

Integrating Araani Video Fire Recognition (VFR) with Video Management Systems (VMS)

USER MANUAL

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

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About this manual

This manual describes the integration of Araani Video Fire Recognition (VFR) products with common Video Management Systems (VMS).

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

 **Attention:** Please refer to the product-specific manuals for any information that is related to the installation, configuration or use of the various Video Fire Recognition applications.

Product overview

Product description

Video Fire Recognition is a smart camera application with video fire detection functionality. It will trigger an alarm if it recognizes smoke and/or flames.

Video Fire Recognition products can be connected via the LAN to a Video Management System for visual monitoring and alarm processing.

This manual is valid for following Araani Video Fire Recognition products:

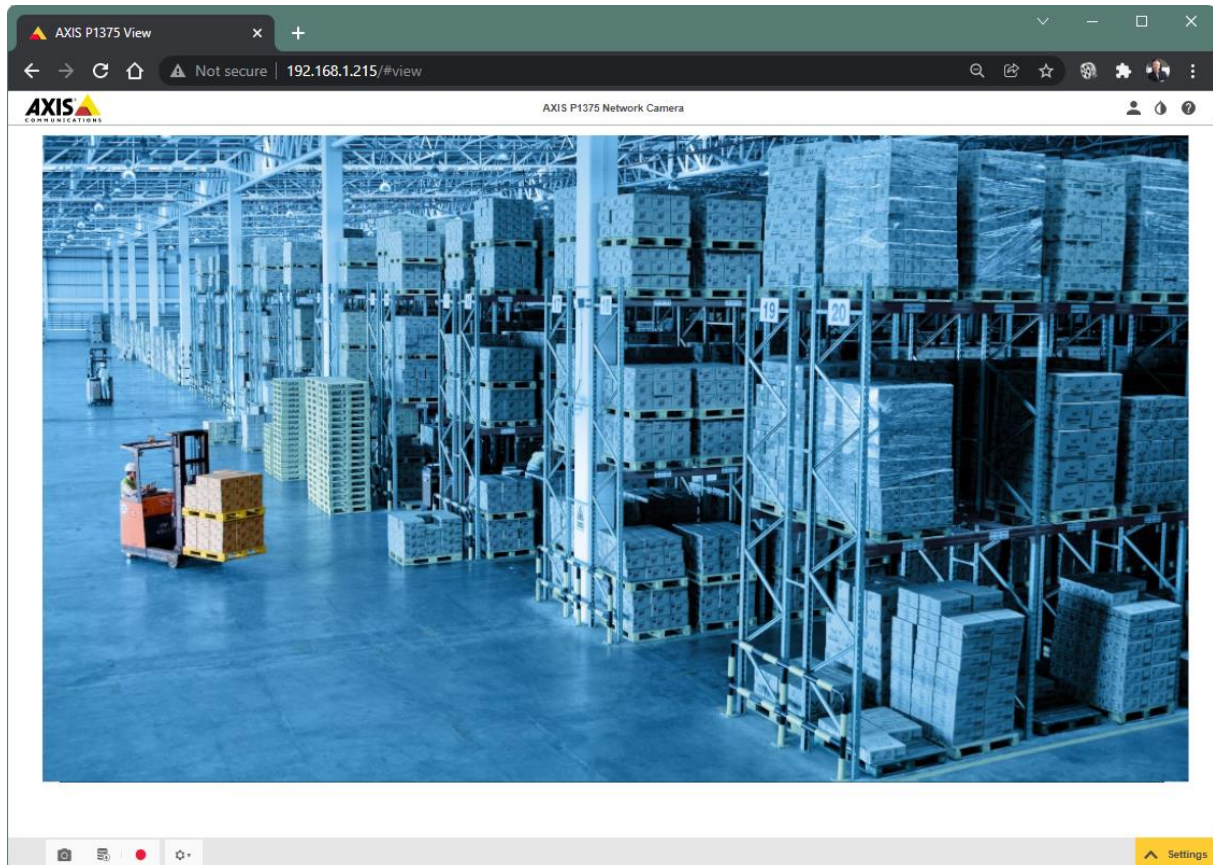
- FireCatcher software
- FireCatcher Camera

Using video streaming

Viewing the camera stream

The image of any Axis camera can be visualized in standard browser software by entering the IP address in the site address bar.

Clicking the 'Play' button in the video window will show live video from the camera.



Alternatively, the video can be accessed in any compatible video player, using the proper rtsp link with username and password:

```
rtsp://[username]:[password]@[ip_address]/axis-media/media.amp
```

where:

- *username, password* = credentials for a user account with at least viewer rights.
- *ip_address* = IP address of the camera

Video streaming limitations

In setting up your system, pay attention to the fact that total streaming video capacity of the camera is 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:

$$P_{\text{stream}} = \text{horizontal resolution (pixels)} \times \text{vertical resolution (pixels)} \times \text{frame rate (fps = frames per second)} / 1.000.000$$

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.

$$P_{\text{CPU}} = \sum \text{unique } P_{\text{stream}}$$

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 detection 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 and report a fault.

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 properly on such combination.

⚠ Notice: For performance reasons, do not exceed streaming limits of the processor!

Araani Video Fire Recognition products will automatically try to re-establish a video stream connection when it is lost. Araani Video Fire Recognition will generate FAULT status when the video stream is lost, and reconnection fails a number of times.

Integration of Video Fire Recognition with VMS systems

Araani Video Fire Recognition products can be easily integrated with many video management systems (VMS), allowing to view streaming video and alarm notifications in 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 Video Fire Recognition overlay function as described in the product user manual. This overlay will be embedded in the streaming video and as such visible in the VMS client software.

To make integration of alarms possible, Video Fire Recognition 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.

! 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 Video Fire Recognition analytics. For instructions on how to accomplish this, please refer to the VMS documentation.

