. Select "Normal operation" if you want to end test mode and return to the configuration page manually and detection will start recalibrating.



Perform following actions to test all connections:

Wanted state	Action	Result
Operational Signal	Leave all states to Operational Signal and disable State supervisory.	Display overlay shows "Operational Signal"
Fault Signal	Start from Operational Signal state. Set State fire = Fault Signal.	Display overlay shows "Fault Signal". If configured, a Fault Signal is sent to the VMS.
Fire alarm	Start from Operational Signal state. Set State fire = Fire Alarm.	Display overlay shows "Fire Alarm". If configured, a Fire Alarm is sent to the VMS.

Testing detection with test fire and smoke

Attention: Before and during testing, make sure all installation guidelines as described in Installation guidelines are respected!

SAFETY PRECAUTIONS

Danger: Make sure to respect all safety precautions imposed in the location where the test will be performed.

Danger: Before and while conducting tests, consider all safety precautions below.

- Wear personal protective equipment:
    - Gloves.
    - Eye protection.

- Use demarcation material to secure the test zone:
    - Cones.
    - Safety ribbon.
- Fire safety:
    - Assure the proximity of a fire extinguisher.

REQUIRED MATERIALS

SMOKE SIMULATION

To perform a smoke test, try to simulate smoke in a safe way. You can choose from different options to simulate smoke:

- **Smoke pellets**. Make sure the volume of smoke is at least 24m³ in total, use multiple pellets if necessary (to find a local supplier, google: smoke tablets 24m³).
  Accessories:
    - a metal, fireproof cup, or bucket to put the tablets in.
    - a long nose lighter.
- **Smoke machine**. Make sure to use a powerful smoke machine that has capacity of 60 seconds or more of continuous smoke.
  Required:
    - power connection.
    - smoke machine liquid.
- **Other**: be aware of fire hazards before using other ways to test Araani Fire Guard smoke recognition.

FLAME SIMULATION

To perform a flame test, try to simulate flames in a safe way with. You can choose from different options to simulate flames:

- **Flame video**. Use a fireplace video to simulate flames on a screen/laptop/tablet, this type of video can be easily found on YouTube or other video-sharing platforms. Select a video where the flames are present in most of the screen, e.g.:
- 
- **Chemical solvents** or other types of combustibles can be used to create flames, but this is not recommended. This method requires expertise. Do not do this if you are not a fire safety specialist.
- **Other**: be aware of fire hazards before using other ways to test Araani Fire Guard flame recognition.

TEST ZONE SETUP

Select a safe indoor area to perform the fire tests. For best result, position the test fire in the middle of the field of view.

Pay attention to following issues:

- Smoke:
  - Anticipate on where the smoke will travel (due to airflow, wind, air-conditioning, open doors…) and make sure to position the test fire in such a way that the smoke remains in the camera field of view for a maximum amount of time.
- Flame:
  - When using a fireplace video:
    - Make sure that the screen is perpendicularly oriented towards the camera, to have a proper/clear view off the video.
    - Avoid reflections on the screen.
    - Set the screen to maximum brightness. Araani Fire Guard is looking for light intensity. Screen brightness can never compete with sunlight or bright lamps. Try to avoid these interferences in the field of view during the test or create a detection zone excluding these disturbing factors.
- Described testing methods may not be suitable for outdoor testing. Weather conditions may negatively affect dispersion of generated smoke and outdoor light will interfere with video screens.
- Make sure the site responsible is informed about the tests and you have the authorization to perform the tests.
- Make sure existing smoke alarms are disabled or generated alarms are properly managed and/or inform site safety responsible before conducting tests

SENSITIVITY VERSUS SIZE

Refer to Camera Position / Field of view chapter for a proper understanding of required smoke and flame sizes before conducting tests.

TEST PROTOCOL

Step	Action	Check
1.	Install and configure the camera according the Araani Fire Guard manual. Do not forget to check if the camera is compatible and the firmware is supported.	
2.	Activate overlay text and bounding boxes to display the Araani Fire Guard status (see Araani Fire Guard manual to enable this).	

3.	Make sure the site responsible is informed on the tests and you have the authorization to perform the tests. .	
4.	Make sure the alarms the test will generate are managed and will not be escalated.	
5.	Put the test fire in the test fire position as described in 'Test fire position' and place the demarcation.	
6.	Make sure that the test fire has enough fuel to generate smoke during at least x seconds with a coverage of at least x% (see table Sensitivity vs size) at the same location in the field of view. Avoid entering the field of view for refuelling during the test.	
7.	Make sure Araani Fire Guard is running in operational mode.	
8.	Keep the field of view stable and avoid disturbance from vehicles, door/windows opening/closing, sudden light changes, people walking in the field of view…	
9.	Start the test fire, ideally without entering the field of view. If this is impossible, try to have only 1 person entering the field of view.	
10.	Araani Fire Guard should recognize the smoke/flame and will display this via overlay text and bounding boxes.	

Maintenance and troubleshooting

CAMERA MAINTENANCE

For consistent performance of Araani Fire Guard, periodic maintenance of the camera is necessary.

The time intervals of this maintenance strongly depend on environmental elements such as dust, pollution …

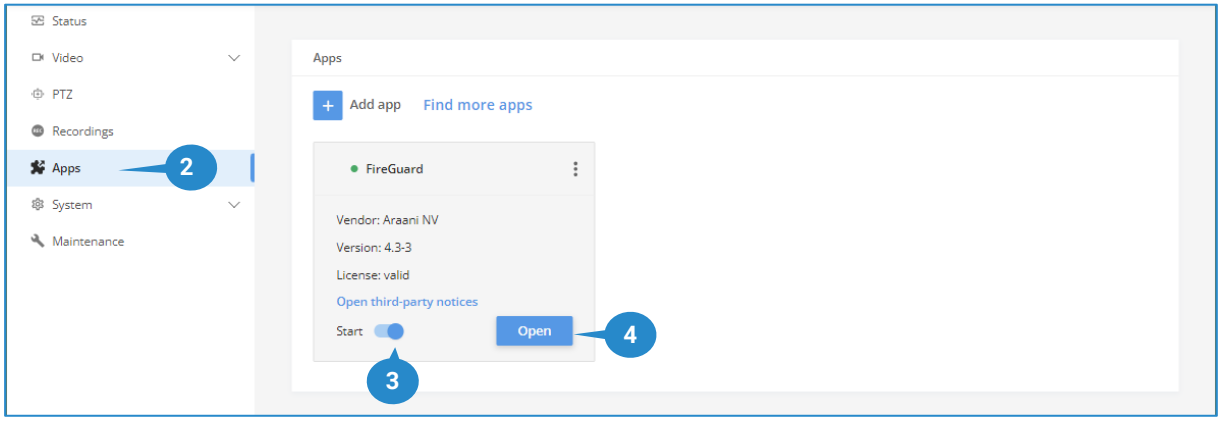
By default, a maintenance procedure should include these steps in the correct order:

1. Stop Araani Fire Guard.
2. Clean lens and/or window of housing (clean the rest of the camera if necessary).
3. Re-focus lens.
4. Control field of view and make sure it is identical to the original field of view.
5. Update the camera firmware if available and if approved by Araani (check camera settings consistency after upgrade).
6. Update Araani Fire Guard software.
7. Start Araani Fire Guard software and check if Araani Fire Guard is still in Operational state after the learning period of 5 minutes.

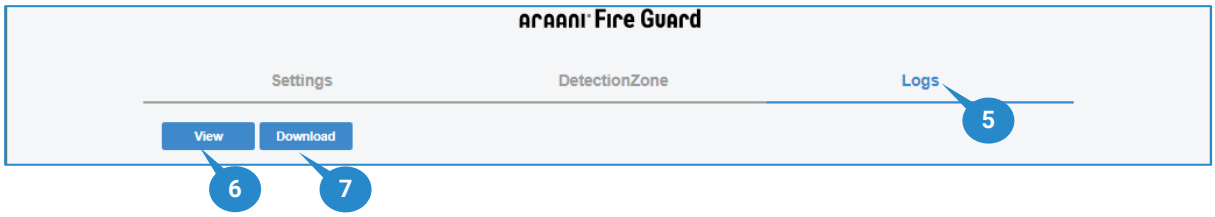
RETRIEVING DIAGNOSTICS INFORMATION

In case of problems with the Araani Fire Guard, your support contact may request you to retrieve the log information from the app. When contacting support services, it is advised to include this information by default in the problem report. Follow steps below to retrieve this diagnostics information.

1. Connect to your camera, using your internet browser software and login to the camera webpage.
   Refer to the camera user manual on how to do this.
2. Select “Apps” from the menu pane.
3. Make sure the application is running, otherwise start Araani Fire Guard.
4. Select the Araani Fire Guard app “Open” button.



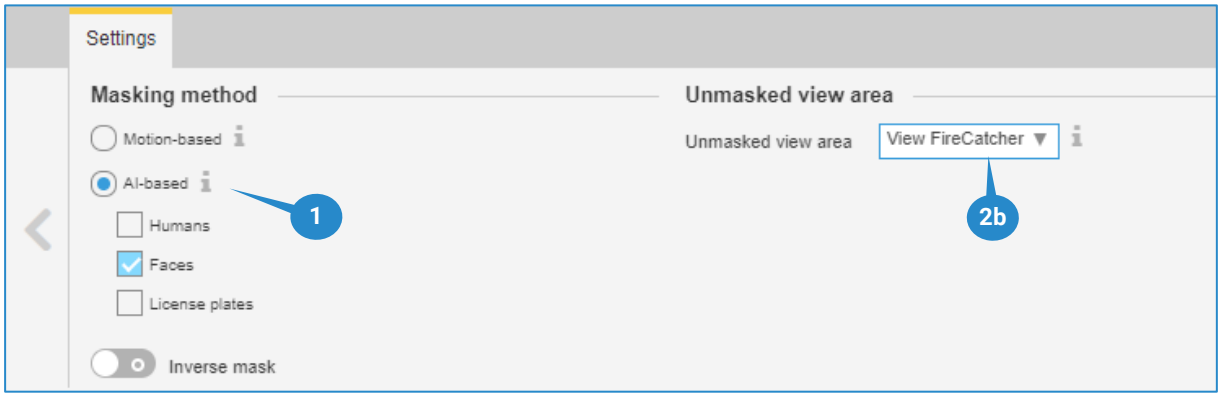
5. Select the “Logs” tab.
6. To view the log information of the application, select “View”.
7. To download the logging information of the application, select “Download”.
   A text file will be created with extension ‘.log’ that contains all available logging information. This file can be sent to your support contact for diagnosis and troubleshooting.


