About this document
This manual is intended for administrators and users of AXIS Q6044-5 PTZ Dome Network Camera, and is applicable to firmware 5.70 and later. It includes instructions for using and managing the product on your network. Previous experience of networking will be of use when using this product. Some knowledge of UNIX or Linux-based systems may also be beneficial, for developing shell scripts and applications. Later versions of this document will be posted to the Axis website, as required. See also the product’s online help, available via the web-based interface.

Legal Considerations
Video surveillance can be regulated by laws that vary from country to country. Check the laws in your local region before using this product for surveillance purposes.
This product includes one (1) H.264 decoder license. To purchase further licenses, contact your reseller.

Liability
Every care has been taken in the preparation of this document. Please inform your local Axis office of any inaccuracies or omissions. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Axis Communications AB makes no warranty of any kind with regard to the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Axis Communications AB shall not be liable for incidental or consequential damages in connection with the furnishing, performance or use of this material. This product is only to be used for its intended purpose.

Intellectual Property Rights
Axis AB has intellectual property rights relating to technology embodied in the product described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the patents listed at www.axis.com/patent.htm and one or more additional patents or pending patent applications in the US and other countries.
This product contains licensed third-party software. See the menu item "About" in the product’s user interface for more information.
This product contains source code copyright Apple Computer, Inc., under the terms of Apple Public Source License 2.0 (see www.opensource.apple.com/apsl). The source code is available from https://developer.apple.com/bonjour/

Equipment Modifications
This equipment must be installed and used in strict accordance with the instructions given in the user documentation. This equipment contains no user-serviceable components. Unauthorized equipment changes or modifications will invalidate all applicable regulatory certifications and approvals.

Trademark Acknowledgments
AXIS COMMUNICATIONS, AXIS, ETRAX, ARTPEC and VAPIX are registered trademarks or trademark applications of Axis AB in various jurisdictions. All other company names and products are trademarks or registered trademarks of their respective companies. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates. UPIoT™ is a certification mark of the UPIoT™ Implementers Corporation.
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Regulatory Information

A copy of the original declaration of conformity may be obtained from Axis Communications AB. See Contact Information on page 3.

Electromagnetic Compatibility (EMC)
This equipment has been designed and tested to fulfill applicable standards for:
- Radio frequency emission when installed according to the instructions and used in its intended environment.
- Immunity to electrical and electromagnetic phenomena when installed according to the instructions and used in its intended environment.

USA
This equipment has been tested using an unshielded network cable (UTP) and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. This equipment has also been tested using a shielded network cable (STP) and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada
This digital apparatus complies with CAN ICES-3 (Class A). The product shall be connected using a shielded network cable (STP) that is properly grounded. Cet appareil numérique est conforme à la norme NMB ICS-3 (classe A). Le produit doit être connecté à l’aide d’un câble réseau blindé (STP) qui est correctement mis à la terre.

Europe
This digital equipment fulfills the requirements for RF emission according to the Class A limit of EN 55022. The product shall be connected using a shielded network cable (STP) that is properly grounded. Notice! This is a Class A product. In a domestic environment this product may cause RF interference, in which case the user may be required to take adequate measures.
This product fulfills the requirements for electricity and immunity according to EN 50121-4 and IEC 62236-4 railway applications. This product fulfills the requirements for immunity according to EN 61000-6-1 residential, commercial and light-industrial environments. This product fulfills the requirements for immunity according to EN 61000-6-2 industrial environments. This product fulfills the requirements for immunity according to EN 55024 office and commercial environments.

Australia/New Zealand
This digital equipment fulfills the requirements for RF emission according to the Class A limit of AS/NZS CISPR 22. The product shall be connected using a shielded network cable (STP) that is properly grounded. Notice! This is a Class A product. In a domestic environment this product may cause RF interference, in which case the user may be required to take adequate measures.

Japan
この装置は、クラスター情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。本製品は、ソフトウェアワークグループ(SWP)を使用して検査を受けています。また適切に接続してください。

Korea
이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 절을 준수하시기 바랍니다. 가정외의 지역에서 사용하는 것을 목적으로 합니다. 적절히 설치된 STP (shielded twisted pair) 케이블을 사용하여 제품을 연결하십시오.
Safety
This product complies with IEC/EN/UL 60950-1 and IEC/EN/UL 60950-2-2, Safety of Information Technology Equipment. The product shall be grounded either through a shielded network cable (STP) or other appropriate method.

The power supply used with this product shall fulfill the requirements for Safety Extra Low Voltage (SELV) and Limited Power Source (LPS) according to IEC/EN/UL 60950-1.

Battery
The Axis product uses a 3.0 V BR2032 lithium battery as the power supply for its internal real-time clock (RTC). Under normal conditions this battery will last for a minimum of five years.

Low battery power affects the operation of the RTC, causing it to reset at every power-up. When the battery needs replacing, a log message will appear in the product’s server report. For more information about the server report, see the product's setup pages or contact Axis support.

The battery should not be replaced unless required, but if the battery does need replacing, contact Axis support at www.axis.com/techsup for assistance.

WARNING
- Risk of explosion if the battery is incorrectly replaced.
- Replace only with an identical battery or a battery which is recommended by Axis.
- Dispose of used batteries according to local regulations or the battery manufacturer’s instructions.

Disposal and Recycling
When this product has reached the end of its useful life, dispose of it according to local laws and regulations. For information about your nearest designated collection point, contact your local authority responsible for waste disposal. In accordance with local legislation, penalties may be applicable for incorrect disposal of this waste.

Europe
This symbol means that the product shall not be disposed of together with household or commercial waste. Directive 2012/19/EU on waste electrical and electronic equipment (WEEE) is applicable in the European Union member states. To prevent potential harm to human health and the environment, the product must be disposed of in an approved and environmentally safe recycling process. For information about your nearest designated collection point, contact your local authority responsible for waste disposal. Businesses should contact the product supplier for information about how to dispose of this product correctly.

This product complies with the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

China
This product complies with the requirements of the legislative act Administration on the Control of Pollution Caused by Electronic Information Products (ACPEIP).

Contact Information
Axis Communications AB
Emdalavägen 14
223 69 Lund
Sweden
Tel: +46 46 272 18 00
Fax: +46 46 13 61 30
www.axis.com

Support
Should you require any technical assistance, please contact your Axis reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response. If you are connected to the Internet, you can:
- report problems to Axis support staff by logging in to your private support area
- chat with Axis support staff
- visit Axis Support at www.axis.com/techsup/

Learn More!
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AXIS Q6044-E PTZ Dome Network Camera

Safety Information

Hazard Levels

- **DANGER**: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
- **WARNING**: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION**: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
- **NOTICE**: Indicates a situation which, if not avoided, could result in damage to property.

Other Message Levels

- **Important**: Indicates significant information which is essential for the product to function correctly.
- **Note**: Indicates useful information which helps in getting the most out of the product.
**NOTICE**

Make sure the dome is attached in operation mode, otherwise focus may be affected.

---

**Connectors and Buttons**

For technical specifications, see page 61.

**Network Connector**

RJ45 Push-pull Connector (IP66) with High Power over Ethernet (High PoE).
**AXIS Q6044-E PTZ Dome Network Camera**

**Hardware Overview**

**NOTICE**
Use the supplied midspan.

**NOTICE**
Due to local regulations or the environmental and electrical conditions in which the product is to be used, a shielded network cable (STP) may be appropriate or required. All cables connecting the product to the network and that are routed outdoors or in demanding electrical environments shall be intended for their specific use. Make sure that the network devices are installed in accordance with the manufacturer’s instructions. For information about regulatory requirements, see *Electromagnetic Compatibility (EMC)* on page 2.

**NOTICE**
To comply with the IP66-rated design of the camera and maintain the IP66 protection, the supplied RJ45 Push-pull Connector (IP66) shall be used. Alternatively, use the RJ45 IP66-rated cable with pre-mounted connector which is available from your Axis reseller. Do not remove the plastic network connector shield from the camera.

**SD Card Slot**

**NOTICE**
- Risk of damage to SD card. Do not use sharp tools or excessive force when inserting or removing the SD card.
- Risk of data loss. To prevent data corruption, the SD card should be unmounted before removal. To unmount, go to Setup > System Options > Storage > SD Card and click Unmount.

This product supports SD/SDHC/SDXC cards (not included).

For SD card recommendations, see www.axis.com

**Control Button**

For location of the control button, see *Hardware Overview on page 7*.

The control button is used for:
- Resetting the product to factory default settings. See page 56.
- Connecting to an AXIS Video Hosting System Service. See page 49. To connect, press and hold the button for about 3 seconds until the Status LED flashes green.
- Connecting to AXIS Internet Dynamic DNS Service. See page 49. To connect, press and hold the button for about 3 seconds.

**Power Button**

Press and hold the power button to temporarily power the product when the dome cover is removed. The power button is also used with the control button to reset the camera to factory default settings. See page 56.

**LED Indicators**

<table>
<thead>
<tr>
<th>Status LED</th>
<th>Indication</th>
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<tbody>
<tr>
<td>Unlit</td>
<td>Connection and normal operation.</td>
</tr>
<tr>
<td>Green</td>
<td>Shows steady green for 10 seconds for normal operation after startup completed.</td>
</tr>
<tr>
<td>Amber</td>
<td>Steady during startup. Flashes during firmware upgrade.</td>
</tr>
<tr>
<td>Amber/Red</td>
<td>Flashes amber/red if network connection is unavailable or lost.</td>
</tr>
<tr>
<td>Red</td>
<td>Flashes red for firmware upgrade failure.</td>
</tr>
</tbody>
</table>
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Hardware Overview

### Midspan LED Indicators

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>Indication</th>
</tr>
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<tbody>
<tr>
<td>Port</td>
<td>Unlit</td>
<td>No camera connected.</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>Steady when camera connected, normal operation.</td>
</tr>
<tr>
<td></td>
<td>Green, flashing</td>
<td>Slow flash when overcurrent or short circuit condition on the port.</td>
</tr>
<tr>
<td></td>
<td>Green, flashing</td>
<td>Fast flash when input voltage is out of range or other internal error.</td>
</tr>
<tr>
<td>AC</td>
<td>Green</td>
<td>Steady when AC power input connected.</td>
</tr>
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Access the Product

To install the Axis product, see the Installation Guide supplied with the product. The product can be used with most operating systems and browsers. The recommended browsers are

- Internet Explorer® with Windows®
- Safari® with OS X®
- Chrome™ or Firefox® with other operating systems.

See Technical Specifications on page 61.

To view streaming video in Internet Explorer, allow installation of AXIS Media Control (AMC) when prompted.

The Axis product includes one (1) H.264 decoder license for viewing video streams. The license is automatically installed with AMC. The administrator can disable the installation of the decoders, to prevent installation of unlicensed copies.

Note

- QuickTime™ is also supported for viewing H.264 streams.

Access from a Browser

1. Start a web browser.

2. Enter the IP address or host name of the Axis product in the browser's Location/Address field.
   
   To access the product from a Mac computer (OS X), go to Safari, click on Bonjour and select the product from the drop-down list.

   If you do not know the IP address, use AXIS IP Utility to locate the product on the network. For information about how to discover and assign an IP address, see the document Assign an IP Address and Access the Video Stream on Axis Support web at www.axis.com/techsup

   Note

   To show Bonjour as a browser bookmark, go to Safari > Preferences.

3. Enter your user name and password. If this is the first time the product is accessed, the root password must first be configured. For instructions, see Set the Root Password on page 11.

4. The product's Live View page opens in your browser.

   Note

   The controls and layout of the Live View page may have been customized to meet specific installation requirements and user preferences. Consequently, some of the examples and functions featured here may differ from those displayed in your own Live View page.

Access from the Internet

Once connected, the Axis product is accessible on your local network (LAN). To access the product from the Internet you must configure your network router to allow incoming data traffic to the product. To do this, enable the NAT-traversal feature, which will attempt to automatically configure the router to allow access to the product. This is enabled from Setup > System Options > Network > TCP/IP Advanced.

For more information, see NAT traversal (port mapping) for IPv4 on page 50. See also AXIS Internet Dynamic DNS Service at www.axis.com.net

For Technical notes on this and other topics, visit the Axis Support web at www.axis.com/techsup
AXIS Q6044-E PTZ Dome Network Camera

Access the Product

Set the Root Password

To access the Axis product, you must set the password for the default administrator user root. This is done in the Configure Root Password dialog, which opens when the product is accessed for the first time.

To prevent network eavesdropping, the root password can be set via an encrypted HTTPS connection, which requires an HTTPS certificate. HTTPS (Hypertext Transfer Protocol over SSL) is a protocol used to encrypt traffic between web browsers and servers. The HTTPS certificate ensures encrypted exchange of information. See HTTPS on page 45.

The default administrator user name root is permanent and cannot be deleted. If the password for root is lost, the product must be reset to the factory default settings. See Reset to Factory Default Settings on page 56.

To set the password via a standard HTTP connection, enter it directly in the dialog.

To set the password via an encrypted HTTPS connection, follow these steps:

1. Click Use HTTPS.
   A temporary certificate (valid for one year) is created, enabling encryption of all traffic to and from the product, and the password can now be set securely.
2. Enter a password and then re-enter it to confirm the spelling.
3. Click OK. The password has now been configured.

The Live View Page

The controls and layout of the Live View page may have been customized to meet specific installation requirements and user preferences. Consequently, some of the examples and functions featured here may differ from those displayed in your own Live View page. The following provides an overview of each available control.

Controls on the Live View Page

Click the View size buttons to show the image in full size (right button) or to scale down the image to fit the browser window (left button).

Select a stream profile for the Live View page from the Stream Profile drop-down list. For information about how to configure stream profiles, see page 19.

The Manual Trigger button is used to trigger an action rule from the Live View page. For information about how to configure and enable the button, see Manual Trigger on page 12.

Click Snapshot to save a snapshot of the video image. This button is primarily intended for use when the AXIS Media Control viewer toolbar is not available. Enable this button from Live View Config > Action Buttons.

