

Chapter 22

IP Video Surveillance System

ABSTRACT

The chapter is a summary of IP surveillance systems: basic functions, the advantages of network video, customizing surveillance applications, and possible legal concerns. The most important step one can take before installing IP surveillance system is to define goals and requirements. Once these are determined, the video system can be set up. The required goals to be determined are the following: definition of the video surveillance system needs (installation plan, area of coverage, camera positioning, illumination conditions determination, camera cabling, the recording server positioning), network camera and/or video encoder selection (image quality, lens selection, network camera selection, Power over Ethernet [PoE], video motion detection, audio, accessories selection, testing), hardware (switches, additional light sources, power supplies, additional server for video management software, hard drives), software (software package selection, licenses, image quality and frame rate requirements, IP address range calculation, hard disk usage calculation, camera configuration, video motion detection settings, user access definition), and maintenance.

1. INTRODUCTION

Security systems that utilize an Internet Protocol-based IP network such as the Internet or a Local Area Network LAN in order to allow users to observe scenes or record audio and video are IP-Surveillance systems.

Simple IP-Surveillance systems consist of network cameras (or analog cameras that have a video encoder), a network switch, and a computer equipped with software for video management. IP-Surveillance systems use IP networks to transmit information, unlike analog video systems' point-to-point cabling from the camera's physical location to the monitoring station (Kruegle, 2007).

Video monitoring and recording is possible from anywhere in the world provided that the location is enabled with a wired or wireless IP network.

Network video systems allow signals to be sent and received simultaneously; they are bi-directional. As a result, network video systems can be easily integrated into larger systems. Analog systems, however, are unidirectional: only one signal can be transmitted at a time. For example, a network camera is capable of both sending data (audio, video, SMS) to a user and receiving information (instructions, audio) from the same user. This type of activity can be used to perform multiple functions, like activating alarms or doors.

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Network video systems are also more flexible than audio in that they can multitask and connect with multiple applications at once.

IP-Surveillance offers many benefits and advanced capabilities. Via IP-Surveillance, you have superior control over recorded video, live video, and alarm events, which makes a network video system a natural choice for surveillance applications.

Among the benefits are:

1. **Remote Accessibility:** Authorized users from around the world can view video footage at any time of day. If your company would like to contract out its security needs to a third party, remote accessibility is a huge advantage. Remote accessibility through an analog system would only be possible with the purchasing of extra equipment like network Digital Video Recorders DVRs and video encoders.
2. **Superior Image Quality:** In order to identify subjects in a video scene, the image must be clear. Network video systems' images are consistently sharp because no inessential conversions are performed and distance between the scene and the remote monitor is not a factor. However, every time a video is converted in an analog system, its quality is degraded. Also, video signals become weaker with distance in an analog system.
 - a. Digital images are also of higher quality than analog because they are more easily stored and received. Networks cameras have the progressive scanning capability, which presents an image as one whole, thus creating a clearer image.
 - b. Large areas can be covered in more detail with megapixel network cameras. These cameras' images consist of at least 1 million pixels, which is greater than the capabilities of analog.
3. **Streamlined Integration:** Since network video components are built based on open standards, they can be assimilated into security and audio systems as well as made compatible with Ethernet-based and computer information, application and management software, and various devices. Network

Figure 1. IP surveillance video system

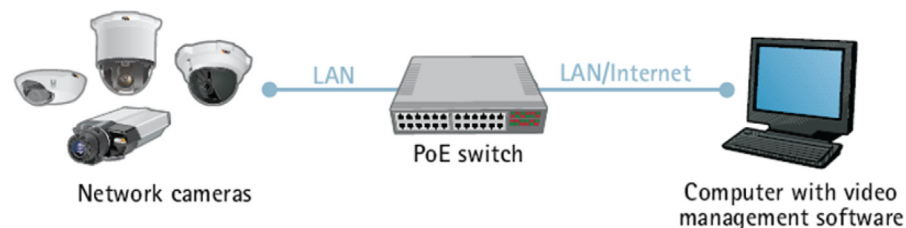
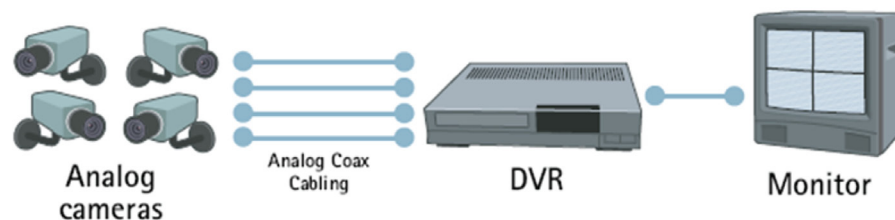


Figure 2. Analog surveillance video system



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