AXIS Optimizer

User Manual

AXIS Optimizer

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About AXIS Optimizer

AXIS Optimizer unlocks great user experiences and Axis features directly in Milestone XProtect or Siemens Siveillance Video. The application optimizes the performance of Axis devices in these video management systems which allows you to save both time and effort when configuring a system or during daily operation. The application is free of charge.

System requirements

AXIS Optimizer is fully supported on the following platforms:

- Milestone XProtect Express+
- Milestone XProtect Professional+
- Milestone XProtect Expert
- Milestone XProtect Corporate
- Milestone XProtect Essential+
- Siemens Siveillance Video Pro
- Siemens Siveillance Video Advanced
- Siemens Siveillance Video Core Plus
- Siemens Siveillance Video Core

We recommend to use the latest versions of Management Client and Smart Client. The latest version of AXIS Optimizer is always tested and compatible with the latest version of the VMS platform version. For more information, read the *Release notes on page 3*.

Note

When we refer to *Smart Client* in the help, we mean both Milestone XProtect Smart Client and Video Client in a Siemens system.

Compatibility

In the Compatibility information page you can verify which AXIS Optimizer features are supported by your VMS version.

In Management Client

1. Go to **Site Navigation > Basics > AXIS Optimizer**.
2. Click **Show compatibility info**.

In Smart Client

1. Go to **Settings > Axis general options**.
2. Click **Show compatibility info**.

Support for federated systems

AXIS Optimizer is fully supported in federated systems.

Support for interconnected systems

From version 4.3: Full support for interconnected system except for visitor management.

AXIS Optimizer

About AXIS Optimizer

Release notes

To see the latest release notes, go to *axis.com/ftp/pub_soft/cam_srv/optimizer_milestone/latest/relnote.txt*

Install or update AXIS Optimizer

Install or update AXIS Optimizer

Install AXIS Optimizer

Note

To update AXIS Optimizer, you must have administrator rights.

1. Make sure you have the correct client version of Milestone XProtect.
2. Log in to your MyAxis account.
3. From *axis.com/products/axis-optimizer-for-milestone-xprotect*, download AXIS Optimizer to each device that runs Management Client or Smart Client.
4. Run the downloaded file and follow the instructions in the wizard.

Which versions are installed in my system?

In **System overview** you can see which versions of AXIS Optimizer and AXIS Optimizer Body Worn Extension that are installed on different server and clients in your system.

Note

To view your system's clients or servers in System overview, they must have AXIS Optimizer version 3.7.17.0, AXIS Optimizer Body Worn Extension version 1.1.11.0 or later versions.

To view active servers and clients:

1. In Management Client, go to **Site Navigation > AXIS Optimizer > System overview**.

To upgrade a certain server or client:

1. Go to that specific server or client and upgrade it locally.

Silent installation

If you want to install AXIS Optimizer on several devices at the same time, which doesn't require any user interaction, you can do a silent installation.

1. Right-click the **Start** menu.
2. Click **Run**.
3. Browse to the downloaded installation file and click **Open**.

4. Add **/SILENT** or **/VERYSILENT** at the end of the path.
   - During silent installation, the wizard and the background window are not shown. However, the installation progress window is shown.
   - During very silent installation, neither the wizard and the background window nor the installation progress window are show.
5. Press **Enter**.

Update notifications

AXIS Optimizer regularly checks for new versions of itself and to notifies you when new there are new updates. If you've a network connection, you'll receive update notifications in Smart Client.

Note

To update AXIS Optimizer, you must have administrator rights.

To change which type of notifications you receive:

1. In Smart Client, go to **Settings > Axis general options > Notification preference**.
2. Select **All**, **Major** or **None**.

Manual update

You can manually update AXIS Optimizer from both Management Client and Smart Client.

Note

To update AXIS Optimizer, you must have administrator rights.

In Management Client

1. Go to **Site Navigation > Basics > AXIS Optimizer**.
2. Click **Update**.

In Smart Client

1. Go to **Settings > Axis general options**.
2. Click **Update**.

Upgrade system automatically

From the VMS management server, you can publish a local AXIS Optimizer version to your system. When you do, AXIS Optimizer will be upgraded automatically on all client machines. Automatic upgrade will never interrupt operator work. Silent installations are performed during machine or VMS client restarts. Automatic upgrade is supported also when the client is not connected to internet.

Note

Automatic upgrade is supported for clients that run AXIS Optimizer 4.4 or later.

Install or update AXIS Optimizer

Turn on automatic upgrade

Note

Before you start, verify that you have:

- A system where Management Client runs on the same machine as the VMS management server.
- PC administrator rights on the VMS management server.

To turn on automatic upgrade, you must publish a specific AXIS Optimizer version to your system:

1. On the VMS management server, install the AXIS Optimizer version you want to publish to the whole system.
2. On the VMS management server machine, open Management Client.
3. Go to **Site Navigation > AXIS Optimizer > System Overview**.
4. Click **System upgrade settings**.
5. Make sure the **Local version** is correct and click **Publish**.

   If a published AXIS Optimizer version already exists, it's replaced by the new version.

Note

Client machines with an earlier AXIS Optimizer version than 4.4 must be manually upgraded.

Turn off automatic upgrade

To turn off automatic upgrade, you must reset the published version:

1. On the VMS management server machine, open the Management Client.
2. Go to **Site Navigation > AXIS Optimizer > System Overview** .
3. Click **System upgrade settings > Reset published version**.

Learn more

- Smart Clients without AXIS Optimizer can access the published installer file from the management server web page (*http://[serveradress]/installation/*) even if they're not connected to the internet.
- AXIS Optimizer installation package is available and configurable in Milestone's Download manager.
- On federated or interconnected systems, you must publish AXIS Optimizer on each management server.
- After you published a new version of AXIS Optimizer you can monitor which clients has updated to the published version. Machines on the **System overview** page will show a green check symbol when they are running the published version.
- Automatic upgrade is turned off on machines that run a VMS Management server.

User privileges

AXIS Optimizer includes a specific *Axis Optimizer user role*. The purpose is to make it simple for you to give users the required Smart Client privileges to use AXIS Optimizer's features and capabilities.

If you run XProtect 2018 R3 or earlier, this role is only available in XProtect Corporate.

If you run XProtect 2019 R1 or later, this role is available for the these XProtect editions:

- Corporate
- Expert

Install or update AXIS Optimizer

- Professional+
- Essential+
- Express+

If you prefer to configure privileges manually, use the this configuration to let a Smart Client operator use all capabilities included in AXIS Optimizer:

- Management server: Read (only available in some versions)
- Hardware: Driver Commands
- Cameras: AUX commands

Note

For more advanced user roles handling, see *Customize which features operators can access on page 54*

Access device settings

Access device settings

About Device assistant

Device assistant helps you save time and effort by giving easy access to all Axis device settings directly in the VMS Management Client. You can easily find and reach your Axis device webpage inside Milestone XProtect to change different device settings. You can also configure applications installed on your devices.

Important

To use Device assistant, the Axis device must be connected to the same network as Management Client.

Configure an Axis device

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Select a device and go to **Device settings**. The device's webpage opens.
3. Configure the settings you want.

Install applications on an Axis device

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Select a device and go to **Device settings**. The device's webpage opens.
3. Go to **Apps**. Where you find the **Apps** functionality depends on the on the device's firmware version. For more information, see your device's help.
4. Install the applications you want.

Configure applications on an Axis device

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Select a device and go to **Applications**. If any applications are installed on the device, you'll see them here.
3. Go to the relevant application, for example AXIS Object Analytics.
4. Configure the application to suit your needs.

Update applications on an Axis device

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Right-click a device and select **Show updates**. If any applications can be updated, you'll see a list of available updates.
3. Download the update file.
4. Click **How to update** and follow the instructions.

Restart an Axis device

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Right-click a device and select **Restart device**.

Access device settings

Copy an Axis device's IP address

1. In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant**.
2. Right-click a device and select **Copy device address**.

Perform automation

Create actions for Axis devices

About the Event server plugin

The AXIS Optimizer event server plugin allows you to create custom actions for Axis devices. When you use the XProtect rule engine and the Event server plugin, you can for example:

- Perform a custom action when the operator clicks a button in the Smart Client. For a setup example, see *Dry multiple cameras with one click on page 11*
- Perform actions without human interaction (automation). For a setup example, see *Turn off privacy masks on multiple cameras automatically on page 14*

The Event server plugin consists of two parts:

- A separate plugin that runs on the event server. This populates the rule engine with new *actions*.
- A page called **Axis actions** in the Management server where you can create new *action presets*.

The custom actions for Axis devices are: Run operator control, Turn on/off radar, Start door station call and Dry camera (SpeedDry/wiper).

The Event server plugin is included in AXIS Optimizer. On a multi-PC system, you must install AXIS Optimizer on both the Management Client machine and the Event server machine.

Install the Event server plugin

The Event server plugin is an optional component that is included in the AXIS Optimizer installer. You can only install it on a video management system (VMS) event server. If the requirements are fulfilled, you'll be prompted with an option to install the Event server plugin when you run the AXIS Optimizer installer. The Event server plugin works with Milestone XProtect 2018 R1 or later.

Note

The VMS event server will require a short restart during installation and sometimes during upgrade of AXIS Optimizer. You will be notified when this is the case.

Dry multiple cameras with one click

With the Event server plugin you can set up custom rules to make life easier for the operators. In this example we will show how to dry all cameras in a specific area by clicking an overlay-button.

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10162306

Perform automation

Note

Before you start, verify that you have:

- AXIS Optimizer version 4.0 or later on event server and Management Client
- One or several cameras that supports either SpeedDry or Wiper, for example AXIS Q86, Q87 or Q61 series.

