Whitepaper

More Than Security

The advantages of an open platform IP video management solution for optimizing business processes

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Introduction

Internet Protocol (IP) video — the use of digital cameras connected through IP networking (wired or wireless) to centralized servers — is a global paradigm shift. The days of murky analog video and unwieldy, expensive CAT 5 cable are quickly going the way of the film camera.

IP video revolutionizes video surveillance, enabling access through a network to video captured anywhere an organization has cameras. In addition to security and safety, this opens the door to all kinds of new uses of video for cost-effectively monitoring operations for business optimization and process improvement.

Once video is networked and accessible through computers and other devices (such as smart phones), there is no limit to how it can be used to benefit people, businesses, governments, and institutions. In fact, advances in video analytics — the use of computer algorithms to intelligently monitor real-time video for specific actions — provide new ways to automate the viewing of videos, enabling software to do the "watching" and act on what the camera sees. These actions can be as simple as alerting a retail store's staff when more cashiers are needed or prompting a maintenance crew to replace a part in a critical system that is showing signs of failure, such as hairline cracks.

Many companies in the IP video surveillance industry are helping drive business optimization solutions through a variety of new products and services. New companies are joining the movement as well, offering innovative solutions, such as new video analytics software products designed for specific business uses.

Because this is fast-growing, fast-changing industry, it's important for any organization looking into using IP video to choose *open* solutions. Such solutions make it easy to select from a wide variety of third-party components and integrate with other solution to expand the capabilities of a system. Open systems also protect users from getting locked into proprietary systems that could become a dead-end in the future.

The most important piece of the puzzle is the IP video management software used to operate the IP video system. Selecting an open platform IP video management solution, such as the Milestone XProtect® product line, is crucial to future proofing an IP video system and enabling the addition of these new and improved capabilities over time.

This paper will provide:

- An overview of the advantages of an open platform for IP video
- A brief look at some of today's video analytics technology and applications for optimizing business processes
- Real-life examples of IP video in action

Advantages of open platform IP video management software for business optimization solutions

A key technological advantage in the migration to IP video technology is the ability to move to an open platform. An open platform is a software system with published external application programming interfaces (APIs) that allow other companies and developers to develop products that add additional functionality and versatility. Open platform IP video management software enables organizations to choose from a wide selection of commercial off-the-shelf (COTS) servers, cameras, and other components from hundreds of manufacturers to meet specialized needs and serve a wider variety of purposes. What's more, open platform IP video management software allows organizations to update technology (such as servers, clients, cameras, video analytics, etc.) selectively and avoid the extensive ("forklift") upgrades required when a proprietary network video recorder (NVR) or digital video recorder (DVR) systems and their cameras reach their end of life.

Often, an organization first looks into IP video for video surveillance. Most organizations quickly discover there's a lot more that can be done with IP video than surveillance. By combining IP network cameras and video analytics with other applications and systems, it's possible to video enable a wide range of business processes to improve efficiency, productivity, safety, and return on investment (ROI). This is why starting with an open platform is so important. You don't want to limit yourself from the start.

Below are some of the key advantages of building an IP video system on the foundation of an open platform IP video management software solution.

- **Hardware and software independence.** Open platform IP video surveillance software allows organizations to choose best-in-class (and price) components from a wide range of manufacturers, not just one. In fact, selecting an open platform with an extensive ecosystem opens up an enormous marketplace of proven solutions that helps lower total cost of ownership (TCO) and provides greater flexibility in meeting evolving security or other surveillance needs. An open platform with a well-documented software development kit (SDK) like the Milestone XProtect product line attracts solution partners all over the world to address usage models including access control, point-of-sale (POS), analytics, biometrics, HVAC and building automation, process optimization, enterprise resource planning (ERP), radio frequency ID (RFID), logistics, and more.

- **Protecting existing investment.** True open platforms, particularly those backed by a large ecosystem and strong ongoing support for external hardware and software solutions, enable organizations to continuously take advantage of new advances as they become available. With an open platform, an

organization will be able to continually keep its options open for the best deal, the best innovations, and the best ROI over time.

- **Scaling and interoperability.** No-growth is a bad strategy for any video system. Most organizations grow over time and so do their video needs. But, while installing an IP video system does make it easier to add cameras and other components, it doesn't guarantee interoperability. Interoperability requires an open platform solution. Used in front of a product (such as in "IP network camera"), "IP" simply means the product will use the Internet protocol to exchange data. There is no guarantee that two IP-based products will plug and play and instantly be useful together. Choosing true open platform IP video management software ensures the greatest amount of choice in selecting cameras and other components, the greatest ease in setting them up to work together, and the least amount of trouble in scaling the system as it needs to expand.

- **Integration with other devices and systems.** An open platform with extensive APIs and well documented software development kits makes it much easier to integrate with other networked devices. Finding innovative ways to leverage this connectivity is a major trend in using video to optimize business processes. Since most IP network cameras have digital inputs and outputs (I/O), it is possible to program them to help with loss prevention in a retail setting by having a transaction cancellation at a checkout stand alert an IP network camera to save the six seconds of video recorded before and after the cancellation. As a business process improvement, a camera can be programmed to activate devices according to what the camera sees through video analytics. For instance, a camera could "see" a truck backing up to a warehouse door and alert staff, reducing the amount of time it takes to respond to a truck that needs loading or unloading.

