

# **Axis Secure Remote Access**

Remote access made easy, secure and available

March 2019



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# 1. Introduction

An easy, secure and reliable way to access cameras remotely is a priority for many users of surveillance systems. However, connecting to remote cameras or recorders can be a challenge, especially when the devices are located behind routers or firewalls. To provide an easy and secure way of accessing cameras remotely, Axis has developed the Axis Secure Remote Access technology.

This white paper describes Axis Secure Remote Access and gives examples of the technology when used in AXIS Companion and AXIS Camera Station.

## 2. Axis solution to remote access

Axis Secure Remote Access makes it possible for a smartphone or PC client to access Axis network cameras and recorders when the client and the devices are located on different local networks. Using external mediator servers<sup>1</sup> or Axis backend servers, the client and the camera can find each other and establish a secure peer-to-peer connection. As a fallback, the communication is automatically relayed through the servers if direct communication cannot be established.

### 2.1 Easy to setup

Axis Secure Remote Access significantly simplifies the installation of remote access to surveillance systems. It is automatically configured during installation and removes the need of manual port forwarding or router configuration.

### 2.2 Secure communication

Secure communication is in the core of Axis Secure Remote Access. It uses multiple levels of authentication to establish an encrypted communication between a client and the cameras in the surveillance system.

### 2.3 Availability

To keep the response time to a minimum, and reduce latency, Axis Secure Remote Access is supported by multiple cloud servers provided by a major cloud vendor. The redundant environment secures the availability of the system.

<sup>1</sup> The mediator servers are a collection of servers hosted or controlled by Axis.

### 3. Using remote access with AXIS Companion

With AXIS Companion software, Axis cameras are turned into a surveillance solution that typically comprises 1-4 cameras while supporting up to 16 channels. The solution needs a PC only at installation and operating the system is conveniently done by using a mobile viewing app on a smartphone or tablet. For more details, see [www.axis.com/companion](http://www.axis.com/companion).

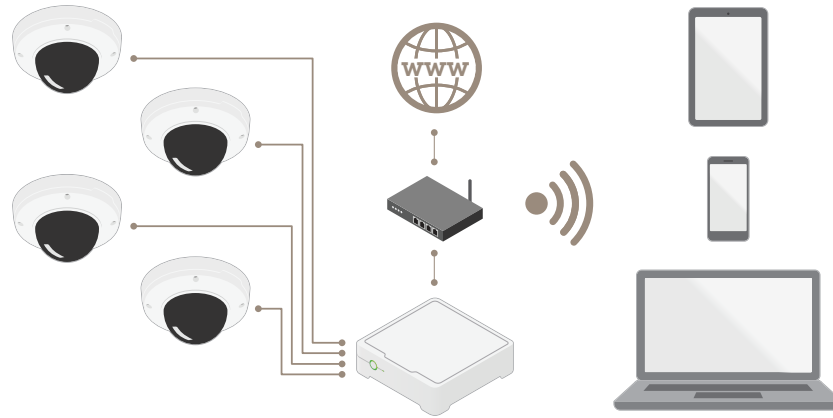


Figure 1: An AXIS Companion system with four cameras, AXIS Companion Recorder, router, and clients.

#### 3.1 System setup

To use Axis Secure Remote Access in AXIS Companion, you must have a MyAxis account. The MyAxis account organizes your sites and devices and makes them accessible from different clients. It is also possible to share sites with other MyAxis users by inviting them (applicable from version 4 of AXIS Companion)<sup>2</sup>.

For Axis Secure Remote Access to work, an initial one-time setup, or provisioning, is required where the AXIS Companion PC client, the cameras, and the recorder are located on the same network. The one-time setup is conducted using a setup wizard, guiding the installer through all necessary steps. If there is a new firmware version available for a device, this is automatically updated during the wizard, and system configuration is performed.