1. Add a user-defined event:
   1.1 Go to **Site Navigation > Rules and Events** and right-click **User-defined Event**.
   1.2 Select **Add User-defined Event** and enter a name, in this example "Dry all cameras".
2. Create a new rule:
   2.1 Go to **Site Navigation > Rules and Events** and right-click **Rules**.
   2.2 Select **Add Rule** and enter a name, in this example "Dry all cameras Rule".
   2.3 Select **Perform an action on <event>**.
   2.4 In the **Edit the rule description** field, click **event**.
   2.5 Go to **Events > External Events > User-defined Events** and select **Dry all cameras**.
   2.6 Click **Next** until you get to **Step: 3 Actions**.
   2.7 Select the action: **Axis: Dry <camera>**.
   2.8 In the **Edit the rule description** field, click **Axis: Dry camera**.
   2.9 In the **Select Triggering Devices** window, choose **Select devices** and click **OK**.
   2.10 Select which devices you want to trigger the action and click **OK**, then **Finish**.
3. In the Smart Client, add the user-defined event as an overlay-button on a map or video view.
4. Click the overlay-button and make sure the rule works as you want.

Turn on autofocus for multiple cameras with one click

With the Event server plugin you can set up custom rules to make life easier for the operators. In this example we will show how to turn on autofocus for all cameras with just one click.

Note

Before you start, verify that you have:

- AXIS Optimizer version 4.1 or later on event server and Management Client
- One or several cameras that support autofocus

1. Add a user-defined event:
   1.1 Go to **Site Navigation > Rules and Events** and right-click **User-defined Event**.
   1.2 Select **Add User-defined Event** and enter a name, in this example "Autofocus".
2. Create a new rule:
   2.1 Go to **Site Navigation > Rules and Events** and right-click **Rules**.
   2.2 Select **Add Rule** and enter a name, in this example "Perform autofocus".
   2.3 Select **Perform an action on <event>**.

2.4 In the **Edit the rule description** field, click **event**.

2.5 Go to **Events > External Events > User-defined Events** and select **Autofocus**. Click **OK**.

2.6 Click **Next** until you get to **Step: 3 Actions**.

2.7 Select the action: **Axis: Run autofocus on <camera>**.

2.8 In the **Edit the rule description** field, click **Axis: Run autofocus on camera**.

2.9 In the **Select Triggering Devices** window, choose **Select devices** and click **OK**.

2.10 Select which devices you want to trigger the action on and click **OK**, then **Finish**.

3. In the Smart Client, add the user-defined event "Autofocus" as an overlay-button on a map or video view.
4. Click the overlay-button and make sure the rule works as you want.

Trigger multiple strobe sirens with one click

With the Event server plugin you can set up custom rules to make life easier for the operators. In this example we show how to activate multiple strobe sirens with one click in Smart Client.

Note

Before you start, verify that you have:

- AXIS Optimizer version 4.4 or later on event server and Management Client
- Several Axis strobe sirens

1. Create a user-defined event:

   1.1 Go to **Site Navigation > Rules and Events** and right-click **User-defined Event**.

   1.2 Select **Add User-defined Event** and enter a name, for example "Trigger all strobe sirens".

2. In Device assistant, create strobe siren profiles:

   2.1 Go to **Site Navigation > AXIS Optimizer > Device assistant**.

   2.2 Select a strobe siren. The strobe siren's webpage opens.

   2.3 Go to **Profiles** and click **Add profile**.

   2.4 Configure what you want the strobe siren to do when the operator triggers the strobe sirens in Smart Client.

   2.5 Create the same profiles on the other strobe sirens. You must use the same profile name on all devices.

3. In Axis actions, create an action preset:

   3.1 Go to **Site Navigation > Rules and Events > Axis actions**

   3.2 Click **Add new preset**.

   3.3 Go to **Select strobe siren** and click **Strobe siren**.

   3.4 Select strobe sirens you want to use and click **OK**.

   You'll see a list of the strobe sirens' profiles.

   3.5 Select the strobe siren profile you created in the previous step. The action preset is saved automatically.

   3.6 Press F5 to refresh the server configuration. Now you can to start to use the new action preset you created.

4. Create a rule:

4.1 Go to **Site Navigation > Rules and Events** and right-click **Rules**.

4.2 Select **Add Rule** and enter a name, for example "Trigger all strobe sirens rule".

4.3 Select **Perform an action on <event>**.

4.4 In the **Edit the rule description** field, click **event**.

4.5 Go to **Events > External Events > User-defined Events** and select **Trigger all strobe sirens**.

4.6 Click **Next** until you get to **Step 3: Actions**.

4.7 Select the action **Axis: Run a profile on a strobe siren <preset>**.

4.8 In the **Edit the rule description** field, click **preset**.

4.9 Select which preset you want to use.

4.10 Click **Next**, then **Finish**.

5. In Smart Client, add the user-defined event as an overlay-button on a map or video view.
6. Click the overlay-button and make sure the rule works as you want.

Turn off privacy masks on multiple cameras automatically

With the Event server plugin you can automate certain actions. In this example we will show how to automatically turn off privacy masks on multiple cameras when an analytics event occurs. The event in the example is that humans or vehicles enter an area where they shouldn't normally be. Therefore we want to automatically turn off the privacy masks to get a better view of what's happening.

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10162627

The workflow is:

1. *Configure an analytics scenario on page 15* in AXIS Object Analytics (or other analytics application of your choice)
2. *Add operator controls to relevant cameras on page 15*
3. *Create action presets on page 15*
4. *Create a rule to turn off privacy masks when the analytics event occurs on page 15*
5. *Create a rule to turn on the privacy masks again on page 16*
6. *Test the rule on page 16* and make sure everything works as you want.

Perform automation

Note

Before you start, verify that you have:

- AXIS Optimizer version 4.0 or later on event server and Management Client
- Camera(s) with firmware version 7.40 or later
- Camera(s) that can generate events, in this example a camera with AXIS Object Analytics

Configure an analytics scenario

1. Go to **Site Navigation > AXIS Optimizer > Device assistant** and find the device with the analytics you want to use.
2. Click **Applications** and create an analytics scenario that will trigger the action.
3. Go to **Devices > Cameras** and find the camera you created the analytics scenario on.
4. In the **Properties** window, click **Events > Add**.
5. Select a driver event, in this example "Object Analytics: Event test Rising" and click **OK**.
6. Click **Add** and select the driver event "Object Analytics: Event test Falling". Then click **OK**.
7. Click **Save**.

Add operator controls to relevant cameras

1. Go to **AXIS Optimizer > Operator controls** and open the Controls library.
2. In the **Configuration** window, select the relevant folder and activate both **Turn off privacy mask** and **Turn on privacy mask**.

Create action presets

1. Go to **Rules and Events > Axis actions** and click **Add new preset**.
2. Click **Cameras** and select relevant cameras. In this example: AXIS P1375 and AXIS Q6075-E. Then, select the control **Turn on privacy mask**.
3. Click **Add new preset > Cameras** and select relevant cameras. In this example: AXIS P1375 and AXIS Q6075-E. Then, select the control **Turn off privacy mask**.

Create a rule to turn off privacy masks when the analytics event occurs

1. Go to **Site Navigation > Rules and Events** and right-click **Rules**.
2. Select **Add Rule** and enter a name, in this example "Turn off privacy mask on analytics".
3. Select **Perform an action on <event>**.
4. In the **Edit the rule description** field, click **event**. Go to **Devices > Configurable Events** and select **Object Analytics: Event test Rising**.
5. In the **Edit the rule description** field, select a device, in this example AXIS P1375.
6. Click **Next** until you get to **Step: 3 Actions**.
7. Select the action **Axis: Run operator control: <preset>**.
8. In the **Edit the rule description** field, click **preset**. Then add the target **Turn off privacy mask on 2 cameras** and click **OK**.
9. Click **Finish**.

Create a rule to turn on the privacy masks again

1. Select **Add Rule** and enter a name, in this example "Turn on privacy mask on analytics stop".
2. Select **Perform an action on <event>**.
3. In the **Edit the rule description** section, click **event**. Go to **Devices > Configurable Events** and select **Object Analytics: Event test Failing**.
4. In the **Edit the rule description** section, select a device, in this example AXIS P1375.
5. Click **Next** until you get to **Step: 3 Actions**.
6. Select the action **Axis: Run operator control: <preset>**.
7. In the **Edit the rule description** section, click **preset**. Then add the target **Turn on privacy mask on 2 cameras** and click **OK**.
8. Click **Finish**.

Test the rule

1. Go to **AXIS Optimizer > Device assistant** and find the device with the analytics you've used to create the automation. In this example AXIS P1375.
2. Open the relevant scenario and click **Test alarm**.

Activate a strobe siren when a camera detects motion

With the Event server plugin you can set up custom rules to make life easier for the operators. In this example we show how to activate a strobe siren automatically when a camera detects motion.

Note

Before you start, verify that you have:

- AXIS Optimizer version 4.4 or later on event server and Management Client
- One or several Axis strobe sirens

1. In Device assistant, create a strobe siren profile:
   1.1 Go to **Site Navigation > AXIS Optimizer > Device assistant**.
   1.2 Select a strobe siren. The strobe siren's webpage opens.
   1.3 Go to **Profiles** and click **Add profile**.
   1.4 Configure what you want the strobe siren to do when it detects motion.
2. In Axis actions, create an action preset:
   2.1 Go to **Site Navigation > Rules and Events > Axis actions**
   2.2 Click **Add new preset**.
   2.3 Go to **Select strobe siren** and click a **Strobe siren**.
   2.4 Select a strobe siren and click **OK**.
   You'll see a list of the strobe siren's profiles.
   2.5 Select the siren profile you created in the previous step. The action preset is saved automatically.
   2.6 Press F5 to refresh the server configuration. Now you can to start to use the new action preset you created.
3. Create a rule:

3.1 Go to **Site Navigation > Rules and Events** and right-click **Rules**.

3.2 Select **Add Rule** and enter a name.

3.3 In the **Edit the rule description** field, click **event**.

3.4 Go to **Predefined Events** and select **Motion Started**.

3.5 In the **Edit the rule description** field, click **devices/recording_server/management_server**.

3.6 Select the camera that should trigger the strobe siren.

3.7 Click **Next** until you get to **Step 3: Actions**.

3.8 Select the action **Axis: Run a profile on a strobe siren <preset>**.

3.9 In the **Edit the rule description** field, click **preset**.

3.10 Select which preset you want to use.

3.11 Click **Next**, then **Finish**.

4. In Smart Client, verify that the rule works as expected.

Troubleshoot a rule

If a rule doesn't work, first check the Event server messages to see that the event service is running.