ARAANI Fire Guard
Settings
DetectionZone
Logs
5
View
Download
6
7

Using Araani Fire Guard with Axis Live Privacy Shield (ALPS)

Axis Live Privacy Shield is an ACAP application that adds AI-based dynamic masking of moving and still objects such as humans, license plates, or backgrounds to the streaming video in order to safeguard privacy. Araani Fire Guard can operate in combination with ALPS, subject to following conditions.

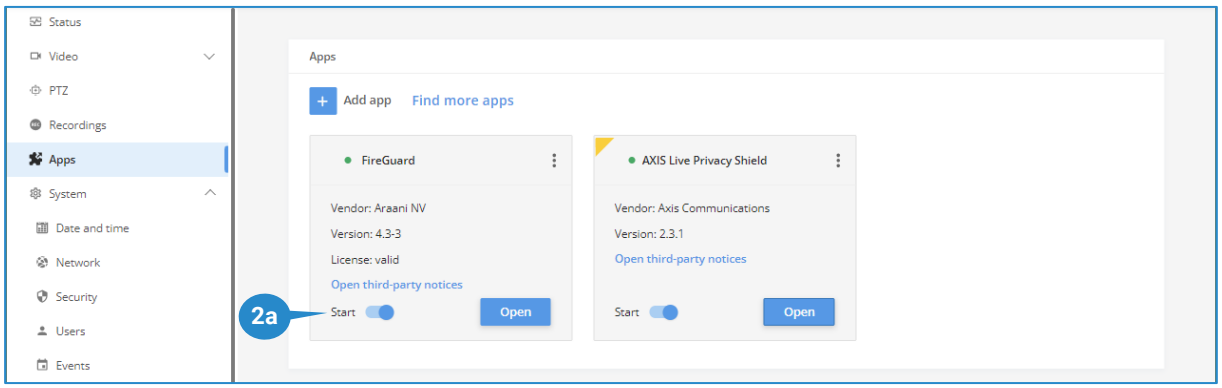
1. The camera has a deep learning processing unit (DLPU) and the ALPS application is assigned to run on it. This is done by selecting the AI-based version of ALPS as shown below. If the ALPS application does not show the AI-based option, then your camera has no DLPU and the ALPS applications must not be used. The motion-based option is executed on the main CPU of a camera and due to its heavy computing load will interfere with the Araani Fire Guard operation.



2. Araani Fire Guard needs access to an unmasked version of the video. This is realized through the use of a dedicated view area, called "View Araani Fire Guard ". This view is created automatically by the Araani Fire Guard application at startup but it is not assigned automatically as the unmasked view area. For correct configuration, follow these steps:

    a. If ALPS was installed after Araani Fire Guard, stop and restart the Araani Fire Guard application. This will make sure the "View FireGuard" is created.

    b. Select the "View Araani Fire Guard" as the unmasked view area in the ALPS configuration interface.



Integration of Araani Fire Guard with VMS systems

Araani Fire Guard can be easily integrated with many video management systems (VMS), allowing to view alarms in the alarm interface of the VMS. Depending on the type of VMS, all kinds of actions can then be associated with the alarm such as messaging, recording, activating scenarios, etc.

To view overlay information such as alarm bounding boxes and status overlay in the VMS, enable the Araani Fire Guard overlay function as described in Configuring display options. This overlay will be embedded in the streaming video and as such visible in the VMS client software.

To make integration of alarms possible, Araani Fire Guard sends out alarm and status messages, using the Axis dynamic events scheme. This method is recognized by most VMS systems that allow for integration with Axis cameras and Axis video analytics capabilities.

For integration with other VMS systems than the ones stated below, please contact your supplier.

Attention: The following instructions assume that you are familiar with the video management software and have already installed and configured the cameras that are running Araani Fire Guard analytics. For instructions on how to accomplish this, please refer to the VMS documentation.

Integration with Milestone XProtect

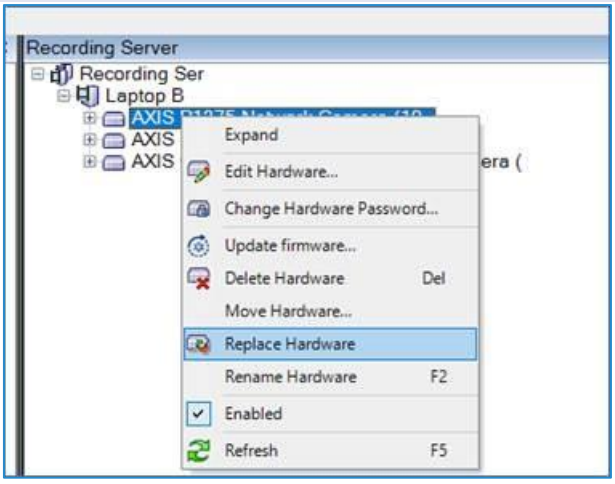
Araani Fire Guard is compatible with Milestone Xprotect Express+, Professional+, Expert and Corporate. Araani Fire Guard is tested with Milestone XProtect Professional+ version 2021R2.

Enabling alarm notifications from Araani Fire Guard involves 2 steps:

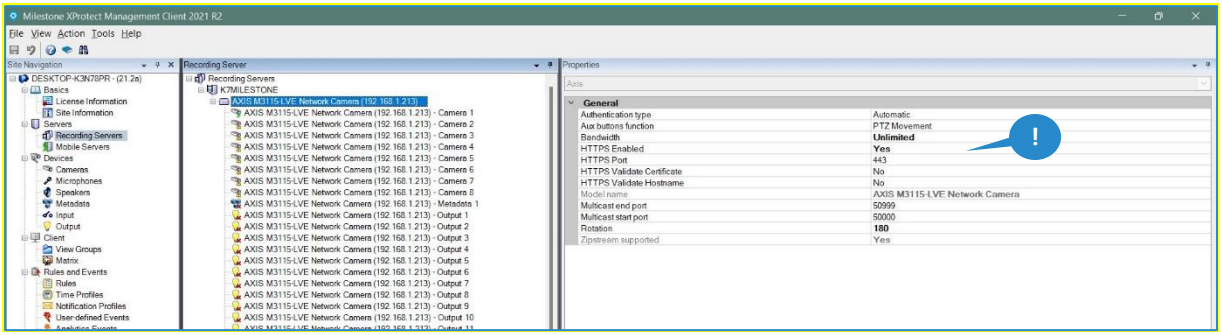
- Enable the device events in the device configuration on the recording server.
- Define the alarms, associated with these events.

Attention: When Araani Fire Guard was installed after the camera installation in Milestone VMS, or the application is replacing another, or an upgrade has occurred with new features, it may be required to reinitialize the hardware in the Milestone XProtect Management Client. This is done by right clicking the camera under the selected recording server and choosing "Replace hardware". Follow the instructions on-screen to perform a reinitialization. At this time, the capabilities of the camera are re-read.

Information: If your camera has been configured for https communication only w.r.t. cybersecurity, it may be needed to temporarily enable http communication in the camera system security setup to be able to perform this action.



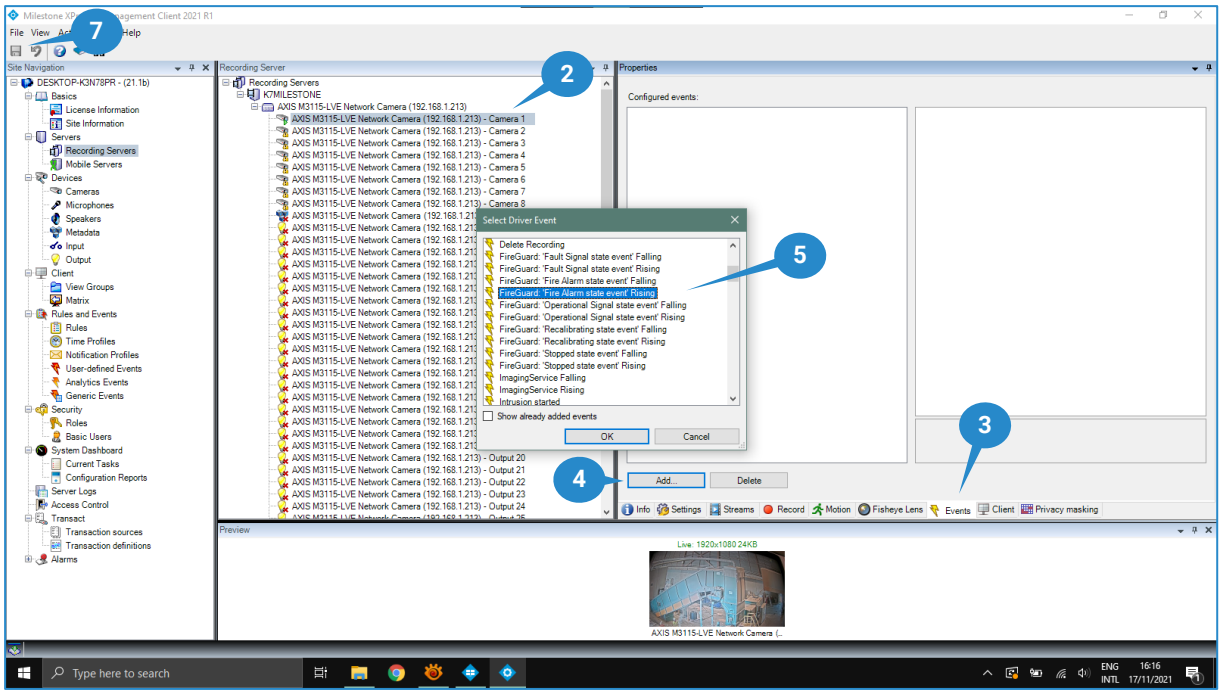
Attention: Araani Fire Guard release 4.00.03 and higher may be using secure https for communications. In such case, https needs to be enabled on camera level in the Milestone XProtect Management Client:

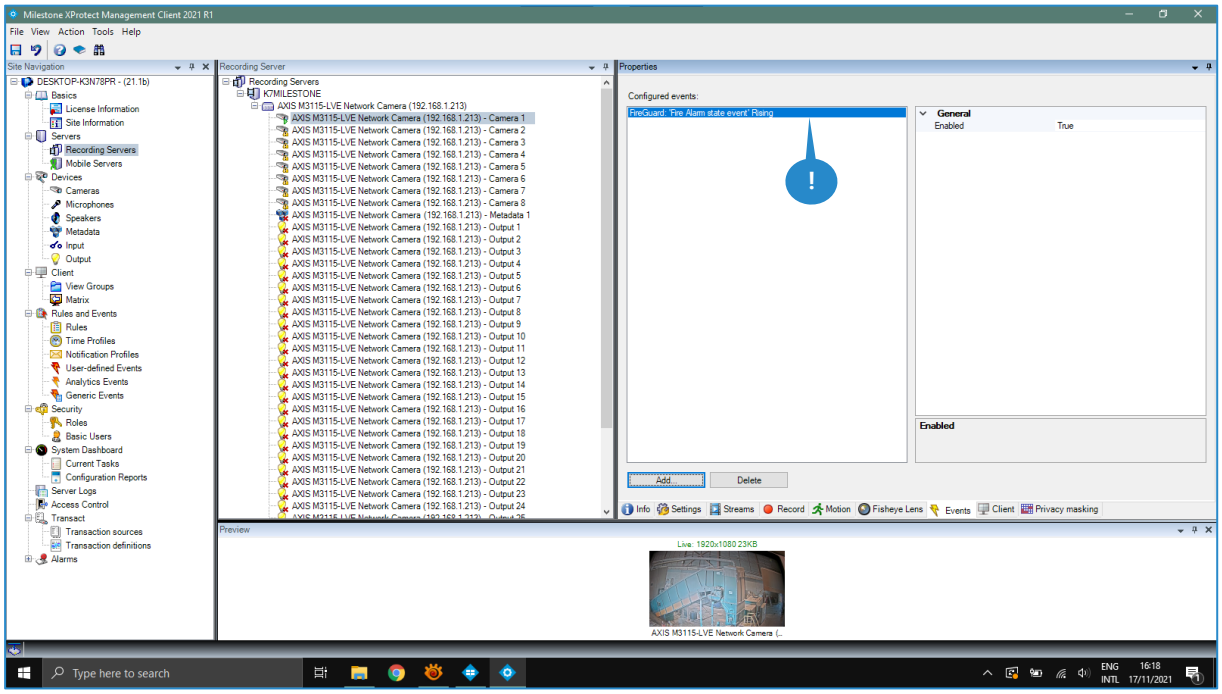


To enable the events for each camera in Milestone VMS, follow these steps:

1. Open Milestone XProtect Management Client.
2. Find the camera under the corresponding recording server on which Araani Fire Guard is running and for which you want to enable Araani Fire Guard alarm notifications.
3. Select the Events tab.
4. Select "Add.."; a popup box "Select Driver Event" appears.
5. Add the event for which you want to raise an alarm. All events start with the application name, followed by the event name and either "Falling" or "Rising" option. "Rising" refers to the beginning of the event, so only select the "Rising" version of the event, unless you want to create an alarm notification for the ending of the event. Following events are available:
    a. Fire Alarm state event
    b. Fault Signal state event
    c. Operational Signal state event
    d. Recalibrating state event
    e. Stopped state event

    Refer to View Araani Fire Guard status for the meaning of these events.
6. Repeat steps 4-5 for each event that you want to be notified of in the VMS client. In most cases, "Fire Alarm state event' Rising" will be the only alarm that your VMS operators need to know about. Sometimes, it can also be useful to know about the fault signal.
7. Save the configuration by selecting the save button or confirm saving when asked.
8. Repeat steps 2-7 for each camera with Araani Fire Guard installed.



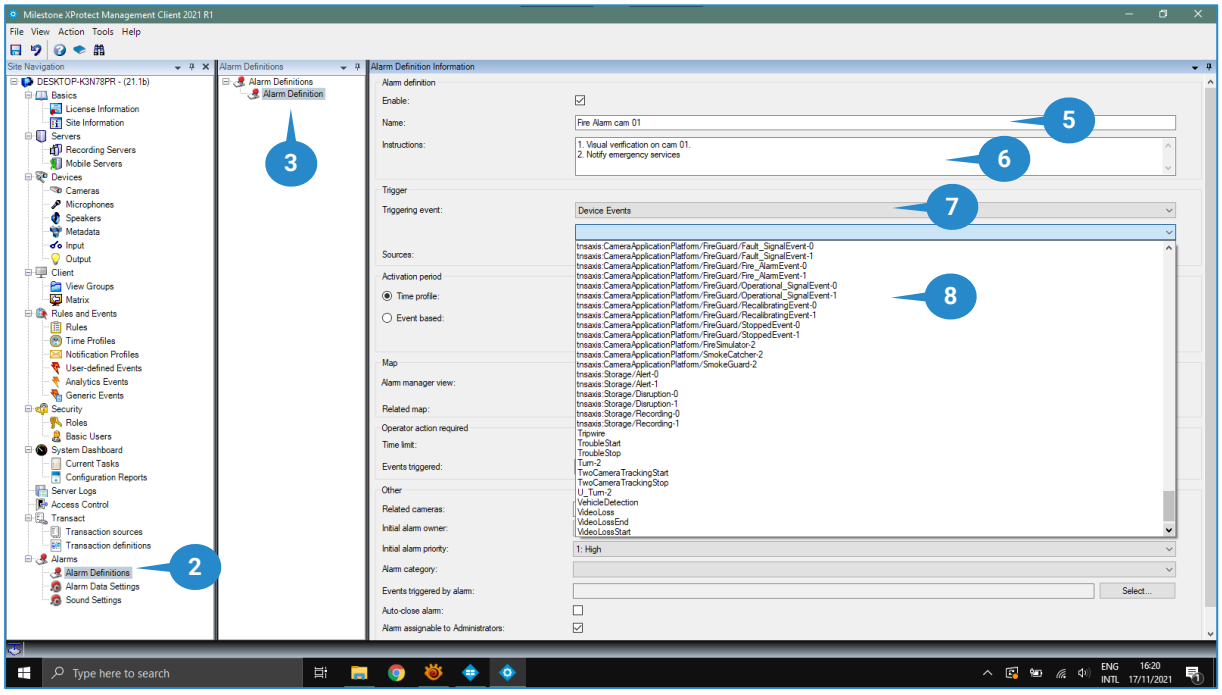


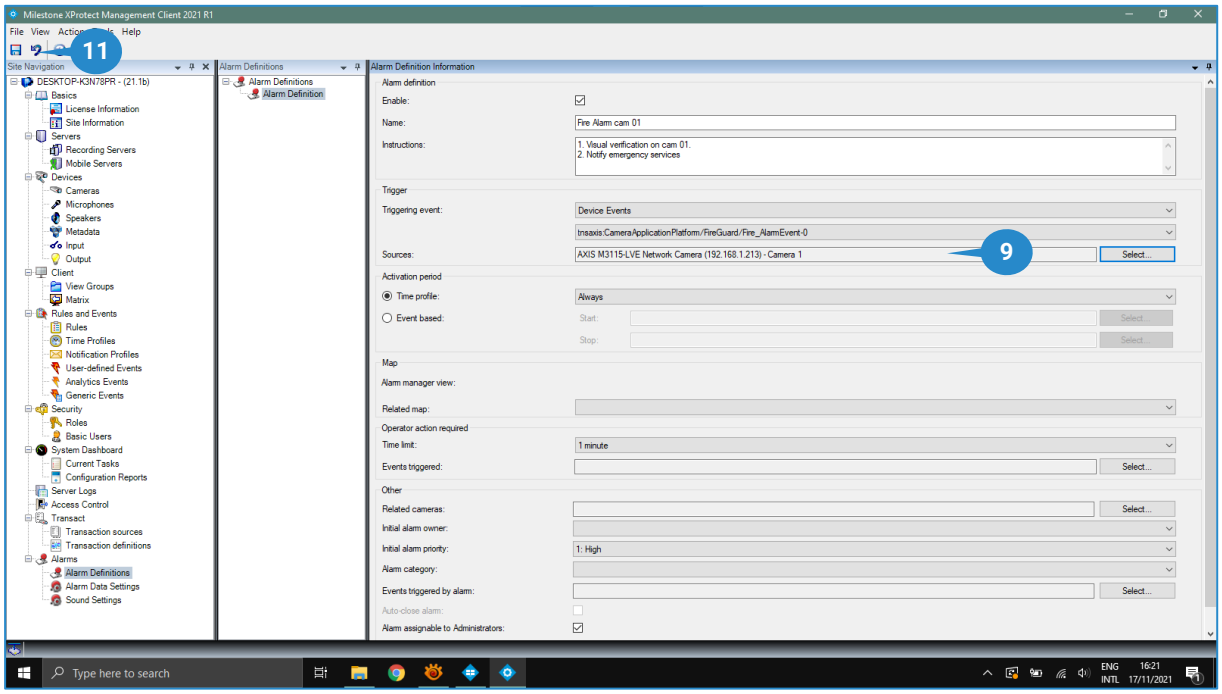
To define the alarms associated with the events as configured above, follow these steps:

