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Remote Video Monitoring: Evaluating the Pros and Cons

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Video monitoring has been used successfully in retail settings for several years. Video surveillance has enabled significant improvements in customer and associate safety, as well as proven an effective tool in theft deterrence through improving loss prevention productivity and accuracy.

Recent increases in network bandwidth between store locations and retail headquarters now enables the use of remote video monitoring for retail loss prevention.

This technology has already become pervasive in other industries. For example, remote location and gauge monitoring is common in the public utility and industrial segments. In the law enforcement world, the city of Chicago recently installed video surveillance cameras around town and saw its murder rate fall to its lowest level in four decades. The city is now employing new technology that recognizes the sound of a gunshot within a two-block radius, pinpoints the source, turns the surveillance camera toward the shooter, and places an emergency 911 call.

This article outlines the pros and cons of remote video monitoring for retailers and establishes a decision framework for its implementation. It also addresses future improvements in remote video monitoring based on research efforts currently underway.

The Argument for Remote Video Monitoring

Remote video monitoring enables the reallocation of loss prevention personnel from low-activity locations without the elimination of loss prevention coverage and oversight. This not only increases the effectiveness of LP associates, but also increases overall job satisfaction, which reduces turnover, lost time, and recruiting, hiring, and training costs.

Loss prevention personnel productivity can increase five to ten times depending upon the current coverage model and activity levels. This increase in productivity is partially due to the fact that low levels of activity lull loss prevention personnel into a false sense of security, resulting in missed observations and apprehensions. Maintaining a video monitoring "sweet spot" improves their effectiveness.

Remote video monitoring enhances loss prevention's business value to the organization by raising overall loss prevention personnel productivity while simultaneously increasing coverage and oversight—without increasing the loss prevention budget.

It also increases loss prevention deterrence. Sophisticated external and internal threats are aware of the physical presence of loss prevention personnel and, in local monitoring locations, focus their efforts when loss prevention personnel are physically present. When remote video monitoring is used, it is more difficult for sophisticated external and internal threats to determine if they are being monitored, increasing the deterrence effect.



This technology also positively impacts district, regional, and corporate loss prevention management by providing the capability to observe remote locations without having to be physically present. This improves management's effectiveness by reducing both the time and costs of travel.

Coupled with the integration of additional key data elements, such as POS, alarm, and EAS data, remote video monitoring enables loss prevention professionals to investigate and resolve threat events quicker and more accurately. This data integration also enables store and retail management to better understand the nature and volume of threat events by store and departments within the store, improving management and loss prevention program targeting and effectiveness. For those retailers with proprietary alarm systems, remote video monitoring can dramatically reduce the costs associated with false alarms.

In addition to its loss prevention uses, establishing a remote video monitoring capability enables cross-functional corporate executives to obtain real-time feedback on customer traffic, customer service execution, merchandising presentation, and in- and out-of-stock conditions.

This extension of the use of video technology beyond LP adds significant value to the retail organization both in a functional as well as bottom-line basis. For example, retailers are using remote video to conduct on-going audits that effectively help reduce shortage and increase sales, safety, and productivity.

Negatives Associated with Remote Video Monitoring

While there are many positive aspects of remote monitoring, there are several issues to consider that reduce the impact of this technology in the retail environment.

Remote video monitoring works most effectively for activity that is clearly discernible or detectable, versus fine or complex activities. It is also less effective when observed activities require immediate on-site response.

Remote monitoring can prove difficult in environments where existing camera angles create zones where activity can't be observed or the environment is complex, requiring detailed first-hand knowledge.

Remote video monitoring can be fatiguing. Associates performing only remote video monitoring duties become increasingly less effective without regular breaks or additional work assignments that don't require video monitoring.

Care is needed when evaluating the costs of digital video for remote monitoring. While digital recording systems are comparable in cost to tape recording systems, maintenance and storage costs can be higher, depending upon how maintenance is performed and the retention period for the digital records.