The growing use of video analytics

One reason video is quickly growing as a management tool to optimize business operations is the growing sophistication of video analytics, both at the edge (incorporated in intelligent cameras equipped with their own processor and software) and at the server (the best location for high-end live and post processing analytics). Video analytics algorithms can automatically analyze live video streams to detect, track and map the positions of people, vehicles and other objects as they move and interact in a camera's field of view. This makes video analytics ideal for applications such as motion detection, crowd detection, counter flow detection (noticing when someone or something breaks boundaries set in the camera's field of vision), license plate recognition, facial recognition, counting, detecting left-behind objects, and spotting defects.

Use video analytics for business intelligence enables the cost of an IP video system to be spread across multiple departments. What's more, analytics at the edge can also help control the bandwidth requirements of IP video, transmitting video data over the network only when a camera is viewing an actionable activity.

Video analytics will increasingly influence many IP video purchases and play a significant role in the selection of video management software. Selecting an open platform video management software solution provides IP video system buyers an open door to adding more and more video analytics applications as their business optimization goals grow. In fact, some open platform video management software, such as Milestone XProtect, already has a proven framework for handling server-based (including library-based video content analysis) and edge-based video analytics. This saves having to go through a painful change of video management software when sometime in the future an organization decides to add additional video analytics applications.

Realizing ROI by using video for process control

IP technology provides opportunities to improve the bottom line by enabling the use of networked video for process control. For instance, a chain restaurant could install an IP video surveillance system for security, but then also use it for loss prevention (monitoring activity at the register, as well as in food storage areas) and process optimization. This could include ensuring workers wear gloves, properly greet and treat customers, follow procedures for food handling and serving, and regularly clean tables and counters. A hospital could use video to make sure doctors and nurses wash their hands and thus help reduce costly infections and prove compliance with health regulations. A recycling facility could use video analytics for business optimization activities, such as identifying peak times and ways to streamline access to specific areas to reduce traffic buildup. Retailers can use video to obtain information about customer flow, hot spots (places within the store that are most frequented by customers), checkout traffic, product placement, and in-store advertising effectiveness.

Some examples of business uses for video:
- Businesses using video systems to improve customer service and sales by collecting information about customer behavior in banks, retail stores, grocery stores, gasoline stations, and other locations.
- Distribution warehouses using video for loss prevention (making sure trucks are completely loaded and unloaded).
- Museums using cameras to track traffic patterns and devise ways to direct more traffic to profit centers, such as the museum store and cafe.
- Building designers using cameras to study traffic flow to improve interior design.
- Toll roads employing video to monitor vehicle flow and improve response to traffic incidents.
- Transit companies using high resolution cameras to continuously inspect train pantographs (the metal frame on top of an electric locomotive that picks up electricity from cables hanging above the track) for suspicious anomalies suggesting defects.
- Semiconductor fabrication plants (fabs) using video for monitoring cleanroom procedures to guard against contamination.
- Utilities operating wind turbines or other equipment using video to monitor critical machinery in remote locations to reduce costly trips for visual checks by maintenance personnel.
- Training departments collecting video of employees performing tasks properly and improperly for use in training videos.

Overall, it's easy to see how a centrally controlled, IP video system allows organizations to collect data that can enable make more accurate and intelligent decisions in sales, marketing, HR, supply chain systems, and many other areas. In fact, as data mining techniques improve and move into the mainstream, it will become easier for organizations to search video for patterns, relationships and trends that will help them improve their customer service, interactions and responses to a wide variety of events.

IP video in action

We'll now look at how five different companies are using IP video running on open platform IP video software (Milestone XProtect products) to improve the efficiency of their businesses.

Making the unpredictable more predictable

When people picture beautiful beaches or harbors, they envision clear blue waters and the sound of rolling waves. What's missing from this image are the hidden dangers of powerful currents capable of sweeping an unassuming swimmer or surfer out to sea, or massive waves that can wreak havoc on small craft. Coastalwatch is an innovative Australian company that has the world's coastlines under its high-tech eyes through networks of private- and publicly-owned surveillance cameras. CoastalCOMS, the company's coastal observation and monitoring solution division, monitors several beaches along Australia's Gold Coast, as well as coastal areas in western and southern U.S., Hawaii and Denmark.

Employing a set of sophisticated analytics they developed, CoastalCOMS' cloud-hosted solutions monitor shorelines for state and local agencies worldwide, delivering the data via integration with Amazon Web services and various private cloud offerings. The CoastalCOMS monitoring platform uses Milestone XProtect IP video management software to manage live video surveillance integrated with the company's analytics solutions. CoastalCOMS' analytics software and multi-national network of hosted coastal cameras collect real-time data, such as wave height and wave period analysis, vessel traffic, the number of people on beaches, as well as changes in the shoreline. The Milestone software allows CoastalCOMS to create "networks" of hundreds of coastal cameras on the fly, patterning and sourcing video from both new and existing beach cameras according to each customer's needs. The video is then processed in real time for different groups based on their reporting needs and workflows. Unique to the CoastalCOMS analytics offering, data is presented with a "level of confidence" metric associated with each measured output, ensuring both context and trust in the analytics results.