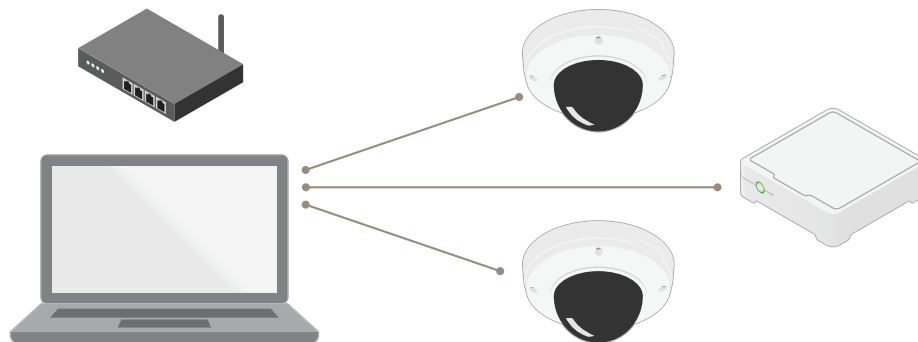


Figure 2: At system setup, the client and the devices must be located on the same network.

Once the initial setup is complete, the camera is accessible remotely to the user that created the site or added the camera to an existing site, as well as to any user who has been invited to access the site.

<sup>2</sup> Version 4 of AXIS Companion requires Axis devices to run firmware version 8.40 or later. Devices that remain on a lower firmware version can be used with version 3 of AXIS Companion.

### 3.2 Establish connection

In order to be accessible remotely, the device keeps an open connection to Axis backend servers (applicable from version 4 of AXIS Companion) or to the device's nearest mediator server (applicable for version 3 of AXIS Companion). When the client wants to contact a camera, it uses the servers to find out how and where to contact the camera. The client and the camera establish a connection via the server, verify each other's identities and establish a secure, direct, peer-to-peer communication.

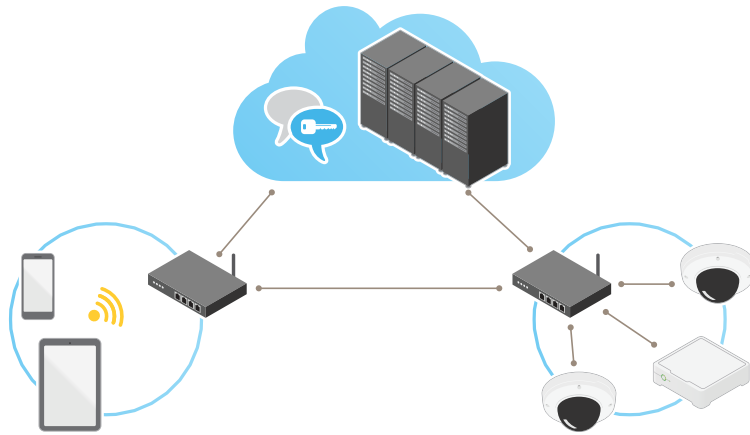


Figure 3: Secure peer-to-peer communication between clients and devices located on different networks.

### 3.3 Fallback to relayed communication

In some scenarios, for example complex network configurations, it is not possible to set up a peer-to-peer connection. For maximal availability, Axis Secure Remote Access has a fallback option to relay the communication through the servers. This is seamlessly handled by the system.

### 3.4 Secure communication

The data transferred over peer-to-peer connection, or via Axis mediator servers, is end-to-end encrypted which means that the data communicated only can be decrypted by the client and server. The data transferred via Axis backend servers (applicable from version 4 of AXIS Companion) is encrypted both between the client and the cloud, and between the cloud and the device. All encryption is performed using algorithms of the same security class as the banking sector uses to secure money transactions.