The product’s fans are controlled by the ambient temperature and are turned on and off automatically. If required, the fans can be activated manually by clicking the Fan button. To show the button, go to Setup > Live View Config. Under Action Buttons, select Show fan button and specify the number of minutes the fans should be activated.
The product's heater is controlled by the ambient temperature and is turned on and off automatically. If required, the heater can be activated manually by clicking the Heater button. To show the button, go to Setup > Live View Config. Under Action Buttons, select Show heater button and specify the number of minutes the heater should be activated.

Enable or disable the Gatekeeper by selecting On or Off from the drop-down list. For more information about the Gatekeeper, see page 28.

Manual Trigger
The Manual Trigger is used to trigger an action rule from the Live View page. The manual trigger can for example be used to validate actions during product installation and configuration.

To configure the manual trigger:
1. Go to Setup > Events.
2. Click Add to add a new action rule.
3. From the Trigger drop-down list, select Input Signal.
4. From the second drop-down list, select Manual Trigger.
5. Select the desired action and configure the other settings as required.

For more information about action rules, see Events on page 36.

To show the manual trigger buttons in the Live View page:
1. Go to Setup > Live View Config.
2. Under Action Buttons, select Show manual trigger button.

AXIS Media Control viewer toolbar
The AXIS Media Control viewer toolbar is available in Internet Explorer only. See AXIS Media Control (AMC) on page 14 for more information. The toolbar displays the following buttons:

- The Play button connects to the Axis product and starts playing a media stream.
- The Stop button stops the media stream.
- The Snapshot button takes a snapshot of the video image. The location where the image is saved can be specified in the AMC Control Panel.
- Click the View Full Screen button and the video image will fill the entire screen. Press ESC (Escape) on the computer keyboard to cancel full screen view.
- The Record button is used to record the current video stream on your computer. The location where the recording is saved can be specified in the AMC Control Panel. Enable this button from Live View Config > Viewer Settings.

PTZ Controls
The Live View page also displays Pan/Tilt/Zoom (PTZ) controls. The administrator can enable/disable controls for specified users under System Options > Security > Users.

With the PTZ Control Queue enabled the time each user is in control of the PTZ settings is limited. Click the buttons to request or release control of the PTZ controls. The PTZ Control Queue is set up under PTZ > Control Queue.
Click the **Emulate joystick mode** button and click in the image to move the camera view in the direction of the mouse pointer.

Click the **Center mode** button and click in the image to center the camera view on that position.

The center mode button could also be used to zoom in on a specific area. Click in the image and drag to draw a rectangle surrounding the area to be magnified. To zoom out, rotate the mouse wheel.

Click the **Ctrl panel** button to open the PTZ control panel which provides additional PTZ controls. User-defined buttons can also appear in the Control panel. See **Controls on page 30**.

Select a recorded tour and click **play** to play a previously recorded tour and click **stop**. See **Tour Recording on page 29**.

Select a PTZ preset position to steer the camera view to the saved position. See **Preset Positions on page 26**.

Click the **Start Auto Track** button to start autotracking directly from the Live View page. See **Autotracking on page 27**.

**Pan and Tilt bars** – Use the arrows to pan and tilt the camera view, or click on a position on the bar to steer the camera view to that position.

**Zoom bar** – Use the arrows to zoom in and out, or click on a position on the bar to zoom to that position.

**Focus bar** – Use the arrows to focus the camera, or click on a position on the bar to set the focus position. Using the focus bar will disable the product’s autofocus. To re-enable, use the PTZ control panel which is opened by clicking the **Ctrl panel** button (see above).

**Iris bar** – Click on a position to set a manual exposure level to make the image brighter or darker. This will disable auto iris (automatic exposure) and set fixed levels on iris, gain and shutter speed. To re-enable auto iris, use the PTZ control panel which is opened by clicking the **Ctrl panel** button (see above). If auto iris is enabled, **Auto** is visible next to the **Iris bar**.

**Important**

In an environment with varying light conditions it is recommended to use the **Brightness bar** instead of the **Iris bar** to adjust image brightness since changing the brightness level will not disable auto iris (automatic exposure).

**Brightness bar** – Click on a position on the brightness bar to adjust the image brightness. This setting will not be saved. To make a saved change, go to **Setup > Video > Camera Settings > Brightness** and adjust the brightness.

The **PTZ controls** can be disabled under **PTZ > Advanced > Controls**, see **Controls on page 30**.
Media Streams

The Axis product provides several video stream formats. Your requirements and the properties of your network will determine the type you use.

The Live View page in the product provides access to H.264 and Motion JPEG video streams, and to the list of available stream profiles. Other applications and clients can access video streams directly, without going via the Live View page.

How to Stream H.264

H.264 can, without compromising image quality, reduce the size of a digital video file by more than 80% compared with the Motion JPEG format and as much as 50% more than the MPEG-4 standard. This means that much less network bandwidth and storage space are required for a video file. Or seen another way, much higher video quality can be achieved for a given bit rate.

Deciding which combination of protocols and methods to use depends on your viewing requirements, and on the properties of your network. The available options in AXIS Media Control are:

<table>
<thead>
<tr>
<th>Unicast RTP</th>
<th>This unicast method (RTP over UDP) is used for live unicast video, especially when it is important to have an up-to-date video stream, even if some frames are dropped.</th>
<th>Unicasting is used for video-on-demand transmission so that there is no video traffic on the network until a client connects and requests the stream. Note that there are a maximum of 20 simultaneous unicast connections.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTP over RTSP</td>
<td>This unicast method (RTP tunneled over RTSP) is useful as it is relatively simple to configure firewalls to allow RTSP traffic.</td>
<td></td>
</tr>
<tr>
<td>RTP over RTSP over HTTP</td>
<td>This unicast method can be used to traverse firewalls. Firewalls are commonly configured to allow the HTTP protocol, thus allowing RTP to be tunneled.</td>
<td></td>
</tr>
<tr>
<td>Multicast RTP</td>
<td>This method (RTP over UDP) should be used for live multicast video. The video stream is always up-to-date, even if some frames are dropped. Multicasting provides the most efficient usage of bandwidth when there are large numbers of clients viewing simultaneously. A multicast cannot however, pass a network router unless the router is configured to allow this. It is not possible to multicast over the Internet, for example. Note also that all multicast viewers count as one unicast viewer in the maximum total of 20 simultaneous connections.</td>
<td></td>
</tr>
</tbody>
</table>

AXIS Media Control negotiates with the Axis product to determine the transport protocol to use. The order of priority, listed in the AMC Control Panel, can be changed and the options disabled, to suit specific requirements.

**Note**

H.264 is licensed technology. The Axis product includes one H.264 viewing client license. Installing additional unlicensed copies of the client is prohibited. To purchase additional licenses, contact your Axis reseller.

MJPEG

This format uses standard JPEG still images for the video stream. These images are then displayed and updated at a rate sufficient to create a stream that shows constantly updated motion.

The Motion JPEG stream uses considerable amounts of bandwidth, but provides excellent image quality and access to every image contained in the stream. The recommended method of accessing Motion JPEG live video from the Axis product is to use the AXIS Media Control in Internet Explorer in Windows.

AXIS Media Control (AMC)

AXIS Media Control (AMC) in Internet Explorer in Windows is the recommended method of accessing live video from the Axis product.
AXIS Q6044-E PTZ Dome Network Camera

Media Streams

The AMC Control Panel can be used to configure various video settings. Please see the AXIS Media Control User’s Manual for more information.

The AMC Control Panel is automatically installed on first use, after which it can be configured. Open the AMC Control Panel from:

- Windows Control Panel (from the Start screen or Start menu)
- Alternatively, right-click the video image in Internet Explorer and click Settings.

Alternative Methods of Accessing the Video Stream

You can also access video and images from the Axis product in the following ways:

- **Motion JPEG server push** (if supported by the client, Chrome or Firefox, for example). This option maintains an open HTTP connection to the browser and sends data as and when required, for as long as required.
- **Still JPEG images in a browser**. Enter the path `http://<ip>/axis-cgi/jpg/image.cgi`
- **Windows Media Player**. This requires AXIS Media Control and the H.264 decoder to be installed. The following paths can be used:
  - Unicast via RTP: `axrtpu://<ip>/axis-media/media.amp`
  - Unicast via RTSP: `axrtsp://<ip>/axis-media/media.amp`
  - Unicast via RTSP, tunneled via HTTP: `axrtsphttp://<ip>/axis-media/media.amp`
  - Multicast: `axrtpm://<ip>/axis-media/media.amp`
- **QuickTime™**. The following paths can be used:
  - `rtsp://<ip>/axis-media/media.amp`
  - `rtsp://<ip>/axis-media/media.3gp`
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Media Streams

Note

- `<ip>` = IP address
- The Axis product supports QuickTime 6.5.1 and later.
- QuickTime may add latency to the video stream.
- It may be possible to use other players to view the H.264 stream using the paths above, although Axis does not guarantee this.
Set Up the Product

The Axis product can be configured by users with administrator or operator rights. To open the product’s Setup pages, click Setup in the top right-hand corner of the Live View page.

- Administrators have unrestricted access to all settings.
- Operators have access to all settings except System Options

See also the online help.

Basic Setup

Basic Setup provides shortcuts to the settings that should be made before using the Axis product:

1. Users. See page 45.
2. TCP/IP. See page 48.
3. Date & Time. See page 47.

The Basic Setup menu can be disabled from System Options > Security > Users.
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Video

It is possible to configure the following video features in your Axis product:

- Video stream. See page 18.
- Stream profiles. See page 19.
- Camera settings. See page 20.
- Overlay image. See page 21.
- Privacy mask. See page 23.

Set Up Video Streams
To set up the product’s video streams, go to Video > Video Stream.

The video stream settings are divided into the following tabs:

- Image. See page 18.
- MJPEG. See page 19.

Pixel Counter
The pixel counter shows the number of pixels in an area of the image. The pixel counter is useful in situations where there is a specific size requirement, for example in face recognition.

The pixel counter can be used:

- When setting up a video stream, see Set Up Video Streams on page 18. Under Preview, click Open and select the Show pixel counter option to enable the rectangle in the image. Use the mouse to move and resize the rectangle, or enter the number of pixels in the Width and Height fields and click Apply.
- When accessing the Live View page in Internet Explorer with AXIS Media Control (AMC) in Windows. Right-click in the image and select Pixel counter. Use the mouse to move and resize the rectangle.

Image
The default image settings can be configured under Video > Video Stream. Select the Image tab.

The following settings are available:

- Resolution. Select the default resolution.
- Compression. The compression level affects the image quality, bandwidth and file size of saved images; the lower the compression, the higher the image quality with higher bandwidth requirements and larger file sizes.
- Rotate image. If required, the image can be rotated.
- Maximum frame rate. To avoid bandwidth problems, the frame rate allowed to each viewer can be Limited to a fixed amount. Alternatively, the frame rate can be set as Unlimited, which means the Axis product always delivers the highest frame rate possible under the current conditions.

Overlay settings. See Overlay on page 21.

Click Save to apply the new settings.
**Video**

**H.264**

H.264, also known as MPEG-4 Part 10/AVC, is a video compression standard that provides high quality video streams at low bit rates. An H.264 video stream consists of different types of frames such as I-frames and P-frames. An I-frame is a complete image whereas P-frames only contain the differences from previous frames.

The H.264 stream settings can be configured from the Video > Video Stream page. Select the H.264 tab. The settings defined in this page will apply to all H.264 streams that do not use a stream profile.

The GOP length is the number of frames between two consecutive I-frames. Increasing the GOP length may save considerably on bandwidth requirements in some cases, but may also have an adverse affect on image quality.

The Axis product supports the following H.264 profile(s):

- **Baseline.** The Baseline profile is recommended for clients that don't support CABAC entropy coding.
- **Main.** The Main profile provides higher compression with maintained video quality compared to the Baseline profile but requires more processing power to decode.

The bit rate can be set as **Variable bit rate** (VBR) or **Maximum bit rate** (MBR). VBR adjusts the bit rate according to the image complexity, using up more bandwidth for increased activity in the image, and less for lower image activity. When the activity in the scene increases, the bit rate would usually increase as well. If there is a surplus in bandwidth, this may not be an issue and selecting **Variable bit rate** (VBR) will be sufficient. But if bandwidth is limited, it is recommended to control the bit rate by selecting **Maximum bit rate** (MBR). When the activity in the scene increases, VBR adjusts the bit rate according to the complexity, using up more bandwidth for increased activity in the scene, and less for lower scene activity. MBR allows you to set a target bit rate that limits the bandwidth consumption.

The MBR target bit rate works like the ceiling of a tent. It limits the bit rate, while maintaining some flexibility. The bit rate may bounce up and down within the set target but when it nears the set target value, the limitation kicks in. However, because MBR will always prioritize a continuous video stream, it allows temporary overshoots from the target bit rate. Because setting a target value prevents the bit rate from increasing, frame rate and image quality are affected negatively. To partly compensate for this, select which variable shall be prioritized, frame rate or image quality. Not setting a priority means that frame rate and image quality are equally affected.

The current bit rate can be set to appear as text overlay. Under **Overlay Settings**, select **Include text** and enter the modifier # in the field.

To apply the settings, click **Save**.

**MJPEG**

Sometimes the image size is large due to low light or complex scenery. Adjusting the maximum frame size helps to control the bandwidth and storage used by the Motion JPEG video stream in these situations. Setting the frame size to the **Default** setting provides consistently good image quality at the expense of increased bandwidth and storage usage in low light. Limiting the frame size optimizes bandwidth and storage usage, but may give poor image quality. To prevent increased bandwidth and storage usage, the maximum frame size should be set to an optimal value.

**Stream Profiles**

A stream profile is a set of predefined stream settings including resolution, compression, frame rate and overlay settings. Stream profiles can be used:

- When setting up recording using action rules. See **Events on page 36**.
- When setting up continuous recording. See **Continuous Recording on page 43**.
- In the Live View page – select the stream profile from the **Stream profile** drop-down list.

For quick setup, use one of the predefined stream profiles. Each predefined profile has a descriptive name, indicating its purpose. If required, the predefined stream profiles can be modified and new customized stream profiles can be created.

To create a new profile or modify an existing profile, go to Setup > Video > **Stream Profiles**.
To select a default stream profile for the Live View page, go to Setup > Live View Config.

**Camera Settings**

The Video > Camera Settings page provides access to advanced image settings for the Axis product.

