IP Video Surveillance

Business Challenges and Goals

Small businesses today are increasingly concerned with the security of their premises. Security procedures and technology must effectively prevent vandalism, accidents, and unlawful building access from disrupting daily operations.

For video surveillance, many companies still use closed circuit TV (CCTV), a legacy technology. However, CCTV is not an efficient way to view property and assets remotely, or to integrate new capabilities such as analytics and event-triggered e-mail alerts.

In a CCTV-based surveillance solution, images may be of poor quality and stored on tape, and the images may be difficult to access and search. The process of maintaining video surveillance tapes is prone to human error and degradation of quality over time. Upgrading to an IP video surveillance solution effectively addresses these concerns.

Organizations today are looking to achieve the following security goals:

- Protecting the business from theft and vandalism
- Monitoring the business from remote locations over the Internet
- Reducing the risk of liability for workplace accidents
- Optimizing operations by converging business application and surveillance networks into a single IP infrastructure
- Integrating with network storage to backup surveillance data
- Enabling cost-effective, advanced surveillance features, such as analytics and automatic alerts
- Improving awareness of customer behavior and traffic patterns

Solution Overview

The Cisco IP Video Surveillance solution provides a total solution, with a network foundation integrating the best practices described in the Cisco Secure Network Foundation (SNF) and Cisco Smart Business Communications System (SBCS) design and implementation guides.

IP-based video surveillance is the next step in the evolution of video surveillance technology. By connecting to the existing IP infrastructure, the video surveillance system becomes part of the data network and can be integrated with other business systems to provide enhanced surveillance capabilities.

IP-based cameras work with monitoring software and network-attached storage devices to allow improved event search and retrieval and remote management of the physical security solution.

IP video surveillance provides a cost-effective way to implement an advanced security solution, and to upgrade from complex and outdated CCTV and tape solutions. It allows physical security systems to be integrated and managed using the same network that is used for the rest of the business.

This integration lets users remotely access the virtual private network (VPN], cameras (local authentication), and surveillance data (authentication within the application). Access to the network, cameras, and surveillance applications is protected by user authentication. Combining these levels of security provides a secure video surveillance solution.

Making Video Surveillance Work for Businesses

Deploying a video surveillance system poses some intrinsic challenges, particularly if using a CCTV solution, which requires specialized cabling. An IP-based video surveillance system provides greater flexibility when deploying the solution by using the existing data network,

For example, power outlets might not be always available at the planned camera location. Installing additional power outlets can be very costly or might not be possible because of building codes or other constraints at the physical site. Cisco Small Business Video Surveillance Cameras, with support for Power over Ethernet (PoE) technology, address these challenges easily and cost-effectively.

Cisco network PoE switches provide power to PoE-enabled cameras over standard network cable. Providing a data network cable at the camera location eliminates the cost of installing or extending existing power outlets.

Once deployed, an IP surveillance system offers many other benefits as well.

The network itself provides the security required to transport video from remote cameras to centralized monitoring stations. In addition, VPN technology lets you connect to the business network and monitor the IP video surveillance system securely over any Internet connection. Access to the video surveillance system can be achieved by setting up a secure connection from any computer, laptop, or web-enabled mobile phone, at home, from a branch office, or when traveling,

Cisco secure routers provide this capability cost-effectively and without exposing the network to additional risk. With the capability to securely connect to a business network, monitoring software can be used to view recorded video streams or live video anywhere, or to connect directly to a camera through a web-browser at any time.

Deploying a Cisco Small Business Video Surveillance solution opens up additional options for integration with other technologies, such as Cisco Unified Communications.

Cisco VC 220 Camera

The Cisco VC 220 Network Camera (see Figure 1) is a complete and affordable video surveillance camera with premium camera features that is easy to install and use. The VC 220 Network Camera is ideal for monitoring stores and office buildings. The camera is placed in a dome enclosure, making it less intrusive.

Figure 1 Cisco VC 220 Camera

Features

The following are some of the features provided by the Cisco VC 220 Camera:

- Wide-dynamic range 1/3.3" CMOS sensor—Provides improved video quality in harsh lighting conditions
- Passive infrared (PIR) thermal sensor—Provides additional alert trigger based on thermal detection
- Day/night functionality, integrated IR LEDs and IR filter—Allow viewing images/video in 0 lux environments, automatic switching from day and night modes, and night vision without additional illuminator
- 30 frames per second VGA video—Displays up to 640 x 480 resolution at 30 fps real time
- Flexible recording methods—Allow recording based on schedule, motion detection, manual and event triggers
- IP multicast and Real Time Streaming Protocol (RTSP)—Supports streaming video to unlimited clients
- 3G phone support—Allows for streaming video to 3G mobile phones
- Samba client—Enables direct transfer of video to network-attached storage (NAS)

Cisco VC 240 Camera

The Cisco Small Business VC 240 Dome Day/Night Network Camera provides a complete, easy-to-use, feature-rich video solution that allows you to monitor any aspect of your business operations. The bullet form factor camera with integrated outdoor enclosure for dust and moisture protection makes it perfect for outdoor or harsh indoor environments such as warehouses, manufacturing sites, parking lots, and so on.