## 4. Using remote access with AXIS Camera Station

AXIS Camera Station software is the ideal solution to meet the needs for active and efficient surveillance of retail shops, hotels, schools, and manufacturing sites. A system typically contains between 10 and 50 cameras. It is designed to perfectly match Axis' wide range of network video products and product features to optimize system reliability. For more details, see [www.axis.com/axis-camera-station](http://www.axis.com/axis-camera-station)

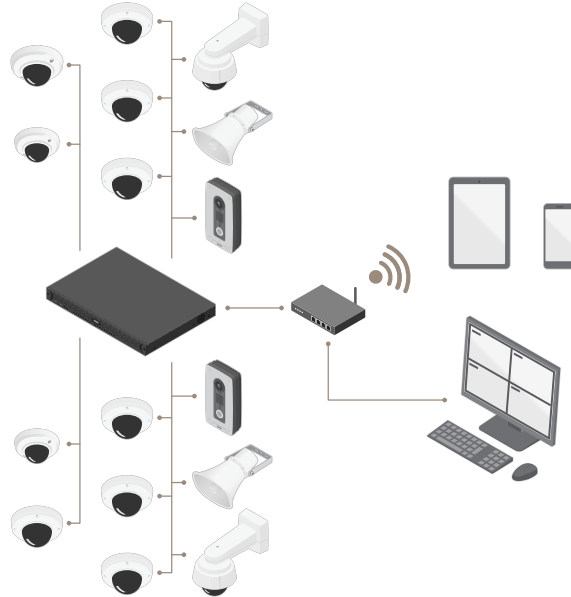


Figure 4: Illustration of a manufacturing installation with AXIS Camera Station on a system running on AXIS S2016 with integrated PoE switch, 16 devices, and operator clients.

### 4.1 System setup

To use Axis Secure Remote Access in AXIS Camera Station, all users must have a joint MyAxis account. The AXIS Camera Station server and the viewing client need Internet access. Install AXIS Camera Station and cameras on the local network and enable Axis Secure Remote Access in the server configuration.

### 4.2 Establish connection

In order to be accessible remotely, the server maintains an open connection to its nearest mediator server. When a client wants to contact the server and cameras, it uses the mediator servers to find out how and where to contact the server. The client and the server establish a connection via the mediator server, verify each other's identities and establish a secure, direct, peer-to-peer communication.

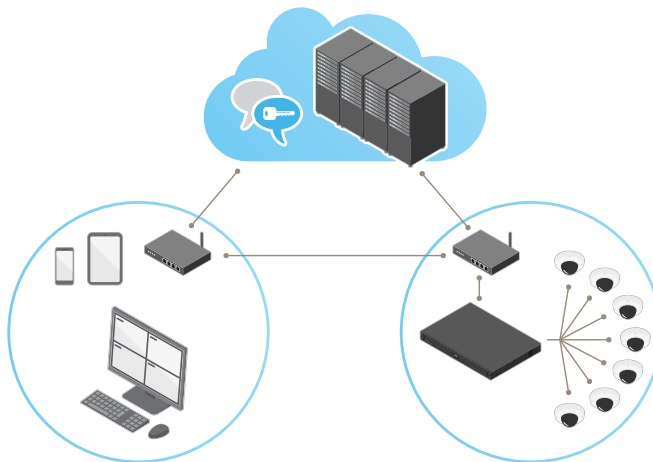


Figure 5: Secure, peer-to-peer communication between a client and a server located on different networks and fallback to relayed communication.

### **4.3 Fallback to relayed communication**

In some scenarios, for example complex network configurations, it is not possible to set up a peer-to-peer connection. For maximal availability, Axis Secure Remote Access has a fallback option to relay the communication through the mediator servers. This is seamlessly handled by the system.

### **4.4 Secure communication**

The data transferred via Axis mediator servers and over peer-to-peer connection is end-to-end encrypted which means that the data communicated only can be decrypted by the client and server. All data is encrypted using algorithms of the same security class as the banking sector uses to secure money transactions.

# About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, and audio systems. Axis has more than 3,000 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

For more information about Axis, please visit our website [www.axis.com](http://www.axis.com).