**Image Appearance**

To change Image Appearance go to the menus under Setup > Video > Camera Settings.

Increasing the **Color level** increases the color saturation. The value 100 gives maximum color saturation and the value 0 gives minimum color saturation.

The image **Brightness** can be adjusted in the range 0–100, where a higher value produces a brighter image.

Increasing the **Sharpness** can increase bandwidth usage. A sharper image might increase image noise especially in low light conditions. A lower setting reduces image noise, but the whole image will appear less sharp.

**White Balance**

To change this setting go to Setup > Video > Camera Settings

White balance is used to make colors in the image appear the same regardless of the color temperature of the light source. The Axis product can be set to automatically identify the light source and compensate for its color. Alternatively, select the type of light source from the drop-down list. For a description of each available setting, see the online help.

**Wide Dynamic Range**

Wide Dynamic Range (WDR) processing balances the brightest and darkest sections of a scene to produce an image that is balanced in lighting to provide more detail. Wide dynamic range can improve the exposure when there is a considerable contrast between light and dark areas in the image. There are three different WDR modes:

- **WDR 1** – contrast
- **WDR 2** – double exposure
- **WDR 3** – contrast and double exposure

The different WDR settings adjust for various amounts of contrast in the image. Use a higher WDR number for a higher contrast. Enable WDR in intense backlight conditions. Disable WDR in low light conditions for optimal exposure.

**Exposure Settings**

**Exposure control** – These settings is used to adapt to the amount of light used. **Automatic** is the default setting and it can be used in most situations. The shutter speed is automatically set to produce optimum image quality. Use **Manual** if you have special requirements for the exposure setting and wish to lock it. Select the desired exposure time from the drop-down list.

**Max exposure time** – Select the maximum exposure time from the drop-down list. Increasing the exposure time will improve image quality, but decrease the frame rate. There may also be an increase in motion blur.

**Allow slow shutter** – Select Allow slow shutter to let the camera decrease the shutter speed in low light to improve image brightness.

**Enable Backlight compensation** – Select Enable Backlight compensation if a bright spot of light, for example a light bulb, causes other areas in the image to appear too dark.

**Max gain** – Measured in decibels (dB), gain describes the amount of amplification applied to a signal, in this case the visual information in the image. A high level of amplification may provide a better image in very low light situations. A high gain will also increase the amount of image noise.
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Video

Exposure zones – This settings determines which part of the image is used to calculate the exposure. For most situations, the Auto setting can be used. For particular requirement, select a predefined area.

IR cut filter – The IR cut filter prevents infrared (IR) light from reaching the image sensor. In poor lighting conditions, for example at night, or when using an external IR lamp, set the IR cut filter to Off. This increases light sensitivity and allows the product to "see" infrared light. The image is shown in black and white when the IR cut filter is off. Set the IR cut filter to Auto to automatically switch between On and Off according to the lighting conditions.

Day/Night shift priority – Use the Day/Night shift priority bar to determine when the camera shifts into either day mode or night mode. By default, the camera will automatically change from day to night mode at a pre-defined level which corresponds to light conditions. By dragging the bar handle towards the sun, the camera will change to day mode earlier and change to night mode late.

Image Settings

Important

The autofocus behavior is affected by factors such as light conditions, contrasts in the scene, and objects moving in and out. In these conditions or scenes, a manual focus could be preferable to enhance performance and allow the camera to focus faster.

Autofocus enabled – Autofocus enables the camera to focus although the distance to different objects of interest is constantly changing. Whenever the camera’s pan/tilt/zoom position is changed, the autofocus performs a search to find the ideal focus point. Automatic focusing is enabled by default. If the focus position is changed manually using the focus bar, autofocus will be disabled even if enabled in Image Settings. In this case, use the PTZ control panel to enable autofocus, see page 12. If required, the focus control can be disabled under PTZ > Advanced > Controls.

Auto defog – The product will detect fog and automatically filter it out to get a clear image. Select the level of fog removal from the drop-down list. High implies that maximum fog removal is applied and off implies no fog removal. Auto defog can be activated incorrectly in scenes with low contrast, high light level variations or when auto focus is slightly off. This can affect the image quality by for example, increasing image contrast. Also, too much brightness can negatively impact the image quality when defog is active.

Noise reduction – Set to On to enable noise reduction. Noise reduction may increase the amount of motion blur.

Image freeze on PTZ – Select All movements to freeze the image while the camera is moving during a pan, tilt or zoom operation. Once the camera reaches its new position, the view from that position is shown. Presets freezes the image only when the camera moves between preset positions.

Overlay

Overlays are used to provide extra information, such as forensic video analysis or during product installation and configuration. Overlays are superimposed over the video stream.

An overlay text can display the current date and time, or a text string. When using a text string, modifiers can be used to display information such as the current bit rate or the current frame rate. For information about available modifiers, see File Naming & Date/Time Formats in the online help.

It is also possible to display text when an action rule is triggered, see Use Overlay Text in an Action Rule.

To enable overlays:

1. Go to Video > Video Stream and select the Image tab.
2. To include an overlay image, select Include overlay image at the coordinates. The overlay image must first be uploaded to the Axis product, see Overlay Image.
3. To include date and time, select Include date and Include time.
4. To include a text string, select Include text and enter the text in the field. Modifiers can be used, see File Naming & Date/Time Formats in the online help.
5. Define text overlay characteristics in the relevant fields.
6. Click Save.
To modify the date and time format, go to System Options > Date & Time. See Date & Time on page 47.

Displaying the Pan Position as a Text Overlay

It may be useful to retrieve, for instance from a recorded video, the pan position (in degrees) in which an event has taken place. This can be obtained by including the pan position in the image as a text overlay, using a modifier. To display the pan position as a text overlay:

1. Go to Setup > Video > Video Stream.
2. Under Overlay settings, select Include text and enter #X.
3. Configure the optional size, color and position of the text overlay.
4. Click Save.

Overlay Image

An overlay image is a static image superimposed over the video stream. The image, for example a company logo, is used to provide extra information or to mask a part of the image.

Since it is static, the position and size of an overlay image will remain the same regardless of resolution and Pan/Tilt/Zoom movements.

Use a privacy mask to set up a dynamic mask which will always mask the specified part of monitored area.

For more information about privacy masks, see Privacy Mask on page 23.

To use an overlay image, the image must first be uploaded to the Axis product. The uploaded image should be a Windows 24-bit BMP image with maximum 250 colors. The image width and height, in pixels, must be exactly divisible by 4 and cannot be larger than the maximum image resolution. If combining text and image overlays, take into consideration that the text overlay occupies 16 or 32 pixels in height (depending on the resolution) and has the same width as the video image.

To automatically scale the image to the resolution used by the Axis product, select the option Scale with resolution from the Transparency Settings page which is displayed when uploading in the image.

To upload an overlay image:

1. Go to Video > Overlay Image.
2. Click Browse and browse to the file.
3. Click Upload.
4. The Transparency Settings page is now displayed:
   - To make a color in the overlay image transparent, select Use transparency and enter the RGB hexadecimal value for the color. Example: To make white transparent, enter FFFF.
     - For more examples of hexadecimal values, see the online help.
   - To scale the image automatically, select Scale with resolution. The image will be scaled down to fit the resolution used by the Axis product.
5. Click Save.

To select the image to use as overlay:

1. Go to Video > Overlay Image.
2. Select the image to use from the Use overlay image list and click Save.

To display the overlay image:

1. Go to Video > Video Stream and select the Image tab.
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Video

2. Under Overlay Settings, select Include overlay image at the coordinates.
3. To control the image's position, enter the X and Y coordinates. The X=0 and Y=0 position is the top left corner. If a part of the image is positioned outside the video image, the overlay image will be moved so that the whole image is visible.
4. Click Save.

Use Overlay Text in an Action Rule

Action rules, see page 36, can display an overlay text when the rule is triggered. The text can be used to provide information for forensic video analysis, notify surveillance operators or validate triggers and actions during product installation and configuration.

To display overlay text when an action rule is triggered, the modifier $D$ should be used as described below. When the rule is triggered, $D$ will be replaced by the text specified in the action rule.

Start by enabling overlay text in the video stream:
1. Go to Video > Video Stream and select the Image tab.
2. Under Overlay Settings, select Include text.
3. Enter the modifier $D$ and, optionally, additional text which will be displayed also when the action rule is not active.

Create the action rule:
1. Go to Events > Action Rules
2. Click Add to create a new rule.
3. Select a Trigger and, optionally, a Schedule and Additional conditions. See the online help for details.
4. From the Actions list, select Overlay Text
5. Enter the text to display in the Text field. This is the text that $D$ will be replaced by.
6. Specify the Duration. The text can be displayed while the rule is active or for a fixed number of seconds.

Example

To display the text "Motion detected" when motion is detected, enter $D$ in the Include text field and enter "Motion detected" in the Text field when setting up the action rule.

Privacy Mask

A privacy mask is an area of solid color that prohibits users from viewing parts of the monitored area. Privacy masks cannot be bypassed via the VAPIX® Application Programming Interface (API).

The Privacy Mask List, Video > Privacy Mask, shows all the masks that are currently configured in the Axis product and indicates if they are enabled.

Since the Pan/Tilt/Zoom coordinates define its size and position, a privacy mask is dynamic in relation to the monitored area. This means that regardless of the angle and zoom of the lens, the same place or object will be hidden. To define at what magnification the mask should be displayed, zoom to the desired level and click Set level.

You can add a new mask, re-size the mask with the mouse, choose a color for the mask, and give the mask a name.

For more information, see the online help.

Important
Adding many privacy masks may affect the product's performance.
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Configure the Live View Page

Configure the Live View Page

You can customize the Live View page and alter it to suit your requirements. It is possible to define the following features of the Live View page.

- Stream Profile. See page 19.
- Default Viewer for Browser. See page 24.
- Viewer Settings. See page 24.
- Action Buttons. These are the buttons described in Controls on the Live View Page on page 11.
- User Defined Links. See page 25.

Default Viewer for Browsers

From Live View Config > Default Viewer select the default method for viewing video images in your browser. The product attempts to show the video images in the selected video format and viewer. If this is not possible, the product overrides the settings and selects the best available combination.

<table>
<thead>
<tr>
<th>Browser</th>
<th>Viewer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows Internet Explorer</td>
<td>AMC</td>
<td>Recommended viewer in Internet Explorer (H.264/Motion JPEG).</td>
</tr>
<tr>
<td></td>
<td>QuickTime</td>
<td>H.264.</td>
</tr>
<tr>
<td></td>
<td>Still image</td>
<td>Displays still images only. Click the Refresh button in your browser to view a new image.</td>
</tr>
<tr>
<td>Other browsers</td>
<td>Server Push</td>
<td>Recommended viewer for other browsers (Motion JPEG).</td>
</tr>
<tr>
<td></td>
<td>QuickTime</td>
<td>H.264.</td>
</tr>
<tr>
<td></td>
<td>Still image</td>
<td>Displays still images only. Click the Refresh button in your browser to view a new image.</td>
</tr>
</tbody>
</table>

For more information, please see the online help.

Viewer Settings

To configure options for the viewer, go to Live View Config > Viewer Settings.

- Select Show viewer toolbar to display the AXIS Media Control (AMC) or the QuickTime viewer toolbar under the video image in your browser.
- H.264 decoder installation. The administrator can disable installation of the H.264 decoder included with AXIS Media Control. This is used to prevent installation of unlicensed copies. Further decoder licenses can be purchased from your Axis reseller.
- Select Show crosshair in PTZ joystick mode to enable a cross that will indicate the center of the image in PTZ joystick mode.
- Select Use PTZ joystick mode as default to enable joystick mode. The mode can be changed temporarily from the PTZ control panel.
- Select Enable recording button to enable recording from the Live View page. This button is available when using the AMC viewer. The recordings are saved to the location specified in the AMC Control Panel. See AXIS Media Control (AMC) on page 14.
User Defined Links

To display user-defined links in the Live View page, select the Show custom link option, give the link a name and then enter the URL to link to. When defining a web link do not remove the "http://" from the URL address. Custom links can be used to run scripts or activate external devices connected to the product, or they can link to a web page. Custom links defined as cgi links will run the script in the background, in a hidden frame. Defining the link as a web link will open the link in a new window.
PTZ (Pan Tilt Zoom)

Preset Positions

A preset position is a saved view that can be used to quickly steer the camera to a specific position. A preset position consists of the following values:

- Pan and tilt positions
- Zoom position
- Focus position (manual or automatic)
- Iris position (manual or automatic)

Access the Preset Positions

Preset positions can be accessed in several ways:

- By selecting the preset from the Preset positions drop-down list in the Live View Page.
- When setting up action rules. See page 36.
- When setting up guard tours. See page 28.
- When setting up the Gatekeeper. See page 28.

Add a Preset Position

1. Go to PTZ > Preset Positions.
2. Click in the image or use the controls to steer the camera view to the desired position, see Preset Positions.
3. Enter a descriptive name in the Current position field.
4. If required, select Use current position as Home.
5. Click Add to save the preset position.

To include the preset position name in the overlay text, go to Video, select Include overlay text and enter the modifier #P in the field. For more information about modifiers, see File Naming & Date/Time Formats in the online help 🕵️

Set the Home Position

The Home position is readily accessible by clicking the Home button on the Live View page and in the Preset Positions setup window.

To set a customized home position, select Use current position as Home when adding a preset position. The user-defined home position will have (H) added, for example, Entrance (H). The default Home position, called “Home”, will still be available.

The product can be configured to return to the Home position when the PTZ functionality has been inactive for a specified length of time. Enter the length of time in the Return to home when inactive field and click Save. Set the time to zero to prevent the product from automatically returning to the Home position.

Important

Set new Pan 0° affects all previously defined presets, guard tours, masks etc.
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PTZ (Pan Tilt Zoom)

The product can be mounted in three different horizontal directions. This may cause the view from Pan 0° to be changed from the original view. Click Set new Pan 0° to set the pan coordinate system to zero in the current direction. Set new Pan 0° can be useful for instance when re-installing the product after maintenance.

