

1. Introduction to network video

The video surveillance industry today has a wide range of systems and devices for monitoring and safeguarding people and property. In order to understand the scope and potential of an integrated, fully digitized system, let us first examine the core components of a network video system: the network camera, the video server and video management software. When selecting an appropriate system, it is useful to compare the various available technologies in the light of the intended application area and requirements in terms of cost-effectiveness, scalability, ease of use and flexibility.

1.1. What is network video?

Network video, often referred to as IP-Surveillance for specific applications within security surveillance and remote monitoring, is a system which gives users the ability to monitor and record video over an IP network (LAN/WAN/Internet).

Unlike analog video systems, network video uses the network, rather than dedicated point-to-point cabling, as the backbone for transporting information. The term network video refers to both the video and audio sources available throughout the system. In a network video application, digitized video streams are transferred to any location in the world via a wired or wireless IP network, enabling video monitoring and recording from anywhere on the network.

Network video can be used in an almost unlimited number of applications; however, most of its uses fall into one of the following two categories:

■ Security surveillance

Network video's advanced functionality makes it highly suited to the applications involved in security surveillance. The flexibility of digital technology enhances security personnel's ability to protect people, property and assets. Such systems are therefore an especially attractive option for companies currently using CCTV.

■ Remote monitoring

Network video gives users the ability to gather information at all key points of an operation and view it in real-time. This makes the technology ideal for monitoring equipment, people and places both locally and remotely. Application examples include traffic and production line monitoring, and the monitoring of multiple retail locations.

The main vertical markets where network video systems have been successfully installed are:

■ Education

Security and remote monitoring of school playground areas, hallways and classrooms.

■ Transportation

Remote monitoring of railway stations and tracks, parking lots and garages, highways and airports.

■ Banking

Traditional security applications in high street banks, branch offices and ATM locations.

■ Government

For surveillance purposes, to provide safe and secure public environments.

■ Retail

For security and remote monitoring purposes to make store management easier and more efficient.

■ Industrial

Monitoring manufacturing processes, logistic systems, warehouse and stock control systems.

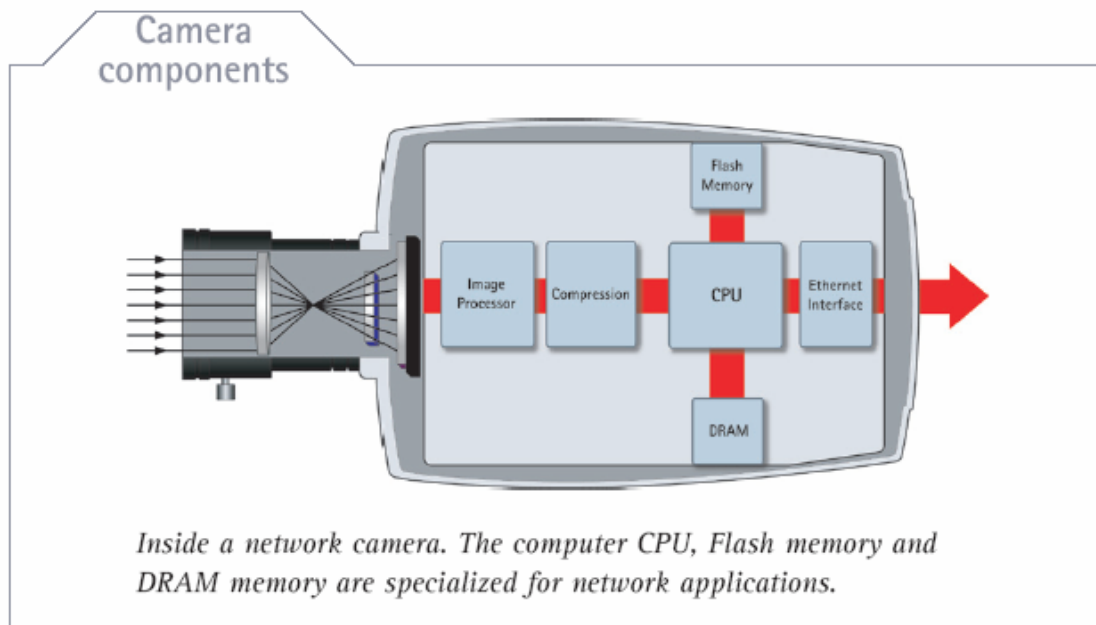
1.2. What is a network camera?