A Decision Framework for Remote Video Monitoring

Three variables establish the viability of remote video monitoring for a retail location, including the best times and locations. These variables are

- The level of activity,
- The response time needed to respond to threat events, and
- The need for independent verification of threat events.

When evaluating this decision framework, consider threat events to include shoplifting, robbery during store open hours, burglary during store closed hours, internal theft of merchandise or cash, and thefts by outsiders but enabled by employees.

Locations are candidates for remote video monitoring when their activity level does not warrant full-time loss prevention coverage or when their activity level does not require an immediate threat response from an internal loss prevention associate, such as in most cases of internal thefts.

Locations are not candidates for remote video monitoring if the video system requires independent verification of a threat event due to insufficient camera coverage, such as the continuous observation of shoplifting suspects.

Next Generation Video Monitoring

There are a number of emerging technologies that will impact the effectiveness of remote video monitoring.

Smart camera technologies are improving dramatically, enabling these cameras to detect and track movement independently based upon preset criteria as described above in the city of Chicago. As another example, several locations along the U.S. border with Canada are monitored using smart cameras, enabling remote video monitoring on an exception basis, which is dramatically increasing the scope and

productivity of each monitoring agent.

U.S. airports are also implementing smart cameras coupled with remote video monitoring to increase perimeter security, monitoring vehicle activity, and detecting tailgating into secure areas.

Smart cameras have also improved to the point where they can track a subject quicker and better than a human operator.

Digital video technologies are also improving, offering greater capability at increasingly lower costs. This will further enable lower storage costs and increased integration of video data with other important data sources such as POS.

As cellular devices become more sophisticated, they will be used for remote monitoring as well. Newer cellular devices such as smart phones and pocket PCs have larger screens, faster processors, and an ever improving user interface that will be able to take advantage of cellular networks that can support video transmission.

While remote video monitoring can be an effective tool for both loss prevention and other retail disciplines, its use must be considered carefully, as it does not presently work well for all environments or all situations. However, the continuing advance of technology coupled with innovative applications of the technology will keep remote video monitoring on the forefront of the tools used to reduce losses and increase retail sales and productivity.

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Implementing Remote Video Monitoring at Office Depot

By Robert Rice

My introduction to remote video monitoring began fifteen years ago when this technology was in its infancy. In 1990 as a young corporate loss prevention executive in the San Francisco Bay area, I worked for Natt Fry, the author of this article, at Mervyn's department stores.

Natt lead the LP division back then and was a visionary of sorts. He was instrumental in establishing, among many other things, the proprietary alarm monitoring system at Mervyn's. Since we had a command center at our corporate office in Hayward, California, monitoring alarms on all of our locations, Natt had a passion to supplement this monitoring with remote video.

It was his dream to have the ability to pull up video real time from one of our locations as we were receiving alarm signals in our central monitoring station. We wanted to do down-and-dirty remote video verified alarm response, plus have the ability to phone into the public address system as a burglary was in progress to call out to the perpetrators, "Hey, you in the black hat and plaid pants. Drop the merchandise. The cops are on their way!"

On day, we drove out to one of the local ADT offices to review a remote video monitoring system about to hit the market that was "cutting edge." I remember viewing "live" remote video of an office building somewhere in Australia. We watched the video paint across the screen at about one image a minute or more. It was more like watching a series of snap shots rather than true video, similar to how many intricate websites download on the slowest of dial-up modems.

Although we found in the end that the technology was not quite there yet...both in price and efficiency...it continued to feed the passion and the vision for where it could take us.

Sadly, it is now fifteen years later, and it has taken almost this long to bring much of what we had dreamed of into reality.

The Office Depot Business Model

The remote video monitoring initiative here at Office Depot began in earnest about three years ago, led by Bill Gavin, the director of loss prevention for our Business Services Group. An understanding of our retail business model will help you

understand the large potential remote video monitoring has both with our warehouse and our North American retail operations.