Integration with Milestone XProtect

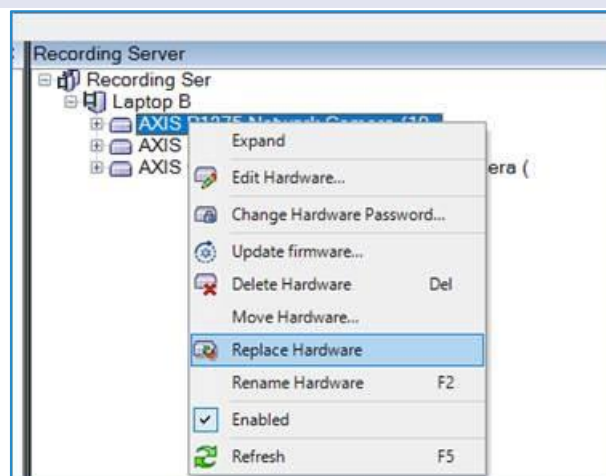
Araani Video Fire Recognition products are compatible with Milestone Xprotect Express+, Professional+, Expert and Corporate.

Enabling alarm notifications from Araani Video Fire Recognition products involves 2 steps:

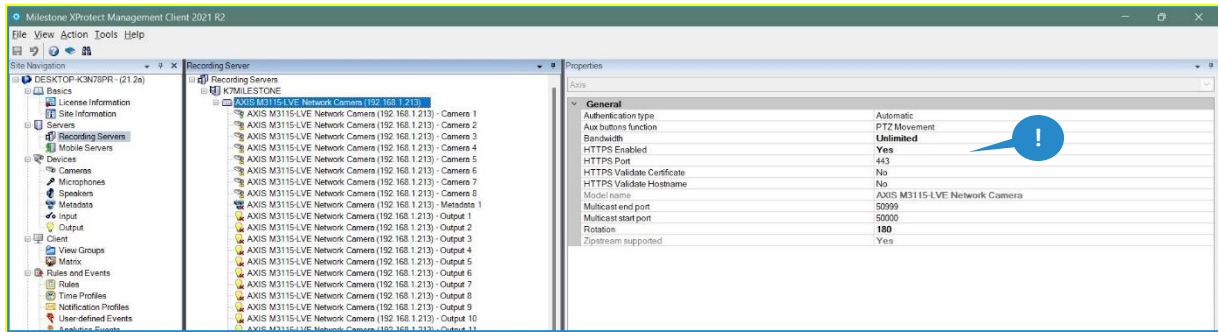
- Enable the device events in the device configuration on the recording server.
- Define the alarms, associated with these events.

! Attention: When the Video Fire Recognition application 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.

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



! Attention: Some Video Fire Recognition products use secure https only for communications. In such case, https needs to be enabled on camera level in the Milestone XProtect Management Client. This is done on camera level in the general settings.



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

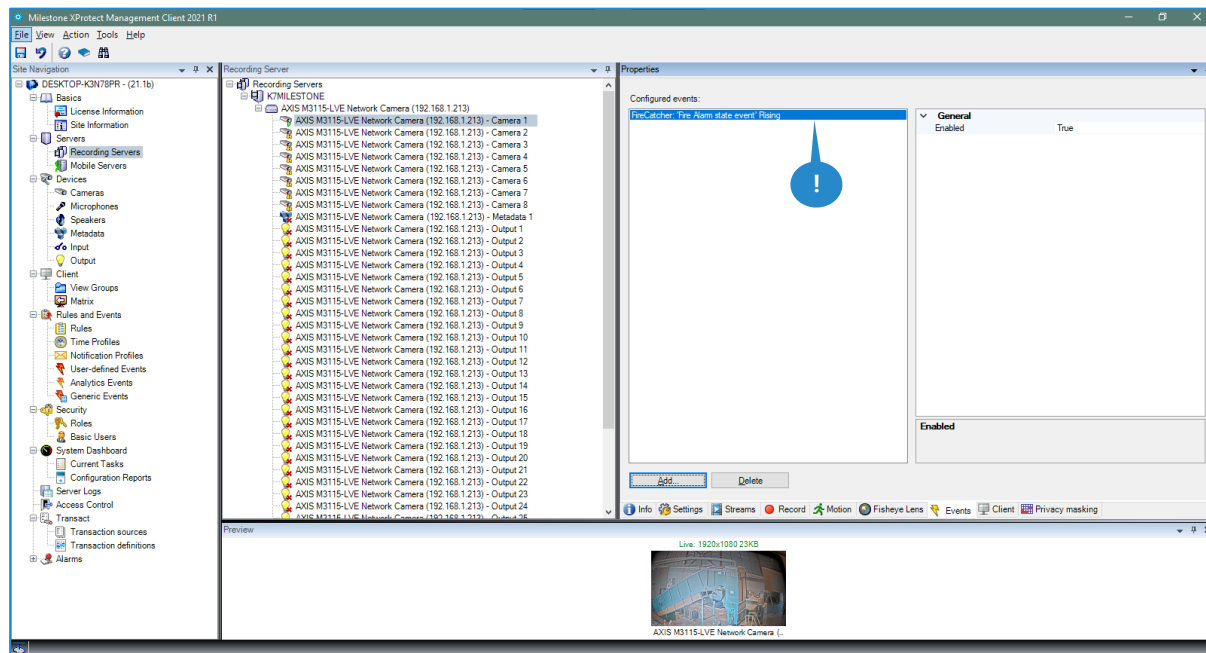
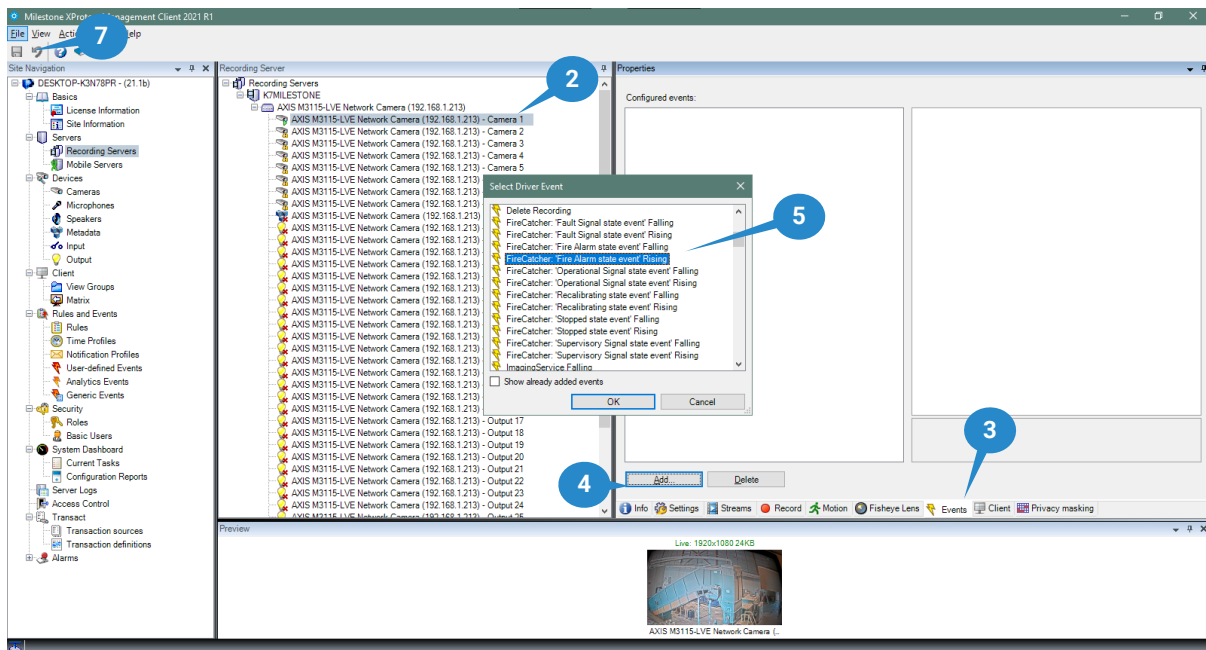
1. Open Milestone XProtect Management Client.
2. Find the camera under the corresponding recording server on which Video Fire Recognition is running and for which you want to enable Video Fire Recognition alarm notifications.
3. Click the Events tab.
4. Click "Add..."; a popup box "Select Driver Event" 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.