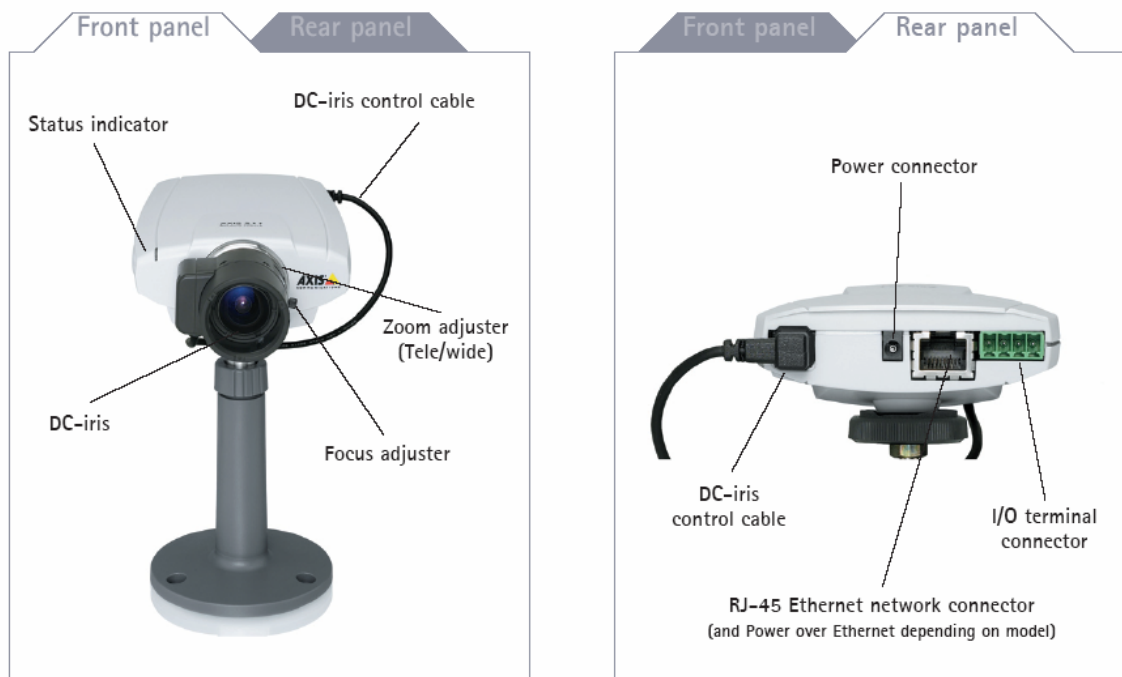
A network camera can be described as a camera and computer combined in one unit. It captures and transmits live images directly over an IP network, enabling authorized users to locally or remotely view, store, and manage video over standard IP-based network infrastructure.

Product overview

A network camera has its own IP address. It is connected to the network and has a built-in web server, FTP server, FTP client, e-mail client, alarm management, programmability, and much more. A network camera does not need to be connected to a PC; it operates independently and can be placed wherever there is an IP network connection. A web camera, on the other hand, is something totally different – it is a camera that requires connection to a PC via a USB or IEEE1394 port and a PC to operate.

In addition to video, a network camera also includes other functionalities and information being transported over the same network connection, i.e. digital inputs and outputs, audio, serial port(s) for serial data or control of pan/tilt/zoom mechanisms.