To quote our most recent earnings release, "Office Depot provides more office products and services to more customers in more countries than any other company." We do this in a number of different business models. While many of you might know us because of our 1,000-plus retail stores throughout North America, we also drive more than half our business through direct customer office supply sales. We are the third largest sales business on the Internet, and drive both direct customer sales as well as business-to-business through these channels and our call centers throughout the U.S.

This piece of our business is supported by ten cross-dock warehouses that feed all of our store locations and twenty-two customer service center (CSC) warehouses that fill our direct customer business. We also have as many as sixty-eight satellite warehouse locations that support this supply-chain network.

Office Depot has wholly-owned business operations in fourteen different countries, and our international business can account for as much as 36 percent of our business. We are starting to implement remote video monitoring in the United Kingdom this year, and now have twelve warehouse locations up and running. I can pull these locations up on my office PC in Delray Beach, Florida, by IP address. However, I will focus my remote video monitoring discussion to the U.S.

Success in Our Warehouse Operations

In talking to Bill Gavin, I see a great deal of the same passion for remote video monitoring that I saw in Natt fifteen years ago. Let me share just a small sample of the success that Bill recently showcased for remote video monitoring in our warehouse environment.

We have reduced our guard cost and support in our warehouse environment by as much as 20 percent annually in facilities throughout the country. Since Office Depot spends millions of dollars a year in guard coverage, these savings are not insignificant.

We are remote monitoring video centrally in the field, where one warehouse location monitors video in several satellite warehouse locations attached logistically to the hub warehouse, thus eliminating the need to use manpower in a small facility that might not warrant continuous dedicated guard coverage.

We also have a command center here at corporate that remote monitors large warehouse facilities in four different time zones. This model brings some manpower relief to certain facilities on the weekends and other non-peak times. Operationally, we have also begun remotely opening and closing truck gates in certain circumstances.

Anecdotally, here is just a small sample of some of the huge wins that we have celebrated here at Office Depot with the continued integration of remote monitoring in the warehouses.

- We have thwarted three workplace violence incidents in three separate facilities.
- We have stopped two recent burglaries in one of our large warehouse facilities, where burglary thefts can mount up into the hundreds of thousands in losses per incident.
- In one facility, we were actually able to identify and put out a fire that had ignited in a trash can outside one of our exit doors from a cigarette butt where there were no fire-detection devices available.
- And finally, after enduring more than our share of hurricanes that blew through Florida last year, we were able to survey property damage immediately after a couple of these storms in a number of locations without putting our associates at risk of harm in the aftermath of some of the severe storm damage.

Moving to Our Retail Operations

The future of remote video monitoring is starting to impact our retail operations at Office Depot as well. We have now networked six of our retail locations for remote video monitoring, and, after a short test, we hope to have as many as 130 store locations networked by third quarter 2005.

Some of the immediate wins we hope to have from a loss prevention standpoint is the ability to conduct internal LP investigations remotely.


We also want to refine our digital video recording (DVR) equipment to maximize data retention and viewing. We want our DVR systems to record the video that is worth reviewing, and not store hours upon hours of an empty door way or POS stand where no movement or activity has taken place. Standard default settings on the equipment we purchase from our vendor partner often won't cut it for our business

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needs. The ability to tweak these systems remotely will provide a big system win. We also want to look at using the remote video system outside of loss prevention. The ability to enhance return-on-investment and substantiation to a CCTV system might revolve around the ability to network camera systems. Networking video monitoring may prove to be a very useful tool for our business partners in merchandising and store operations. The ability to see how the rubber meets the road on any number of merchandising and operations initiatives may prove invaluable to internal customers. The capability to assess such things as associate zone coverage, response at POS, new merchandise receipt processing, and merchant POG set up, might prove to be a better payback than what is met by the traditional LP model.

ROBERT RICE is the director of loss prevention operations and risk management at Office Depot. Prior to his current tenure, he was director of loss prevention for several years at Nike, Inc. Rice has almost twenty-five years of retail experience in loss prevention, finance, store operations, inventory control, internal audit, store field management, and alarm monitoring management. He can be reached at 561-438-6422 or rrice@officedepot.com.