You can also check the AXIS Optimizer logs on the event server. If the Management Client or Smart Client are available, use them to enable and to save logs.

Centrally manage license plate lists

About license plate lists

Using AXIS Optimizer list manager you can centrally manage license plate lists for all cameras at once. You can create and manage allowlist and blocklist directly from Milestone XProtect. The system supports combining lists. This means that you can have a global list that applies to all cameras in the system and local lists that applies to specific cameras.

Centralized list management is useful for example when you want to automate parking entry and exit or want to receive an alarm when the system registers a certain license plate.

You must be an administrator to create and edit lists. It's possible to give read and edit rights to other roles, see section *Configure list permissions on page 18*.

Create a list

Note

Before you start, verify that you have:

- Milestone XProtect 2019 R2 or later
- AXIS License Plate Verifier 1.8 or later running on the cameras

1. In Management Client, go to **Site Navigation > AXIS Optimizer > License plates**.
2. Click **+** and enter a list name.
3. Select the cameras you want to send the list to.
4. (Optional) Add user roles that can view and edit the allowlist and blocklist.

5. Click **+** and add license plates to the allowlist and blocklist.

   You can also import existing license plates lists.

   When the list gets status **Synchronized**, it has been pushed to the cameras you selected.

Configure list permissions

You can configure which user roles that can edit the allowlist and blocklist. This is useful for example when the administrator has set up the lists but you want the operator to add visitors based on daily needs.

1. In Management Client, go to **Site Navigation > AXIS Optimizer > License plates**.
2. Click the list you want to edit.
3. Go to **Permissions** and click the user roles.
4. Select user roles and click **OK**.

Edit a list

In Management Client

1. Go to **Site Navigation > AXIS Optimizer > License plates**.
2. Click the list you want to edit.
3. Update **Cameras**, **Permissions** or **License plates** as needed.

   When the list gets status **Synchronized**, your changes have been pushed to the cameras you selected.

In Smart Client

1. Go to **AXIS Optimizer license plate search** tab and click **License plate lists**.

   If you don't see the tab, go to **Settings > Axis search options** and select **Show license plate search tab**.
2. Click the list you want to edit.
3. Click **+** and add license plates to the allowlist and blocklist.

   You can also import existing license plates lists.

   When the list gets status **Synchronized**, it has been pushed to the cameras you selected.

Import a list

You can import lists in several text or csv formats.

- Allowed text format: one license plate on each line
- Allowed csv formats:
  - One license plate on each line
  - Two fields: license plate and date
  - Three fields: license plate, owner and comment
  - Four fields: license plate, owner, comment and the string "Active" or "Inactive". (Same format as when you export a list.)

In Management Client

1. Go to **Site Navigation > AXIS Optimizer > License plates**.
2. Click the list you want to edit.
3. Go to **License plates**.
4. Click the action menu and select **Import to allowlist** or **Import to blocklist**.

In Smart Client

1. Go to **AXIS Optimizer license plate search** tab and click **License plate lists**.

   If you don't see the tab, go to **Settings > Axis search options** and select **Show license plate search tab**.
2. Click the list you want to edit.
3. Click the action menu and select **Import to allowlist** or **Import to blocklist**.

Export a list

In Management Client

1. Go to **Site Navigation > AXIS Optimizer > License plates**.
2. Click the list you want export the list from.
3. Go to **License plates**.
4. Click the action menu and select **Export allowlist** or **Export blocklist**.

   The exported list will be in csv format with four fields: license plate, owner, comment and Active or Inactive status.

In Smart Client

1. Go to **AXIS Optimizer license plate search** tab and click **License plate lists**.

   If you don't see the tab, go to **Settings > Axis search options** and select **Show license plate search tab**.
2. Click the list you want to edit.
3. Click the action menu and select **Export allowlist** or **Export blocklist**.

   The exported list will be in csv format with four fields: license plate, owner, comment and Active or Inactive status.

Learn more about lists

- You can create several lists.
- Each list is associated with one or several cameras that have AXIS Licence Plate Verifier installed.
- Each list is associated with one or several Milestone XProtect user roles. The user role defines who has permission to read and edit the list.
- All lists are stored in a Milestone database.
- When you add the camera to a list, already existing license plates on the camera are overwritten.
- If the same camera is present in several lists, the camera will receive the sum of all lists.
- If the same license plate is present in several lists, "block" has the highest priority.
- For each license plate, you can add information about the vehicle owner. However, this information is not synchronized to the cameras.

Respond to live events

Use device controls

About operator controls

The operator controls allow you to access an Axis camera's specific features directly from the Smart Client. Which features you'll have access to depends on which cameras you have in your system and the features they have. In addition to the pre-installed operator controls, you can create custom ones. You can also configure which controls an operator has access to.

Some examples of operator controls are:

- Turn on or off wiper
- Turn on or off heater
- Turn on or off IR
- Focus recall
- Turn on or off WDR
- Turn on or off electronic image stabilization (EIS)
- Turn on or off privacy masks.

For information about your camera's specific operator controls, refer to the datasheet.

Access the operator controls

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2019 R3 or later
- Axis devices(s) with firmware version 7.10, 7.40 or later. (Versions 7.20 and 7.30 don't support operator controls.)

1. In the Smart Client, click **Live** and go to your Axis camera.
2. Click and select which function to use.

Save a focus area for a PTZ camera

The focus recall function allows you to save focus areas to which the PTZ camera returns automatically when it moves to that area of the scene. This is especially useful in low light conditions, where the camera would otherwise have trouble finding the focus.

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10134524

1. In the Smart Client, move the camera to the area you want to focus on.

Note

Light conditions must be good when you set the focus area.

2. Focus the camera.
3. Select **Add Focus Recall Zone**.

Later, when you pan or tilt the camera and move the view to an area, the camera automatically recalls the preset focus for that view. Even if you zoom in or out, the camera will keep the same focus position.

If the zone is incorrectly configured, select **Remove Focus Recall Zone**.

Autofocus a camera

Cameras with autofocus can adjust the lens mechanically and automatically so that the image stays focused in the area of interest when the view changes.

Autofocus a PTZ camera

1. In the Smart Client, select a camera view.
2. Click and go to **Set Focus > AF**.

   Focus Control allows you to move the focus point closer or further away:

   - For a large step, click the large bar.
   - For a small step, click the small bar.

Autofocus fixed box and fixed dome cameras

1. In the Smart Client, select a camera view.
2. Click and go to **Autofocus**.

Turn on speed dry or wiper

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10134525

The speed dry function enables the dome to shake itself off when it becomes wet. When the dome vibrates at high speed, the surface tension of the water breaks and removes the drips. This allows the camera to produce sharp images even in rainy weather.

To turn on the speed dry function

1. In the Smart Client, select a camera view.
2. Click and go to **PTZ > Speed Dry**.

Important

The speed dry function is only available in AXIS Q61 series cameras.

To turn on the wiper function

The wiper removes excess water and rain from the lens of Axis positioning cameras.

1. In the Smart Client, select a camera view.
2. Click .

Important

The wiper function is only available in AXIS Q86 series cameras.

Measure spot temperature

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10134522

If you've a temperature alarm camera in your system, you can measure the temperature directly in the camera view.

1. In the Smart Client, open the relevant camera view, for example a view with AXIS Q2901-E Temperature Alarm Camera.

2. Click and select **Measure Spot Temperature**.
3. Click any area in the view and you'll see the current temperature.

Note

If digital zoom is used, temperature measurements can give incorrect result.

Automatically zoom in and track a moving object

About autotracking

With autotracking, the camera automatically zooms in on and tracks moving objects, for example a vehicle or a person. You can manually select an object to track, or set up trigger areas and let the camera detect moving objects. When the camera doesn't track an object, it returns to its home position after 5 s.

- You configure the trigger areas in the Management Client.
- In the Smart Client you'll see:
  - Red square: the tracked object
  - Yellow zones: trigger areas
  - Blue zones: objects perceived as not moving or static

Configure autotracking

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2017 R3 or later (C-code license is required)
- Axis camera(s) supporting Autotracking 2, for example AXIS Q6075 PTZ Dome Network Camera
- Metadata enabled in Management Client and Events enables in Metadata stream.

1. In the Management Client, add the camera that supports **Autotracking 2.0** to the Recording Server.
2. Verify that the camera and metadata devices are enabled.
3. Select Metadata 1 for your camera and click **Settings**.
4. Go to **Metadata stream > Event data** and select **Yes**.
5. Click **Save**.
6. Verify that the Autotracking 2 application has started:
   6.1 In the Management Client, go to **AXIS Camera Assistant** and select your camera.
   6.2 Go to**Settings > Apps > axis-ptz-autotracking**. Start the application if it's turned off.
7. Setup zones (profiles):
   7.1 In the Management Client, go to **AXIS Camera Assistant** and select your camera.
   7.2 Go to **Settings > Profiles**.
   7.3 Click **+**.
   7.4 Enter a name and select a preset position for the profile, then click **Done**.
   A yellow square appears, the trigger area.

7.5 To move the trigger area, click inside it and drag. To modify the size and shape of the trigger area, click and drag the anchor points.