Figure 2 Cisco VC 240 Camera

Features

The following are some of the features provided by the Cisco VC 240 Camera:

- Wide-dynamic range 1/3.3" CMOS sensor—Provides improved video quality in harsh lighting conditions
- Integrated IP66 enclosure—Allows for deployment of the VC 240 in harsh environments, including locations with dust and water
- Flexible power sources (PoE, 12VDC, 24VAC)—Allows for single wire connection (PoE), common AC wall adapter (included, 12VDC), and common CCTV power source (24VAC)
- Day/night functionality, integrated IR LEDs, and IR filter—Allows viewing images/video in 0 lux environments, automatic switching from day and night modes, and night vision without additional illuminator
- IP multicast and Real Time Streaming Protocol (RTSP)—Supports streaming video to unlimited clients
- 3G phone support—Allows for streaming video to 3G mobile phones
- Samba client—Enables direct transfer of video to NAS

The Cisco VC 220 and Cisco VC 240 complement the existing portfolio of Cisco cameras, presented for comparison in Table 1.

Table 1 Product Comparison Table

Features	WVC210	WVC2300	PVC2300	PVC300	VC220	VC240
802.11g wireless	Yes	Yes	No	No	No	No
Max resolution	VGA	VGA	VGA	VGA	VGA	VGA
UPnP AV server	No	No	No	No	Yes	Yes
LCD status	Yes	No	No	No	No	No
External IO ports	0/0	2/2	2/2	1/1	1/1	1/1
Interchangeable CS lenses	No	Yes	Yes	No	No	No
Pan tilt	Yes	No	No	Yes	No	No
PoE powered	No	No	Yes	Yes	Yes	Yes
Optional enclosures	No	Yes	Yes	Yes	Yes	No
Optical zoom	No	No	No	Yes	Yes	Yes
Day/night	No	Yes	Yes	Yes	Yes	Yes
Image sensor	¼" CMOS	¼" CCD	¼" CCD	¼" CCD	1/3.3" WDR CMOS	1/3.3" WDR CMOS

Cisco Video Monitoring Software

Cisco Video Monitoring Software (see Figure 3) is available in three tiers to provide the right solution for various video surveillance requirements:

- Basic (included with camera)—Feature set provided by Software for Small Business Video Monitoring System for 16 Cameras (SWVMS16)
- Basic Plus—Includes all the basic features plus remote client access (L-VM200-32)
- Advanced—Includes all the features provided by the Advanced Video Monitoring Software (AVMS; L-VM300-04/08/16/32/64)

The Basic and Basic Plus software support 16 and 32 cameras, AVMS can be purchased with a license for 4, 8, 16, 32, or 64 cameras. All licenses are incremental; therefore, acquiring two 4-camera licenses creates an 8-camera solution. There is no need to install additional software. Basic, Basic Plus, and Advanced monitoring systems are based on the same software and require only licenses to upgrade to the required feature set.

Cisco Basic Video Monitoring Software

Cisco Basic Video Monitoring Software, included with the purchase of a Cisco IP camera (SWVMS16), provides the functions most used by businesses for video surveillance:

- Graphical user-friendly interface
- Supports up to 16 Cisco cameras
- Event triggers and notifications
- Camera control of pan, tilt, zoom (PTZ) cameras
- Enhancing images while viewing recorded video
- Exporting recorded video to a standard format (.AVI)

The software provides a basic set of controls to effectively begin monitoring and securing a business.

Cisco Basic Plus Video Monitoring Software

Cisco Basic Plus Video Monitoring Software includes all the features supported in the Basic version of the software, with the addition of remote client login to the monitoring software. This allows businesses to access video recordings from remote locations. In addition to remote access, Cisco Basic Plus Video Monitoring Software supports up to 32 cameras.

Figure 3 Cisco Video Monitoring System

Cisco Advanced Video Monitoring Software

Features provided by the Cisco Advanced Video Monitoring system include the following:

- Support for viewing, recording, and managing up to 64 cameras
- Advanced product support for popular third-party camera brands
- Live dual monitor display plus support for a third monitor for playback
- Multifunctional playback system with Intelligent search

Cisco provides enterprise-quality video surveillance with the ease of use and lower cost required by small businesses. AVMS provides superior video monitoring and management capabilities, including analytics, higher-end security, and business/marketing intelligence.

Analytics

Adding analytics to a video surveillance solution provides a higher grade of security. This feature provides six event detections, enabling a business to secure areas based on specific criteria.

Security

Basic motion detection provides a way to monitor secure areas and trigger an alert when movement is detected. The ability to detect an object disappearing from an area of interest helps businesses protect valuable items. When an object is left where it should not be, alerts can be sent out to address a possible safety issue. In addition to movement, disappearing objects, or objects left behind in the area of interest, analytics also provide event detection when something is blocking the camera view such as a hand, a plant placed in front of the camera, and so on. In the event of a camera losing focus or not providing video, notifications can be sent out so that the issue can be addressed. A shifted camera, optical interference, and so on, resulting in loss of focus, as well as signal loss due to unplugged cameras, can be caused by malicious acts that can lead to high security risks.