Comparing a network and an analog camera

In recent years, network camera technology has caught up to the analog camera and now meets the same requirements and specifications. Network cameras even surpass the performance of analog cameras, by offering a number of advanced functions which will be described later in this guide.

In short, an analog camera is a one-directional signal carrier which terminates at the DVR and operator level, whereas a network camera is fully bi-directional, and integrates with and drives the rest of the system to a high degree in a distributed and scalable environment. A network camera communicates with several applications in parallel, to perform various tasks, such as detecting motion or sending different streams of video.

Read more about using network cameras in chapter 4, page xx

1.3. What is a video server?

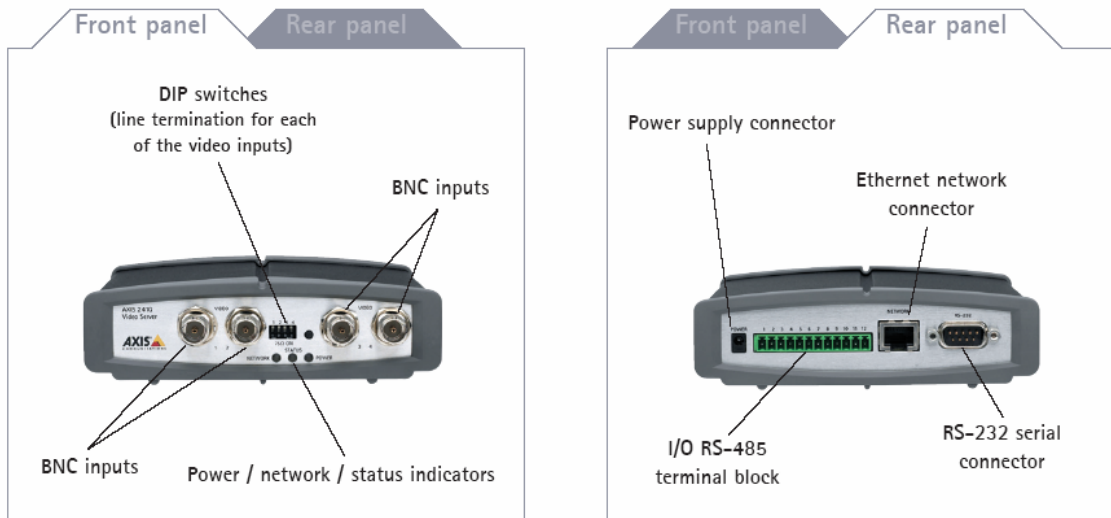
A video server (sometimes called a video encoder) makes it possible to move toward a network video system without having to discard existing analog equipment. It brings new functionality to analog equipment and eliminates the need for dedicated equipment such as coaxial cabling, monitors and DVRs – the latter becoming unnecessary as video recording can be done using standard PC servers.

Product overview

A video server typically has between one and four analog ports for analog cameras to plug into, as well as an Ethernet port for connection to the network. Like network cameras, it contains a built-in web server, a compression chip and an operating system so that incoming analog feeds can be converted into digital video, transmitted and recorded over the computer network for easier accessibility and viewing.

Besides the video input, a video server also includes other functionalities and information which are transported over the same network connection: digital inputs and outputs, audio,

serial port(s) for serial data or control of pan/tilt/zoom mechanisms. A video server can also be connected to a wide variety of specialized cameras, such as a highly sensitive black and white camera, a miniature or a microscope camera.



Read more about using analog cameras with video servers in chapter 4.2, page 36.