Autotracking

The Axis product can detect movement in the field of view, for example a moving vehicle or person. If autotracking is enabled, the Axis product will automatically pan and tilt to follow the moving object. In case there is much simultaneous movement, the area with the most movement will be followed. Autotracking continues until the moving object stops or disappears from the monitored area. Movement in areas blocked by privacy masks and in exclude areas does not trigger autotracking.

It is strongly recommended to enable the PTZ Control Queue if autotracking and guard tour are enabled simultaneously. In the PTZ Control Queue, guard tour has lower priority than autotracking, so autotracking will not be abandoned to start a guard tour.

Configuration

Start/Stop Autotracking – Click Start to enable autotracking. To disable autotracking, click Stop.

Settings – The Movement trigger sensitivity level can be set to Low, Medium or High. Medium is usually a good choice, depending on the size of the moving objects and the image contrast, a low or high sensitivity might be more suitable.

Exclude Areas

Exclude areas are areas where movement is to be ignored.

Note

Movement in an area blocked by a privacy mask is always ignored.

1. Click Add area to create an exclude area
2. Resize and move the area (the blue rectangle) to the desired position.
3. Enter a descriptive name and click Save.

To remove an area, click the name of the area and click Remove. To enable or disable an area, click the name of the area and click Enable/Disable.

Max Limits

The pan and tilt limits restrict the area where autotracking is allowed. The area beyond the set limits will be ignored. This may prove useful, for example, to avoid tracking birds in the sky. Between the pan start and end limits, autotracking is allowed going clockwise.

The illustrations show the difference between setting a range from 135° to 45° (1) and a range from 45° to 135° (2).

1. Select Enable tilt limit and Enable pan limit respectively to enable the tilt and pan limits.
2. Enter the Tilt angle and Pan limit values, or click the links and move the blue horizontal and vertical bars in the preview window until satisfied.
3. Click Save.
Gatekeeper

The Active Gatekeeper monitors an area such as an entrance gate. When motion is detected in the monitored area, the Gatekeeper will, depending on configuration, steer the camera to a selected preset position or start autotracking from a selected preset position. Using a zoomed-in preset position can make it possible to, for example, read a license plate or identify a person. When motion is no longer detected, the camera returns to its Home position after a defined time.

To enable the Gatekeeper, go to PTZ > Gatekeeper and follow the online instructions.

It is also possible to, for example, record video or save images (take a snapshot) while the Gatekeeper is active. Go to Events and set up an action rule with PTZ Preset Reached or Autotracking as trigger.

Guard Tour

A guard tour displays the video stream from different preset positions, one-by-one, in a predetermined order or at random and for configurable time periods. The enabled guard tour will keep running after the user has logged off or closed the browser.

The guard tour capability in this Axis product also includes tour recording. Tour recording is described in Tour Recording on page 29.

To add a guard tour:

1. Go to PTZ > Guard Tour and click Add.
2. Select Create a preset tour and click OK.
3. Enter a descriptive name.
4. Specify the pause length between runs.
5. Select an available preset position and click Apply.
6. Specify the Move Speed.
7. Specify the View Time in seconds or minutes.
8. Specify the View Order or select the Random view order option.
9. Click Save.
PTZ (Pan Tilt Zoom)

To modify or remove guard tours, go to PTZ > Guard Tour, select the guard tour in the Guard Tour List and click Modify/Remove.

Note: For products that support Limited Guard Tour, the product has a fixed minimum view time

For more information see the online help.

Tour Recording

The guard tour function in this product includes tour recording, which allows recording of a custom tour using an input device such as a joystick, mouse, keyboard or through the VAPIX® Application Programming Interface (API). A recorded tour is a replay of a recorded sequence of Pan/Tilt/Zoom movements, including their variable speeds and lengths.

To add a recorded tour:

1. Go to PTZ > Guard Tour and click Add.
2. Select Create a record tour and click OK.
3. Enter a descriptive name.
4. Specify the pause length between runs.
5. Click to start recording the Pan/Tilt/Zoom movements.
6. When satisfied, click .
7. Click OK.

Note: Only the name of the recorded tour and pause between runs can be modified. Starting a new recording will overwrite the existing guard tour.

The recorded tour can be activated from the Live View and Guard Tour pages or through events. For more information see the online help.

OSDI Zones

On-Screen Direction Indicator (OSDI) zones can be included in the overlay text (see Overlay on page 21) to aid the user to navigate the Axis product. Each OSDI zone is set up with coordinates and a descriptive name.

OSDI zones are set up under PTZ > OSDI Zones. The Axis product uses the coordinates of the center of the view to set the lower left and upper right zone areas. First navigate to where you would like the lowermost left point of the OSDI zone to be located. Click Get to set the coordinates. Proceed to where the upper right point of the zone should be located and click Get. Give the zone a descriptive name and click OK.

To include the name of the OSDI zone in the overlay text, go to Video < Video Stream < Overlay Settings. Check the Include text box and enter the modifier # in the field. For more information about modifiers, see File Naming & Date/Time Formats in the online help.

Advanced

Limits

Define the pan, tilt, zoom and focus limits for the Axis product. Movements to the left and right, up and down, can be restricted to narrow the area under surveillance.
When Enable E-flip is selected, as it tilts down and continues to pan backwards, the Axis product will automatically correct the view and flip it 180 degrees. The left limit must be set to –180 degrees and the right limit to 180 degrees for e-flip to work.

Near focus limit is used to prevent the camera from autofocusing on objects close to the camera. This way, the camera can ignore objects such as overhead wires, streetlights, or other cameras placed close to the camera.

To make the camera focus on the areas of interest, set the near focus limit to a value that is greater than the distance at which the uninteresting objects tend to appear. See illustration below where x is the near focus limit value.

Move speed sets the speed of the camera’s pan and tilt movements. The default setting is maximum speed.

When using a joystick (or emulating one with the mouse) the Enable proportional speed setting can be used to reduce the maximum pan/tilt movement speed, i.e. the speed the camera view moves at when the joystick is pushed all the way out in any direction. This is useful then the view is zoomed in on an object.

See the online help for more information.

Controls

Advanced PTZ settings can be configured under PTZ > Advanced > Controls.

The Panel Shortcut Command Buttons list shows the user-defined buttons that can be accessed from the Live View page’s Ctrl panel. These buttons can be used to provide direct access to commands issued using the VAPIX® application programming interface. Click Add to add a new shortcut command button.

The following PTZ controls are enabled by default:

- Pan control
- Tilt control
- Zoom control
- Focus control
- Iris control

To disable specific controls, deselect the options under Enable/Disable controls.
AXIS Q6044-E PTZ Dome Network Camera

PTZ (Pan Tilt Zoom)

Note
Disabling PTZ controls will not affect preset positions. For example, if the tilt control is disabled, the product can still move to preset positions that require a tilt movement.

Control Queue

Note
- The administrator can enable and disable PTZ controls for selected users.
- To identify different users in the viewer group, cookies must be enabled on the client.
- The Control queue polltime is measured in seconds. For more information see the online help.

The administrator can set up a queue for PTZ controllers from PTZ > Control Queue. Once set up, the PTZ Control Queue buttons appear in the Live View page offering one viewer exclusive control for a limited period of time. Other users will be placed in queue.

A user who belongs to a group (see Users on page 45) with a higher PTZ priority can go before other users in the queue and take control of the product. The order of priority is as follows:

1. **Administrator** — An administrator takes over PTZ control regardless of who is first in queue. The administrator will be removed from the queue 60 seconds after the last PTZ control command.
2. **Event** — The Axis product can be configured to go to a preset position when triggered by an alarm (see Events on page 36). The event will immediately be placed first in the queue except when an administrator is in control.
3. **Operator** — Same as administrator but with lower priority
4. **Guard Tour** — A guard tour (see page 28) has PTZ control for an indefinite period of time. It may be overridden by an operator, event or administrator. The guard tour will resume when higher priority groups leave the queue.
5. **Viewer** — Multiple viewers must wait for their turn. The viewer has 60 seconds PTZ control before control is passed on to the next viewer in queue.
Shock Detection

Enable Shock Detection from the Detectors menu. Shock detection is used, for example, to generate an alarm if the product is hit by an object or if the product is tampered with.

Use the Shock sensitivity slider to adjust the sensitivity level at which the product should send an alarm. Low sensitivity value implies that the product will generate an alarm only if the hit is powerful. A high sensitivity value implies that the product will generate an alarm even with mild tampering.

Motion Detection

Motion detection is used to generate an alarm whenever movement starts or stops in the camera view.

Motion detection is configured by defining up to 10 Include and Exclude windows:

- Include windows — define areas where motion should be detected
- Exclude windows — define areas within an Include window that should be ignored (areas outside Include windows are automatically ignored).

For instructions, see Set Up Motion Detection Windows on page 32.

To control the number of motion detection alarms, the parameters Object Size, History and Sensitivity can be adjusted. See Motion Detection Parameters on page 32.

Once motion detection windows are configured, the Axis product can be configured to perform actions when motion is detected. Possible actions include uploading images and start recording. For more information, see Set Up Action Rules on page 36.

Note

- Using the motion detection feature may decrease the product’s overall performance.
- The position of the Motion Detection Window is relative to the orientation of the Camera. Changing the orientation of the camera will also change the position of the Motion Detection Window.

Set Up Motion Detection Windows

To set up a motion detection Include Window, follow these instructions:

1. Go to Detectors > Motion Detection.
2. Select the Configure Included Windows option and click New. Select the new window in the list of windows and enter a descriptive name.
3. Adjust the size (drag the bottom right-hand corner) and the position (click on the text at the top and drag to the desired position) of the window.
4. Adjust the Object Size, History and Sensitivity profile sliders (see Motion Detection Parameters for details). Any detected motion within an active window is indicated by red peaks in the Activity window.
5. Click Save.

To exclude parts of the include window, select the Configure Excluded Windows and position the exclude window within the include window.

To delete an include or exclude window, select the window in the list of windows and click Del.

Motion Detection Parameters

The parameters controlling motion detection are described in the table below:
### Detectors

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Object Size</th>
<th>History</th>
<th>Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Object size relative to window size.</td>
<td>Object memory length.</td>
<td>Difference in luminance between background and object.</td>
</tr>
<tr>
<td>High level (100%)</td>
<td>Only very large objects trigger motion detection.</td>
<td>An object that appears in the window triggers motion detection for a long time before it is considered as non-moving.</td>
<td>Ordinary colored objects on ordinary backgrounds trigger motion detection.</td>
</tr>
<tr>
<td>Medium level (50%)</td>
<td>An object that appears in the window triggers motion detection only for a very short time before it is considered as non-moving.</td>
<td>A large difference in luminance is required to trigger motion detection.</td>
<td></td>
</tr>
<tr>
<td>Low level (0%)</td>
<td>Even very small objects trigger motion detection.</td>
<td>An object that appears in the window triggers motion detection only for a very short time before it is considered as non-moving.</td>
<td>Only very bright objects on a dark background trigger motion detection.</td>
</tr>
</tbody>
</table>

**Recommended values**
- 5–15%
- 60–90%
- 75–95%

**Default values**
- 15%
- 90%
- 90%

**Note**
- To trigger on small objects or movements, use several small motion detection windows rather than one large window, and select a low object size.
- To avoid triggering on small objects, select a high object size.
- While monitoring an area where moving objects are not expected, select a high history level. This will cause motion detection to trigger as long as the object is present in the window.
- To only detect flashing light, select a low sensitivity. In other cases high sensitivity is recommended.
AXIS Q6044-E PTZ Dome Network Camera

Applications

Applications

AXIS Camera Application Platform (ACAP) is an open platform that enables third parties to develop analytics and other applications for Axis products. For information about available applications, downloads, trials and licenses, go to www.axis.com/applications

Note

• Several applications can run at the same time but some applications might not be compatible with each other. Certain combinations of applications might require too much processing power or memory resources when run in parallel. Verify that the applications work together before deployment.

Application Licenses

Some applications need a license to run. Licenses can be installed in two ways:

• Automatic installation — requires access to the Internet
• Manual installation — obtain the license key from the application vendor and upload the key to the Axis product

To request a license, the Axis product serial number (S/N) is required. The serial number can be found on the product label and under System Options > Support > System Overview.

Upload Application

To upload and start an application:

1. Go to Setup > Applications.
2. Under Upload Application, click Browse. Locate the application file and click Upload Package.
3. Install the license (if applicable). For instructions, see the documentation provided by the application vendor.
4. Start the application. Go to page Applications, select the application in the list of installed applications and click Start.
5. Configure the application. For instructions, see the documentation provided by the application vendor.

Note

• Applications can be uploaded by product administrators.
• Applications and licenses can be installed on multiple products at the same time using AXIS Camera Management, version 3.10 and later.

To generate a log file for the application, go to Applications. Select the application and click Log.

Application Considerations

If an application is upgraded, application settings, including the license, will be removed. The license must be reinstalled and the application reconfigured.

If the Axis product's firmware is upgraded, uploaded applications and their settings will remain unchanged, although this is not guaranteed by Axis Communications. Note that the application must be supported by the new firmware. For information about firmware upgrades, see Upgrade the Firmware.

If the Axis product is restarted, running applications will restart automatically.

If the Axis product is restored, uploaded applications remain unchanged but must be restarted. To start the application, go to Setup > Applications. Select the application in the list of installed applications and click Start. For information about restoring the Axis product, see Maintenance.
If the Axis product is reset to factory default, uploaded applications and their settings are removed. For information about factory default, see *Reset to Factory Default Settings*. 

AXIS Q6044-E PTZ Dome Network Camera

Applications
Events

The Event pages allow you to configure the Axis product to perform actions when different events occur. For example, the product can start a recording or send an email notification when motion is detected. The set of conditions that defines how and when the action is triggered is called an action rule.

Set Up Action Rules

An action rule defines the conditions that must be met for the product to perform an action, for example record video or send an email notification. If multiple conditions are defined, all of them must be met to trigger the action.

For more information about available triggers and actions, see Triggers on page 36 and Actions on page 38.

The following example describes how to set up an action rule to record video to a network share if there is movement in the camera’s field of view.

Set up motion detection and add a network share:

1. Go to Detectors > Motion Detection and configure a motion detection window. See page 32.
2. Go to System Options > Storage and set up the network share. See page 54.