Depending on your type of Video Fire Recognition exact, following events may be available:

- a. Fire Alarm state event
- b. Fault Signal state event
- c. Operational Signal state event
- d. Recalibrating state event
- e. Stopped state event
- f. Supervisory signal state event
- g. Low visibility warning

Refer to the product user manual 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 clicking the save icon or confirm saving when asked.
8. Repeat steps 2-7 for each camera with Video Fire Recognition application installed.



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

1. Open Milestone XProtect Management Client.
2. Click "Alarm Definitions".
3. Right-click on the Alarm Definitions field and click "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/vfr_application_name/eventname-x`"

where:

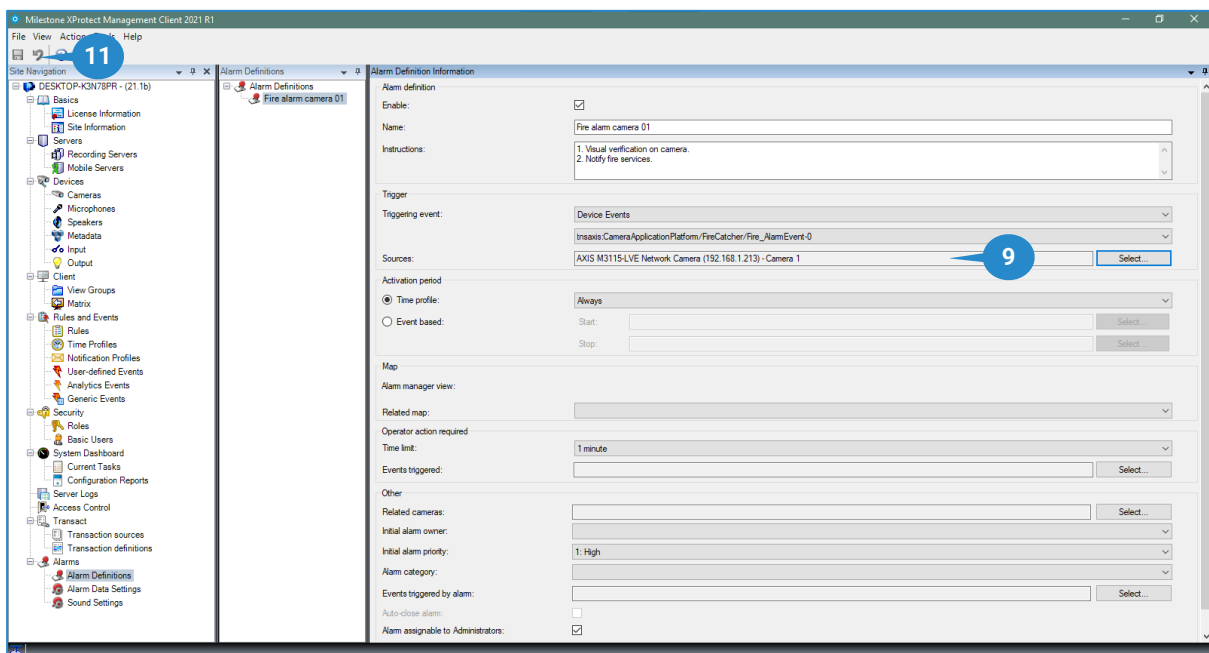
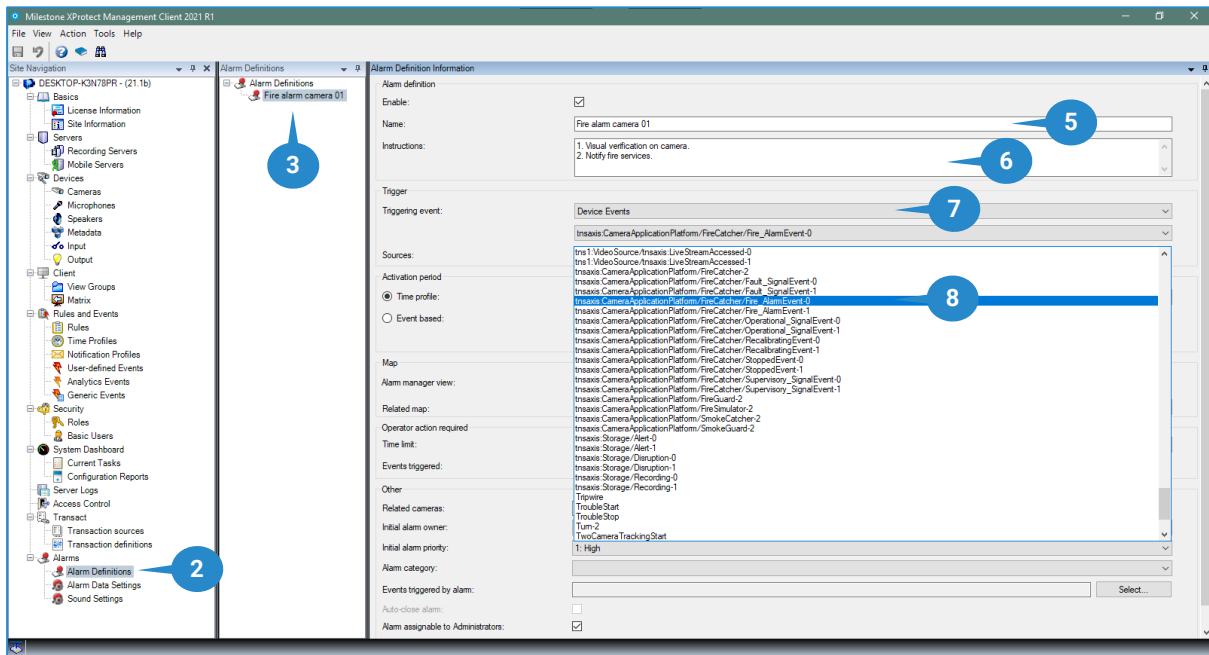
`vfr_application_name` is the name of the Araani Video Fire Recognition product

