

The Cisco and Pelco Industrial Wireless Video Surveillance Solution: Real-Time Monitoring of Process Environments for Safety and Security

The Cisco and Pelco Industrial Wireless Video Surveillance Solution provides fully networked IP-based video monitoring for industrial environments, helping to assure proactive security and flexible surveillance installation based on an open standard that enables rapid deployment at an effective cost.

Today's industrial organizations are increasingly focusing on monitoring processes and events throughout the plant. Such systems help them to meet regulatory requirements and proactively assure the safety of assets and workers. As well, industries such as oil and gas, chemical manufacturing, and others must be able to consistently carry out potentially hazardous procedures such as outgassing, chemical interactions, adjusting pipeline flows, and other critical functions. This grave responsibility has made constant, reliable, real-time information an industry imperative. Process companies require the best possible data at all times regarding their plant's systems, services, and employee activities.

The Cisco and Pelco Industrial Wireless Video Surveillance solution combines the powerful capabilities of Cisco's Unified Wireless Networks with Pelco's Digital Sentry technology, providing an IP-based intelligent video monitoring and security system to process industries. Designed to meet the rigorous requirements of explosion-proof and dust-ignition-proof areas both indoors and out, this open standards-based solution is easily deployed on top of the existing network backbone and extended throughout the plant. Based on a powerful integrated solution, process industry companies gain centralized oversight of the entire facility at an affordable cost, allowing them to:

- Proactively monitor processes, machinery, workers, and facilities to increase quality, safety, and security
- Receive instant security alerts as to system problems and issues
- Leverage cost-effective, scalable wireless video deployments
- Preserve legacy video systems and cut costs
- Take advantage of a tested, feature-rich solution that can be extended throughout the enterprise

With this solution, security professionals are able to leverage the many new capabilities of today's digital video surveillance technologies. Traditional video security systems have evolved as storage costs decline and CMOS/CCD resolutions and video compression tools mature. Now, digital surveillance solutions are enabled by new security technologies—including facial recognition, video analytics, and object classifications—to help assure complete security at even the most sensitive or hazardous facilities.

The Challenges of Video Surveillance in the Plant

Process industry organizations face a number of challenges in assuring secure, trouble-free processing of expensive, hazardous, and highly regulated products. It is necessary for them to monitor processes from beginning to end for quality control, as well as to identify potential process improvement. They must also constantly watch vital equipment, pipelines, and other critical areas of the plant to make sure that equipment is both functioning properly and is being appropriately used by employees.

As well, plants must meet extremely high government safety standards for workers and procedures (such as monitoring flare systems, for example). Especially given today's concerns over terrorism, it is also necessary to be able to reliably secure the plant's perimeter; to identify and track suspicious behavior and inappropriate access; and guard against crimes such as theft of valuable equipment and other assets. All too often, a plant may have up to thousands of surveillance cameras, with no one managing the resulting information to assess potential problems. This leads on the one hand to a lower probability of threat detection, and on the other to a high number of false alarms.

Unfortunately, accidents can also occur due to human error or malfunctioning equipment that has gone unnoticed. Such incidents may injure or kill workers and nearby residents, as well as doing significant environmental damage. Investigations show that in many such accidents, the cause of the disaster is a ruptured pipeline, incorrectly opened valve, or other basic physical security or maintenance issue that has gone unobserved by workers and managers. For example, in the Bhopal incident, large amounts of water were accidentally released overnight into a tank, producing toxic gas and forcing an emergency pressure release. The reaction was hastened by the presence of iron from corroding pipelines that had gone unseen and unrepaired.