VENDOR QUOTES

“To make remote monitoring a viable, cost-effective loss prevention option, organizations must supplement their existing security infrastructure with advanced monitoring technologies. Software-based video monitoring platforms with open architectures augment existing edge devices with powerful analytical tools to provide a deeper level of insight into customer and employee behaviors. In addition, these platforms leverage corporate computer networks and the Internet to simultaneously distribute critical video footage in real time to multiple, disparate locations, including security command posts, law enforcement agencies, and mobile devices. For example, a remote monitoring center in Florida could instantly push video footage of a crime in progress to security personnel and a 911 command center in California.”

- Jean-Paul Saindon, Vice President of Video Solutions Product House, Verint

“Digital video is a basic tool for loss prevention in the retail environment. The presence of cameras acts as a strong deterrent for the would-be shoplifter, and digital video also gives security professionals the ability to monitor an entire store or even multiple locations from one central location. Video can also provide a record of activities that can be used in apprehending and prosecuting shoplifters.

Retailers are also finding that digital video can do double duty. It not only helps limit theft and losses, but it is also a powerful management tool. It allows management to analyze the store environment and make adjustments based on operational events. A review of the video can help management make staffing modifications, alter traffic patterns, and even determine if seasonal displays are updated in a timely manner. These adjustments can effectively save money and increase the bottom line for retailers. Digital video provides an additional way for retailers to get value from their loss prevention technology.”

- Lisa Ciappetta, Product Marketing Manager, ADT Security Services

“It is very important to note that the human factor can severely limit the effectiveness of remote video monitoring, and in some cases remote monitoring is not a feasible option at all due to budget or manpower constraints. In a retail environment, you can overcome this limitation by deploying a digital CCTV system where the video data can also be interfaced with the POS, access control systems, and alarm panels. This way, the video data can then be used to search for images related to a particular incident, as well as to trigger recording and create audit trail entries. In other words, you are not dependant on a possibly error-prone human being closely observing the monitor at all times.”

- Brandon Ring, Director of Sales, Image Vault

“Digital video monitoring and recording offers retail environments tremendous advantages for retailers with multiple locations. This technology presents the opportunity for new approaches to loss prevention, fraud investigations, and operations management within the retail industry as the ‘remote’ characteristics are paired with capabilities to ‘centralize’ information and processes from the remote locations.

Now that video information is digital, new opportunities to further extend its benefits to retailers are within reach. As digital information, video can be easily integrated with and linked to POS transactions. Additionally, once it is networked, access to the video information enters the scope of ‘unbound’ applications, available through wireless (WiFi) networks.

With centralized video management and wireless video access, the retail loss prevention function, that once looked like an operator at a control desk, falling asleep in front of a wall of monitors, is now transformed into a mobile in-store officer, carrying a hand-held PC who receives ‘video alerts’ over the wireless in-store infrastructure.”

- *Wendy Raoux, Retail Product Manager, March Networks*

“Video monitoring is an extremely effective tool in loss prevention with high return on investment. Three recent technologies have dramatically increased the effectiveness of remote monitoring: wide-angle cameras, digital infrastructure, and smart tracking.

Fisheye lenses, when accompanied by appropriate viewing software, can fundamentally increase the power of a video monitoring solution by eliminating blind spots. Aside from increasing coverage, fisheye lenses increase deterrence because shoplifters know where normal cameras point, but fisheye lenses point everywhere.

Digital infrastructure requires fewer cables, the equipment lasts longer, and the images are higher quality for later prosecution. Viewed this way, the value is scarcely comparable to an analog solution.

Tracking software increases the effectiveness of LP personnel, both local and remote. All agree that these analytics are powerful tools for loss prevention, but their effectiveness is only as good as the camera upon which they are based.

With these new technologies, remote video monitoring is a much more attractive possibility.”