eventname is similar to the event list as seen at the device event configuration
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 on a FireCatcher Camera, select

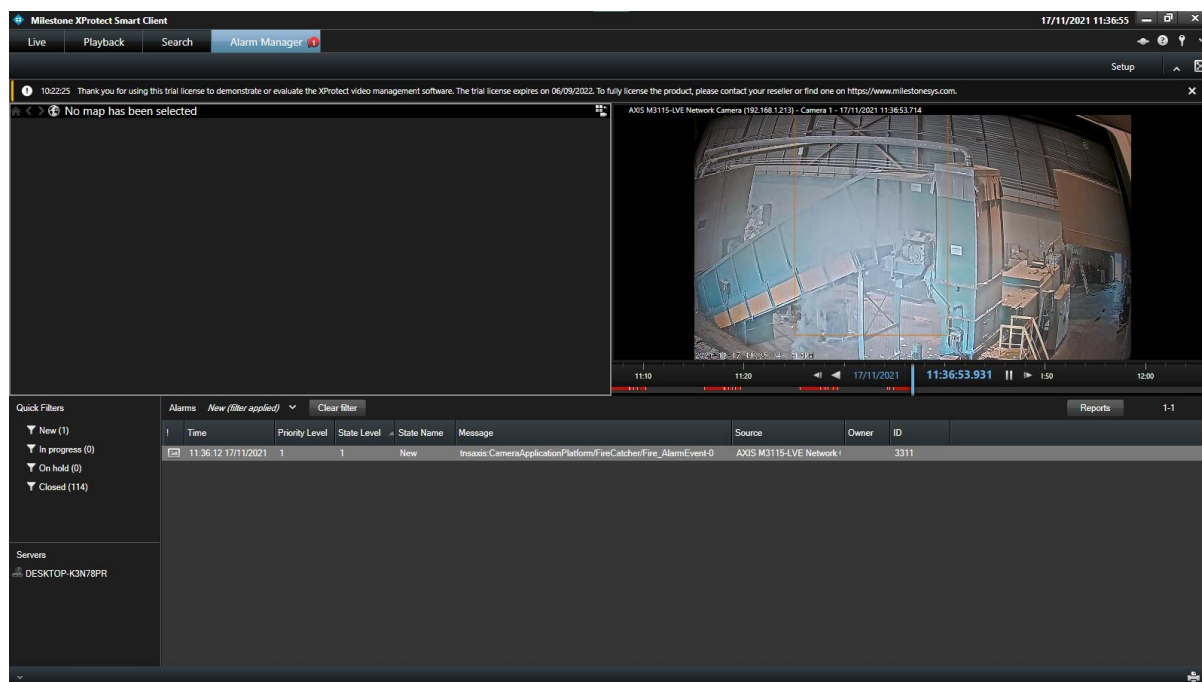
"insaxis:CameraApplicationPlatform/FireCatcher/Fire_AlarmEvent-0"

9. In the source field, click on 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 clicking the save icon 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 Video Fire Recognition products are compatible with Genetec Security Center.

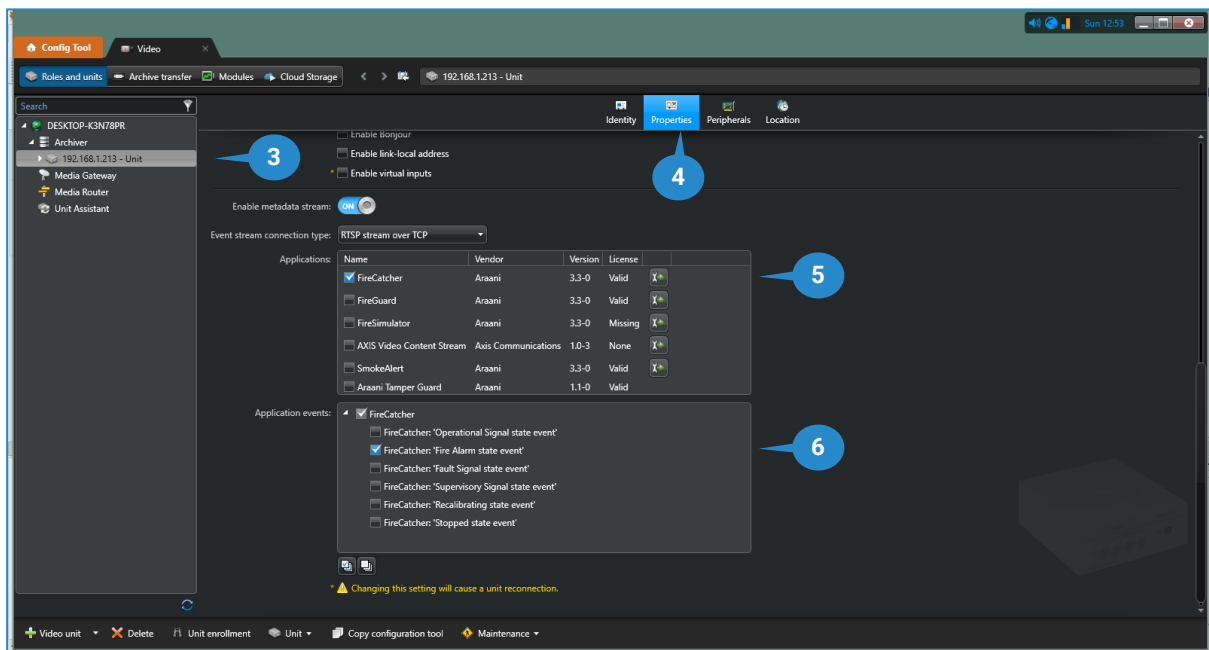
! Attention: Some Video Fire Recognition products use secure https only for communications. In such case, https needs to be enabled on camera level in the Genetec Security Center.