Set up the action rule:

1. Go to Events > Action Rules and click Add.
2. Select Enable rule and enter a descriptive name for the rule.
3. Select Detectors from the Trigger drop-down list.
4. Select Motion Detection from the drop-down list. Select the motion detection window to use.
5. Optionally, select a Schedule and Additional conditions. See below.
6. Under Actions, select Record Video from the Type drop-down list.
7. Select a Stream profile and configure the Duration settings as described below.
8. Select Network Share from the Storage drop-down list.

To use more than one trigger for the action rule, select Additional conditions and click Add to add additional triggers. When using additional conditions, all conditions must be met to trigger the action.

To prevent an action from being triggered repeatedly, a Wait at least time can be set. Enter the time in hours, minutes and seconds, during which the trigger should be ignored before the action rule can be activated again.

The recording Duration of some actions can be set to include time immediately before and after the event. Select Pre-trigger time and/or Post-trigger time and enter the number of seconds. When While the rule is active is enabled and the action is triggered again during the post-trigger time, the recording time will be extended with another post-trigger time period.

For more information, see the online help.

Triggers

Available action rule triggers and conditions include:

- Applications – Use installed applications to trigger the rule. See Applications on page 34.
- Detectors
AXIS Q6044-E PTZ Dome Network Camera

Events

- **Live Stream Accessed** – Trigger the rule when any stream is accessed and during edge storage playback. This can for example be used to send notifications.

- **Motion Detection** – Trigger the rule when motion is detected. See Motion Detection on page 32.

- **Shock Detection** – Trigger the rule when the Axis product detects it has been tilted or hit. See Shock Detection on page 32.

- **Hardware**
  - **Casing Open** – Triggers the rule if the casing of a connected external device, such as a junction box or cabinet (not included), is removed or opened. This can for example be used to send notifications of maintenance or unauthorized tampering.
  - **Fan** – Trigger the rule if the fan is malfunctioning. This can for example be used to send maintenance notifications.
  - **Heater** – Trigger the rule if the heater is malfunctioning. This can for example be used to send maintenance notifications.
  - **Network** – Trigger the rule if network connection is lost or restored. This can for example be used to start recording to the SD card.
  - **Temperature** – Trigger the rule if the temperature falls outside or inside the operating range of the product. This can for example be used to send maintenance notifications.

- **Input Signal**
  - **Manual Trigger** – Trigger the rule using the Manual Trigger button in the Live View page. See Controls on the Live View Page on page 11. This can for example be used to validate actions during product installation and configuration.
  - **Virtual Inputs** – can be used by a VMS (Video Management System) to trigger actions. Virtual inputs can, for example, be connected to buttons in the VMS user interface.

- **PTZ**
  - **Autotracking** – Trigger the rule when autotracking starts or stops. See Autotracking on page 27.
  - **Error** – Trigger the rule if the PTZ functionality is not working correctly. This can for example be used to send maintenance notifications.
  - **Moving** – Trigger the rule when the camera view moves due to a PTZ operation. This can for example be used as an additional condition to prevent an action rule triggered by motion detection to record video while the camera view moves due to a PTZ operation.
  - **Preset Reached** – Trigger the rule when the camera stops at a preset position. This can be for example be used with the Send Images action to upload images from the preset position.
  - **Ready** – Trigger the rule when the PTZ functionality is ready to be used. This can for example be used to steer the camera to a specific preset position when the product is started.

- **Storage**
  - **Disruption** – Trigger the rule if storage problems are detected, for example if the storage device is unavailable, removed, full, locked or if other read or write problems occur. This can for example be used to send maintenance notifications.
  - **Recording** – Triggers the rule when the Axis product records to the storage device. The recording status trigger can be used to notify the operator, for example by flashing LED lights, if the product has started or stopped to record to the storage device. Note that, this trigger can be used only for edge storage recording status.

- **System**
AXIS Q6044-E PTZ Dome Network Camera

Events

- **System Ready** – Trigger the rule when the product has been started and all services are running. This can for example be used to send a notification when the product restarts.

- **Time**
  - **Recurrence** – Trigger the rule periodically. See *Set Up Recurrences on page 40*. This can for example be used to upload an image every 5 minutes.
  - **Use Schedule** – Trigger the rule according to the selected schedule. See *Create Schedules on page 40*.

Actions

Available actions include:

- **Day/Night Vision Mode** – Set day mode (IR cut filter on) or night mode (IR cut filter off).
- **Overlay Text** – Display an overlay text. See *Use Overlay Text in an Action Rule on page 23*.
- **PTZ Control**
  - **Autotracking** – Start autotracking. See *Autotracking on page 27*.
  - **Preset Position** – Go to a preset position.
  - **Guard Tour** – Start a guard tour. See *Guard Tour on page 28*.
- **Record Video** – Record video to a selected storage.
- **Send Images** – Send images to a recipient.
- **Send Notification** – Send a notification message to a recipient.
- **Send SNMP Trap** – Send an SNMP trap message to the operator. Make sure that SNMP is enabled and configured under *System Options > Network > SNMP*.
- **Send Video Clip** – Send a video clip to a recipient.

Add Recipients

The product can send media files and messages to notify users about events. Before the product can send media files or notification messages, you must define one or more recipients. For information about available options, see *Recipient Types on page 38*.

To add a recipient:

1. Go to Events > Recipients and click Add.
2. Enter a descriptive name.
3. Select a recipient Type.
4. Enter the information needed for the recipient type.
5. Click Test to test the connection to the recipient.
6. Click OK.

Recipient Types

The following recipients are available:
## Events

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Use with action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>Send Images</td>
<td>An email recipient can contain multiple email addresses.</td>
</tr>
<tr>
<td></td>
<td>Send Notification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td>FTP</td>
<td>Send Images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td>SFTP</td>
<td>Send Images</td>
<td>Encrypted file transfer using SSH File Transport Protocol (SFTP). SFTP is a more secure method than FTP but file transfer might be slower, especially for large files such as high resolution video.</td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specify login information for the SFTP server and the server’s public key MD5 fingerprint (32 hexadecimal digits).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The SFTP recipient supports SFTP servers using SSH-2 with RSA and DSA host key types. RSA is the preferred method. To use DSA, disable the RSA key on the SFTP server.</td>
</tr>
<tr>
<td>HTTP</td>
<td>Send Images</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send Notification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td>HTTPS</td>
<td>Send Images</td>
<td>Encrypted file transfer using HyperText Transfer Protocol Secure (HTTPS).</td>
</tr>
<tr>
<td></td>
<td>Send Notification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specify login information for the HTTPS server and validate the server’s certificate. If there is a proxy between the Axis product and the HTTPS server, also specify the proxy settings.</td>
</tr>
<tr>
<td>Network Share</td>
<td>Send Images</td>
<td>A network share can also be used as a storage device for recorded video. Go System Options &gt; Storage to configure a network share before setting up a continuous recording or an action rule to record video. For more information about storage devices, see Storage on page 53.</td>
</tr>
<tr>
<td></td>
<td>Send Video Clip</td>
<td></td>
</tr>
<tr>
<td>TCP</td>
<td>Send Notification</td>
<td></td>
</tr>
</tbody>
</table>

### Set Up Email Recipients

Email recipients can be configured by selecting one of the listed email providers, or by specifying the SMTP server, port and authentication used by, for example, a corporate email server.

**Note**

Some email providers have security filters that prevent users from receiving or viewing large amount of attachments, from receiving scheduled emails and similar. Check the email provider’s security policy to avoid delivery problems and locked email accounts.

To set up an email recipient using one of the listed providers:

1. Go to Events > Recipients and click Add.
2. Enter a Name and select Email from the Type list.
3. Enter the email addresses to send emails to in the To field. Use commas to separate multiple addresses.
4. Select the email provider from the Provider list.
AXIS Q6044-E PTZ Dome Network Camera

Events

5. Enter the user ID and password for the email account.

6. Click Test to send a test email.

To set up an email recipient using for example a corporate email server, follow the instructions above but select User defined as Provider. Enter the email address to appear as sender in the From field. Select Advanced settings and specify the SMTP server address, port and authentication method. Optionally, select Use encryption to send emails over an encrypted connection. The server certificate can be validated using the certificates available in the Axis product. For information on how to upload certificates, see Certificates on page 46.

Create Schedules

Schedules can be used as action rule triggers or as additional conditions, for example to record video if motion is detected outside office hours. Use one of the predefined schedules or create a new schedule as described below.

To create a new schedule:

1. Go to Events > Schedules and click Add.

2. Enter a descriptive name and the information needed for a daily, weekly, monthly or yearly schedule.

3. Click OK.

To use the schedule in an action rule, select the schedule from the Schedule drop-down list in the Action Rule Setup page.

Set Up Recurrences

Recurrences are used to trigger action rules repeatedly, for example every 5 minutes or every hour.

To set up a recurrence:

1. Go to Events > Recurrences and click Add.

2. Enter a descriptive name and recurrence pattern.

3. Click OK.

To use the recurrence in an action rule, first select Time from the Trigger drop-down list in the Action Rule Setup page and then select the recurrence from the second drop-down list.

To modify or remove recurrences, select the recurrence in the Recurrences List and click Modify or Remove.

Enable Open Casing Detection

This section describes how to enable open casing detection in an outdoor AXIS Q60 Series camera (AXIS Q60-E).

An outdoor AXIS Q60 PTZ Dome Network Camera only has one connector used for both power and Ethernet. Open casing detection is enabled by connecting the redundant pairs in the network cable to an alarm device (not included) equipped with a physical switch and configuring the camera to perform an action when the alarm device circuit opens or closes. The set of conditions that defines how and when an action is triggered is called an Action Rule.

Installation Steps

1. Connect the cable between the camera, an alarm device (not included), and the midspan (included). See Connect the Cable, below.

2. Set up an action rule. See Set Up Action Rules on page 36.
AXIS Q6044-E PTZ Dome Network Camera

Events

Connect the Cable

**CAUTION**

Modifications could have a negative effect on the electromagnetic compatibility (EMC) of the whole system. Take appropriate precautions and make sure to properly connect the shield in both ends.

1. Strip the cable.
2. Separate the wires.
3. Cut the alarm device wires (see table below) and connect them to the alarm device.
   - Connect the following wires to the midspan through an alarm device that can open and close the circuit:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pair</th>
<th>Wire</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1</td>
<td>2</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>1</td>
<td>White/blue</td>
</tr>
<tr>
<td>7</td>
<td>4</td>
<td>1</td>
<td>White/brown</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>2</td>
<td>Brown</td>
</tr>
</tbody>
</table>

4. Mount the network connector and connect the cable between the camera and the midspan.
   - Connect the following wires directly to the midspan:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Pair</th>
<th>Wire</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td>White/green</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>2</td>
<td>Green</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>1</td>
<td>White/orange</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>2</td>
<td>Orange</td>
</tr>
</tbody>
</table>

For more information, see the camera’s Installation Guide.
Recordings

The Axis product can be configured to record video continuously or according to an action rule:

- To start a continuous recording, see page 43.
- To set up action rules, see page 36.
- To access recordings, see Find Recordings on page 42.
- To play recordings, see Play Recording on page 42.
- To export a recording as a video clip, see Export Video Clip on page 43.
- To configure camera controlled storage, see Storage on page 53.

Find Recordings

Recordings stored on the SD card or network share can be accessed from the Recordings > List page. The page lists all recordings on the storage device and shows each recording’s start date and time, duration and the event that triggered the recording.

Note

The recording’s start date and time is set according to the Axis product’s date and time settings. If the Axis product is configured to use a time zone different from the local time zone, make sure to configure the Recording time filters according to the product’s time zone. Date and time settings are configured under System Options > Date & Time, see Date & Time on page 47.

To find a recording, follow these steps:

1. Go to Recordings > List.
2. To reduce the number of recordings displayed, select the desired options under Filter:
   - Recording time – List recordings that started between the From and To times.
   - Event – List recordings that were triggered by a specific event. Select continuous to list continuous recordings.
   - Storage – List recordings from a specific storage device.
   - Sort – Specify how recordings should be sorted in the list.
   - Results – Specify the maximum number of recordings to display.
3. To apply the filters, click the Filter button. Some filters may take a long time to complete.
4. The recordings are displayed in the Recording list.

To play a recording, select the recording and click Play. See also Play Recording on page 42.

To view detailed information about a recording, select the recording and click Properties.

To export a recording or a part of a recording as a video clip, select the recording and click Export. See also Export Video Clip on page 43.

To remove a recording from the storage device, select the recording and click Remove.

Play Recording

Recordings on the SD card or network share can be played directly from the Axis product’s webpages.
To play a recording, follow these steps:

1. Go to Recordings > List.
2. To reduce the number of recordings displayed, select the desired options under Filter and click the Filter button to apply the filters. See also Find Recordings on page 42.
3. Select the recording and click Play. The recording will be played in a new browser window.

Export Video Clip

Recordings on the SD card or network share can be exported as video clips. It is possible to export a complete recording or a part of a recording.

Note
The exported recording is a Matroska video file (.mkv). To play the recording in Windows Media Player, AXIS Matroska File Splitter must be installed. AXIS Matroska File Splitter can be downloaded from www.axis.com/techsup/software

To export a video clip, follow these steps:

1. Go to Recordings > List.
2. To reduce the number of recordings displayed, select the desired options under Filter and click the Filter button to apply the filters. See also Find Recordings on page 42.
3. Select the recording and click Export. The Export Recording dialog opens.
4. By default, the complete recording is selected. To export a part of the recording, modify the start and stop times.
5. Optionally, enter a file name for the recording.
6. Click Export.

Note
Recordings can also be exported from the playback window.

Continuous Recording

The Axis product can be configured to continuously save video to a storage device. For information about storage devices, see Storage on page 53. To prevent the disk from becoming full, it is recommended to configure the disk to automatically remove old recordings.

If a new stream profile is selected while a recording is ongoing, the recording will be stopped and saved in the recording list and a new recording with the new stream profile will start. All previous continuous recordings will remain in the recording list until they are removed manually or through automatic removal of old recordings.

