



WHITE PAPER

RETAIL SURVEILLANCE

A Smarter Way to Mind the Store: IP Video Surveillance

A guide for retail managers and executives on the advantages of IP video surveillance and management systems.

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Introduction

In both retail operations and the sales floor, the competition is fierce and the profit margins are slim. To stay on top, retailers have to seize every advantage they can. This often means adopting the latest technological advances as they become available. That's why today nearly every aspect of retail operations, from inventory to hiring, is computerized and networked. Now is the time to add video surveillance to the list.

IP (Internet Protocol) video surveillance gives retailers new tools and capabilities for improving loss prevention and store performance. By enabling video to be captured as digital information and accessed anywhere on an IP-based network, IP video surveillance allows your loss prevention staff and other departments to view, analyze and manage surveillance video. Built-in intelligence also enables cameras to automatically detect and alert staff to potential thefts, suspicious behavior, and other events.

The advantages hardly stop there. This same intelligence opens the door to new in-store research methods for determining the effectiveness of store layout, display design, and employee behavior. What's more, through advantages in using common networking and digital camera technology, stores can achieve everything from a lower total cost of ownership to higher resolution imagery that improves forensic evidence and repurposing for training and other uses.

This white paper introduces managers and executives to the many retail business advantages of IP video surveillance. It also includes a case study of an installation by IKEA® that provides an example of how easy and cost effective it can be to make the switch to IP video surveillance.

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1 Where traditional (analog) video surveillance falls short

As both a deterrent and a source of evidence, video surveillance is recognized as an essential element to any retail operation's loss prevention program. According to market researcher J.P. Freeman Co., in the U.S. alone there are 6 million video cameras mounted in stores watching customers and employees. A large retail chain with 1,500 locations can record more than 50 years of analog video throughout its stores in a single day.

How effectively used is this video? Not very. Inventory shrinkage continues to be an expensive problem for the retail industry. In 2004, total losses were close to \$31 billion, accounting for more than 1.5 percent of total retail sales across North America (National Retail Security Survey, University of Florida). This percentage changes little from year to year, yet as overall sales continue to grow, billions more dollars are added to the total amount of losses. If a company could reduce its percentage of losses from shrinkage by even a tenth of a percent across its stores, it would see a significant improvement to its bottom line.

A major weakness in loss prevention techniques today is the inability of analog video equipment to detect criminal behavior and alert personnel. Someone has to be constantly watching store monitors – or later search through hours of video to find a particular instance of theft. Poor video quality also hurts effectiveness. Analog surveillance cameras are only capable of video resolutions equivalent to 0.4 megapixels, whereas the latest digital video surveillance cameras provide much higher resolution. Blurry, low resolution analog images often fail to provide conclusive evidence in theft prosecutions or insurance fraud cases, such as bogus injury claims. Such images aren't sharp enough to read license plate numbers, work poorly in training videos, and have no value for other uses, such as facial recognition systems.

Think back to those 50 years of video being recorded by 1,500 stores in an average day. What if:

- That video was sharper and could alert you to a theft?
- There was a way to tap the incredibly rich information in all this video for activities such as store design research?
- You could use it as an operations management tool measuring how long it takes for an employee to help a customer waiting at a customer service kiosk?
- You could do searches for organized crime behaviors and create training videos for employee showing these behaviors?
- The video was so sharp you could see enough detail to read an employee badge number?

2 The answer is IP video surveillance

IP video surveillance brings all the advantages of network cameras and IP networking to video surveillance. Using digital cameras, it gives you sharper color video, greater coverage, and better zooming capabilities. Incorporating video surveillance into your local area network (LAN) makes the video collected at every store available throughout your network. This means other departments can use store video capabilities for training, consumer behavior research, testing store layout and display design, and many other uses. What's more, the cameras can be more "intelligent." IP video surveillance systems can actually "watch" for certain kinds of behavior, events and actions. You no longer need people monitoring the monitors.

Here's a look at five key advantages of IP video surveillance.

2.1 Improving loss prevention

The programmable intelligence capabilities of IP video surveillance and network cameras enable detection of suspicious behavior by customers or employees, reducing the need for dedicated loss

prevention staff to monitor shoppers. In fact, smart network cameras may be more effective than staff. After 20 minutes or so, the average person's attention wanes watching monitors. A smart camera is always attentive.

Intelligence at the camera level closes many gaps in loss prevention. IP video surveillance systems can be set up to:

- Detect suspicious behaviors, such as a consumer taking multiple units of an item not normally bought in bulk, or a cashier deliberately not scanning a purchase.
- Capture organized crime behaviors in a store and enable you to quickly communicate them to other stores in your chain.
- Integrate video surveillance with electronic article systems (EAS) to ensure proper procedures are being followed, such as stopping customers who set off the alarm at the door.
- Directly connect video with point-of-sale (POS) systems to uncover employee sweethearting (giving unauthorized discounts to friends) or other improper sales. For instance, video can be activated every time an age-restricted sale is made or a refund given.