Enabling alarm notifications from Araani Video Fire Recognition products 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 Video Fire Recognition events, follow these steps:

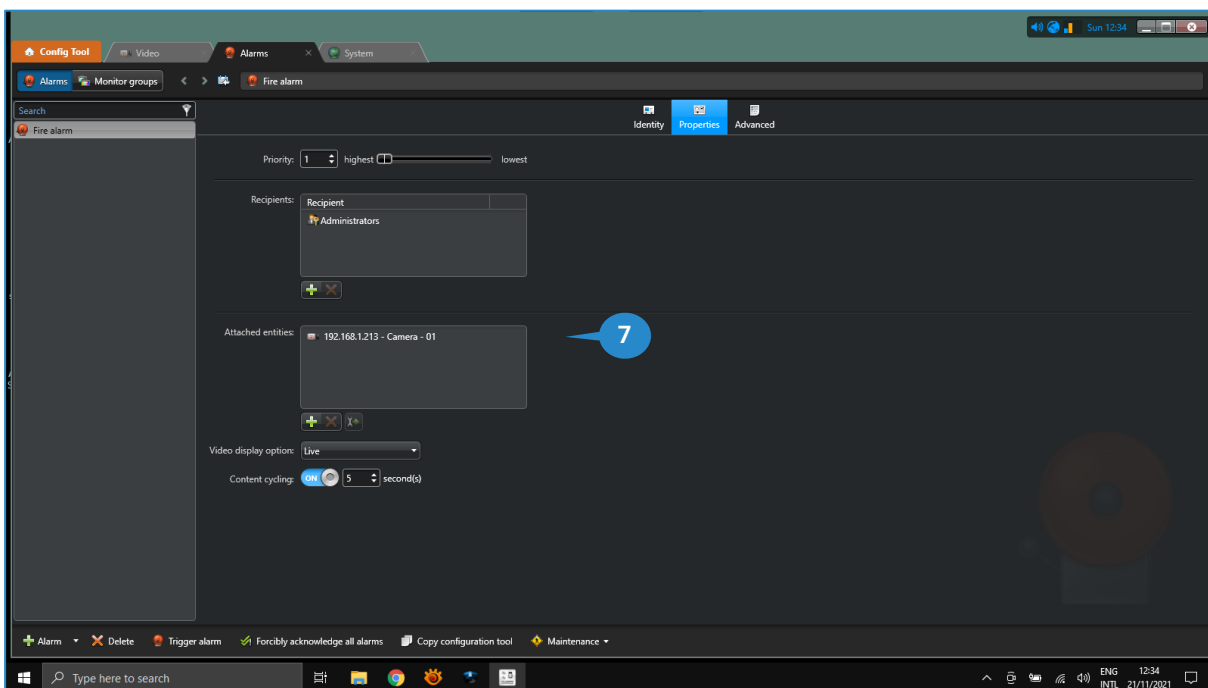
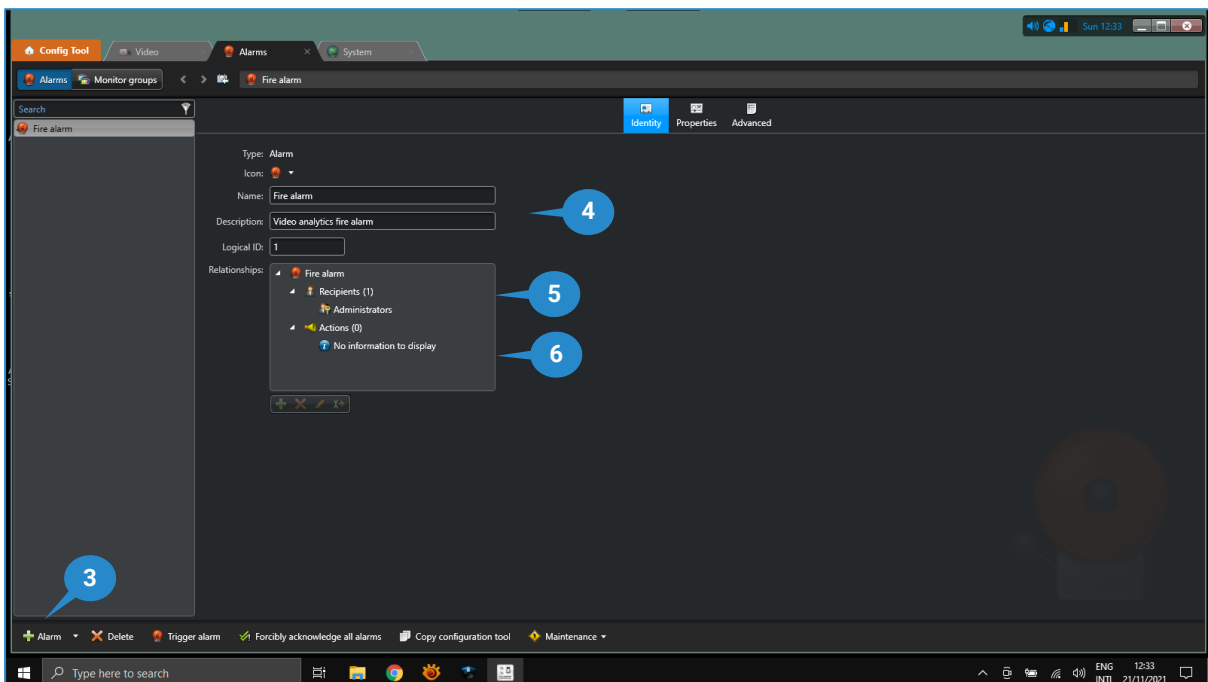
1. Open the Genetec Config Tool.
2. Open the "Video" configuration task.
3. Click on the camera unit for which you want to enable the Video Fire Recognition alarms. Select the unit level, not the lower stream level.
4. Choose "properties".
5. Under "Applications", enable the Video Fire Recognition entry. Click "Apply".
6. Under Application events for Video Fire Recognition, 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.