- *Dr. Geoffrey Egnal, Chief Technology Officer, IPIX Corporation*

“The average superstore has 150 cameras, and one LP officer for every two stores. Recording is done in a ‘dark room,’ meaning all the cameras end up on tapes or nowadays DVRs. No one is watching anything in the store. Most stores have one 56k modem that has to share credit card transactions with emails. Do you really think they are going to stream video over IP across what is left? For centralized monitoring, the infrastructure has to be in place with T1 lines or network connectivity.

If you have one operator monitoring ten sites, that is one person for 1,500 cameras. If he can view twenty-five cameras, that means 99.98 percent of the cameras are going into an archive. That means the most important thing is to be able to search the mass of recorded video and associated meta-data, such as POS information, length of queue, degree of crowd formation, etc. That requires the proper tools.

For example, I want to see the video clips from all stores in New Jersey during the past thirty days when Visa card number 4285 5367 6152 9965 was used. I want to know the branch ID, the date/time, the cash register ID, and the employee ID of the person who accepted the card. Oh, what a coincidence, it’s only one store, every Wednesday and Friday, and it’s employee 716284.”

- *Dr. Bob Banerjee, Americas Product Manager, Video over IP, Bosch*

“More cameras mean more recorded digital video. The answer is not less recording, but more selective video monitoring.

Event-driven Video Monitoring—the integration of alarm systems, digital video recorders, and a state-of-the art monitoring operation—is a real-world solution for many retail organizations. Alarm signals are sent to the monitoring center where the monitoring operation responds to the event using video pulled from the site and the appropriate camera, without interrupting DVR recording.

This type of integrated solution enables retailers to implement the latest DVR technology to reduce shrinkage. At the same time, retailers can increase their ROI by integrating DVR technologies with existing alarm systems and effective monitoring processes to reduce false alarm fines, provide alarm verification where required by local ordinances, and increasing employee security."

- *Jacqueline M. Grimm, Director of Security Solutions and Strategic Channel Management, Diebold*

"Some of the benefits of remote video monitoring and supporting services include:

- Measurable reduction in store theft and shrinkage.
- Visual confirmation of alarms before police or fire are dispatched, reducing false alarms and resulting fees.
- Encourages people to 'move on' before a problem or conflict situation occurs, eliminating a problem that otherwise would have developed.
- Improves safety of employees by having a remote guard deal with problem situations.
- Reduces store theft with 'live' or scheduled voice messages that are a constant reminder that the location is being monitored by a remote monitoring service.
- Improves service levels to customers by removing or reducing impact of problem individuals.
- Reduces property damage caused by vandalism.
- Monthly reports summarize activity by type and location measuring the results. Problem equipment is quickly identified and repaired."

- *Peter Murdoch, President and CEO, ID Systems*

"While remote video monitoring can certainly deliver benefits in a variety of business environments, it should be evaluated based on its ability to impact the bottom line.

Incidents that occur while monitoring live video (locally or remotely) typically require some type of immediate, on-site action such as stopping a shoplifter or intervening in an altercation. By utilizing tools such as two-way audio, some minor incidents may be able to be influenced, but remote users are not able to efficiently affect the incident.

The real power is utilizing personnel across an enterprise to focus on the issues that directly impact profit, such as loss, operational efficiencies, and reduced liability. Technologies are now available that integrate video with other data sources, like POS, video analytics, and alarm events, and that drive users through a consistent business process to combat their largest problem areas, allowing managers to better utilize resources and improve their businesses."

- *Andrew Wren, President, Wren*

"Remote video monitoring is a viable, new tool being used very effectively by today's loss prevention professionals. Previously constrained by bandwidth limitations, digital transmission and storage capability have now advanced to the point where we can truly leverage the 'remote' aspect of this technology. When deployed as part of a strategically planned loss prevention program, remote video monitoring enhances coverage and assists personnel in doing their jobs more efficiently. Perhaps just as important, we are finally seeing utilization of video for applications well beyond traditional LP in the store environment. People counting, out-of-stocks, traffic patterns, promotional efficacy, in-store advertising, customer service compliance, and conversion rate metrics are all being managed through remote video monitoring applications. The retailer can now more accurately gather data to improve sales while simultaneously impacting shrinkage."