2.2 Delivering greater business value

Intelligent network cameras and the ability to store and access video on the network is driving many of the smartest retailers in the industry to investigate new uses of video surveillance to improve their bottom line. Some are working with the Loss Prevention Research Council in a program called StoreLab™ to co-develop and test innovative store layouts, work processes, and technologies to maximize sales, profit and productivity, while minimizing losses and crime. For one study, nearly a dozen stores of all different types (mass merchant, drug, home improvement, club, department, and specialty) are giving researchers access to their networks to test ways IP video surveillance can be used to study consumer behavior, employee tasking, and loss prevention.

IP video surveillance is ideal for these applications because it can be set up to recognize certain actions and events, plus makes it easy to search thousands of hours of video to find the few minutes of footage that correspond to your search.

Some ways your company could use the video your store collects every day include:

- Monitoring the number of customers entering and leaving and the length of checkout lines to provide alerts when more staff is needed.
- Providing alerts when shelves need restocking, spills have occurred, aisles are obstructed, or checkout lines exceed guidelines.
- Monitoring employee/customer interactions to improve service, detect gaps in training and management, spot and praise good behavior, and identify employees avoiding customer contact or shirking other responsibilities.
- Studying and improving store design, traffic flow, and point of purchase displays to improve sales and reduce shrinkage.
- Developing training tools to teach employees everything from how to spot common shoplifting behaviors to ways to more effectively help customers.

2.3 Reducing total cost of ownership through IP video surveillance advantages

For most retailers, nearly all important processes and operations are connected through a local area network (LAN). The exception is loss prevention. Legacy Closed Circuit Television (CCTV) systems are proprietary and typically have separate support and maintenance contracts. This precludes loss prevention from being able to leverage the lower infrastructural costs of the existing network and all the advantages of IP networking for video.

IP networking delivers cost savings in video surveillance in many ways.

- **Your company already has the necessary IT expertise.** Network cameras have IP addresses just like any other network device and can be inexpensively installed anywhere in the network and controlled centrally via software. This enables you to leverage existing infrastructure such as servers, switches and cabling. Your video surveillance infrastructure simply becomes another part of the IT infrastructure, allowing you to take advantage of the cost savings of IP networking, as well as standard IT policies (such as authentication, data security, etc.).
- **IP video surveillance systems use open standards and run on ordinary Ethernet networking.** Using standard PC server hardware for video recording and storage rather than proprietary equipment such as Digital Video Recorders (DVRs) radically reduces management and equipment costs, particularly for larger systems where storage and servers are a significant portion of the total solution cost.
- **Availability of powerful software management tools for monitoring, accessing and storing video.** Software makes it easy to add additional powerful capabilities such as combining video evidence with time-lined POS transaction data or integrating video with cash register transaction data for advanced, flexible searching and analysis.
- **Easy, future-proof installations with commercial off-the-shelf (COTS) components.** Installation can be done in stages, integrating your analog CCTV system with your network video solution. As analog cameras reach their end of life, you replace them with network cameras that simply plug into the network.
- **Greater archiving capabilities and storage reliability.** Surveillance videos can be transferred through the network to off-site storage just like any other data and stored on standard servers.
- **Ability to scale capacity and performance.** Products like Milestone Systems XProtect™ Corporate provide support for multiple servers, sites and cameras, allowing your system to grow easily with your organization.

2.4 Saving staff time through centralized management and remote accessibility

Part of the problem with analog video is that it's usually only available at the store. Each camera has a cable that feeds its video into a monitor and, unless you have a network video recorder, a local recording device. If someone in another store or headquarters wants to monitor what's going on in a store or see a particular incident, the video has to be recorded and mailed.

By having cameras connected to a network, you can achieve a higher level of surveillance with less people. Loss prevention personnel can monitor many locations from one office. Live camera feeds can be accessed over the Internet from any location, making it easy to check out an alert or event from any computer, laptop or other device with a wired or wireless Internet connection.

2.5 Network camera advantages

While traditional analog cameras can only provide the equivalent of 0.4 megapixel resolution, network (digital) cameras can deliver up to 16 times greater resolution, cover a larger area, and provide superior digital zoom capabilities. This can translate into such rich detail as the numbers on a license plate or the name on an employee badge. Their progressive scanning (versus analog interlaced scans) also produces better detail within a moving image such as a person running away.

Network cameras are also less expensive to install. They don't even require a power outlet. Using Power over Ethernet (PoE) technology, you can power a camera with same cable used for connecting

it to the network. PoE also enables easier application of uninterruptible power supplies (UPS) to ensure 24 hours a day, 7 days a week operation.

Switching to network cameras is actually common sense. If you were going out to buy a camera right now for personal use, what would you get, analog or digital? You would buy digital. It offers the greatest return on your investment and opens the door to all kinds of value-added features through connection to the rest of today's digital world.