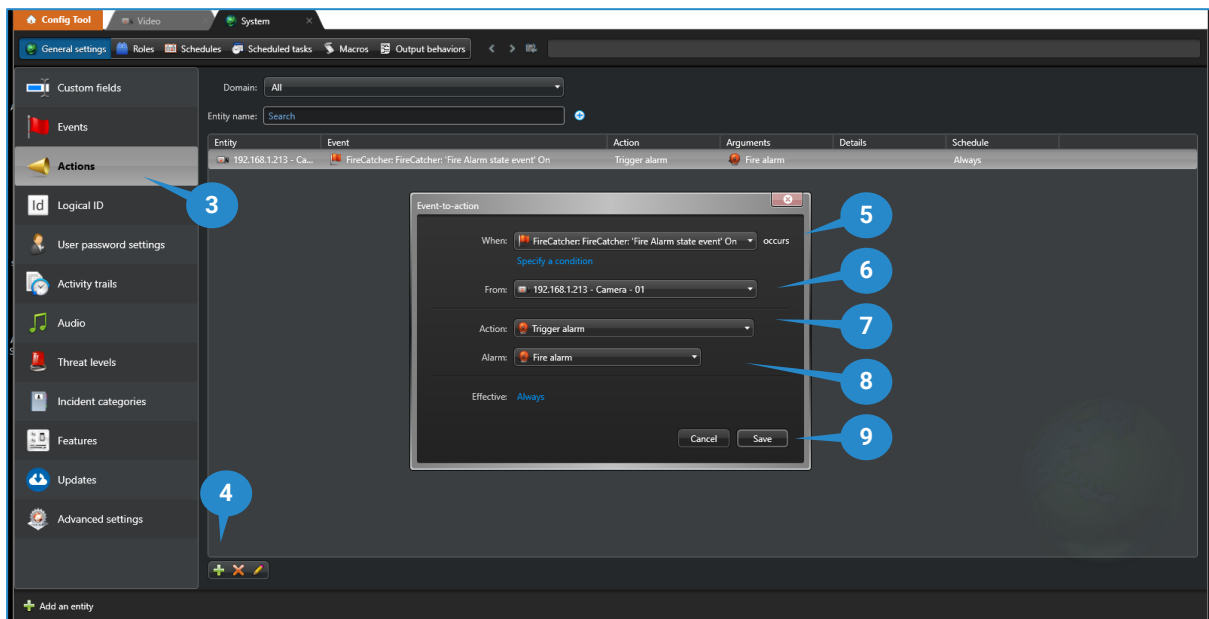
7. In the 'Properties' tab, add the cameras for which you want to raise the alarm under 'Recipients'.



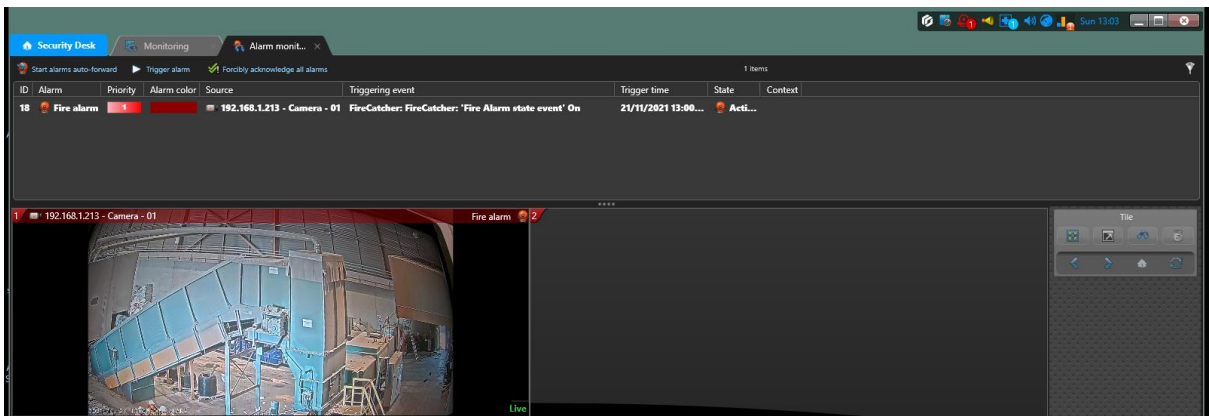
Finally, create a rule to trigger the alarm when a Video Fire Recognition event occurs by following these steps:

1. Open the Genetec Config Tool.
2. Open the "General Settings" task under "System".
3. Click "Actions".
4. Add a new action by clicking the "+" button.
5. In the "When:" dropdown, select the Video Fire Recognition event source for which you want the 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. Click "Save"