1. Open Milestone XProtect Management Client.
2. Select "Alarm Definitions".
3. Right-click on the Alarm Definitions field and select "Add New" or press Ctrl+N.
4. A form appears to configure the new alarm.
5. Provide a meaningful name for the alarm that is easily recognized by the operator.
6. Add instructions for the operator if needed.
7. Under Triggering Event, select "Device Events" from the dropdown.
8. In the following field, scroll down and find the appropriate event in the dropdown list.
   This will be in the format "tnsaxis :CameraApplicationPlatform/FireGuard/*eventname-x*" where eventname is similar to the event list as seen at the device event configuration and x is either 0 or 1. For the "Rising"

events configured in first step, select the "0" event here.
E.g. for the fire event, select " tnsaxis :CameraApplicationPlatform/FireGuard/Fire_AlarmEvent-0"

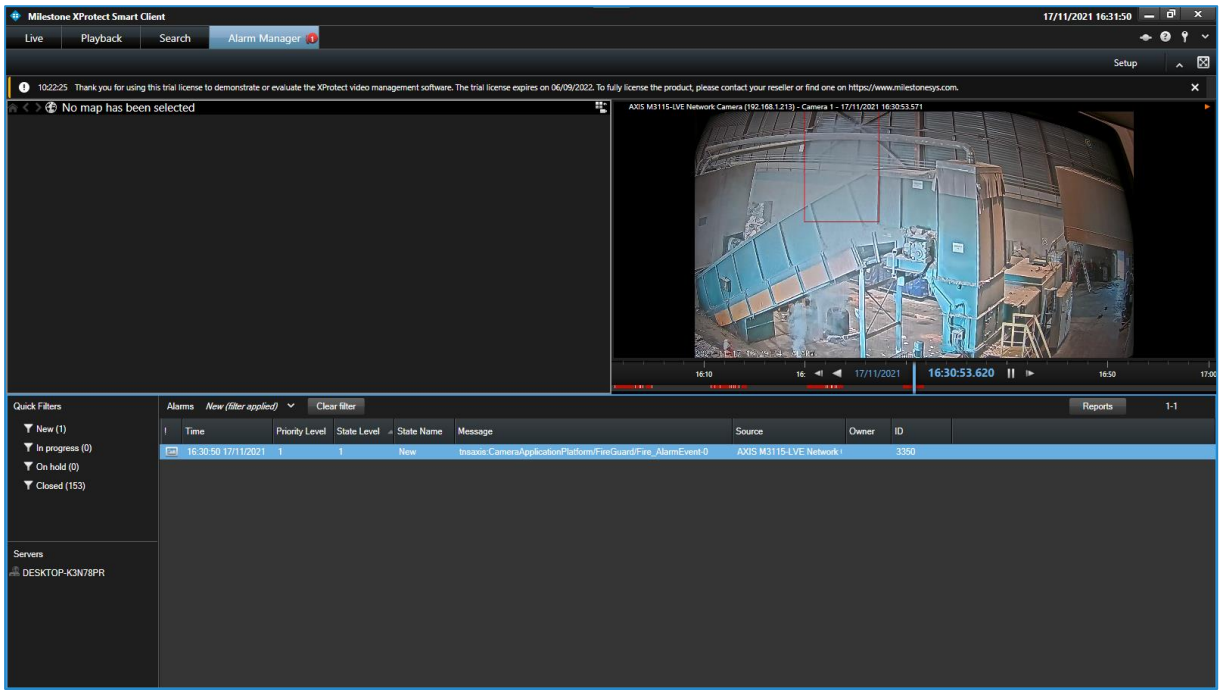
9. In the source field, select the camera device for which you want to set the alarm.
10. Other fields are optional, depending on your local preferences. Refer to the Milestone documentation for further information on these fields.
11. Save the configuration by selecting the save button or confirm when asked.
12. Repeat steps 2-11 for each event that you want to raise an alarm for.
13. Repeat steps 2-12 for each camera device for which you want to raise alarms.





When both the event is defined for a camera device and a corresponding alarm definition is created that is associated with the event, alarms will appear in the Milestone Xprotect Smart Client alarm window as illustrated below. Clicking

the alarm will cause a replay in the replay window. Double clicking the alarm will show details about the alarm. Refer to the Milestone documentation on how to process alarms.



Integration with Genetec Security Center

Araani Fire Guard is compatible with Genetec Security Center. Araani Fire Guard is tested with Security Center version 5.10.

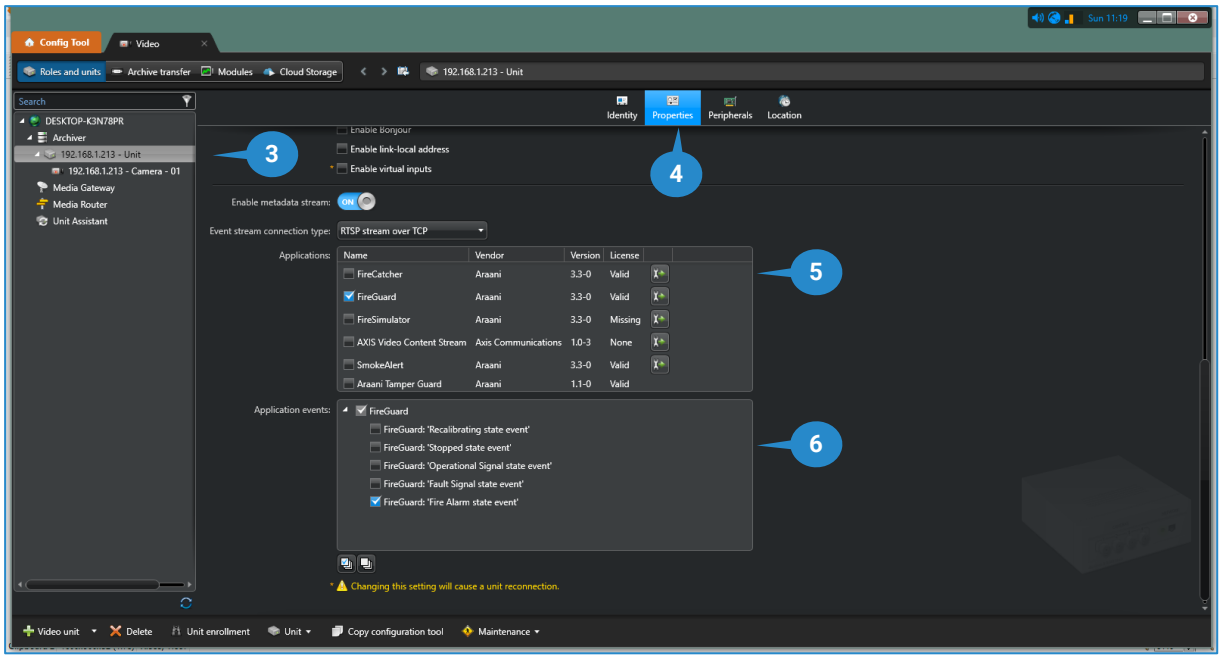
Attention: Araani Fire Guard release 4.00.03 and higher may be using secure https for communications. In such case, https needs to be enabled on camera level in the Genetec Security Center.

Enabling alarm notifications from Araani Fire Guard involves 3 steps:

- Enable the device events in the device configuration.
- Define an alarm
- Create an action rule to generate the alarm

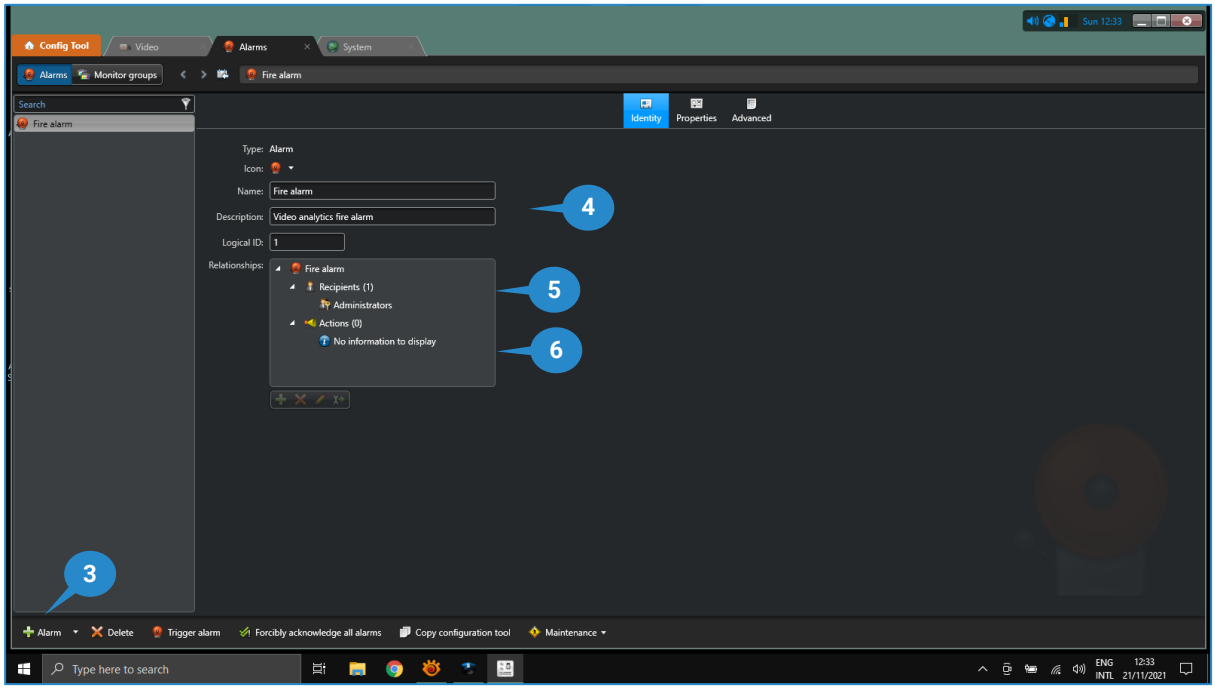
To enable the Araani Fire Guard events, follow these steps:

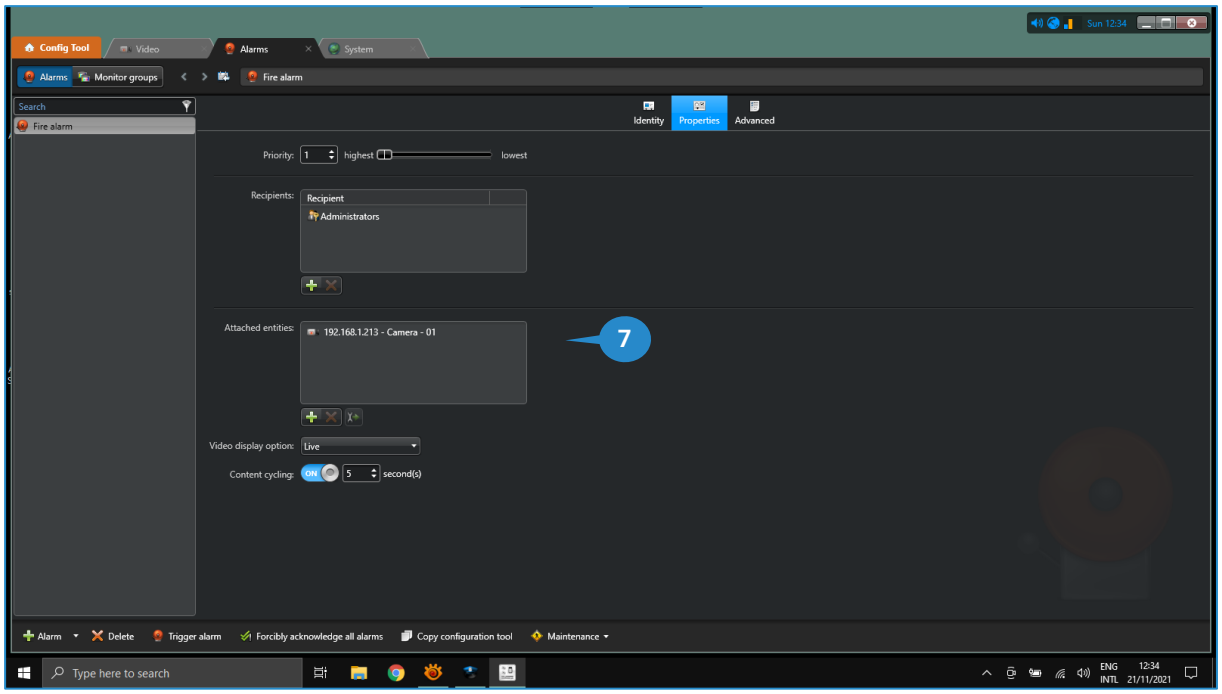
1. Open the Genetec Config Tool.
2. Open the "Video" configuration task.
3. Select the camera unit for which you want to enable the Araani Fire Guard alarms. Select the unit level, not the lower stream level.
4. Choose "properties".
5. Under "Applications", enable the Araani Fire Guard entry. Click "Apply".
6. Under Application events for Araani Fire Guard, select the events for which you want to raise an alarm. . In most cases, "Fire Alarm state event" will be the only alarm that your VMS operators need to know about. Sometimes, it can also be useful to know about the fault signal. Click "Apply".



Define an alarm by following these steps:

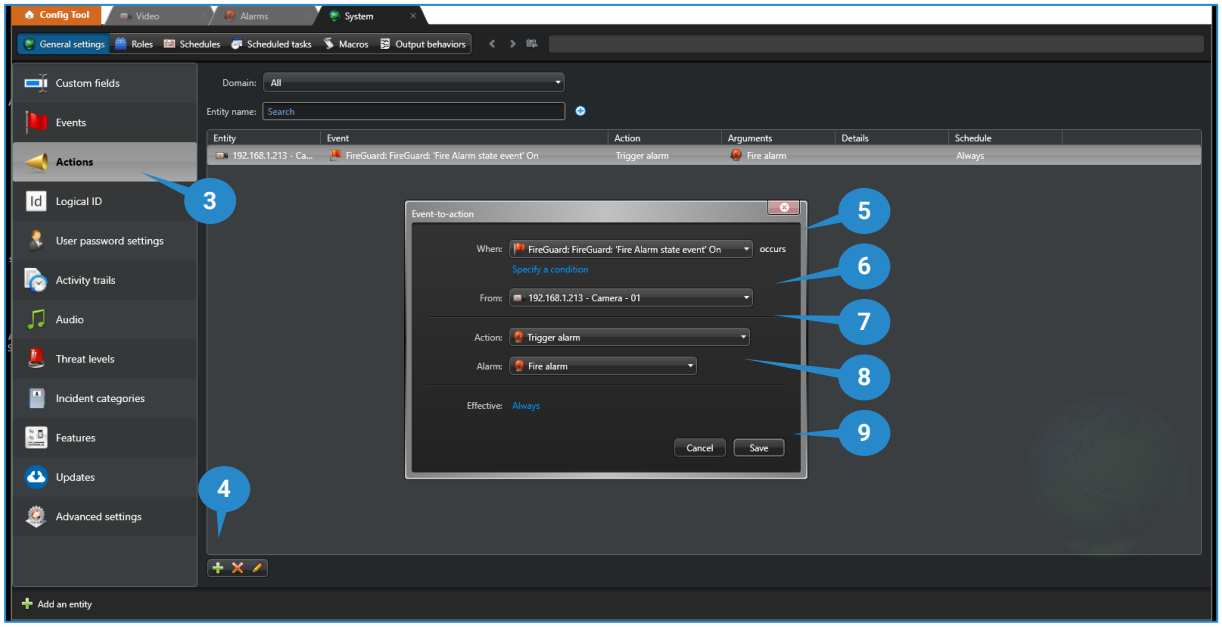
1. Open the Genetec Config Tool.
2. Open the "Alarms" configuration task.
3. Add a new alarm by clicking the "+ Alarm" button.
4. Provide a meaningful name and description for the alarm.
5. If not present, add the operator accounts for which you want to raise this type of alarm under "Recipients"
6. Under "Actions", you can define all kind of actions when the "Alarm triggered" occurs, e.g. playing a sound, starting a recording, etc.
7. In the 'Properties' tab, add the cameras for which you want to raise the alarm under 'Recipients'.



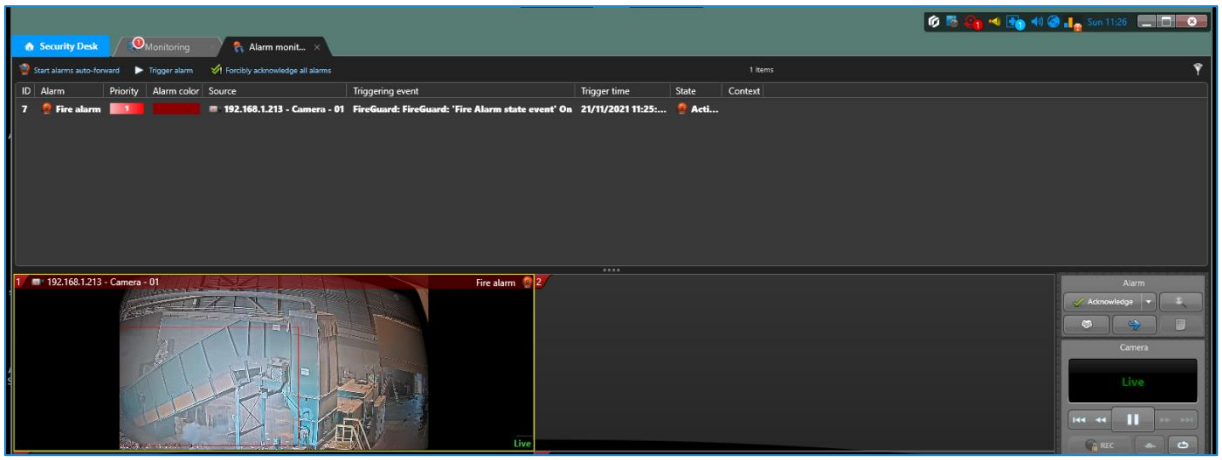


Finally, create a rule to trigger the alarm when a Araani Fire Guard event ocurs by following these steps:

1. Open the Genetec Config Tool.
2. Open the "General Settings" task under "System".
3. Select "Actions".
4. Add a new action by clicking the "+" button.
5. In the "When:" dropdown, select the Araani Fire Guard for which you want he alarm to occur. Choose the "ON" option to select the beginning of the event e.g. "Fire Alarm State event ON".
6. In the "From:" field, select the camera for which you want to enable the alarm. Note that here, the stream level is selected.
7. As "Action:", select "Trigger Alarm".
8. In the "Alarm:" field, select the alarm that you defined in previous step.
9. Select "Save"



When properly configured, the selected Araani Fire Guard events will cause an alarm to be generated and displayed in the Security desk monitor panel as illustrated below.

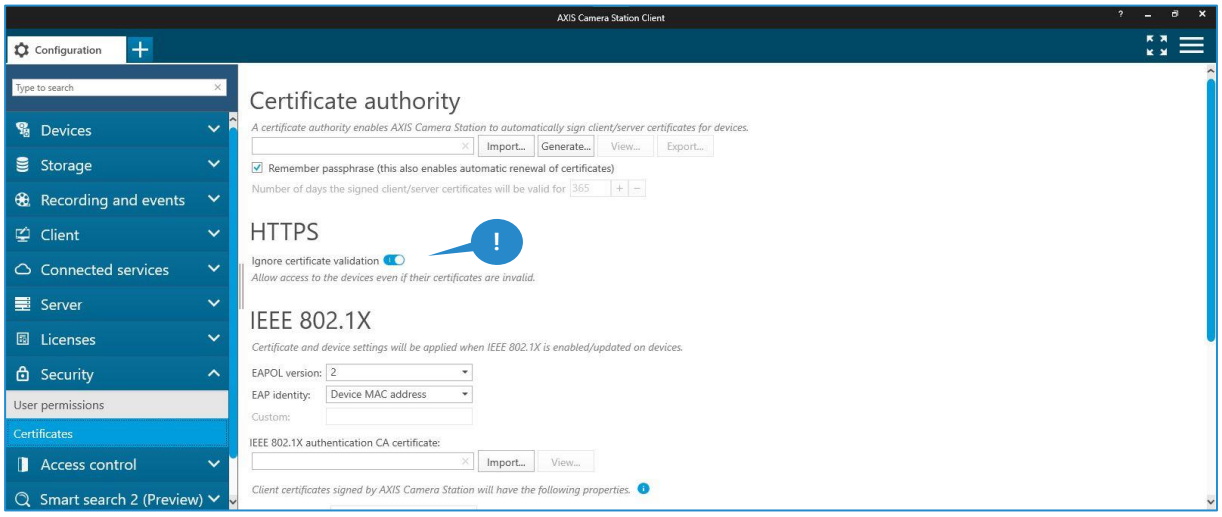


For more information on how to configure alarms and all the possible options, please refer to the Genetec Security Center documentation.