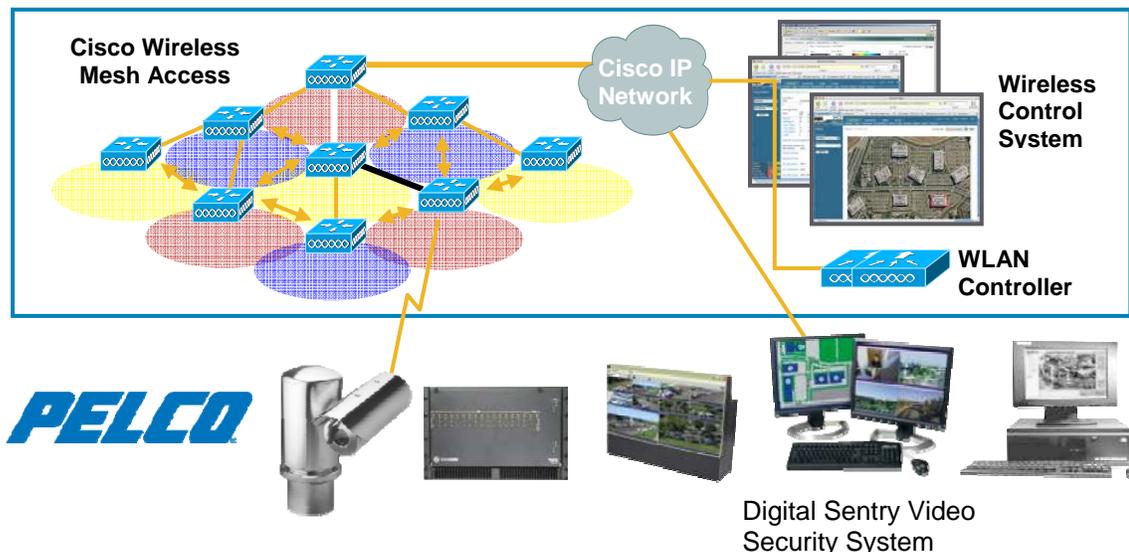
Clearly, the toll of such massive disasters can be enormous for companies facing a long series of civil damages lawsuits, as well as delays in production at a time when commodities such as oil and refined gas cannot be put on the market fast enough. To assure a smooth production process, industrialists must find a way to proactively achieve plant safety and security, rather than reacting to situations when it is already too late.

The Cisco and Pelco Industrial Wireless Video Surveillance Solution

The Cisco and Pelco Industrial Wireless Video Surveillance solution responds to these challenges by providing a powerful wireless network and camera surveillance system that can be rapidly and cost-effectively deployed to critical areas of the plant. Based on an open-standards platform, this flexible solution integrates existing analog and digital camera installations with the Cisco IP network, as well as with DCS and SCADA control systems via an open API. Pelco's Digital Sentry video management software and camera hardware utilize the network to enable viewing of live and recorded video, camera controls, and video export through a centralized user interface. The system is configurable to meet a wide range of unique plant requirements, bringing the adaptability of wireless to harsh, sensitive, or hazardous areas while retaining a powerful and reliable signal. Solution products meet the Intrinsically Safe Equipment (IE) standard.

With this solution, plant managers take advantage of an advanced video surveillance system which supports both custom-built and heterogeneous environments. It also provides instant alerting for problem areas or system failures, integrating with other security systems such as fire or burglar alarms. Systems can be configured to operate over one or many geographically dispersed sites, providing centralized capabilities and better protection of assets.

This cost-effective and easily deployable solution improves efficiency and safety with better video monitoring and management throughout the company. By investing in the Cisco and Pelco solution, process organizations also achieve a secure and scalable wireless networking solution that supports future growth and other enterprise applications, based on its open standards architecture.



The Cisco and Pelco Industrial Wireless Video Surveillance Solution

The Cisco and Pelco Industrial Video Surveillance solution is based on the [Cisco Unified Wireless Network Architecture](#), a powerful infrastructure that delivers scalable, manageable, and secure wireless local area networks (WLANs). It supports both standard wireless configurations and the Cisco Wireless Mesh for video surveillance, and includes RF capabilities that provide transparent connection, using the 802.11n protocol, to the control room and corporate IT systems as desired. The Unified Wireless Network provides industrial organizations with the same level of security, scalability, reliability, ease of deployment, and management that they have come to expect from the wired network.

The Wireless Mesh Network is built upon the [Cisco Aironet® 1500 Series](#) of lightweight outdoor mesh access points, which connect gateways and field cameras into a single network and provide automated capabilities to help reduce deployment and maintenance costs. These include intelligent routing, which allows the access point to sense the best possible path for each packet of data, optimizing the network, choosing new routes, or resetting if exposed to radio interference or outages. Cisco [Radio Resource Management](#) (RRM) software enables access points to monitor the environment and adjust channels and frequencies in real time to avoid interference from other devices.