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

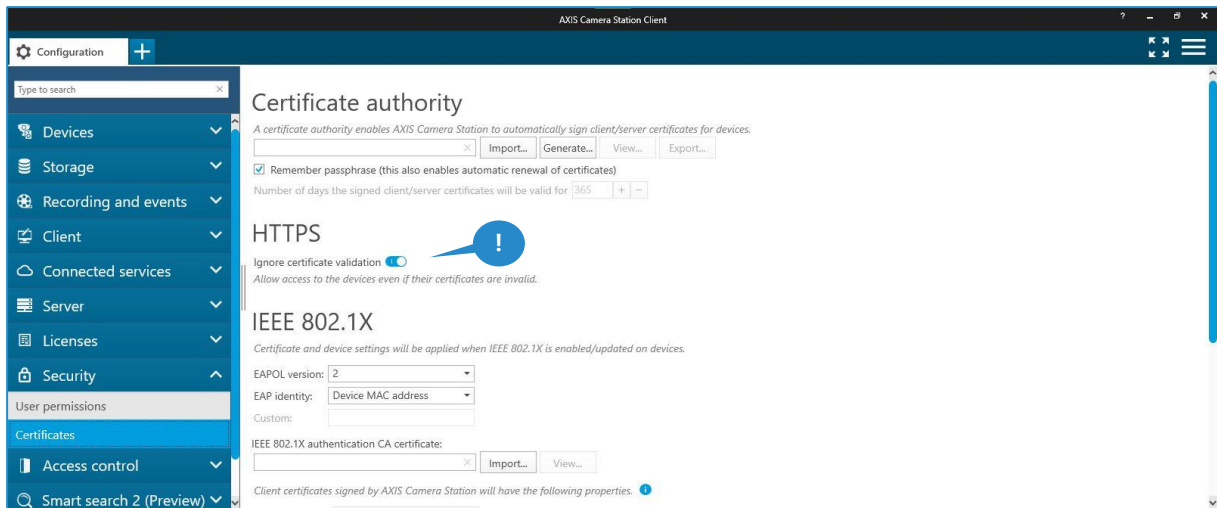


For more information on how to configure alarms and all the possible options, please refer to the Genetec Security Center documentation.

Integration with Axis Camera Station

Video Fire Recognition is compatible with Axis Camera Station (ACS).

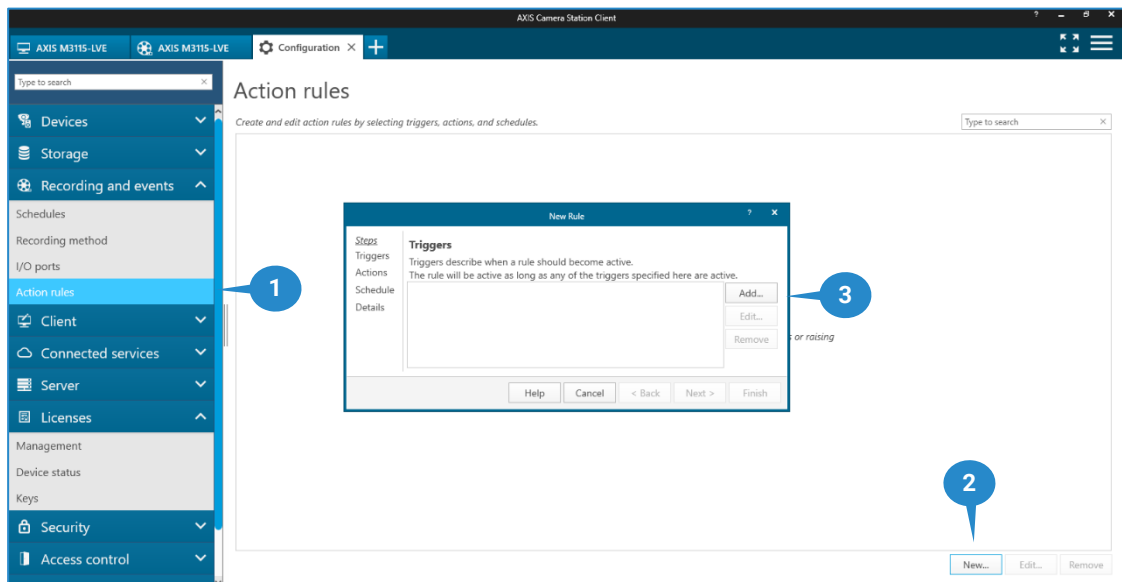
! Attention: Some Video Fire Recognition products use secure https only for communications. By default, Axis cameras use a self-signed certificate. In such case, https certificate validation needs to be disabled in Axis Camera Station. This can be found under security settings:



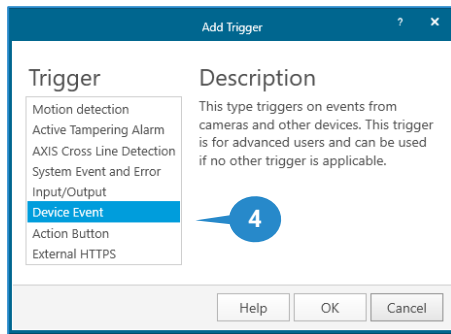
Enabling Video Fire Recognition alarm notifications is done by creating a new action rule for each event that you want to be notified off and for each camera that has Video Fire Recognition installed.

To enable Video Fire Recognition alarm notification, follow these steps:

1. In ACS Client, click "Action rules" under "Recording and events" on the "Configuration" tab.
2. Click "New". A popup window appears to configure a new rule.
3. In the "Triggers" dialog, click "Add". A new popup window appears to select the type of trigger.



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

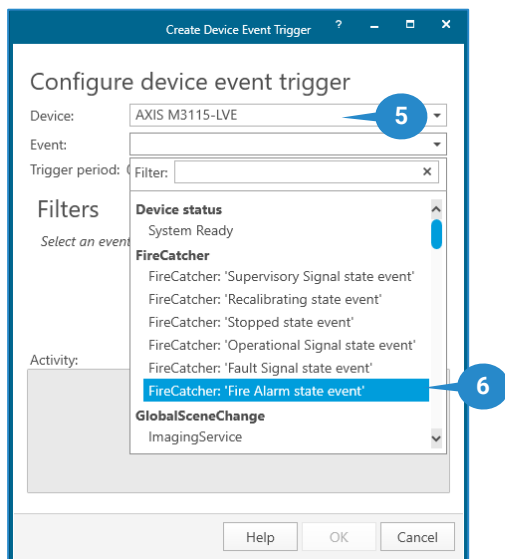


5. In the device dropdown, select the camera for which you want to enable the alarm.
6. In the Event dropdown, select the event for which you want an alarm notification.