Turn on or off autotracking

1. In the Smart Client, click .
2. Select **Turn on autotracking** or **Turn off autotracking**.

Start autotracking manually

If you hover the mouse over or very near an object the overlay will be filled. Right clicking when hovering an object will set that object as a target, and the camera will start to track the targeted object. The camera will reset after 5 s if the object can't be tracked anymore.

Create custom operator controls

1. In the Management Client, go to **Site Navigation > AXIS Optimizer > Operator controls**.
2. Select a device or a group of devices.
3. Click **Add new control**.
4. Enter a **Name** and a **Description**.
5. Select **Administrator** if you want the operator control to be available only to users with administrator rights.
6. Add the VAPIX URL for the specific control.

   Example: To add a *Defog on* operator control, enter this URL: `/axis-cgi/param.cgi?action=update&imageSource.IO.Sensor.Defog=on`.
7. Go to the Smart Client and test that the operator control works as expected.

Configure access to operator controls

You can configure which operator controls an operator in the Smart Client has access to.

1. In the Management Client, go to **Site Navigation > AXIS Optimizer > Operator controls**.
2. Select a device or a group of devices.
3. Select which operator controls you want the operators to have access to in the Smart Client.

Interact through speakers

About Speaker manager

The Speaker manager integrates Axis audio products into the VMS so you can get full functionality of your Axis devices. You can:

- Access speakers related to your camera

  Connect cameras to a speaker or speaker groups, and you can access speakers from the live view. You no longer need to find your speakers manually.
- Send audio to a group of speakers

  Send audio to many speakers with a single click. Use the groups already defined in your system.
- Manage audio clips

Set up your local audio clip library and upload audio clips to your speakers with a single click.

- Take immediate action with your speakers

  Respond quickly to an alarm without leaving the Alarm Manager.

- Synchronize audio between speakers

  If you want to use your audio system for background music, the Speaker manager can help you set up zones to synchronize the audio between your speakers.

Note

If you've turned on AXIS Audio Manager Edge on your speakers, use this application to manage your speakers and not the Speaker manager.

Configure speakers

Get started

You must first add speakers to Milestone XProtect. Depending on how you do this, you can then access speakers in the Smart Client in two ways:

- A side menu, see *Add speakers on page 25*.

  Then you can push and talk, and play recordings.

- Directly from a camera view, see *Associate a camera to a speaker or device group on page 26*

  Then you can push and talk, and play recordings.

After you've added speakers you can also:

- *Upload audio clips to a speaker on page 26*

The workflow to get started with Axis speakers is:

1. Add speakers to Milestone XProtect, see *Add speakers on page 25*.
2. Open the Speaker manager and associate cameras to speakers, see *Associate a camera to a speaker or device group on page 26*.

   Speaker manager audio features are now available in the Smart Client.
3. (Optional) Add media clips to the speaker, see *Upload audio clips to a speaker on page 26*.

Add speakers

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10147277

1. In the Management Client, go to **Site Navigation > Devices > Speakers** and add device groups or add and remove speakers from device groups.
2. Go to **Site Navigation > AXIS Optimizer > Speaker manager** and click .
3. In the **Manage Side Panel** window, select the speaker(s) you want to show in the Smart Client.
4. Click **Add** and **OK**.

   The speakers in the **Visible** panel are now shown in the Smart Client for all users that have access to the speaker.

Associate a camera to a speaker or device group

To address a specific speaker or device group in the Smart Client's camera view, it's possible to associate the speaker or group to a camera.

1. In the Management Client, go to **Site Navigation > AXIS Optimizer > Speaker manager** and select a speaker.
2. In the **Associated camera(s)** window, click **+** and select the cameras you want to connect the speaker with.
3. Click **Ok**.

   When a camera is connected to a speaker, a microphone icon is shown in the tool bar in the Smart Client.

Upload audio clips to a speaker

To play audio clips on a speaker from the Smart Client you must first upload the clips to the speaker in the Management Client.

1. Place the audio clips you want to upload to the speaker in the default folder **C:\Users\Public\Documents\AXIS Optimizer for Milestone XProtect - Audio Clips**.
2. In the Management Client, go to **Site Navigation > AXIS Optimizer > Speaker manager** and select your speaker.
3. Go to **Audio clips** and click **+** in front of the clips you want to upload to the speaker.

Change the volume

1. In the Management Client, go to **Site Navigation > Speaker manager** and select your speaker.
2. Go to **Volume** and adjust to the wanted volume.

Remove speakers

1. In the Management Client, go to **Site Navigation > AXIS Optimizer > Speaker manager** and click .
2. In the **Manage Side Panel** window, select the speaker(s) you want to remove from the Smart Client.
3. Click **Remove** and **OK**.

   The speakers in the **Visible** panel are still shown in the Smart Client for all users that have access to the speaker.

Play audio clips on a speaker

1. In the Smart Client, go to **MIP Pplug-ins** > **Axis speaker control** and select a speaker or device group in the drop-down list.
2. To let the microphone send audio to the speaker, click the microphone icon.
3. Go to **Media clip** and select an audio clip in the drop-down list.
4. To start playing the audio clip on the selected speaker, click play.

Play audio clips on an associated speaker

1. In the Smart Client, go to a camera view.
2. In the tool bar, click the microphone icon. The **Axis speaker control** opens.

3. Select an audio clip and click play.

Address a specific speaker from the Smart Client's camera view

To address a specific speaker, device group or zone from a camera view in the Smart Client's, it's possible to associate the speaker, group or zone to a camera.

1. In the Management Client, go to **Site Navigation > AXIS Optimizer > Speaker manager** and select a speaker.
2. In the **Associated camera(s)** window, click **+** and select the cameras you want to associate the speaker with.
3. Click **OK**.

   When a camera is associated to a speaker, you'll see a microphone icon in the tool bar in the Smart Client.
4. In the Smart Client, go to the camera view.
5. In the tool bar, click the microphone icon. The **Axis speaker control** opens.
6. Play an audio clip on or talk to the speaker associated to the camera.

Manage visitors

About the Door Station plugin

Axis network door stations and intercoms combine communication, video surveillance and remote entry control in one device. AXIS Optimizer makes it easy to configure and use Axis door stations together with Milestone XProtect. For example, you can receive calls and open doors.

Note

- Call history is limited to 39 calls and 1000 access log records. The limited number of calls can be lower if you mute the conversation frequently.

Permissions

The following permissions are required for an operator to handle a call:

- Smart Client: 2019 R1 or older requires **Administrator** rights to receive calls and control the door.

  For XProtect Corporate you only require **Hardware** > **Driver commands** rights to receive calls and control the door.
- Management Server/Read (in Smart Client versions before 2019 R1)
- Hardware/Driver Commands
- Door station camera
  - Read
  - View Live
- Door station microphone
  - Read
  - Listen
- Door station speakers
  - Read
  - **Overall Security**: Speak

- If you want to control door station speakers on device level, go **Speech** and select **Speak**.

- Metadata/Live
- Input/Read

Note

With permissions you can control which operators that handle the calls from a certain door station:

1. Make sure you've selected **Read** permission for the **Input device 1** of the specific door station.
2. Clear this permission for all other operator (roles). No call windows will be generated if the user doesn't have privileges to the input.

Set up a door station

The door lock should typically be connected to the first relay on the door station. AXIS Optimizer determines which output port to use based on the **Usage** information. It will use the first port having **Usage = Door** (RELAY1 by default).

Note

Before you start, verify that you have:

- Milestone XProtect 2017 R3 or later
- AXIS Optimizer 2.0 or later installed on each client receiving calls
- An Axis door station or intercom
- A microphone installed on the PC that receives the calls
- Smart Client up and running

1. Install the latest version of AXIS Optimizer on each client where you want to receive calls and control the door from.
2. Log in to the Management Client.
3. Add your Axis door station to the Recording Server.
4. In the Management Client, enable all devices that you need. To be able to receive calls in the Smart Client you need:
   - Camera 1
   - Microphone
   - Speaker
   - Metadata
   - Input 1

- Input 2 (optional if you have a security relay connected to the door station on port 2)
- Output connected to the door. If you know which output that's connected to the door, select that one. If not select all ouputs.

5. Go to **Site Navigation > Devices > Input** and select Input 1 for the door station you're installing.
6. Click **Events**, then click **Add...**.
7. Select **Input Falling event** and add it to the enabled inputs.
8. Repeat for **Input Rising event**.
9. If you've enabled Input 2 then repeat steps 6 - 8 to verify for Input 2 as well.
10. Click **Save**.
11. *Make a test call on page 30*

Make a test call

1. In the Smart Client, go to **Settings > Axis door station options**.
2. Click **Test call**.
3. Select a door station and click **Make call**.

Control the door station from live view

For each door station and intercom view, click

to quickly control the device.

Respond to live events

How do I?	Instructions	Comment
Open the lock	Click  > **Access** or **Extended access**.	When the lock is unlocked, you can't click **Access** or **Extended access**.
Know if a door is locked or unlocked	Click  and read the status at the bottom of the menu.	-

Respond to live events

How do I?	Instructions	Comment
Talk to a person in front of the door station	Click  > **Start call.**	The call window opens and starts two-way communication with the door station.
Find out who called yesterday	Click  > **Call history.**	You'll see a list of calls made with the current door station.

Respond to a call from live view

When a visitor presses the call button on the door station, a call window appears on each running Smart Client. The call window automatically selects the appropriate camera view when you resize the window, for example corridor or landscape view.

How do I?	Instructions	Comment
Answer the call	Click **Accept**	A two-way audio channel between the operator and the person by the door station opens.
Send the call to another operator because I'm busy	Close the window by clicking **X**	When you dismiss a call, a different operator can take the call on a another client The door station or intercom continues to ring and flash until someone answers the call. If nobody answers, the call gets status *missed* in the call history.