Business/Marketing Intelligence

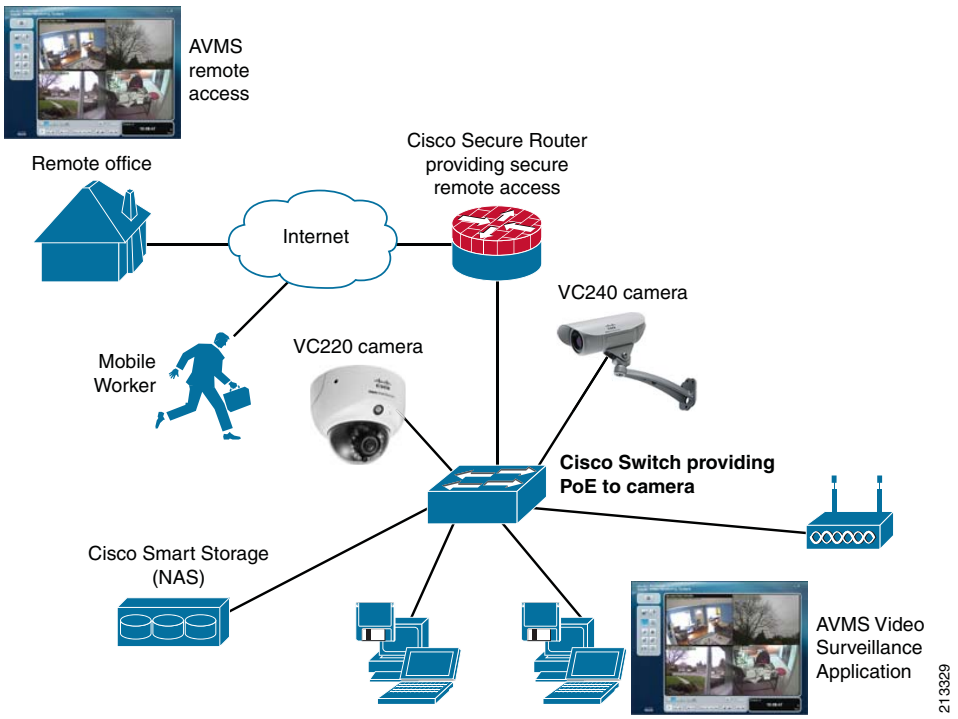
The feature provides valuable information to help optimize business operations. With an integrated counting application, information about incoming and outgoing visitors can be provided, as well as the number of objects in an area. Knowing when a business is most active provides the opportunity to align resources to match. You can integrate AVMS with RS-232-based point-of-sale (POS) equipment (optional NUUO SCB-C31 POS module required) to enable transactions to be logged into the AVMS database, so that POS data can be searched and the appropriate video can be retrieved.

Instant Response and Popup E-map

This feature provides an editable e-map that shows camera locations and event status. The advanced alert system provides on-monitor display notifications and audio alerts, and can generate e-mails to the appropriate people. With the ability to connect 3GPP-enabled devices, these features become available on mobile devices as well.

Figure 4 shows how Cisco Video Surveillance can be integrated with other network services.

Figure 4 Integrating Cisco Video Surveillance with Other Network Services



How It All Comes Together

The Cisco Small Business Video Surveillance solution builds on the capabilities of the data network and provides highly secure remote management. Cisco secure routers provide highly secure remote access to the network and cameras from anywhere. Cisco PoE switches provide power to cameras over the data infrastructure when a power outlet is not readily available. Cisco Smart Storage provides secure storage for video recordings and delivers business continuity with data replication.

Solution Summary

The Cisco Small Business Video Surveillance solution helps protect small businesses from theft and vandalism and helps reduce the risk of liability for workplace accidents. This system reduces operational costs by converging separate business application and surveillance networks. It enables advanced surveillance features, such as business analytics and business/marketing intelligence.

IP-based video surveillance makes video surveillance easier and more cost-effective to manage, maintain and control. The Cisco Small Business Video Surveillance solution provides peace of mind in regard to a company's most important assets—people, property, and information.

Why Cisco?

As the global leader in networking and communications, Cisco has been helping small businesses around the world solve their everyday business challenges. By adopting Cisco technology, small businesses gain an integrated infrastructure that enables employees, suppliers, and customers to securely connect and communicate. This leads to increased employee productivity, enhanced responsiveness to customers, and profitability. You also can rely on Cisco to help your business achieve its full potential.

Cisco offers:

- Everything for your network—With the broadest portfolio of products, financing options, services, and support designed and priced for small business, Cisco helps meet your immediate technology needs while keeping pace with your business growth.
- Experienced local partners—Local Cisco partners, fully backed by Cisco world-class support, understand your requirements and can help you deploy a system that is specifically tailored to your unique needs. This lets you focus on your business, instead of technology challenges.
- Solutions that just work—Cisco provides the reliability, security, and performance you expect from your business network.

To learn more and for a relationship you can trust to help your business succeed, Contact a Cisco partner at the following URL:

http://tools.cisco.com/WWChannels/LOCATR/openBasicSearch.do