To start a continuous recording, follow these steps:

1. Go to Recordings > Continuous.
2. Select Enabled.
3. Select the type of storage device from the Storage list.
4. Select a Stream profile to use for continuous recordings.
5. Click Save to save and start the recording.
Languages

Multiple languages can be installed in the Axis product. All web pages including the online help will be displayed in the selected language. To switch languages, go to Setup > Languages and first upload the new language file. Browse and locate the file and click the Upload Language button. Select the new language from the list and click Save.

**Note**

- Resetting the product to factory default settings will erase any uploaded language files and reset the product language to English.
- Clicking the Restore button on the Maintenance page will not affect the language.
- A firmware upgrade will not affect the language used. However if you have uploaded a new language to the product and later upgrade the firmware, it may happen that the translation no longer matches the product’s web pages. In this case, upload an updated language file.
- A language already installed in the product will be replaced when a current or a later version of the language file is uploaded.
System Options

Security

Users

User access control is enabled by default and can be configured under System Options > Security > Users. An administrator can set up other users by giving them user names and passwords. It is also possible to allow anonymous viewer login, which means that anybody may access the Live View page.

The user list displays authorized users and user groups (access levels):

Viewer – Access to the Live View page
Operator – Access to the Live View page and to all settings except System Options
Administrator – Unrestricted access to all settings; can add, modify and remove other users.

Note

Note that when the option Encrypted & unencrypted is selected, the webserver will encrypt the password. This is the default option for a new unit or a unit reset to factory default settings.

Under HTTP/RTSP Password Settings, select the type of password to allow. You may need to allow unencrypted passwords if there are viewing clients that do not support encryption, or if you upgraded the firmware and existing clients support encryption but need to log in again and be configured to use this functionality.

Under User Settings, select the Enable anonymous viewer login option to allow anonymous users access to the Live View page.

Select the Enable anonymous PTZ control login to allow anonymous users access to the PTZ controls.

Deselect the Enable Basic Setup option to hide the Basic Setup menu. Basic Setup provides quick access to settings that should be made before using the Axis product.

ONVIF

ONVIF (Open Network Video Interface Forum) is a global interface standard that makes it easier for end users, integrators, consultants, and manufacturers to take advantage of the possibilities offered by network video technology. ONVIF enables interoperability between different vendor products, increased flexibility, reduced cost and future-proof systems.

By creating a user you automatically enable ONVIF communication. Use the user name and password with all ONVIF communication with the product. For more information see www.onvif.org

IP Address Filter

IP address filtering is enabled on the System Options > Security > IP Address Filter page. Once enabled, the listed IP address are allowed or denied access to the Axis product. Select Allow or Deny from the list and click Apply to enable IP address filtering.

The administrator can add up to 256 IP address entries to the list (a single entry can contain multiple IP addresses).

HTTPS

HTTPS (HyperText Transfer Protocol over Secure Socket Layer, or HTTP over SSL) is a web protocol providing encrypted browsing. HTTPS can also be used by users and clients to verify that the correct device is being accessed. The security level provided by HTTPS is considered adequate for most commercial exchanges.

The Axis product can be configured to require HTTPS when users from different user groups (administrator, operator, viewer) log in.

To use HTTPS, an HTTPS certificate must first be installed. Go to System Options > Security > Certificates to install and manage certificates. See Certificates on page 46.
To enable HTTPS on the Axis product:

1. Go to System Options > Security > HTTPS
2. Select an HTTPS certificate from the list of installed certificates.
3. Optionally, click Ciphers and select the encryption algorithms to use for SSL.
4. Set the HTTPS Connection Policy for the different user groups.
5. Click Save to enable the settings.

To access the Axis product via the desired protocol, in the address field in a browser, enter https:// for the HTTPS protocol and http:// for the HTTP protocol.

The HTTPS port can be changed on the System Options > Network > TCP/IP > Advanced page.

IEEE 802.1X

IEEE 802.1X is a standard for port-based Network Admission Control providing secure authentication of wired and wireless network devices. IEEE 802.1X is based on EAP (Extensible Authentication Protocol).

To access a network protected by IEEE 802.1X, devices must be authenticated. The authentication is performed by an authentication server, typically a RADIUS server, examples of which are FreeRADIUS and Microsoft Internet Authentication Service.

In Axis implementation, the Axis product and the authentication server identify themselves with digital certificates using EAP-TLS (Extensible Authentication Protocol - Transport Layer Security). The certificates are provided by a Certification Authority (CA). You need:

- a CA certificate to authenticate the authentication server.
- a CA-signed client certificate to authenticate the Axis product.

To create and install certificates, go to System Options > Security > Certificates. See Certificates on page 46. Many CA certificates are preinstalled.

To allow the product to access a network protected by IEEE 802.1X:

1. Go to System Options > Security > IEEE 802.1X.
2. Select a CA Certificate and a Client Certificate from the lists of installed certificates.
3. Under Settings, select the EAPOL version and provide the EAP identity associated with the client certificate.
4. Check the box to enable IEEE 802.1X and click Save.

Note

For authentication to work properly, the date and time settings in the Axis product should be synchronized with an NTP server. See Date & Time on page 47.

Certificates

Certificates are used to authenticate devices on a network. Typical applications include encrypted web browsing (HTTPS), network protection via IEEE 802.1X and secure upload of images and notification messages for example via email. Two types of certificates can be used with the Axis product:

Server/Client certificates – To authenticate the Axis product.

CA certificates – To authenticate peer certificates, for example the certificate of an authentication server in case the Axis product is connected to an IEEE 802.1X protected network.
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System Options

**Note**

Installed certificates, except preinstalled CA certificates, will be deleted if the product is reset to factory default. Preinstalled CA certificates that have been deleted will be reinstalled.

A Server/Client certificate can be self-signed or issued by a Certificate Authority (CA). A self-signed certificate offers limited protection and can be used before a CA-issued certificate has been obtained.

To install a self-signed certificate:

1. Go to Setup > System Options > Security > Certificates.
2. Click Create self-signed certificate and provide the requested information.

To create and install a CA-signed certificate:

1. Create a self-signed certificate as described above.
2. Go to Setup > System Options > Security > Certificates.
3. Click Create certificate signing request and provide the requested information.
4. Copy the PEM-formatted request and send to the CA of your choice.
5. When the signed certificate is returned, click Install certificate and upload the certificate.

Server/Client certificates can be installed as Certificate from signing request or as Certificate and private key. Select Certificate and private key if the private key is to be uploaded as a separate file or if the certificate is in PKCS#12 format.

The Axis product is shipped with several preinstalled CA certificates. If required, additional CA certificates can be installed:

1. Go to Setup > System Options > Security > Certificates.
2. Click Install certificate and upload the certificate.

Date & Time

The Axis product’s date and time settings are configured under System Options > Date & Time.

Current Server Time displays the current date and time (24h clock). The time can be displayed in 12h clock in the text overlay (see below).

To change the date and time settings, select the preferred Time mode under New Server Time:

- **Synchronize with computer time** – Sets date and time according to the computer’s clock. With this option, date and time are set once and will not be updated automatically.
- **Synchronize with NTP Server** – Obtains date and time from an NTP server. With this option, date and time settings are updated continuously. For information on NTP settings, see NTP Configuration on page 50.
  - If using a host name for the NTP server, a DNS server must be configured. See DNS Configuration on page 49.
- **Set manually** – Allows you to manually set date and time.

If using an NTP server, select your Time zone from the drop-down list. If required, check Automatically adjust for daylight saving time changes.

The Date & Time Format Used in Images is the date and time format displayed as a text overlay in the video stream. Use the predefined formats or see File Naming & Date/Time Formats in the online help for information on how to create custom date and time formats. To include date and time in the overlay text, go to Video and select Include date and Include time.
The Axis product supports IP version 4 and IP version 6. Both versions can be enabled simultaneously, and at least one version must always be enabled.

IPv4 Address Configuration
By default, the Axis product is set to use IPv4 (IP version 4) and to obtain the IP address automatically via DHCP. The IPv4 settings are configured under System Options > Network > TCP/IP > Basic.

DHCP (Dynamic Host Configuration Protocol) allows network administrators to centrally manage and automate the assignment of IP addresses. DHCP should only be enabled if using dynamic IP address notification, or if the DHCP can update a DNS server. It is then possible to access the Axis product by name (host name).

If DHCP is enabled and the product cannot be accessed, run AXIS IP Utility to search the network for connected Axis products, or reset the product to the factory default settings (see page 56) and then perform the installation again.

To use a static IP address, check Use the following IP address and specify the IP address, subnet mask and default router.

IPv6 Address Configuration
If IPv6 (IP version 6) is enabled, the Axis product will receive an IP address according to the configuration in the network router.

To enable IPv6, go to System Options > Network > TCP/IP > Basic. Other settings for IPv6 should be configured in the network router.

ARP/Ping
The product’s IP address can be assigned using ARP and Ping. For instructions, see Assign IP Address Using ARP/Ping on page 48.

The ARP/Ping service is enabled by default but is automatically disabled two minutes after the product is started, or as soon as an IP address is assigned. To re-assign IP address using ARP/Ping, the product must be restarted to enable ARP/Ping for an additional two minutes.

To disable the service, go to System Options > Network > TCP/IP > Basic and clear the option Enable ARP/Ping setting of IP address.

Pinging the product is still possible when the service is disabled.

Assign IP Address Using ARP/Ping
The product’s IP address can be assigned using ARP/Ping. The command must be issued within 2 minutes of connecting power.

1. Acquire a free static IP address on the same network segment as the computer.
2. Locate the serial number (S/N) on the product label.
3. Open a command prompt and enter the following commands:
   - Linux/Unix syntax
     ```
     arp -s <IP address> <serial number> temp
     ping -s 408 <IP address>
     ```
   - Linux/Unix example
     ```
     arp -s 192.168.0.125 00:40:8c:18:10:00 temp
     ping -s 408 192.168.0.125
     ```
   - Windows syntax (this may require that you run the command prompt as an administrator)
     ```
     arp -s <IP address> <serial number>
     ```
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ping -l 408 -t <IP address>

Windows example (this may require that you run the command prompt as an administrator)

arp -s 192.168.0.125 00-40-8c-18-10-00
ping -l 408 -t 192.168.0.125

4. Check that the network cable is connected and then restart the product by disconnecting and reconnecting power.

5. Close the command prompt when the product responds with Reply from 192.168.0.125:... or similar.

6. Open a browser and type http://<IP address> in the Location/Address field.

For other methods of assigning the IP address, see the document Assign an IP Address and Access the Video Stream on Axis Support web at www.axis.com/techsup

Note
- To open a command prompt in Windows, open the Start menu and type cmd in the Run/Search field.
- To use the ARP command in Windows 8/Windows 7/Windows Vista, right-click the command prompt icon and select Run as administrator.
- To open a command prompt in Mac OS X, open the Terminal utility from Application > Utilities.

AXIS Video Hosting System (AVHS)

AVHS used in conjunction with an AVHS service, provides easy and secure Internet access to live and recorded video accessible from any location. For more information and help to find a local AVHS Service Provider go to www.axis.com/hosting

The AVHS settings are configured under System Options > Network > TCP IP > Basic. The possibility to connect to an AVHS service is enabled by default. To disable, clear the Enable AVHS box.

One-click enabled – Press and hold the product’s control button (see Hardware Overview on page 7) for about 3 seconds to connect to an AVHS service over the Internet. Once registered, Always will be enabled and the Axis product stays connected to the AVHS service. If the product is not registered within 24 hours from when the button is pressed, the product will disconnect from the AVHS service.

Always – The Axis product will constantly attempt to connect to the AVHS service over the Internet. Once registered the product will stay connected to the service. This option can be used when the product is already installed and it is not convenient to use the one-click installation.

AXIS Internet Dynamic DNS Service

AXIS Internet Dynamic DNS Service assigns a host name for easy access to the product. For more information, see www.axis.com

To register the Axis product with AXIS Internet Dynamic DNS Service, go to System Options > Network > TCP/IP > Basic. Under Services, click the AXIS Internet Dynamic DNS Service Settings button (requires access to the Internet). The domain name currently registered at AXIS Internet Dynamic DNS service for the product can at any time be removed.

Note
AXIS Internet Dynamic DNS Service requires IPv4.

Advanced TCP/IP Settings

DNS Configuration

DNS (Domain Name Service) provides the translation of host names to IP addresses. The DNS settings are configured under System Options > Network > TCP/IP > Advanced.

Select Obtain DNS server address via DHCP to use the DNS settings provided by the DHCP server.

To make manual settings, select Use the following DNS server address and specify the following:
Domain name – Enter the domain(s) to search for the host name used by the Axis product. Multiple domains can be separated by semicolons. The host name is always the first part of a fully qualified domain name, for example, myserver is the host name in the fully qualified domain name myserver.mycompany.com where mycompany.com is the domain name.

Primary/Secondary DNS server – Enter the IP addresses of the primary and secondary DNS servers. The secondary DNS server is optional and will be used if the primary is unavailable.

NTP Configuration
NTP (Network Time Protocol) is used to synchronize the clock times of devices in a network. The NTP settings are configured under System Options > Network > TCP/IP > Advanced.

Select Obtain NTP server address via DHCP to use the NTP settings provided by the DHCP server.

To make manual settings, select Use the following NTP server address and enter the host name or IP address of the NTP server.

Host Name Configuration
The Axis product can be accessed using a host name instead of an IP address. The host name is usually the same as the assigned DNS name. The host name is configured under System Options > Network > TCP/IP > Advanced.

Select Obtain host name via IPv4 DHCP to use host name provided by the DHCP server running on IPv4.

Select Use the host name manually.

Select Enable dynamic DNS updates to dynamically update local DNS servers whenever the Axis product’s IP address changes.
For more information, see the online help 📚.

Link-Local IPv4 Address
Link-Local Address is enabled by default and assigns the Axis product an additional IP address which can be used to access the product from other hosts on the same segment on the local network. The product can have a Link-Local IP and a static or DHCP-supplied IP address at the same time.

This function can be disabled under System Options > Network > TCP/IP > Advanced.

HTTP
The HTTP port used by the Axis product can be changed under System Options > Network > TCP/IP > Advanced. In addition to the default setting, which is 80, any port in the range 1024–65535 can be used.

HTTPS
The HTTPS port used by the Axis product can be changed under System Options > Network > TCP/IP > Advanced. In addition to the default setting, which is 443, any port in the range 1024–65535 can be used.