Integration with Axis Camera Station

Araani Fire Guard is compatible with Axis Camera Station (ACS). Araani Fire Guard is tested with ACS version 5.40.

Attention: Araani Fire Guard release 4.00.03 and higher may be using secure https only for communications. By default, Axis cameras use a self-signed certificate. In such case, https certificate validation needs to be disabled in Axis Camera Station. This can be found under security settings:

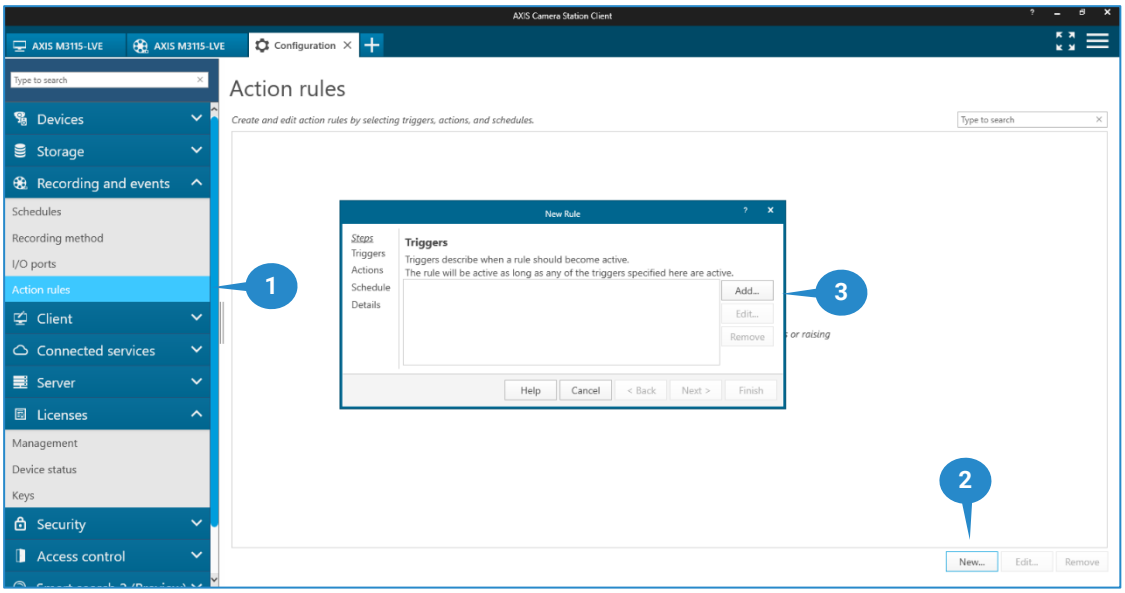


Enabling Araani Fire Guard alarm notifications is done by creating a new action rule for each event that you want to be notified off and for each camera that has Araani Fire Guard installed.

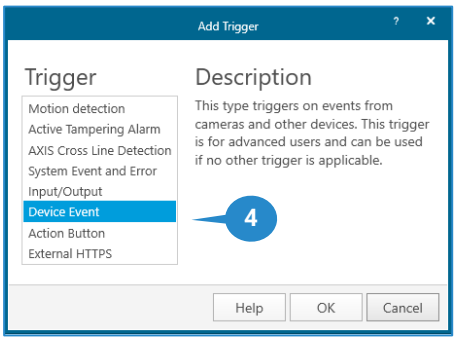
To enable Araani Fire Guard alarm notification, follow these steps:

1. In ACS Client, select "Action rules" under "Recording and events" on the "Configuration" tab.
2. Select "New". A popup window appears to configure a new rule.

3. In the "Triggers" dialog, select "Add". A new popup window appears to select the type of trigger.

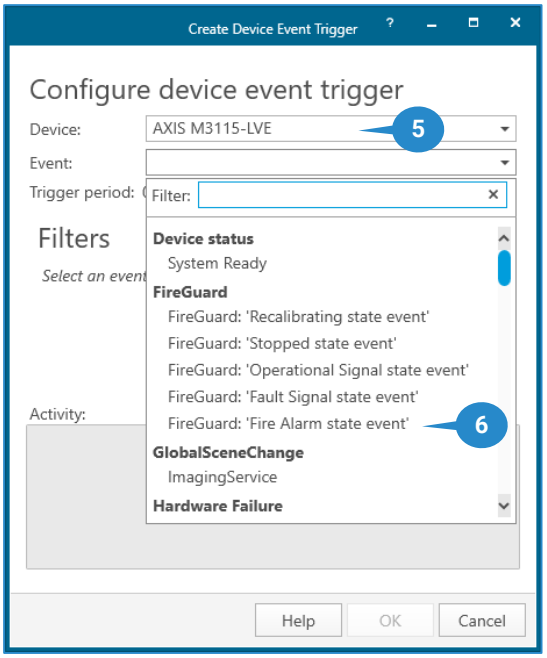


4. Select "Device Events" and "OK". A device event trigger configuration dialog window appears.

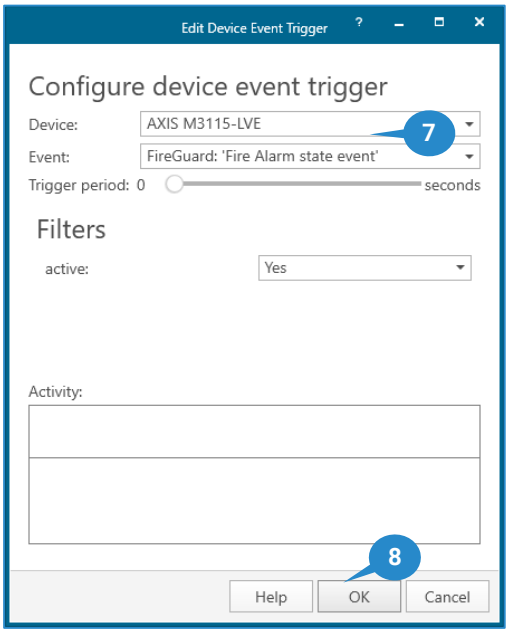


5. In the device dropdown, select the camera for which you want to enable the alarm.
6. In the Event dropdown, select the event for which you want an alarm notification. Following events are available:
    a. Fire Alarm state event
    b. Fault Signal state event
    c. Operational Signal state event
    d. Recalibrating state event
    e. Stopped state event

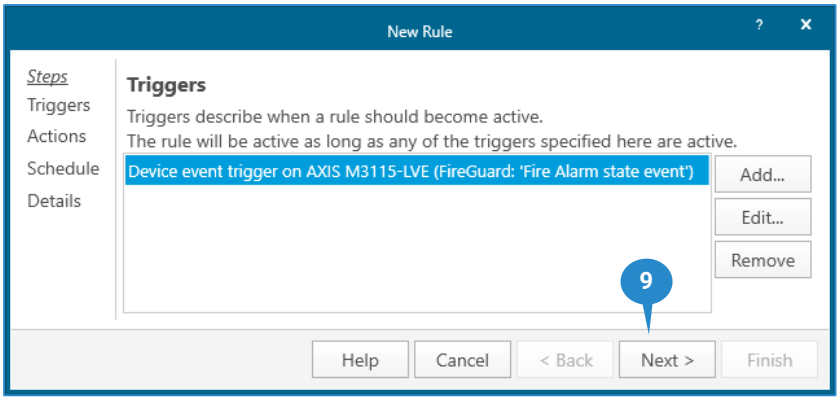
Refer to View Araani Fire Guard status for the meaning of these events.



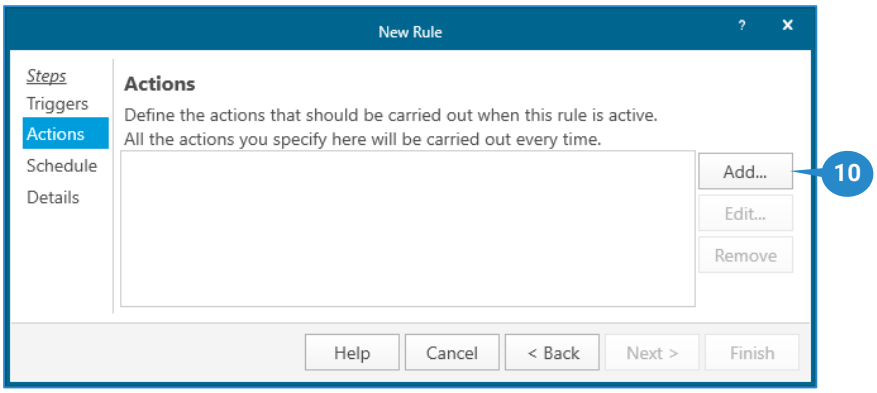
7. Make sure you select "YES" under "Filters", next to active. This will make sure only one alarm notification is generated at the beginning of the Araani Fire Guard event.



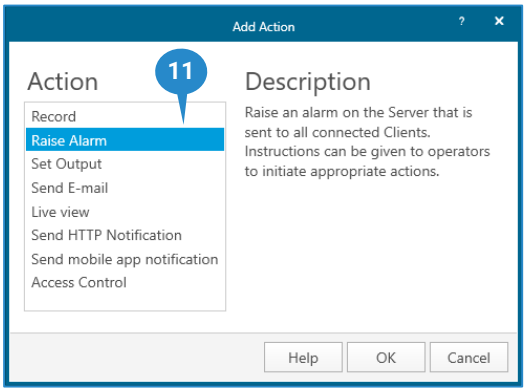
8. Select "OK" to save.