How do I?	Instructions	Comment
Refuse the call because I've already opened the door based on visual confirmation and don't need to talk to the person Refuse the call because I don't want to talk to an unwanted visitor	Click **Decline**	When you decline a call, the call windows automatically close on other clients. No other operator can take the call. The door station or intercom stops to ring and flash, then the call window closes. The call gets status *answered* in the call history.
Open the door	Click **Access**	The door station lock is opened for 7 s. To configure how long the door stays open: 1. In the Smart Client, go to **Settings > Axis door station options > Door access**. 2. Change **Access time**.
Temporarily stop audio from the operator to the door station.	Click **Mute**	-
Terminate the call.	Click **Hang up**	The default auto-close setting is that the call window closes when you decline or hang up a call. To change the default call window behavior: 1. In the Smart Client, go to **Settings > Axis door station options > Call**. 2. Clear **Auto-close window**.

Show multiple cameras in the call window

You can show up to three cameras at the same time in the call window. This means that you can see the door station's or intercom's video stream and the video streams from two other cameras within the same call window. This is useful for example when you want to see the delivery person and the area around the delivery door at the same time.

To configure multiple cameras in the call window:

1. In the Smart Client, go to **Settings > Axis door station options > Multiple cameras**.
2. Select which cameras you want to see in the call window when the door station or intercom calls.
3. Close the **Camera layout** window.

View the call history

In the *call history* you can view answered and missed calls and if the door has been unlocked. You can select among the calls and view the corresponding playback video if available.

1. In the Smart Client, go to the door station's or intercom's view.

2. Click  > **Call history**.

Note

To register when a door has been unlocked, you must set the retention time (days) for the Axis door station or intercom:

1. In the Management Client, go to **Tools > Options > Alarm and Events > Event retention**.
2. Set the time for **Output Activated** and **Output Deactivated**.

Turn off microphone when there's no active call

It's possible to turn off the microphone when no calls are coming in to the Axis door station or intercom. The microphone will be turned on when there's an active call.

Note

You need administrator rights to turn off the microphone.

1. In the Smart Client, go to **Settings** > **Axis door station options**.
2. Select **Turn off door station microphone when no active call**.

Receive an alarm if a door is forced open

If a door has a security relay (Input 2), the door overlay in the Smart Client's call window shows when the door is open or closed. This means that if someone opens the door by force while the door is locked, you can receive an alarm.

Note

To receive an alarm, at least one Smart Client must be running.

To configure the alarm:

1. In the Smart Client, go to **Settings > Axis door station options > Administrator options**.
2. Select **Trigger an alarm when a door has been forced open**.

Receive an alarm if a door stays open too long

If a door has a security relay (Input 2), the door overlay in the Smart Client's call window shows when the door is open or closed. This means that if someone opens the door and the door stays open for too long, you can receive an alarm.

Note

To receive an alarm, at least one Smart Client must be running.

To configure the alarm:

1. In the Smart Client, go to **Settings > Axis door station options > Administrator options**.
2. Select **Trigger an alarm when a door has been open longer than (s)**.
3. Enter for how long the door can stay open before the alarm goes off.

Prevent a client from receiving calls

You can configure a client to not receive any calls. This means that when someone places a call, no call window opens on the specific client.

1. In the Smart Client, go to **Settings > Axis door station options > Call**.
2. Clear **Receive calls on this client**.

Visualize audio

About microphone view

You can visualize audio in your system by adding one or several microphone views to Smart Client. Then you can monitor audio both to in live view and playback. You can see when audio levels rise above a certain level using the built in audio-detection on your Axis device. Typically uses cases are:

- *Listen to several microphones at the same time on page 38*
- *Detect incidents with audio on page 38*
- *Investigate incidents after they happened on page 38*

Configure VMS for microphone view

1. Set detection levels:
   1.1 In Management Client, go to **Site Navigation > AXIS Optimizer > Device assistant** and select your device.
   1.2 Open the **Detectors** settings. How you open these settings depends on your device's firmware version.

1.3 Go to **Audio detection** and modify **Input 1 sound level** to suit your needs.

2. Get events from the camera into Milestone XProtect:

   2.1 In Management Client, go to **Site Navigation > Devices > Microphones**.

   2.2 Click your microphone, then click **Events**.

   2.3 Add events **Audio Falling** and **Audio Rising**.

3. Configure for how long the system keeps metadata about detected audio:

   3.1 Go to **Tools > Options > Alarm and Events > Device events**.

   3.2 Find **Audio Falling** and set retention time.

   3.3 Find **Audio Raising** and set retention time.

4. Verify that you've set up audio recording. You can for example record audio all the time or a create a recording rule based on audio raising or audio falling events.
5. For each microphone you want to use with microphone view, repeat the steps above.
6. In Smart Client, go to **Settings > Timeline > Additional data** and select **Show**.

Add microphone view to Smart Client

1. Open Smart Client and click **Setup**.
2. Go to **Views**.
3. Click **Create new view** and select a format.
4. Go to **System Overview > AXIS Optimizer**.
5. Click **Microphone view** and drag it into the view.
6. Select a microphone.
7. Click **Setup**.

Use microphone view

- Live view
  - Audio levels are displayed as a bar graph with current level to the right and up to 60 s audio history moving to the left.
  - Click *in* the view to listen to audio from the microphone.
  - In each microphone view there's a headphone icon. Click the icon to mute or unmute audio from each view without having to select the view itself. This allows you to listen to several microphones at the same time.
- Playback
  - An icon will highlight when there's detected audio available for the microphone.
  - Yellow bars indicate that audio has been detected according to the detection levels you've set on the device.
  - Click *in* the view to listen to audio from the microphone.
  - In each microphone view there's a headphone icon. Click the icon to mute or unmute audio from each view without having to select the view itself. This allows you to listen to several microphones at the same time.

Respond to live events

Listen to several microphones at the same time

The microphone view allows you to listen to several microphones at the same time, both in live view and playback.

1. *Configure VMS for microphone view on page 36*
2. Open the Smart Client and click **Setup**.
3. Go to **Views**.
4. Click **Create new view** and select a split view.
5. Go to **System Overview > AXIS Optimizer**.
6. For each microphone you want to listen to:
   6.1 Click **Microphone view** and drag it into the view.
   6.2 Select a microphone.
7. Click **Setup**.
8. For each microphone, decide if you want to mute or unmute it by clicking the headphone icon in each microphone view. Now you can listen to all the unmuted microphones at the same time.

Detect incidents with audio

You might want to monitor actions from areas where you're not allowed to install cameras, for example restrooms. In microphone view you can quickly see when an incident happens that is, when the sound level exceeds the detection levels.

1. *Configure VMS for microphone view on page 36*. Remember to set relevant detection levels for the device and the area you want to monitor.
2. Add a microphone view with the device to live view in Smart Client, see *Add microphone view to Smart Client on page 37*.

Investigate incidents after they happened

After an incident occurred, you can quickly identify periods in the playback timeline when audio was detected by your microphones.

1. *Configure VMS for microphone view on page 36*.
2. Add one or several microphone views with relevant devices to playback in Smart Client, see *Add microphone view to Smart Client on page 37*.

Forensic search

AXIS Optimizer offers three search categories for Axis devices in Centralized search:

- *Forensic search on page 39* (object search)
- *Vehicle search on page 42*
- *Container search on page 44*

You can also add a separate license plate search tab to the Smart Client, see *License plate search tab on page 45*

Forensic search

About Forensic search

Axis cameras with firmware 9.50 or later generate metadata that describes all currently moving objects in a camera's field-of-view. Milestone XProtect can record this data together with the corresponding video and audio. The Forensic search function in AXIS Optimizer allows you to analyze and search this data. Use Forensic search to get an overview of all activity in the scene or quickly find a specific object or event of interest.

Configure Forensic search

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2019 R3 or later
- To search for objects without seeing the object type: Axis camera(s) with firmware version 9.50 or later
- To filter on object types:
  - Axis camera(s) with firmware version 10.6 or later and with AXIS Object Analytics running.

    From firmware 10.10 you need to turn on AXIS Object Analytics in the camera's web page under **Metadata producer**.
  - *Human* or *vehicle*: Axis camera(s) with a machine learning processing unit (MLPU)
  - Vehicle types (*car*, *bus*, *truck* or *bike*): Axis camera(s) with a deep learning processing unit (DLPU).
- Camera time synchronized with NTP

1. In the Management Client, make sure the metadata device is enabled for the camera(s).
2. Go to **Site Navigation > Devices > Metadata**.

3. Select your device and click **Record**. Make sure **Recording** is enabled.

   By default, metadata is only recorded when the Milestone XProtect detects motion in a scene. Therefore we recommend to adjust the motion threshold to your environment so you don't miss any object movements.

4. Click **Settings** and make sure **Analytics data** is enabled.

5. Open the Smart Client's live view and verify that you see bounding boxes over objects and that the boxes display correctly.

   It can take a while for the clock to adapt to NTP time.

6. Wait at least 15 min to let the system record video and metadata. After that, you can start searching, see *Perform a search on page 40*.

Perform a search

Note

Before you can use this search function, you need to configure it in the Management Client. To learn how to do this, see *Configure Forensic search on page 39*.

1. In the Smart Client, go to **Search**.
2. Select a time interval and one or several cameras.
3. Click **Search for > Forensic search > New search**. For each search result, you'll see the object and the object's travel path in the thumbnail.
   - The thumbnail shows the video frame when the object was the most visible.
   - The green point marks the location where the camera first detected the object.
   - The red point marks the location where the camera last detected the object.
   - To see the complete video sequence for a search result, select it and click **Play forward** in the preview panel.
   - To hide the graphical overlays, go to **Bounding boxes** and select **Hide**.

   Note

   Analytics applications that run on the camera, for example AXIS Object Analytics and AXIS Loitering Guard, might also burn in overlays in the video. To remove these overlays, go to the application's web configuration page.

4. Select search filters to narrow down the number of search results.

   To learn more about how to use the different filters, see *Fine-tune a search on page 41*.