Other digital camera advantages include:

- Intelligence at the camera level includes detection of motion, directional motion, abandoned objects, object removal, human presence, camera tampering, identification, and digital pan/tilt/zoom (PTZ).
- Network cameras can be equipped with image buffers that save and send the images collected before and after an alarm occurred.
- On a network, network cameras can be monitored, managed and updated just like any network device.

3 A retail case study: The IKEA® Pilot Store

3.1 The Challenge

The IKEA Pilot Store in Delft, The Netherlands, is the “test kitchen” for the rest of the IKEA world. It is tasked with finding the best proven solutions for the organization. IKEA wanted to upgrade their existing analog approach for security surveillance to modern digital networked technology. They were seeking a solution that could integrate with their retail transaction system to improve their management of shrinkage and reduction of fraud.



3.2 The Solution

The IKEA Pilot Store had 51 analog cameras in their existing surveillance setup. These cameras were converted to a networked digital system using the AXIS 2400 video server. IKEA then added 35 new network cameras to provide surveillance of the cash register checkouts and the restaurant/cafeteria areas. For software, Milestone XProtect Retail was selected for its user-friendly interface for the system and ability to operate a mix of Axis network cameras and analog cameras with video servers.

The IKEA Pilot Store's new solution has three components:

1. General surveillance for shoplifting, vandalism, and people safety
2. Shrinkage reduction through monitoring and analysis of transaction data
3. Educational tools for proactive learning and training to improve service levels

An intelligent interface from Milestone combines the data from the store's retail transactions with corresponding video images for fast searching and analysis by transaction ID, item number, cash register, time, date, amount, employee, etc. The system is so flexible that IKEA can sort by any category or type they choose to configure, including scoring employees on performance.

Future plans include additional integration with a people counting system that monitors the number of customers entering and leaving the store. "We want to ensure that we've got the right amount of employees at checkout to avoid people having to wait in long queues," says Remco Hempenius, Project Manager at the IKEA Pilot Store. He adds that "Milestone software lets us tailor the solution for an integrated approach."

3.3 The Advantages

The IKEA Pilot Store has increased the capabilities of its general surveillance by moving it to a pure digital security platform integrated with its back office transaction system to control shrinkage and reduce errors at the cash registers. "Shrinkage is so easy to monitor now, with activities at the checkout addressed quickly and effectively," says Hempenius.

According to Hempenius, the store has "achieved our goal to upgrade our surveillance to a networked digital solution for improved performance and an integrated approach. We are cost-effectively re-using existing equipment while adding a mix of new Axis cameras and video servers controlled by the Milestone software. XProtect Retail gives us real added value in handling shrinkage."



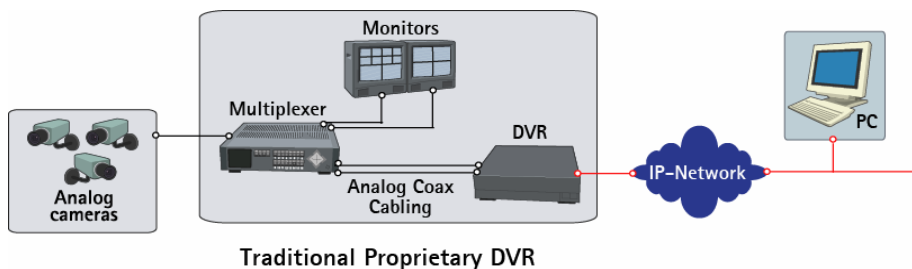
The solution has also given IKEA new IP video tools for their global corporate education facilities. Milestone XProtect software allows them to choose a flexible mix of hardware for different location needs, and provides the ability to integrate with even more systems in future. "We appreciate the ability to choose our own combination of hardware," comments Hempenius. "The Milestone software is a perfect choice being independent, supporting just that kind of flexibility."

4 Making the transition to IP video surveillance

Any retailer using analog video surveillance today can profit from the switch to IP video surveillance. The best part is you don't have to do it all at once. You can do it in stages. You can start with pilots at one or more locations. You can also install IP video surveillance systems in new and old installations, running hybrid digital-analog systems while you wait for your analog systems to reach their natural "end of life." The ability of IP video surveillance systems such as Milestone Systems' XProtect to integrate digitized video from analog cameras with digital camera data enables you to manage all your surveillance operations with a single solution. This makes it easy to do the transition in phases.

Should you make the move to IP video surveillance? The real question is, can you afford not to? IP video surveillance is now a proven and well-established solution. Its benefits are already being reaped by major retailers around the world such as IKEA. The longer you wait to switch to this clearly superior, cost-effective technology, the less competitive your business becomes. Falling behind in the use of IP video surveillance could, literally, close down the store.

The benefits of transition from analog-based to IP-based video surveillance



Open Systems = Infrastructure + Scalability + Integration + Cost efficiency