- *Steve Champeau, Vice President/General Manager, Security Systems Group, Checkpoint Systems*

"Remote video monitoring is a key tool for loss prevention professionals. The technology is not only a security tool, but can be used to improve day-to-day operations. Remote video monitoring can replace or augment on-site guards, monitor

corporate policy adherence, and provide video evidence for false worker's compensation and liability claims.

Intelligent video, or smart camera technology, is opening the door for expanded remote monitoring capabilities. Loss prevention professionals can preprogram cameras to record only for predetermined scenarios, such as after the opening of a back door and/or cash register, or exception reporting (when something happens that is the exception to standard operating procedure).

Remote video monitoring can be a constraint on an internal LP staff, which is one of many reasons why companies often prefer to use a third-party provider for monitoring."

- *Mitch Johnson, President, Westec InterActive*

"The primary purpose for deploying digital video surveillance in any business should be to enable the owner to watch, record, and proactively manage all vital aspects of the business from wherever he or she happens to be at any time. In my experience, when it becomes common knowledge that the owner may be watching at any time, whether present or not, and that every image is recorded for later review, employee theft will decline dramatically, if not immediately, then at least after action is taken on the first detected theft event.

Proactive management practices are an essential ingredient in the successful operation of a video surveillance system in any business. Remote video monitoring is an essential tool to expand the owner's capability to do that whether he or she is at the business or anywhere else in the world, via the Internet."

- *Jim Stoll, Senior Security Consultant, Stealth Security Services*

"The two most recognized users of remote video, namely the convenience store and gaming industries, had strong motivations to use remote video, specifically the threat of loss of life or high stakes money loss. But most retailers' needs are a lot more 'luke warm' than those, which produced a wait-and-see-type attitude.

It is a major benefit to LP when digital video clips of recorded suspicious activity can be compiled immediately and sent to specialists for analysis. The key to moving forward is to begin deployment of the technology through LP. Retailers then need to evolve it into a 'video buddy system' where different departments can all use the 'looking glass' to serve their own store-level interests.

Remote video monitoring will become widely deployed when retailers think about its use more like 'another set of eyes that everyone can look through' than just a video camera designed to catch employees and customers stealing. Combine the needs of loss prevention, store operations, merchandising, marketing, and human resources—that's when remote video will finally become the on-demand service it deserves to be."

- *Jim Rao, Director of Video Technologies, Vector Security*

"Remote video auditing (RVA) represents the next generation of remote video monitoring. RVA employs third-party certified auditors who review video and deliver daily, weekly, and monthly audits to retail and manufacturing operation managers.

Remote video auditing makes use of video cameras and digital video recorders (DVRs) linked through a central server architecture and viewed through the web.

Third-party auditors routinely view video associated with a procedure or alarm event. Through weekly RVA reports, video is transformed into actionable intelligence. And through RVA systems, companies are provided a sophisticated suite of virtual tools for monitoring processes, reducing theft, managing people, and maximizing profit.

Remote video auditing significantly reduces shrinkage in retail stores. For example, Limited Brands stores using RVA cited dramatic decreases in shrinkage rates when compared to same season.

It has to do with using audit reports and coaching people to do the jobs that they have been trained to do, making them feel acknowledged, and rewarding them when they do a great job."

- *Adam Aronson, CEO, Arrowsight*

“As cellular devices, including cell phones, pocket PCs, smart phones, and smart devices such as the Palm Treo, become more sophisticated, they will be used for remote monitoring as well. Newer cellular devices have larger screens, faster processors, and an ever improving user interface. Additionally, cellular networks are now at a point where they can support video transmission. This technology will be used for both business and personal use.”

- *Doug McMillan, Chief Marketing Officer, Cenuco*

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