All access points are managed and monitored by the [Cisco Wireless Control System](#) (WCS), a centralized platform for WLAN planning, configuration, and management. Cisco WCS allows administrators to design, control, and monitor wireless networks from a single centralized location. It oversees a series of WLAN controllers, which are responsible for network-wide wireless functions such as security policies, intrusion prevention, RF management, QoS, and mobility. Cisco WCS facilitates load balancing and traffic management, policy provisioning, network optimization, troubleshooting, user tracking, and monitoring for end-to-end security.

By relying on these robust capabilities, process companies improve safety, reduce costs, and increase security with efficient IP-based video monitoring. A wireless network may be installed for a fraction of the cost of a wired network, which can cost up to US\$3,000 per foot of cable to install in industrial environments. An IP network also saves on man-hours by providing efficient wireless network management and more efficient usage—for example, it eliminates the need for staff to travel around the plant to replace surveillance tapes (and there are no broken wires to worry about). For companies looking into the future, the installation of Cisco wireless networking provides a platform for deployment of other wireless applications, such as voice, mobile worker, and location-based asset tracking.

The Pelco Digital Sentry Video Management System

Pelco's Digital Sentry provides video management software that offers the control and flexibility to maximize video surveillance using existing technologies, protecting organization's technology investment. Companies have the choice of utilizing purpose-built video security digital video recorders (DVRs) or network video recorders (NVRs)—including both lower-end systems and high-performance hardware that can manage up to 32 cameras at 30 frames per second—or of relying on industry-standard servers from third-party suppliers, or even of using a mix of the two technologies. This also holds true for the cameras, as the solution supports analog, IP-based, and heterogeneous visual environments for more than 60 third-party devices.

Every camera is monitored and managed via a highly intuitive graphical user interface. As a video matrix solution supporting multiple monitors, it supports configuration and management of highly diverse and complex security systems. This easy-to-use application offers quick search of recorded audio and video, while an export wizard provides easy access to video evidence. Plant managers can also extend the value of the system by adding software options for network health monitoring, video analytics, and archiving.

In addition, Digital Sentry supports server management, data integration, and integration to third-party software and hardware applications. An event and alarm management database engine allows users to combine video data with intelligence captured by transactional devices such as video analytics applications, truck scales, and HVAC, fire, and burglar systems. This gives users a single access point to critical data from all of these functions to better protect assets and aid loss prevention. By linking transactional data with the associated video, and presenting it in a visually integrated format through in-depth searches, queries, and reports, the solution helps security professionals make informed decisions in real time, quickly identifying and investigating events of interest.

For server management, Digital Sentry optimizes performance through an intuitive and straightforward approach to deployment and set-up. It also ensures system effectiveness and consistent functionality with camera-by-camera configuration of frame rates, resolution, and motion recording. Digital Sentry further allows users to set up an enterprise configuration—an architecture supporting an unlimited number of geographically distributed systems and cameras.

The Benefits of Cisco and Pelco Video Surveillance Networks

The Cisco and Pelco Industrial Video Surveillance solution transforms process industry security from a traditional set of technologies requiring significant human intervention to an automated, flexible network that provides real-time information and greatly improved security and safety. This

solution offers benefits including:

- Increased plant safety and security through ubiquitous video monitoring and alerting
- Open architecture that maximizes current and future investments in video surveillance system
- Supports indoor, outdoor, and hazardous area surveillance applications
- Securely monitors and records manufacturing processes, machinery, and quality
- Choice of software analytics to monitor multiple behaviors
- Integrates into DCS and SCADA systems using an open API
- Wireless video deployments are simple, cost-effective, and scalable
- Wireless networks provide a platform for productivity applications such voice, mobile worker, and people and asset tracking

Next Steps

Cisco and Pelco are leaders in manufacturing solutions, with solutions that are in widespread use all over the globe. For more information on successful real-world implementations and best practices, visit: www.cisco.com/go/manufacturing.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

CCDE, CCENT, Cisco Eos, Cisco Lumin, Cisco Nexus, Cisco StadiumVision, the Cisco logo, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn is a service mark; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, CCVP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0805R)