To enable HTTPS, go to System Options > Security > HTTPS. For more information, see HTTPS on page 45.

NAT traversal (port mapping) for IPv4
A network router allows devices on a private network (LAN) to share a single connection to the Internet. This is done by forwarding network traffic from the private network to the “outside”, that is, the Internet. Security on the private network (LAN) is increased since most routers are pre-configured to stop attempts to access the private network (LAN) from the public network (Internet).

Use NAT traversal when the Axis product is located on an intranet (LAN) and you wish to make it available from the other (WAN) side of a NAT router. With NAT traversal properly configured, all HTTP traffic to an external HTTP port in the NAT router is forwarded to the product.

NAT traversal is configured under System Options > Network > TCP/IP > Advanced.
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**Note**
- For NAT traversal to work, this must be supported by the router. The router must also support UPnP™.
- In this context, router refers to any network routing device such as a NAT router, Network router, Internet Gateway, Broadband router, Broadband sharing device, or a software such as a firewall.

**Enable/Disable** – When enabled, the Axis product attempts to configure port mapping in a NAT router on your network, using UPnP™. Note that UPnP™ must be enabled in the product [see System Options > Network > UPnP].

**Use manually selected NAT router** – Select this option to manually select a NAT router and enter the IP address for the router in the field. If no router is specified, the product automatically searches for NAT routers on your network. If more than one router is found, the default router is selected.

**Alternative HTTP port** – Select this option to manually define an external HTTP port. Enter a port in the range 1024–65535. If the port field is empty or contains the default setting, which is 0, a port number is automatically selected when enabling NAT traversal.

**Note**
- An alternative HTTP port can be used or be active even if NAT traversal is disabled. This is useful if your NAT router does not support UPnP and you need to manually configure port forwarding in the NAT router.
- If you attempt to manually enter a port that is already in use, another available port is automatically selected.
- When the port is selected automatically it is displayed in this field. To change this, enter a new port number and click Save.

**FTP**

The FTP server running in the Axis product enables upload of new firmware, user applications, etc. The FTP server can be disabled under System Options > Network > TCP/IP > Advanced.

**Note**
This FTP server has nothing to do with the product’s ability to transfer images via FTP to other locations and servers.

**RTSP**

The RTSP server running in the Axis product allows a connecting client to start an H.264 stream. The RTSP port number can be changed under System Options > Network > TCP/IP > Advanced. The default port is 554.

**Note**
H.264 video streams will not be available if the RTSP server is disabled.

**SOCKS**

SOCKS is a networking proxy protocol. The Axis product can be configured to use a SOCKS server to reach networks on the other side of a firewall or proxy server. This functionality is useful if the Axis product is located on a local network behind a firewall, and notifications, uploads, alarms, etc need to be sent to a destination outside the local network (for example the Internet).

SOCKS is configured under System Options > Network > SOCKS. For more information, see the online help.

**QoS (Quality of Service)**

QoS (Quality of Service) guarantees a certain level of a specified resource to selected traffic on a network. A QoS-aware network prioritizes network traffic and provides a greater network reliability by controlling the amount of bandwidth an application may use.

The QoS settings are configured under System Options > Network > QoS. Using DSCP (Differentiated Services Codepoint) values, the Axis product can mark different types of traffic.

**SNMP**

The Simple Network Management Protocol (SNMP) allows remote management of network devices. An SNMP community is the group of devices and management station running SNMP. Community names are used to identify groups.
AXIS Video MIB (Management Information Base) for video hardware can be used to monitor Axis-specific, hardware-related issues that may need administrative attention. For more information about AXIS Video MIB and to download MIB files, go to www.axis.com/techsup

To enable and configure SNMP in the Axis product, go to the System Options > Network > SNMP page.

Depending on the level of security required, select the version on SNMP to use.

Traps are used by the Axis product to send messages to a management system on important events and status changes. Check Enable traps and enter the IP address where the trap message should be sent and the Trap community that should receive the message.

Note

If HTTPS is enabled, SNMP v1 and SNMP v2c should be disabled.

Traps for SNMP v1/v2 are used by the Axis product to send messages to a management system on important events and status changes. Check Enable traps and enter the IP address where the trap message should be sent and the Trap community that should receive the message.

The following traps are available:

- Cold start
- Warm start
- Link up
- Authentication failed

Note

All AXIS Video MIB traps are enabled when SNMP v1/v2c traps are enabled. It is not possible to turn on or off specific traps.

SNMP v3 provides encryption and secure passwords. To use traps with SNMP v3, an SNMP v3 management application is required.

To use SNMP v3, HTTPS must be enabled, see HTTPS on page 45. To enable SNMP v3, check the box and provide the initial user password.

Note

The initial password can only be set once. If the password is lost, the Axis product must be reset to factory default, see Reset to Factory Default Settings on page 56.

UPnP™

The Axis product includes support for UPnP™. UPnP™ is enabled by default and the product is automatically detected by operating systems and clients that support this protocol.

UPnP™ can be disabled under System Options > Network > UPnP

RTP/H.264

The RTP port range and multicast settings are configured under System Options > Network > RTP.

The RTP port range defines the range of ports from which the video ports are automatically selected. For multicast streams, only certain IP addresses and port numbers should be used.

Select Always Multicast Video to start multicast streaming without opening an RTSP session.

Bonjour

The Axis product includes support for Bonjour. Bonjour is enabled by default and the product is automatically detected by operating systems and clients that support this protocol.
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Bonjour can be disabled under System Options > Network > Bonjour.

Storage

SD Card

NOTICE
To prevent data corruption, the SD card should be unmounted before removal.

Note
For SD card recommendations see www.axis.com

The Axis product supports SD/SDHC/SDXC cards.

The following SD card file systems are supported:

- ext4 — recommended due to its resilience against data loss if the card is ejected or if there is abrupt power loss. To access data stored on the card from the Windows operating system, a third-party ext4 driver or application is required.
- vFAT — supported by most operating systems for personal computers.

The SD card is managed on the System Options > Storage page. Click SD Card to open Storage Management.

If the card's status shows as failed, click Check disk to see if the problem can be found and then try Repair. This option is only available for SD cards with ext4. For SD cards with vFAT, use a card reader or computer to troubleshoot the card.

To avoid filling the card, it is recommended to remove recordings continuously. Under General Settings, select Remove recordings older than and select the number of days or weeks.

To stop writing to the card and protect recordings from being removed, select Lock under General Settings.

Mount and Unmount SD Card

NOTICE
To prevent corruption of recordings, the SD card should always be unmounted before it is ejected.

The SD card is automatically mounted when the card is inserted into the Axis product or when the product is started. A manual mount is only required if the card has been unmounted and not ejected and re-inserted.

To unmount the SD card:

1. Open the Axis product's webpages and go to Setup > System Options > Storage.
2. Click SD Card.
3. Click Unmount.
4. The card can now be removed.

Format SD Card

NOTE
Formatting the SD card will remove all data and recordings stored on the card.

The Axis product can be configured to automatically format SD cards that are inserted into the product. If autoformat is enabled and an SD card is inserted, the product will check if the SD card has the ext4 file system. If the card has a different file system, the card will automatically be formatted to ext4.
Important

If autoformat is enabled, only use new or empty SD cards. Any data stored on the card will be lost when the card is inserted into the Axis product.

To enable automatic formatting, follow these steps:

1. Open the Axis product’s webpages and go to Setup > System Options > Storage.
2. Click SD Card.
3. Under General Settings, select Autoformat to.
4. Click OK to save settings.

An SD card inserted into the product can be manually formatted to one of the supported file systems. To manually format the SD card, follow these steps:

1. Insert the SD card in the SD card slot.
2. Open the Axis product’s webpages and go to Setup > System Options > Storage.
3. Click SD Card.
4. Click Format and select the desired file system.
5. Click OK to start formatting the card.

Network Share

Network share allows you to add network storage such as a NAS (network-attached storage). The NAS shall be dedicated for recordings and data from the Axis products connected to the network. For information about reference NAS devices, go to www.axis.com/se/sv/products/axis-camera-companion/support-and-documentation

Note

For NAS recommendations see www.axis.com

To add a network share:

1. Go to System Options > Storage.
2. Click Network Share.
3. Enter the IP address, DNS or Bonjour name to the host server in the Host field.
4. Enter the name of the share in the Share field. Sub folders cannot be used.
5. If required, select The share requires login and enter the user name and password.
6. Click Connect.

To clear all recordings and data from the Axis product’s folder on the designated share, click Clear under Storage Tools.

To avoid filling the share, it is recommended to remove recordings continuously. Under Recording Settings, select Remove recordings older than and select the number of days or weeks.

To stop writing to the share and protect recordings from being removed, select Lock under Recording Settings.

Maintenance

The Axis product provides several maintenance functions. These are available under System Options > Maintenance.
Click **Restart** to perform a correct restart if the Axis product is not behaving as expected. This will not affect any of the current settings.

**Note**

A restart clears all entries in the Server Report.

Click **Restore** to reset most settings to the factory default values. The following settings are not affected:

- the boot protocol (DHCP or static)
- the static IP address
- the default router
- the subnet mask
- the system time
- the IEEE 802.1X settings
- uploaded applications are kept but must be restarted

Click **Default** to reset all settings, including the IP address, to the factory default values. This button should be used with caution. The Axis product can also be reset to factory default using the control button, see *Reset to Factory Default Settings on page 56.*

To test the product's PTZ mechanics, click **Test** under PTZ Status.

For information about firmware upgrade, see *Upgrade the Firmware on page 57.*

## Support

### Support Overview

The **System Options > Support > Support Overview** page provides information on troubleshooting and contact information, should you require technical assistance.

See also *Troubleshooting on page 57.*

### System Overview

To get an overview of the Axis product's status and settings, go to **System Options > Support > System Overview.** Information that can be found here includes firmware version, IP address, network and security settings, event settings, image settings and recent log items. Many of the captions are links to the proper Setup page.

### Logs & Reports

The **System Options > Support > Logs & Reports** page generates logs and reports useful for system analysis and troubleshooting. If contacting Axis Support, please provide a valid Server Report with your query.

**System Log** – Provides information about system events.

**Access Log** – Lists all failed attempts to access the product. The Access Log can also be configured to list all connections to the product (see below).

**Server Report** – Provides information about the product status in a pop-up window. The Access Log is automatically included in the Server Report.

**Parameter List** – Shows the product's parameters and their current settings. This may prove useful when troubleshooting or when contacting Axis Support.

**Connection List** – Lists all clients that are currently accessing media streams.
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Crash Report – Generates an archive with debugging information. The report takes several minutes to generate.

Advanced

Scripting

Scripting allows experienced users to customize and use their own scripts.

**NOTICE**

Improper use may cause unexpected behavior and loss of contact with the Axis product.

Axis strongly recommends that you do not use this function unless you understand the consequences. Axis Support does not provide assistance for problems with customized scripts.

To open the Script Editor, go to System Options > Advanced > Scripting. If a script causes problems, reset the product to its factory default settings, see page 56.

For more information, see www.axis.com/developer

File Upload

Files, for example webpages and images, can be uploaded to the Axis product and used as custom settings. To upload a file, go to System Options > Advanced > File Upload.

Uploaded files are accessed through http://<ip address>/local/<user>/<file name> where <user> is the selected user group (viewer, operator or administrator) for the uploaded file.

Plain Config

Plain Config is for advanced users with experience of Axis product configuration. Most parameters can be set and modified from this page.

To open Plain Config, go to System Options > Advanced > Plain Config. Axis Support does not provide assistance.

Reset to Factory Default Settings

**Important**

Reset to factory default should be used with caution. A reset to factory default will reset all settings, including the IP address, to the factory default values.

**Note**

The installation and management software tools are available from the support pages on www.axis.com/techsup

To reset the product to the factory default settings:

1. Press and hold the control button and the power button for 15–30 seconds until the status LED indicator flashes amber. See Hardware Overview on page 7.
2. Release the control button but continue to hold down the power button until the status LED indicator turns green.
3. Release the power button and assemble the product.
4. The process is now complete. The product has been reset to the factory default settings. If no DHCP server is available on the network, the default IP address is 192.168.0.90
5. Using the installation and management software tools, assign an IP address, set the password and access the video stream.

It is also possible to reset parameters to factory default via the web interface. Go to Setup > System Options > Maintenance.

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AXIS Q6044-E PTZ Dome Network Camera

Troubleshooting

Check the Firmware

Firmware is software that determines the functionality of network devices. One of your first actions when troubleshooting a problem should be to check the current firmware version. The latest version may contain a correction that fixes your particular problem. The current firmware version in the Axis product is displayed in the page Setup > Basic Setup and in Setup > About.

Upgrade the Firmware

Important

- Your dealer reserves the right to charge for any repair attributable to faulty upgrade by the user.
- Preconfigured and customized settings are saved when the firmware is upgraded (providing the features are available in the new firmware) although this is not guaranteed by Axis Communications AB.

Note

- After the upgrade process has completed, the product will restart automatically. If restarting the product manually after the upgrade, always wait 10 minutes even if you suspect the upgrade has failed.
- When you upgrade the Axis product with the latest firmware from Axis website, the product receives the latest functionality available. Always read the upgrade instructions and release notes available with each new release before upgrading the firmware.

To upgrade the product’s firmware:

1. Save the firmware file to your computer. The latest version of the firmware is available free of charge from Axis website at www.axis.com/techsup
2. Go to Setup > System Options > Maintenance in the product’s webpages.
3. Under Upgrade Server, click Browse and locate the file on your computer. Click Upgrade.
4. Wait approximately 10 minutes while the product is being upgraded and restarted. Then access the product.

AXIS Camera Management can be used for multiple upgrades. See www.axis.com for more information.

Emergency Recovery Procedure

If power or network connection is lost during the upgrade, the process fails and the product becomes unresponsive. Flashing red Status indicator indicates a failed upgrade. To recover the product, follow the steps below. The serial number is found on the product’s label.