5. Select the search results you want to examine closer. You can for example bookmark them or *Create a PDF report with high quality images on page 46*.

Forensic search

Fine-tune a search

To narrow down the search results you can use one or several search filters.

- **Region of interest**

  Find objects that have moved in a specific area.

- **Object direction**

  Find objects that have moved along a specific route in a scene, for example left and down.

- **Object type**

  Find objects of a certain type: human, vehicle, bike, bus, car or truck.

- **Time-of-day**

  Find objects that were detected during a specific part of the day. This filter is useful when you search over several days, but you're only interested in objects at a specific time of each day, for example during the afternoon.

- **Minimum time in scene (s)**

  Find objects that were detected and tracked for a minimum number of seconds. This filter filters out uninteresting objects, for example objects far away and false objects (lighting effects). The default value is 1 s. This means that when the filter is not set, it excludes objects with a duration less than 1 s.

- **Swaying objects (% of image)**

  Exclude objects that only moved in a constraint area, for example a flag or a tree moving in the wind. The default value is 5-100%. This means that when the filter is not set, it excludes objects that did not move more than 5% of the image area.

- **Object width (% of image)**

  Find objects of a specific width. The object size is measured on screen which means that the same object will be smaller further away from the camera. A size of 100x100 % means that it covers the complete image.

- **Object height (% of image)**

  Find objects of a specific height. The object size is measured on screen which means that the same object will be smaller further away from the camera. A size of 100x100 % means that it covers the complete image.

- **Relative object speed**

  Find objects with a certain average speed. The object speed is measured on screen which means that the same object will be slower further away from the camera. A speed of 100 %/s equals the speed an object has if the object can go from the far left to the far right of the image in 1 s.

Limitations

- To get the correct video footage for the search results, it's important to have the correct clock synchronization.
- The data analyzed in Forensic search doesn't take the scene's perspective into consideration. This means that an object's size and speed differ depending on how close to the camera the object is.
- Weather conditions such as heavy rain or snow may affect the detection accuracy.
- If there's a good contrast of the object in low light scenes, the analytic will become more accurate.
- A single object can, under some circumstances, generate multiple results. For example when tracking is lost when an object is temporary obscured by another object.
- Overlays may differ depending on XProtect version. For example: overlays in video preview require XProtect 2020 R3 and overlay colors require XProtect 2020 R2.

- The object types *Bike*, *Bus*, *Car* and *Truck* are only supported on cameras with a machine learning processing unit (MLPU).
- For Forensic search to work on video streams that have been rotated 180 degrees, you must:
  - use firmware 10.6 or later on the camera(s), or
  - use Device Pack 11.0 or later on the recording server

Vehicle search

About vehicle search

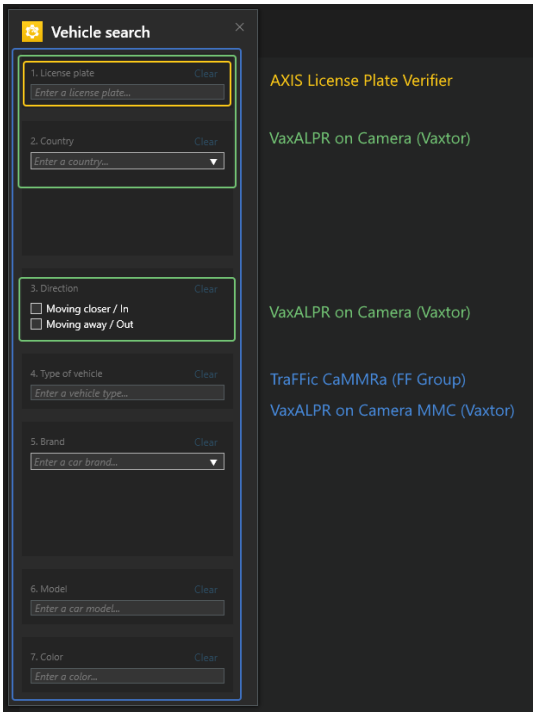
When you use AXIS Optimizer together with certain applications installed on the camera, you can search, identify and share video evidence about vehicles. Vehicle search supports license plate data from these applications:

- *AXIS License Plate Verifier* by Axis Communications
- *TraFFic CaMMRa* by FF Group (version 1.3.1 + recommended)
- *VaxALPR On Camera* by Vaxtor Recognition Technologies
- *VaxALPR On Camera MMC* by Vaxtor Recognition Technologies

Which search filters you can use depends on which application you've installed on the cameras, see *Fine-tune a search on page 43*

Note

Milestone requires XProtect 2019 R3+ Expert or Corporate Editions ito use third party search applications.



Forensic search

Configure vehicle search

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2019 R3 or later
- Camera time synchronized with NTP
- One of the applications listed in *About vehicle search on page 42*

1. In the Management Client, add the camera that runs the chosen application.
2. Enable all devices that you need. To be able to use AXIS Licence Plate Verifier, Camera 1 and Metadata 1 are required.
3. Configure metadata:
   3.1 Go to **Site Navigation > Recording Server** and find the device.
   3.2 Select Metadata 1 and click **Settings**.
   3.3 Go to **Metadata stream > Event data** and select **Yes**.
4. Go to the **Record settings** tab and verify that recording is enabled for metadata.
5. Click **Save**.
6. Configure the application so it works for a standard user:
   6.1 Add read and playback rights on the specific camera and user.
   6.2 Add read and playback rights on the *metadata* for the specific camera and user.

Search for a vehicle

1. In the Smart Client, go to **Search**.
2. Select a time interval and one or several cameras.
3. Click **Search for > Vehicle search > New search**.
4. Select search filters to narrow down the number of search results.

   To learn more about the different filters, see *Fine-tune a search on page 43*.
5. Select the search results you want to examine closer. You can for example bookmark them or *Create a PDF report with high quality images on page 46*.

Fine-tune a search

To narrow down the search results you can use one or several search filters. Different applications give you different filter options.

- **License plate**

  Find a specific license plate number.

  Application: AXIS License Plate Verifier, VaxALPR On Camera, TraFFic CaMMRa or VaxALPR On Camera MMC.
- **Country**

  Find vehicles from a certain country.

  Application: VaxALPR On Camera, TraFFic CaMMRa or VaxALPR On Camera MMC.
- **Direction**

Find vehicles moving in a certain direction.

Application: VaxALPR On Camera, TraFFic CaMMRa or VaxALPR On Camera MMC.

- **Type of vehicle**

  Find a certain type of vehicle.

  Application: TraFFic CaMMRa or VaxALPR On Camera MMC.

- **Brand**

  Find vehicles of a certain brand.

  Application: TraFFic CaMMRa or VaxALPR On Camera MMC.

- **Model**

  Find vehicles

  Application: TraFFic CaMMRa or VaxALPR On Camera MMC.

- **Color**

  Find vehicles in a certain color.

  Application: TraFFic CaMMRa or VaxALPR On Camera MMC.

Container search

About container search

When you use AXIS Optimizer together with certain applications, you can search, identify and share video evidence about containers. Container search supports data from this application:

- *VaxOCR Containers* by Vaxtor Recognition Technologies

Configure Container search

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2019 R3 or later
- Camera time synchronized with NTP
- The application listed in *About container search on page 44*

1. In the Management Client, add the camera that runs the chosen application.
2. Enable all devices that you need.
3. Configure metadata:
   - 3.1 Go to **Site Navigation > Recording Server** and find the device.
   - 3.2 Select Metadata 1 and click **Settings**.
   - 3.3 Go to **Metadata stream > Event data** and select **Yes**.
4. Go to the **Record settings** tab and verify that recording is enabled for metadata.
5. Click **Save**.

6. Configure the application so it works for a standard user:
    6.1 Add read and playback rights on the specific camera and user.
    6.2 Add read and playback rights on the *metadata* for the specific camera and user.

Search for a container

1. In the Smart Client, go to **Search**.
2. Select a time interval and one or several cameras.
3. Click **Search for > Container search > New search**.
4. Select search filters to narrow down the number of search results.

   To learn more about the different filters, see *Fine-tune a search on page 45*.
5. Select the search results you want to examine closer. You can for example bookmark them or *Create a PDF report with high quality images on page 46*.

Fine-tune a search

To narrow down the search results you can use one or several search filters. All filter options come from the application *VaxOCR Containers*.

- **Container code**

  Find a specific container code.
- **Owner**

  Find containers belonging to a certain owner.
- **Owner code**

  Find containers belonging to a certain owner.
- **Size**

  Find containers of a certain size.
- **Size code**
- **City or country**
- **Validation**

License plate search tab

About license plate search tab

You can add a separate tab with license plate search in the Smart Client. This is useful for example if your system doesn't have Centralized search. This is the same search as a when you search for a license plate in *Vehicle search*.

Configure license plate search tab

Note

Before you start, verify that you have:

- Milestone XProtect 2018 R3 or later
- Milestone Device Pack 10.1 or later
- Camera time synchronized with NTP
- One of the applications listed in *About vehicle search on page 42*

1. In the Management Client, add the camera that runs the chosen application.
2. Enable all devices that you need. To be able to use AXIS Licence Plate Verifier, Camera 1 and Metadata 1 are required.
3. Configure metadata:
   3.1 Go to **Site Navigation > Recording Server** and find the device.
   3.2 Select Metadata 1 and click **Settings**.
   3.3 Go to **Metadata stream > Event data** and select **Yes**.
4. Go to the **Record settings** tab and verify that recording is enabled for metadata.
5. Click **Save**.
6. Configure the application so it works for a standard user:
   6.1 Add read and playback rights on the specific camera and user.
   6.2 Add read and playback rights on the *metadata* for the specific camera and user.

Search for a license plate

1. In the Smart Client, go to **AXIS Optimizer license plate search** tab.

   If you don't see the tab, go to **Settings > Axis search options** and select **Show license plate search tab**.
2. Click **Configure devices** and select relevant cameras. Then, click **Close**.
3. Enter a license plate and a **Time frame**.