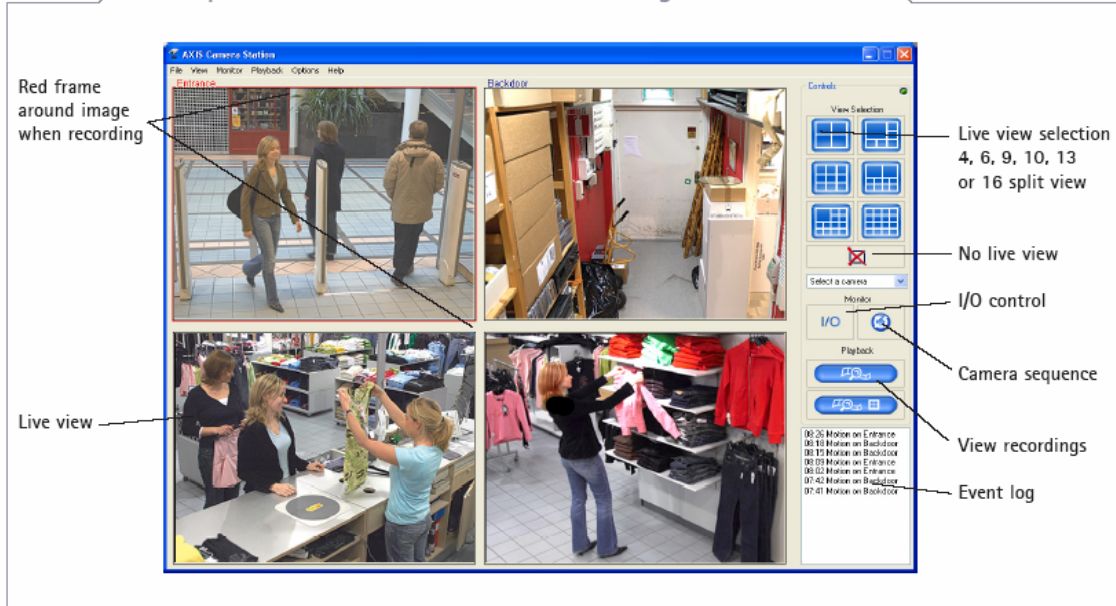
1.4. What is video management software?

Video management software running on a Windows or Unix/Linux server, supplies the basis for video management, monitoring, analysis, and recording. A wide range of software is available, based on the users' requirements. A standard web browser provides adequate viewing for many network video applications, utilizing the web interface built into the network camera or video server especially if only one or a few cameras are viewed at the same time.

To view several cameras at the same time, dedicated video management software is required. A wide range of video management software is available. In its simplest form, it offers live viewing, storing and retrieving of video sequences. Advanced software contains features like:

- Simultaneous viewing and recording of live video from multiple cameras
- Several recording modes: continuous, scheduled, on alarm and on motion detection
- Capacity to handle high frame rates and large amounts of data
- Multiple search functions for recorded events
- Remote access via a web browser, client software and even PDA client
- Control of PTZ and dome cameras
- Alarm management functions (sound alarm, pop-up windows or e-mail)
- Full duplex, real-time audio support
- Video intelligence

Example of a Windows-based video management software



Read more about video management software in chapter 7.2.2, page xx.

Application development

Axis offers application software to suit different needs. In order to facilitate an even wider selection of software, it is possible for independent developers and partners to integrate Axis video products into their applications.

Axis has developed and supports a standardized instruction suite of CGI (Common Gateway Interface) programs. These instructions collectively comprise Axis' HTTP Application Programming Interface (AXIS VAPIX™ API). In their simplest form, CGI instructions for motion detection, event triggering, alarm notification via e-mail, remote video storage and so forth, can be typed directly into the URL of a web browser.

Axis also offers a Software Development Kit (SDK), which contains components and documentation to help developers integrate Axis video products in Windows applications. Furthermore, it is possible to write scripts that run on the video products, which makes it possible to tailor the functionality of network video products to meet specific needs.

More information about developer support can be found at www.axis.com/techsup/cam_servers/dev



Axis Application Development Partner (ADP) Program

Axis' more than 300 ADP partners offer a wide range of complete software solutions that meet varying specifications and requirements for different application areas - from entry-level software to comprehensive applications covering most industry segments.

More information about Axis' ADP partners is available at www.axis.com/partner/adp_intro.htm