1. In UNIX/Linux, type the following from the command line:
   
   ```
   arp -s <IP address> <serial number> temp
   ping -l 408 <IP address>
   ```

   In Windows, type the following from a command/DOS prompt (this may require that you run the command prompt as an administrator):
   
   ```
   arp -s <IP address> <serial number>
   ping -l 408 -t <IP address>
   ```

2. If the product does not reply in 30 seconds, restart it and wait for a reply. Press CTRL+C to stop Ping.

3. Open a browser and type in the product’s IP address. In the page that opens, use the Browse button to select the upgrade file to use. Then click Load to restart the upgrade process.

4. After the upgrade is complete (1–10 minutes), the product automatically restarts and shows a steady green on the Status indicator.
AXIS Q6044-E PTZ Dome Network Camera

Troubleshooting

5. Reinstall the product, referring to the Installation Guide.

If the emergency recovery procedure does not get the product up and running again, contact Axis support at www.axis.com/techsup/

Symptoms, Possible Causes and Remedial Actions

<table>
<thead>
<tr>
<th>Problems setting the IP address</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When using ARP/Ping</strong></td>
</tr>
<tr>
<td><strong>The product is located on a different subnet</strong></td>
</tr>
<tr>
<td><strong>The IP address is being used by another device</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Possible IP address conflict with another device on the same subnet.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The product cannot be accessed from a browser</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cannot log in</strong></td>
</tr>
<tr>
<td><strong>The IP address has been changed by DHCP</strong></td>
</tr>
<tr>
<td><strong>Certificate error when using IEEE 802.1X</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The product is accessible locally but not externally</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Router configuration</strong></td>
</tr>
<tr>
<td><strong>Firewall protection</strong></td>
</tr>
<tr>
<td><strong>Default routers required</strong></td>
</tr>
</tbody>
</table>
## Troubleshooting

### Problems with streaming H.264

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems with AXIS Media Control (Internet Explorer only)</td>
<td>To enable the updating of video images in Internet Explorer, set the browser to allow ActiveX controls. Also, make sure that AXIS Media Control is installed on your computer.</td>
</tr>
<tr>
<td>No H.264 displayed in the client</td>
<td>Check that the relevant H.264 connection methods and correct interface are enabled in the AMC Control Panel (streaming tab). See AXIS Media Control (AMC) on page 14.</td>
</tr>
<tr>
<td>Multicast H.264 only accessible by local clients</td>
<td>Check that RTSP is enabled under System Options &gt; Network &gt; TCP/IP &gt; Advanced.</td>
</tr>
<tr>
<td>No multicast H.264 displayed in the client</td>
<td>Check if your router supports multicasting, or if the router settings between the client and the product need to be configured. The TTL (Time To Live) value may need to be increased.</td>
</tr>
<tr>
<td>Poor rendering of H.264 images</td>
<td>Ensure that your graphics card is using the latest driver. The latest drivers can usually be downloaded from the manufacturer’s website.</td>
</tr>
<tr>
<td>Color saturation is different in H.264 and Motion JPEG</td>
<td>Modify the settings for your graphics adapter. Refer to the adapter’s documentation for more information.</td>
</tr>
<tr>
<td>Lower frame rate than expected</td>
<td>See Performance Considerations on page 63. Reduce the number of applications running on the client computer. Limit the number of simultaneous viewers. Check with the network administrator that there is enough bandwidth available. Check in the AMC Control Panel (H.264 tag) that video processing is NOT set to Decode only key frames. Lower the image resolution. The maximum frames per second is dependent on the utility frequency (60/50 Hz) of the Axis product. See Technical Specifications on page 61.</td>
</tr>
</tbody>
</table>

### Product does not start up

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product does not start up</td>
<td>If the product does not start up keep the network cable connected and re-insert the power cable to the midspan.</td>
</tr>
</tbody>
</table>

### Video and image problems, general

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black image with text indicating inadequate power supply</td>
<td>Check cables and restart power sourcing equipment.</td>
</tr>
<tr>
<td>Image unsatisfactory</td>
<td>Check the video stream and camera settings under Setup &gt; Video &gt; Video Stream and Setup &gt; Video &gt; Camera Settings.</td>
</tr>
</tbody>
</table>

### Motion Detection triggers unexpectedly

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in luminance</td>
<td>Motion detection is based on changes in luminance in the image. This means that if there are sudden changes in the lighting, motion detection may trigger mistakenly. Lower the sensitivity setting to avoid problems with luminance.</td>
</tr>
</tbody>
</table>
AXIS Q6044-E PTZ Dome Network Camera

Troubleshooting

<table>
<thead>
<tr>
<th>Storage and disk management problems</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Storage disruption</strong></td>
<td>A storage disruption alarm is sent if a storage device is unavailable, removed, full, locked or if other read or write problems occur. To identify the source of the problem, check the System Log under System Options &gt; Support &gt; Logs &amp; Reports. Depending on the problem, it might be necessary to re-mount the storage device.</td>
</tr>
<tr>
<td><strong>Video cannot be recorded</strong></td>
<td>Check that the SD card is not write protected (that is, read only).</td>
</tr>
<tr>
<td><strong>SD card cannot be mounted</strong></td>
<td>Reformat the SD card and then click Mount.</td>
</tr>
<tr>
<td><strong>NOTICE</strong></td>
<td>Formatting the card will remove all content, including all recordings, from the SD card.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condensation in dome</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blurred image</strong></td>
<td>Activate fan and heater to remove possible moisture from dome</td>
</tr>
</tbody>
</table>
**AXIS Q6044-E PTZ Dome Network Camera**

**Technical Specifications**

| **Models** | AXIS Q6044-E 60 Hz  
AXIS Q6044-E 50 Hz |
|-----------|------------------|

**Camera**

<table>
<thead>
<tr>
<th><strong>Image sensor</strong></th>
<th>1/3&quot; Progressive scan CCD</th>
</tr>
</thead>
</table>
| **Lens** | 4.4–132 mm, F1.4–4.6  
Horizontal angle of view 62.9°–2.2°  
Vertical angle of view 37°–1.2°  
Autofocus |
| **Day and night** | Automatically removable infrared-cut filter |
| **Minimum illumination** | Color: 0.2 lux at 30 IRE F1.4  
Black and white: 0.04 lux at 30 IRE F1.4 |
| **Shutter time** | 1/10000 s to 1/4 s |
| **Pan/Tilt/Zoom** | Pan: 360° endless, 0.05° – 450°/s  
Tilt: 220°, 0.05°–450°/s  
30x optical zoom and 12x digital zoom, total 360x zoom  
E-flip, 256 preset positions, Tour recording, Guard tour, Control queue, On-screen directional indicator, Set new pan 0°, Adjustable zoom speed |

**Video**

| **Video compression** | H.264 (MPEG-4 Part 10/AVC) Baseline and Main Profiles  
Motion JPEG |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resolutions</strong></td>
<td>HDTV 720p 1280x720 to 320x180</td>
</tr>
<tr>
<td><strong>Frame rate</strong></td>
<td>Up to 30/25 fps (60/50 Hz) in all resolutions</td>
</tr>
</tbody>
</table>
| **Video streaming** | Multiple, individually configurable streams in H.264 and Motion JPEG  
Controlable frame rate and bandwidth  
VBR/MBR H.264 |
| **Image settings** | Wide Dynamic Range (WDR), manual shutter time, compression, color, brightness, sharpness, white balance, exposure control, exposure zones, backlight compensation, fine tuning of behavior at low light, rotation: 0°, 180°, text and image overlay, 32 individual 3D privacy masks, image freeze on PTZ, electronic image stabilization, automatic defog |

**Network**

<table>
<thead>
<tr>
<th><strong>Security</strong></th>
<th>Password protection, IP address filtering, HTTPS+ encryption, IEEE 802.1Xe network access control, Digest authentication, User access log, Centralized Certificate Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supported protocols</strong></td>
<td>IPv4/v6, HTTP, HTTPS+, SSL/TLS+, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP™, SNMP v1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, SFTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS, SSH, NTCP</td>
</tr>
</tbody>
</table>

**System integration**

| **Application Programming Interface** | Open API for software integration, including VAPIX® and AXIS Camera Application Platform; specifications at www.axis.com  
AXIS Video Hosting System (AVHS) with One-Click Connection  
ONVIF Profile S, specification at www.onvif.org |
|-------------------------------------|--------------------------------------------------|
| **Analytics** | Video motion detection, Autotracking, Active Gatekeeper  
Support for AXIS Camera Application Platform enabling installation of AXIS Cross-line detection and third-party applications, see www.axis.com/ocap |
| **Event triggers** | Analytics, Shock detection, Fan, Temperature, Manual trigger, PTZ moving, PTZ preset, Edge storage events  
Heater  
Casing open |
| **Event actions** | File upload: FTP, SFTP, HTTP, HTTPS network share and email  
Notification: email, HTTP, HTTPS and TCP  
Day/night mode, Guard tour, Video recording to edge storage, Pre- and post-alarm video buffering, PTZ preset, Overlay text, Send SNMP trap |
### Technical Specifications

<table>
<thead>
<tr>
<th>Data streaming</th>
<th>Event data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built-in installation aids</td>
<td>Pixel counter</td>
</tr>
<tr>
<td><strong>Web browser</strong></td>
<td>Camera live view</td>
</tr>
<tr>
<td></td>
<td>Video recording to file (ASF)</td>
</tr>
<tr>
<td></td>
<td>Customizable HTML pages</td>
</tr>
<tr>
<td></td>
<td>DirectX 9c or higher</td>
</tr>
<tr>
<td></td>
<td>For other operating systems and browsers, see <a href="http://www.axis.com/techsup">www.axis.com/techsup</a></td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th>Casing</th>
<th>IP66, NEMA 4X- and IK10-rated metal casing (aluminum), polycarbonate (PC) clear dome, sunshield (PC/ASA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>512 MB RAM, 128 MB Flash</td>
</tr>
<tr>
<td></td>
<td>Battery backed-up real-time clock</td>
</tr>
<tr>
<td>Power</td>
<td>High Power over Ethernet (High PoE) IEEE 802.3at, max 60 W</td>
</tr>
<tr>
<td></td>
<td>Axis High PoE Midspan 1-port: 100–240 V AC, max 74 W</td>
</tr>
<tr>
<td>Connectors</td>
<td>RJ45 10BASE-T/100BASE-TX PoE, RJ45 Push-pull Connector (IP66) included</td>
</tr>
<tr>
<td>Edge storage</td>
<td>Support for SD/SDHC/SDXC card</td>
</tr>
<tr>
<td></td>
<td>Support for recording to dedicated network-attached storage (NAS)</td>
</tr>
<tr>
<td></td>
<td>For SD card and NAS recommendations see <a href="http://www.axis.com">www.axis.com</a></td>
</tr>
<tr>
<td>Operating conditions</td>
<td>With 30 W: -20 °C to 50 °C (-4 °F to 122 °F)</td>
</tr>
<tr>
<td></td>
<td>With 60 W: -50 °C to 50 °C (-58 °F to 122 °F)</td>
</tr>
<tr>
<td></td>
<td>Humidity 10–100% RH (condensing)</td>
</tr>
<tr>
<td>Storage conditions</td>
<td>-50 °C to 60 °C (-58 °F to 140 °F)</td>
</tr>
<tr>
<td>Approvals</td>
<td>EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024, FCC Part 15 Subpart B</td>
</tr>
<tr>
<td></td>
<td>Class A, ICES-003 Class A, VCCI Class A, C-tick AS/NZS CISPR 22 Class A</td>
</tr>
<tr>
<td></td>
<td>KCC KN22 Class A, KN24, IEC/EN/UL 60950-1</td>
</tr>
<tr>
<td></td>
<td>EN 50121-4, IEC 62238-4, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27,</td>
</tr>
<tr>
<td></td>
<td>NEMA 250 Type 4X</td>
</tr>
<tr>
<td></td>
<td>IEC/EN/UL 60950-22, IEC 60068-2-30, IEC 60068-2-60, IEC 60068-2-78</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 60529 IP66, NEMA TS-2-2003 v 02.06, subsection 2.2.7, 2.2.8, 2.2.9; IEC 62262 IK10, ISO 4892-2</td>
</tr>
<tr>
<td>Midspan:</td>
<td>EN 60950-1, GS, UL, cUL, CE, FCC, VCCI, CB, KCC, UL-AR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>3.7 kg (8.2 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>Ø232 x 280 mm (Ø9.1 x 11.0 in)</td>
</tr>
</tbody>
</table>

| Included accessories | Axis High PoE 60 W Midspan 1-port, RJ45 Push-pull Connector (IP66), Sunshield Installation Guide, Windows decoder 1-user license |

<table>
<thead>
<tr>
<th>Optional accessories</th>
<th>Smoked dome cover, AXIS T91A Mounting Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AXIS T90 Illuminators, AXIS T8310 Video Surveillance Control Board, Installation Display, Multi-user decoder license pack</td>
</tr>
</tbody>
</table>

| Video management software | AXIS Camera Companion, AXIS Camera Station, Video management software from Axis' Application Development Partners available on www.axis.com/techsup/software |

| Languages | German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese |

| Warranty | Axis 3-year warranty and AXIS Extended Warranty option, see www.axis.com/warranty |

**More information is available at www.axis.com**

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**a.** This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (www.openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).

**b.** Arctic Temperature Control enables camera start-up at temperatures as low as -50 °C (-58 °F)
Performance Considerations

When setting up your system, it is important to consider how various settings and situations will affect performance. Some factors affect the amount of bandwidth (the bit rate) required, others can affect the frame rate, and some affect both. If the load on the CPU reaches its maximum, this will also affect the frame rate.

The following factors are among the most important to consider:

- High image resolution and/or lower compression levels result in images containing more data. Bandwidth affected.
- Access by large numbers of Motion JPEG and/or unicast H.264 clients. Bandwidth affected.
- Simultaneous viewing of different streams (resolution, compression) by different clients. Effect on frame rate and bandwidth.
- Accessing Motion JPEG and H.264 video streams simultaneously. Frame rate and bandwidth affected.
- Heavy usage of event settings affect the product’s CPU load. Frame rate affected.
- Using HTTPS may reduce frame rate, in particular if streaming Motion JPEG.
- Heavy network utilization due to poor infrastructure. Bandwidth affected.
- Viewing on poorly performing client computers lowers perceived performance. Frame rate affected.
- Running multiple AXIS Camera Application Platform (ACAP) applications simultaneously may affect the frame rate and the general performance.