Create a PDF report with high quality images

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10167695

Forensic search

Create a report based on your search results and include high resolution images. You can use this report function for all types of searches.

Note

Before you start, verify that you have:

- Milestone XProtect Corporate or Expert 2019 R3 or later

1. In the Smart Client, perform a search.
2. Select the search results you want to include in the report.
3. Click **More actions > Create high quality PDF report**.
4. (Optional) Enter **Report name**, **Report destination** and **Notes**.
5. For each search result, select which frame you want to include in the report. To enlarge an image, double-click.
6. Click **Create**. When the report is ready, you'll get a notification.

Video dewarping

About dewarping

Dewarping flattens out and corrects the perspective of a geometric distorted image caused by a wide-angle or fisheye lens. Axis dewarping in Milestone can be used with any Axis 360° panoramic camera. Dewarping is done either directly in the camera, or in the Smart Client.

More details about dewarping:

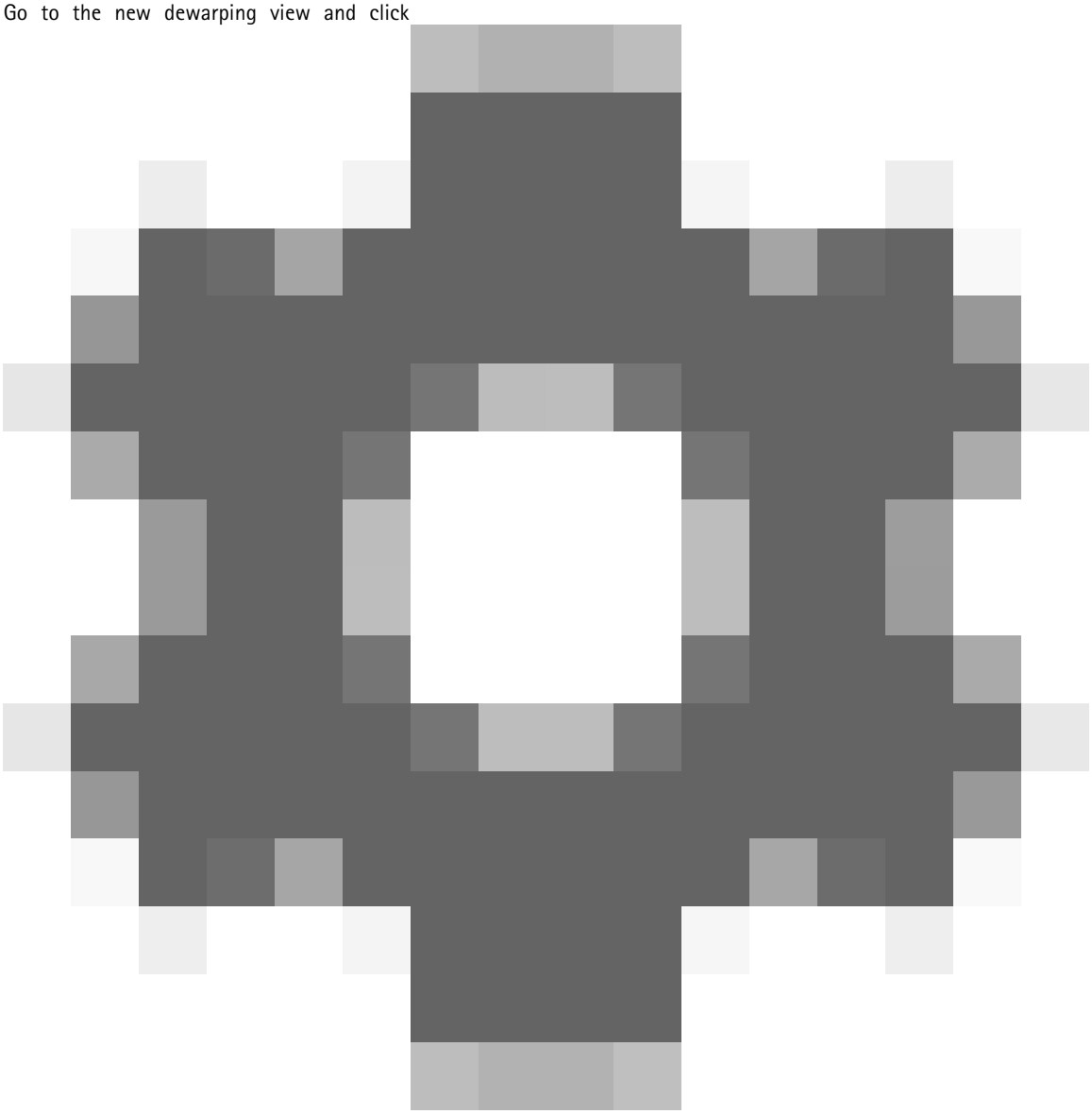
- When you use client-side dewarping, you'll get smooth dewarping both in live and recorded video.
- When you go back to a view, you'll automatically go to the latest dewarping location.
- Dewarping is included when you export videos.
- You can save a home position, see *Set a home position on page 50*
- You can configure if operators are allowed to control and edit dewarping views, see *Allow operators to control and edit dewarping views on page 51*

Create a dewarping view

Note

To optimize the stream for dewarping, select the maximum available resolution for **Video stream 1** of **Camera 1** in the Management Client. For more information, see *Performance and troubleshooting on page 51*.

1. Open the Smart Client and click **Setup**.
2. Go to **Views**.
3. Click **Create new view** and select a format.
4. Go to **System Overview > AXIS Optimizer**.
5. Click **Dewarping view** and drag it into the view.
6. Select a camera and the camera's current mounting position.
7. Click **Setup**.

8. Go to the new dewarping view and click  .
9. Click **Set view type** and select one option. Depending on how the camera is mounted, you can select **Quad**, **Normal**, **Normal with overview** or **Panorama**.

Note

We recommend to use 100 % DPI. If the resolution is other than 100%, Axis dewarping on the second display may not be fully visible.

If you use another DPI settings, the dewarp windows may only be partially visible. Follow the instructions in these external articles to solve this problem:

- *Issues with XProtect on high-res displays (4K and above)*
- *Client GUI scaling on high DPI displays*

Create a dewarping view for multisensor panoramic cameras

You can use dewarping views for multisensor panoramic cameras, for example AXIS P3807-PVE Network Camera and AXIS Q3819-PVE Panoramic Camera

- Client-side stitching. If the camera is set to capture mode *client dewarp*, AXIS Optimizer performs stitching of the four images into one seamless panorama (only AXIS P3807–PVE).
- Horizon adjustment. It it possible to adjust the horizon of the panorama. This might be desired to if the camera is tilted to the ground and the world horizon is curved. This will also make the virtual PTZ control more intuitive.
- PTZ control. Makes it possible to zoom in and move around in the image as if it was a PTZ camera.

To watch this video, go to the web version of this document.

www.axis.com/products/online-manual/50331#t10146469

Note

Before you start, verify that you have:

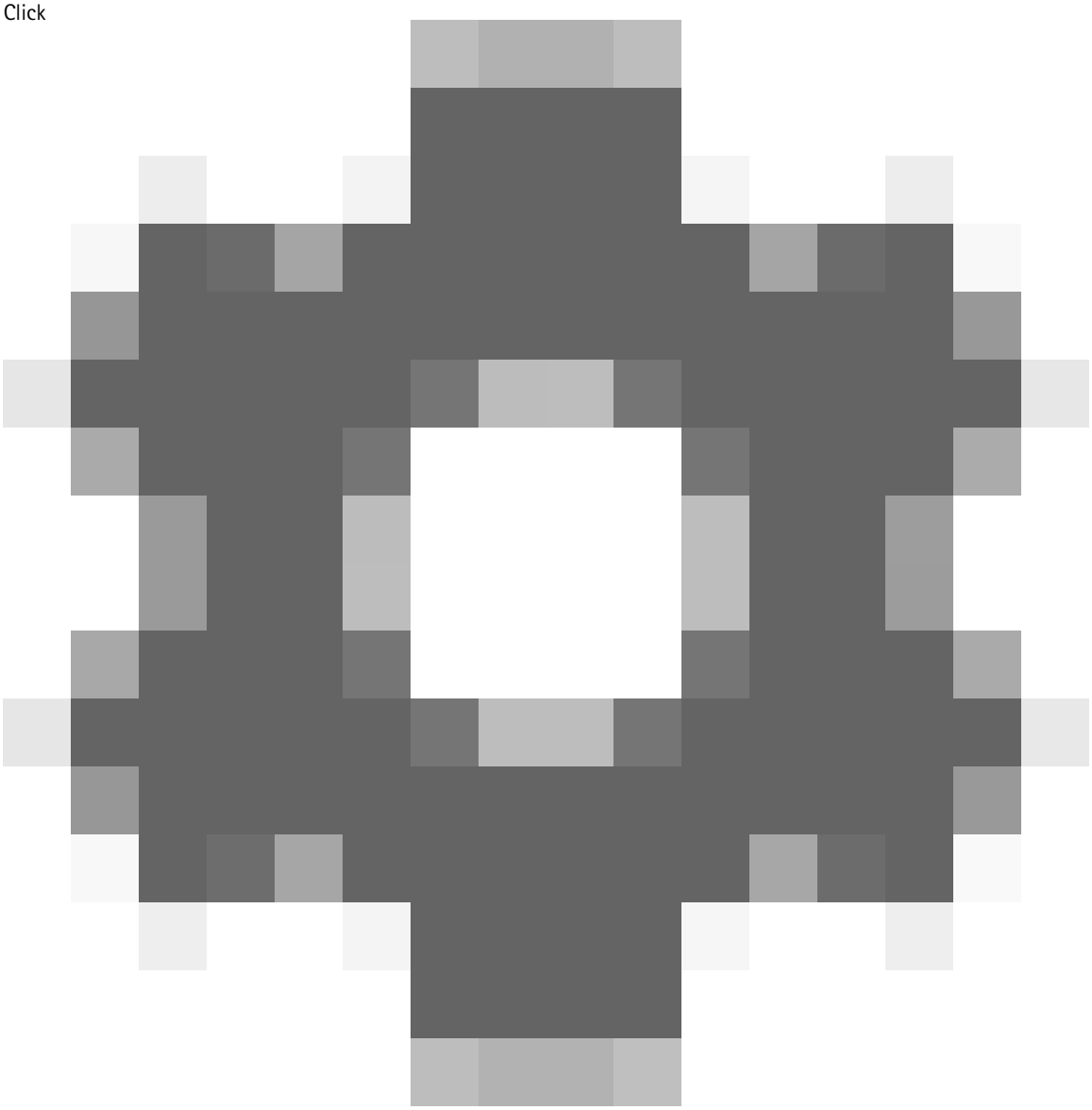
- XProtect Corporate, Expert, Professional+, Express+ or Essential+ running Smart Client 2017 R3 or later
- Users with one of the following user rights:
  - Optimizer role
  - Hardware > Driver commands = Allow
- An Axis multisensor panoramic camera