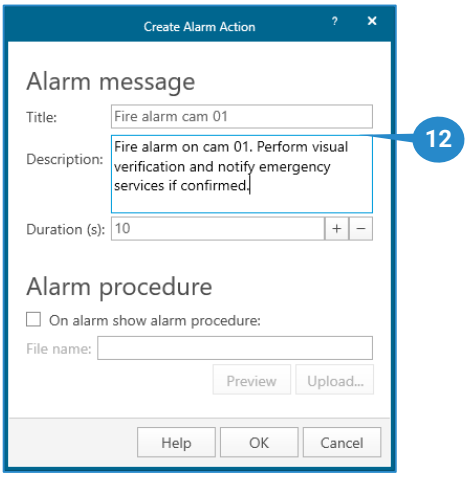


9. Select "Next" to proceed to the action configuration step.
10. In the Actions dialog window, select "Add" to configure the required alarm notification. A new popup window appears to select the type of action.

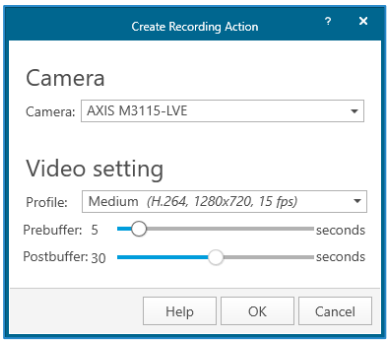


11. Select "Raise Alarm". A new popup window appears to configure the alarm notification.



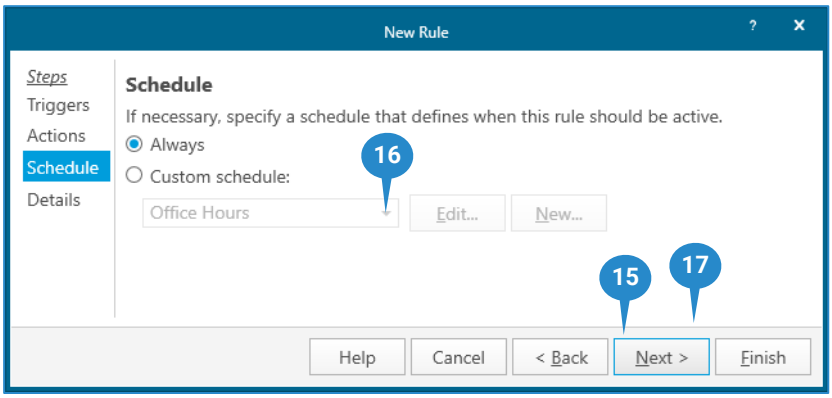


12. Enter a meaningful title and description as needed. This information will appear in the alarm list of the ACS client interface when the event occurs.
13. Select "OK" to save.
14. Other actions may be added e.g. to create a recording when the event occurs.

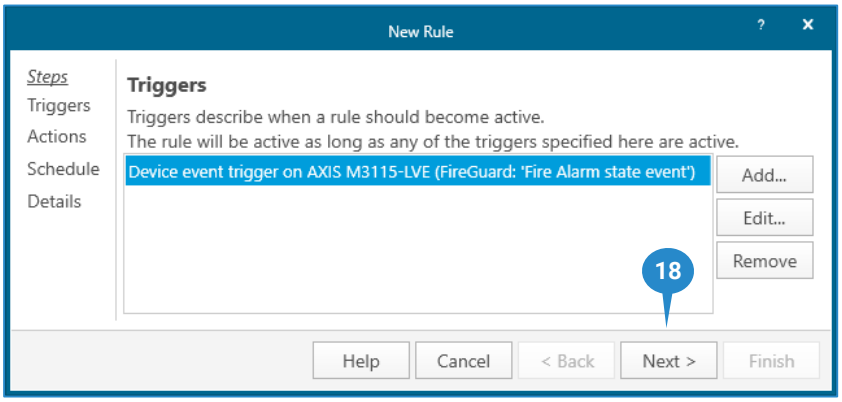


15. Select "Next" to proceed to the scheduling step.

16. A schedule can be entered if the alarm notification is needed only during certain hours. E.g. during hours when no operator is not present, you may prefer a different action.

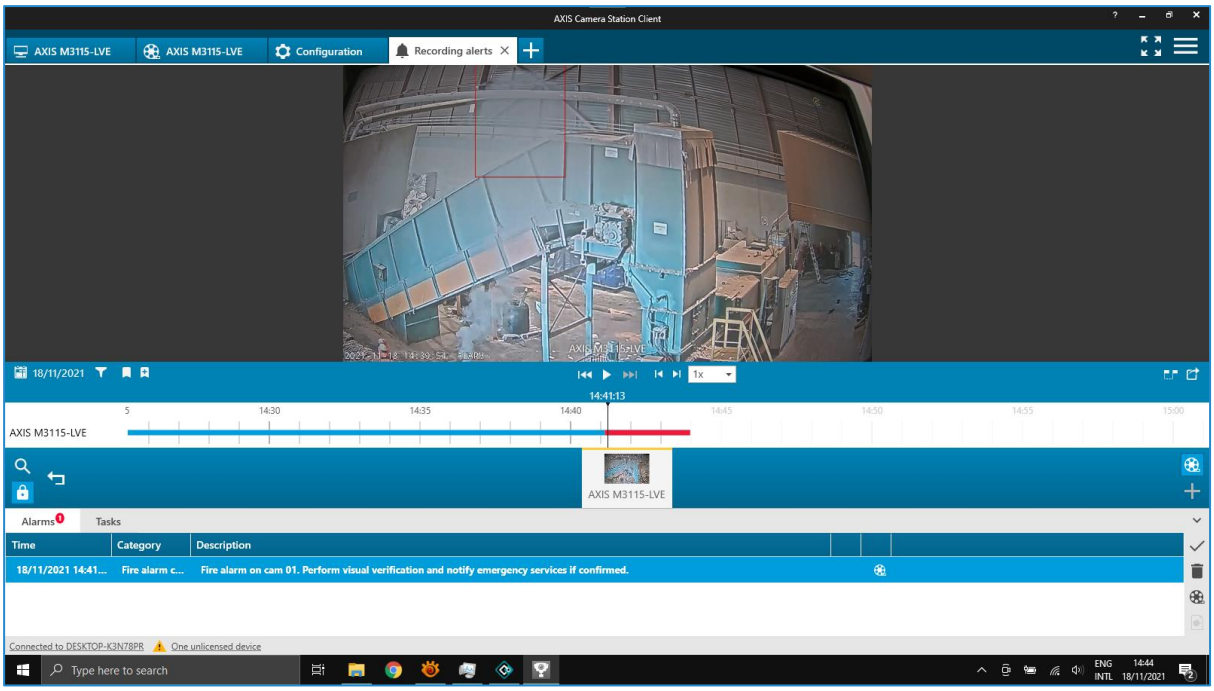


17. Select "Next" to proceed to the next step.



18. An overview of the configured event and associated actions appears. Select Finish to save this rule.
19. The complete rule now appears in the Action rule overview.
20. Repeat steps 3 - 18 for each event that you want to be notified of in the VMS client. In most cases, the "Fire Alarm state event' will be the only alarm that your VMS operators need to know about. Sometimes, it can also be useful to know about the fault signal.
21. Repeat steps 3 - 20 for each camera with Araani Fire Guard installed.

When the action rule is defined for a camera device, alarms will appear in the ACS client interface as illustrated below. Clicking the alarm will open the recording if configured as such.



Other VMS systems

Araani Fire Guard supports the UltraView Security Center from Carrier through the use of a custom bridge software that translates Araani protocol event communication towards the VMS protocol.

Other VMS software can potentially be integrated through custom solutions, using the Araani protocol.

The Araani protocol capability is a license-based option to Araani Fire Guard.

For any of these cases, contact your supplier for more information.

Addendum: Araani Application EULA

This End User License Agreement ("**EULA**") between you, the End User (as defined below), and Araani NV, a registered company with company number 0505.774.826 and registered office at Luipaardstraat 12; 8500 Kortrijk in Belgium ("**Araani**"), sets forth the terms and conditions under which Araani shall provide the End User with a license to the Application (as defined below), as well as the manner in which the End User should (not) use the Application.

Please note that this EULA may be updated from time to time. The latest version shall always be available on Araani's Website and on the Application. Araani shall send the End User a notification in the Application when an update of the EULA is available. The new version enters into effect when the End-User receives the notification.

1. DEFINITIONS

Application	Araani Fire Guard, including any updates, upgrades, enhancements, modifications or new versions made available by Araani to (the) End User(s).
Application Documentation	All written materials, binders, user manuals and other documentation/materials supplied by Araani and related to use of the Application.
Araani Fire Guard	Araani's non-certified Araani Fire Guard, which is an intelligent video surveillance solution, intended to be integrated in a hardware device, that will trigger an alarm if fire (smoke or flame) is recognized. Araani Fire Guard can never replace a mandatory fire detector.
EULA	This End User License Agreement which includes **(i)** the conditions under which the End User shall obtain a license to the Application; and **(ii)** the manner in which said license/Application should or should not be used by the End User.
End User	The person or legal entity that installs and uses the Application, including its employees or any authorized person acting on its behalf.
External Services	Third party software or hardware to which the Application may have access or with which it may communicate.
Intellectual Property Rights	Any and all of Araani's rights to patents, design, utility models, trademarks, trade names, know-how, trade secrets, copyrights, photography rights and other industrial and intellectual property rights relating to the Application, whether registered or not.
License Fee	Amounts due by the End User for obtaining and using a license to the Application.
Privacy Legislation	**(i)** the General Data Protection Regulation of 27 April 2016 ("the Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC"), including all future changes and amendments thereof; and/or **(ii)** all similar national data protection laws that are applicable to the processing of personal data within the scope of this EULA.
Supplier(s)	Araani authorized vendor(s) of the Application or of a hardware device equipped with the Application.
Trial license	The temporary installation and use of the Application in order to evaluate the performance, quality and suitability of the Application.
Website	Araani's official website: https://www.araani.com.