Depending on your type of Video Fire Recognition exact, following events may be available:

- a. Fire Alarm state event
- b. Fault Signal state event
- c. Operational Signal state event
- d. Recalibrating state event
- e. Stopped state event
- f. Supervisory signal state event
- g. Low visibility warning

Refer to the Video Fire Recognition product manual for the meaning of these events.



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

8. Click "OK" to save.

Configure device event trigger

Device:

Event:

Trigger period: 0

Filters

active:

Activity:

9. Click "Next" to proceed to the action configuration step.

New Rule

Steps

Triggers

Actions

Schedule

Details

Triggers

Triggers describe when a rule should become active.

The rule will be active as long as any of the triggers specified here are active.

Device event trigger on AXIS M3115-LVE (FireCatcher: 'Fire Alarm state event')

10. In the Actions dialog window, click "Add" to configure the required alarm notification. A new popup window appears to select the type of action.

New Rule

Steps

Triggers

Actions

Define the actions that should be carried out when this rule is active.

All the actions you specify here will be carried out every time.

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

The first screenshot shows the 'Add Action' dialog. The 'Action' list on the left has 'Raise Alarm' highlighted. The 'Description' field contains the text: 'Raise an alarm on the Server that is sent to all connected Clients. Instructions can be given to operators to initiate appropriate actions.' The 'Help', 'OK', and 'Cancel' buttons are at the bottom.

The second screenshot shows the 'Create Alarm Action' dialog. The 'Alarm message' section has a 'Title' field with 'Fire alarm cam 01' and a 'Description' field with 'Fire alarm on cam 01. Perform visual verification and notify emergency services if confirmed.' The 'Duration (s)' is set to 10. The 'Alarm procedure' section has a checkbox 'On alarm show alarm procedure' which is unchecked, and a 'File name' field. 'Preview' and 'Upload...' buttons are next to the file name field. 'Help', 'OK', and 'Cancel' buttons are at the bottom.

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. Click "OK" to save.
14. Other actions may be added e.g. to create a recording when the event occurs.

The 'Create Recording Action' dialog shows the 'Camera' dropdown set to 'AXIS M3115-LVE'. Under 'Video setting', the 'Profile' is 'Medium (H.264, 1280x720, 15 fps)'. The 'Prebuffer' is set to 5 seconds and the 'Postbuffer' is set to 30 seconds. 'Help', 'OK', and 'Cancel' buttons are at the bottom.

15. Click "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.

The 'New Rule' dialog shows the 'Schedule' tab selected. The 'Schedule' section has a radio button for 'Always' selected and a radio button for 'Custom schedule:' which is unselected. Below the 'Custom schedule:' radio button is a dropdown menu showing 'Office Hours'. To the right of the dropdown are 'Edit...' and 'New...' buttons. At the bottom, there are 'Help', 'Cancel', '< Back', 'Next >', and 'Finish' buttons. The 'Next >' button is highlighted.

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

18. An overview of the configured event and associated actions appears. Click "Finish" to save this rule.

New Rule

Steps

- Triggers
- Actions
- Schedule
- Details**

Details

Entering a name and click 'Finish' to create the rule.

Name: Rule

Triggers: Device event trigger on AXIS M3115-LVE (FireCatcher: 'Fire Alarm state event')

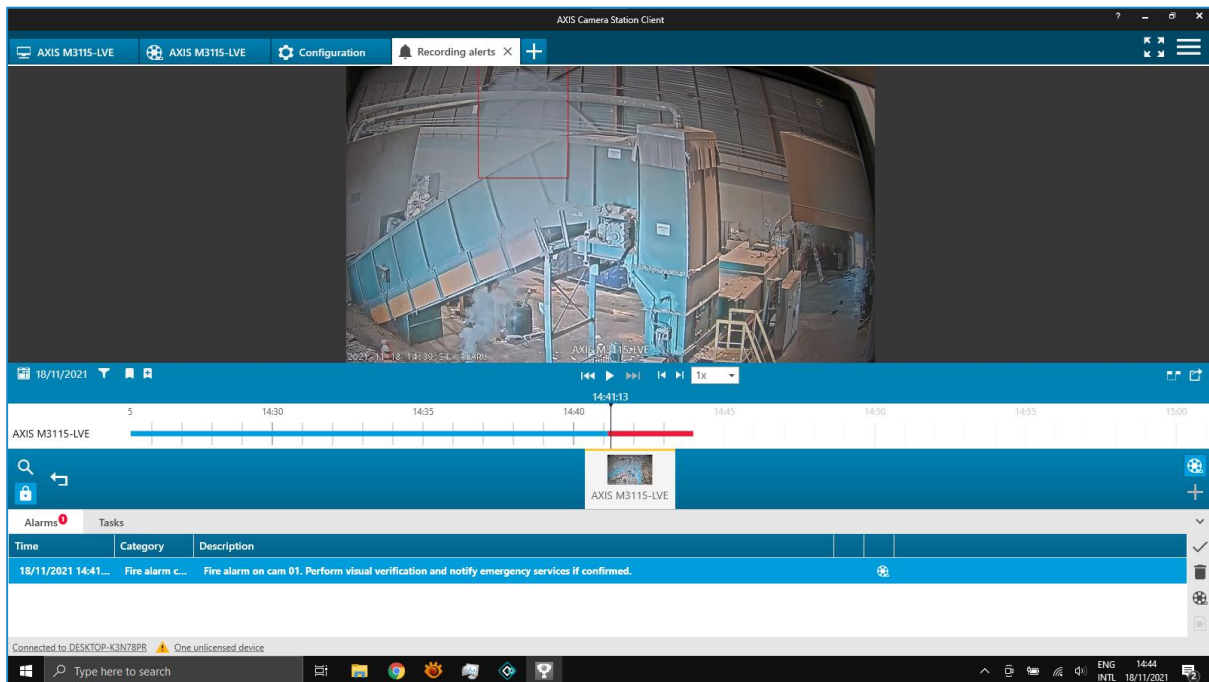
Schedule: Always on

Actions: Raise alarm 'Fire alarm on cam 01'
Record on 'AXIS M3115-LVE'

Help Cancel < Back Next > **Finish**

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 Video Fire Recognition 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

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

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

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