1. If applicable, set the capture mode to **Client Dewarp** during the initial device setup.
2. Open the Smart Client and click **Setup**.
3. Go to **Views**.
4. Click **Create new view** and select a format.
5. Go to **System Overview > AXIS Optimizer**.
6. Click **Dewarping view** and drag it into the view.
7. Select a multisensor panoramic camera.

   The first time you add the multisensor panoramic camera to a dewarping view, a horizon calibration window will be displayed above the view.
8. Click the arrows to make the red line align to the world horizon.
9. Click **Done** to save your settings and exit the calibration mode.

Set a home position

1. In the Smart Client, open a dewarping view.
2. Go to the position you want to save as home position.
3. Click



, then **Set home position**.

Allow operators to control and edit dewarping views

You can configure if operators should be allowed to control and edit dewarping views, see *Customize which features operators can access on page 54*.

Performance and troubleshooting

Performance considerations

Video dewarping

- Axis video dewarping is performed in the GPU when possible, but the video dewarping will also put load on the CPU.
- To prevent the frame rate to drop in a large view with many dewarping views, consider the following:
  - Camera resolution. A high camera resolution, for example 2880x2880, requires a lot of of computer power compared to for example 1920x1920.
  - Camera frame rate. If you don't need a high frame rate, a change to a lower frame rate can prevent stuttering in the dewarping view and other views.
  - Monitor resolution. High resolution monitors, for example 4K, require a lot of resources to show the video. If you don't need the higher resolution, a lower monitor resolution will make it possible to run more dewarped views without stuttering.

Dynamic resolution

- The video stream will be automatically downscaled, if possible, without decreasing video quality. This can improve the performance of the dewarping views.
- If you experience a blink when zooming in from overview, it can help to turn off dynamic resolution.
- To turn on or off dynamic resolution: in the Smart Client, go to **Settings > Axis dewarping options > Rendering options** and select or clear **Dynamic resolution**.
- **Dynamic resolution** is enabled by default.

Compatibility rendering

- If there is any visual errors in the dewarping image, for example black image, or the performance seems worse than expected, enable compatibility rendering. Note that a negative effect of compatibility rendering is that transitions between views and scrubbing in playback may flicker.
- To turn on or off compatibility rendering: open the Smart Client and go to **Settings > Axis dewarping options > Rendering options** and select or clear **Use compatibility rendering**.
- **Use compatibility rendering** is disabled by default.

What to expect

In a reference system with an Intel i7 8700 NVIDIA Gefore 1050 GTX and three 1920x1080 monitors you can expect that:

- 7 dewarping views in 1920x1920 resolution and 25fps can be run without frame drops, or
- 4 dewarping views in 2880x2880 resolution and 25 fps

If one of the three displays runs in 4K resolution instead of 1920x1080 you can expect that:

- 5 dewarping views in 1920x1920 resolution and 25fps can be run without frame drops, or
- 3 dewarping views in 2880x2880 resolution and 25 fps. One dewarping view on each monitor.

Frame rate and resolution scales are linear. A computer that can run 5 dewarped views with 30 fps can run 10 views if you reduce the frame rate to 15 fps.

Body worn integration

About AXIS Optimizer Body Worn Extension

AXIS Optimizer Body Worn Extension lets in-field camera users record, tag and share video with office-based investigators, who can search for and manage video evidence using Milestone XProtect. The service securely enables connection and transfer between Axis body worn system and Milestone XProtect. AXIS Body Worn Extension is a free, standalone service you must install on the recording server.

Note

The supported versions are:

- Milestone XProtect® 2020 R1 Corporate or newer versions
- Milestone XProtect® 2020 R1 Professional+ or newer versions
- Milestone XProtect® 2020 R1 Expert or newer versions

Always use the latest XProtect hotfixes and cumulative patch installers.

Learn more

- To download the service itself or read the integration guide and solution note, go to *axis.com*
- To read the user manual, go to *axis.help.com*

System maintenance

Customize which features operators can access

About Role settings

You can configure which AXIS Optimizer features an operator in the Smart Client have access to or not. You can also turn on or off some sub-features for an operator. This function, *Role settings*, is turned off by default. This means that by default, all users have access to all AXIS Optimizer Smart Client features as long as the users have the necessary device permissions in Milestone XProtect.

Configure Role settings

Note

Before you start, verify that you have:

- AXIS Optimizer version 3.7.13.1 or later on all client PCs

Turn on **Role settings**:

1. In the Management Client, go to **Site Navigation > Security > AXIS Optimizer Security**.
2. Select **Enable Role settings**.
3. Restart the Management Client.

Configure **Role settings**:

1. In the Management Client, go to **Site Navigation > Security > Roles**.
2. Select a role and go to **Overall security**.
3. Click **AXIS Optimizer**.
4. Select which features the role should have access to or not.

   - **Full control**
     Gives the operator role full access to all AXIS Optimizer features.
   - **Edit (not applicable)**
     A Milestone XProtect function that isn't applicable to AXIS Optimizer Role settings.
   - **Access AXIS Optimizer in Management Client**
     The operator role can use all AXIS Optimizer administration features in the Management Client.
   - **Manage AXIS Optimizer security**
     The operator role can change the settings in **Site Navigation > Security > AXIS Optimizer Security**.
   - **Dynamic camera operator controls**
     The operator role gets access to all pre-installed functions the system finds on a device.
   - **Remote focus operator control**
     The operator role can set the remote focus on fixed dome cameras.
   - **PTZ operator controls**
     The operator role gets access to specific operator PTZ controls: focus control, PTZ presets, operator controls for Autotracking 2, washer and SpeedDry/Wiper button.
   - **Temperature spot measurement control**
     The operator role can measure the spot temperature on AXIS Q2901-E.

- **Speaker operator control**
  The operator role gets access to all Speaker manager features in the Smart Client.
- **Access visitor management**
  The operator role gets access to everything related to visitor management, for example answer a call and open a door in live view.
- **Access call history**
  The operator role can access a door station's call history. You must allow **Access visitor management** to use this setting.
- **Extended search functions**
  If you select **Deny**, the AXIS License Plate Verifier tab is hidden in the Smart Client. Also, you can't use the Vehicles and Containers search in the Centralized search.
- **Control dewarping view**
  The operator role can move around in the dewarping views.
- **Edit a dewarping view's home position**
  The operator role can edit a camera's home position.
- **Web page**
  The operator role can create a view with a web browser.

5. Click **Save**.
6. Restart all running Smart Clients in your system.

Turn off Role settings

1. In the Management Client, go to **Site Navigation > Security > AXIS Optimizer Security**.
2. Clear **Enable Role settings**.
3. Restart the Management Client.
4. Restart all running Smart Clients in your system.

Need more help?

FAQ

Question	Answer
How do I update AXIS Optimizer when the client PC doesn't have Internet access?	Publish the new version on the VMS management server, see *Upgrade system automatically on page 6*
Do I need to back up the settings before upgrading to AXIS Optimizer 4.0?	No, you don't need to backup. Nothing will change when you upgrade to version 4.0.
If I've more than 30 clients PCs with AXIS Optimizer, do I need to upgrade them one by one?	You can upgrade the clients individually. You can also push the upgrade automatically by publishing a local AXIS Optimizer version to your system, see *Upgrade system automatically on page 6*
Can I enable or disable each plugin within AXIS Optimizer separately?	No, but they are not taking any resources if you are not actively using them.
Which ports does AXIS Optimizer use?	Ports 80 and 443 are both necessary to communicate with axis.com so your system can get information about new releases and download updates.

Troubleshooting

If you have technical issues, turn on debug logging, reproduce the problem and then share these logs with your Axis support.

To turn on debug logging:

1. In Smart Client, go to **Settings > Axis general options** and select **Turn on debug logging**.

To check which AXIS Optimizer features your client supports:

1. In Smart Client, go to **Settings > Axis general options** and select **Show compatibility info**.

Contact support

Contact support at *axis.com/support*.

Tips and tricks

Add web page in a Smart Client view

AXIS Optimizer allows you to an display almost any web pages directly in Smart Client, not only html pages. This web view is powered by a modern browser engine and compatible with most web pages. This is useful, for example when you want to access AXIS Body Worn Manager from Smart Client or show a dashboard from AXIS Store Reporter next to your live views.

1. In Smart Client, click **Setup**.
2. Go to **Views**.
3. Create new view or select an existing one.
4. Go to **System Overview > AXIS Optimizer**.
5. Click **Web view** and drag it into the view.
6. Enter an address and click **OK**.
7. Click **Setup**.

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AXIS Optimizer

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