2. SCOPE OF LICENSE

2.1 Standard license to Application

2.1.1 Subject to approval to and compliance with this EULA, Araani grants, for the duration of this EULA (*cfr.* **Article 3**), the End User a limited, personal, non-commercial and non-transferable license to **(i)** use the Application and/or **(ii)**, install this Application on a hardware device that it owns or controls (where applicable).

2.1.2 The number of allowed installations and uses depends on the type of license:

- ✓ A **single instance license** allows the End User to use and/or install the Application on one (1) hardware device.
- ✓ A **bulk license** allows the End User to use/and or install the Application on the number of hardware devices as described in the order.

2.1.3 The terms of this EULA shall govern the Application as well as any standard upgrades, updates, enhancements or other modifications to the Application provided by Araani, unless such upgrade, update, enhancement or other modification is accompanied by a new or customized End User License Agreement.

2.2 Trial license

2.2.1 Trial licenses are available to the End User for the Application with a limited activation period. Continued use of the Application beyond said activation period requires the purchase of a standard license to the Application.

2.2.2 The terms described in this EULA apply both to standard and to Trial licenses.

2.2.3 By installing the Application with Trial license, the End User automatically acknowledges the Intellectual Property Rights of Araani (*cfr.* **Article 6**).

2.3 Non-transferable

2.3.1 The End User acknowledges that both the standard license (*cfr*. **Article 2.1**) and the Trial license (*cfr.* **Article 2.2**) are non-transferrable. This means that the End User may not / cannot:

- ✓ transfer such licenses to any third parties, including its affiliates. Accordingly, any third party / parties requiring the Application must request their own copy of the license;
- ✓ move licenses to other hardware devices. An activated license is linked to the unique serial number of a specific hardware device and therefore cannot be installed again on other pieces of (a) hardware device(s). Such action requires the purchase of a new license or is subject to a service contract, e.g. in case of hardware failure (provided that this hardware is (still) covered by the warranty);
- ✓ distribute or make the Application available over a network where it could be accessed or downloaded by third parties.

3. DURATION

3.1 This EULA applies for the duration of the use of the Application by the End User, unless terminated in accordance with **Article 9**, and takes effect from the moment that the Application is used on the intended hardware device.

4. CONDITIONS OF USE

4.1 Acceptable use of the Application

4.1.1 The End User hereby agrees to use the Application in accordance with certain restrictions and conditions. In particular, the End User shall not use the Application in a manner that Araani believes:

- ✓ copies (part of) the Application in any way shape or form (except as permitted by this EULA);

- ✓ reverse-engineers, disassembles or otherwise attempts to derive the source code of the Application;
- ✓ modifies, alters, tempers with, or otherwise creates derivative works of the Application;
- ✓ transfers the license to the Application to a third party in violation with **Article 2.3** of this EULA;
- ✓ violates Privacy Legislation;
- ✓ violates or otherwise encroaches on the rights of Araani or others, including, but not limited to, infringing or misappropriating any privacy, human, intellectual property, proprietary right;
- ✓ advocates or induces illegal activity;
- ✓ interferes with or adversely affects the Application or use of the Application by other End Users;
- ✓ is in general to be considered abnormal use of the Application.

4.1.2 The End User commits itself to:

- ✓ apply all reasonable techniques, practices and/or technology (e.g. use of strong passwords that are regularly changed) to prevent unauthorized use of the Application by a third party;
- ✓ always use the latest, updated version of the Application as (and if) made available by Araani (*cfr*. **Article 7.1**);
- ✓ notify any malfunction or disruption (due to, for example, bugs or malicious code) of the Application to the Supplier of which the End User bought the license).

4.2 Legal disclaimer

4.2.1 The End User recognizes that it is aware that fire safety is subject to strict standards and regulations. Accordingly, the End User acknowledges that the Application may never replace a mandatory fire detector. A solution or hardware device equipped with the Application is also not intended to be linked with a fire alarm control panel. For such function, Araani refers to its certified solutions. Fire indications by the Application should only be raised after human verification.

4.2.2 The Application should in all cases be used by the End User only for the purpose for which it is intended, taking into account the specifications indicated above.

4.2.3 In no event can Araani or its affiliates be held accountable for any – direct or indirect – damages for loss or damage of property, death or personal injury to any person caused by (the non-detection of) fires, or related occurrence.

5. DATA PROTECTION

5.1 In principle, access to / the use of the Application by the End User does not automatically result in the processing by Araani of personal data. However, Araani may receive and process the personal data of an End User in the event it is requested by a Supplier to provide second line support;

5.2 In such case, Araani shall process such personal data of the End User in accordance with Privacy Legislation and with the Araani privacy policy as published on the Website: https://www.araani.com/en/standalone-pages/privacy-policy/.

6. INTELLECTUAL PROPERTY RIGHTS

6.1 The End User acknowledges that Araani is and remains the sole owner of all Intellectual Property Rights related to the Application, developed by Araani itself (or by a third party for the benefit of Araani). Nothing in this EULA shall be construed as to limit Araani's right, title and interest in the Application.

6.2 Araani warrants that the Application does not infringe upon the intellectual property rights of any third parties. If a third party (successfully) claims that the Application infringes upon its intellectual property rights, Araani shall obtain the right to use the third-party software or will amend or replace it so as to allow the End User to lawfully use it.

7. WARRANTY

7.1 Compatibility

7.1.1 Araani warrants for one (1) year that the Application shall run on compatible hardware devices and that the Application shall perform substantially as described in the Application Documentation.

7.2 Software maintenance and updates

7.2.1 During the first year of the license, Araani shall (proactively) take all commercially and technically reasonable measures to ensure that the Application is error/defect-free and free of malicious code. To that effect, Araani shall to its best abilities make sure that the Application is regularly updated and shall perform software maintenances if required. Beyond said first year, Araani shall only be required to proactively update the Application to fix severe bugs or other malicious code that make it impossible or seriously prevent the use of the Application (in general or by a specific End User).

7.2.2 The End User acknowledges that the aforementioned is subject to its own efforts to:

- ✓ notify any bugs of or other errors in the Application to the Supplier; and
- ✓ use, at all times, the latest (updated) version(s) of the Applications, if made available to the End User.

7.3 Exemptions

7.3.1 Araani shall not warrant:

- ✓ that the Application shall work on every hardware device and on future versions and upgrades of such hardware device, given the ever evolving and changing nature of technology;
- ✓ that all defects in the Application shall be corrected;
- ✓ the compensation for damage caused by an alteration or a modification made by the End User or another non-authorized person, or the correction or reparation of any malfunction caused by such alteration/modification;
- ✓ the correction or reparation of a malfunction caused by (non-limited) **(i)** the improper use or installation of the Application in violation with **Article 4.1.1**; (ii) negligence of the End User or any other breach of its commitments under **Article 4.1.2**; or **(iii)** a power surge or failure at the End User's location.

7.3.2 Araani is not responsible for examining or maintaining the compliance of external hardware devices, in which the Application is installed and shall not warrant the compensation of any

damage or the correction of any malfunction of the Application caused by such external hardware device.

7.3.3 If national law applicable to the use of the Application provide that certain warranties cannot be excluded or can only be excluded to a limited extent, this EULA shall be interpreted in accordance with such national law provisions.

8. LIMITATION OF LIABILITY

8.1 Araani's liability

8.1.1 Araani's total liability to the End User for all claims relating to this EULA or the use of the Application shall not exceed the License Fee.

8.2 Exemption for indirect damages

8.2.1 Araani shall not be liable for any incidental, special, indirect, or consequential damages whatsoever, such as, but not limited to: damages for loss of property, loss of profits, loss of revenue, loss of data, business interruption, reputational damage, (legal) advisory fees, etc.

8.3 Misuse of the Application

8.3.1 The End User recognizes that the Application cannot be considered as a (substitute for a) smoke detector. Accordingly, Araani cannot be held liable by any person for any damages for loss or damage of property, death or personal injury to any person caused by (the non-detection of) fire or related occurrence.

8.4 Wilful misconduct, gross negligence, personal injury or death

8.4.1 The limitations of liability set forth in this **Article 8** shall not apply to damages caused by wilful misconduct or gross negligence, personal injury or death attributable to Araani or the Application.

9. TERMINATION

9.1 Breach of any of the terms of this EULA by the End User shall result in the immediate revocation of the standard or Trial license. In such case, the End User shall not be entitled to a refund of the License Fee.

9.2 Upon termination (for whatsoever reason), the End User is obliged to destroy all copies of the Application and associated license files, including backup or archival copies on external storage, and uninstall the Application from all hardware devices it owns or controls.

10. EXTERNAL SERVICES

10.1 The End User agrees to use External Services at its sole risk. Araani is not responsible for examining or evaluating the content or accuracy of any External Services, and shall not be liable for any such External Services.

10.2 The End User shall not use the External Services in any manner that is inconsistent with the terms of this EULA or that infringes the Intellectual Property Rights of Araani or any third party.

10.3 External Services may not be available in the End User's languages and may not be appropriate or available for use in any particular location. To the extent the End User chooses to use such External Services, it is solely responsible for compliance with any applicable laws.

10.4 Araani reserves the right to change, suspend, remove, disable or impose access restrictions or limits on any External Services at any time, in which case it shall reasonably notify the End User thereof.

11. MISCELLANEOUS

11.1 End User acknowledges that it has fully read and understood all terms within this EULA.

11.2 This EULA supersedes any other agreement (oral or written) between Araani and the End User with the same scope. The aforementioned does not apply to customized End User License Agreement between the End User and Araani.

11.3 No deviation from this EULA shall be accepted, without prior consent of Araani.

12. GOVERNING LAW AND DISPUTE RESOLUTION

12.1 This EULA and all relations, disputes, claims and other matters arising hereunder (including non-contractual disputes or claims) shall be governed exclusively by, and construed exclusively in accordance with, the laws of Belgium, without regard to conflicts of law provisions.

12.2 The competent courts located in Kortrijk, Belgium shall have exclusive jurisdiction to adjudicate any dispute or claim arising out of or relating to this EULA (including non-contractual disputes or claims).