With the XProtect API, CoastalCOMS-enabled cameras also have the ability to automatically reposition themselves based on alerts from existing external sensors or data feeds, such as a status change in a pressure sensor, a Weather Service warning or alert, or a measured change that happens in front of the camera. Another key advantage of the open platform capabilities is the ability to expand services, such as adding an automated VoIP hailer that broadcasts warnings at a beach or dock. Milestone XProtect also makes it easy to add new usage models. A good example is a new CoastalCOMS analytics product that helps monitor river/outflow water levels to aid planners and risk managers concerned with rising or falling water levels in rivers, lakes, reservoirs, estuaries or wetlands and in-land waterways.

Not gambling on anything when money is involved

Casinos are all about gambling when it comes to entertainment, but not when it comes to business. They're as bottom line-oriented as any enterprise. Which is why casinos like Casino Copenhagen, Northern Europe's largest, are finding more uses for video than surveillance.

A good example is dispute resolution. Rather than rely on people's memories, Casino Copenhagen now uses video to settle disputes. For instance, if customers at the roulette table claim they put their money on one color and not another, operators at Casino Copenhagen calmly scroll video back to before play began and solve the dispute before it has a chance to get out of hand.

Finding other uses for video surveillance makes good sense for a business that by law has to record and store video evidence for 31 days and images from cash transactions for 62 days. Consider that Casino Copenhagen has more than 200 cameras connected to five servers. With so much video data, it's smart to leverage it in as many ways as possible. Besides solving disagreements, video- can be used to make sure internal procedures are followed, monitor the performance of new employees, and use in training. Of course, from a customer point of view, knowing that the casino is using video to catch professional cheaters makes gambling on their favorite games less of a gamble on the people they're playing with. This can be an advantage too in creating good customer relationships.

Perfecting the art of flight

iFly Singapore is a business that brings the reality of unfettered flight to everyone. A vertical, glass-walled wind tunnel (the largest in the world) allows anyone with a passion for flying to experience it by simply spreading their arms and taking off. Four seven-ton fans generate airflow of hurricane-like magnitudes inside the flight chamber, which allows flyers to reach heights of up to five stories.

In addition to using 60 surveillance cameras for building surveillance and security, part of the iFly Singapore's business model is providing customers videos of their flights. Flyers are given an RFID (Radio Frequency ID) tag

that contains information about them, including time of entry, duration of their intended flight and time of exit. The RFID system is integrated with the same Milestone XProtect video management software used for their surveillance operations. The software directs a number of high definition (1080p) IP cameras to record each flight experience. The Milestone software is able to export the video to DVD so customers can view it later. Professional skydivers use the video for training purposes, reviewing it to improve their technical skills.

Showing better customer service in the showroom

At Yarra Honda, a Honda dealership in Melbourne, Australia, IT manager Chris Gouris had a vision for IP video that extended well beyond video surveillance of the lot and building. He saw it as a way of providing better customer service and management of sales staff. By installing 42-inch plasma screens in the sales workroom, sales staff stay productive with paperwork and making sales phone calls without having to continually peek into the showroom to see if any customers are milling around. Instead, cameras do the watching. When customers come in, their presence is seen on the screen and a salesperson can watch them get acclimated to the spacious room and its cars, then go out and greet them. The company's receptionists can also use the video system to see which sales people are free to deal with a particular customer. According to Giouris, after a year of using the system, the company's management is looking into putting cameras in two other dealerships.

Fast results for improving fast food service

Restaurant Brands in New Zealand wanted to improve loss prevention at its 300 outlets. The company operates Kentucky Fried Chicken (KFC) storefronts, as well as coffeehouse and pizza franchises. The initial goal was to begin with the 90 KFC locations, starting with a proof-of-concept in a small number of stores. Though the main target was dishonest staff, what quickly became apparent were the advantages of an IP video system in other areas, such as store performance, quality assurance, management key performance indicators.

While the immediate effect of installing the IP video system was an exodus of dishonest employees, Restaurant Brands quickly noticed something else. The proof-of-concept stores rose in rank from the lowest performers to the top ten. Managers were able to use the video to improve quality assurance, work with staff on process improvements, and recognize their best employees. This demonstrated that the value of the system went way beyond loss prevention, contributing to improvements in human resource management and business optimization. This success led Restaurant Brands to rollout the system to all 90 KFC stores in a six-week time frame, a speed made possible because of the easy scalability of the Milestone XProtect video management software selected by Lexel, their integrator. Restaurant Brands is now planning to rollout the system to the storefronts of their other franchises as well.

Conclusion

The use of IP video to enable business optimization is providing organizations with a way to extract greater value from their investment in video surveillance systems. In fact, in many cases, IP video may prove more valuable for business optimization use models than for surveillance. Thus, the most important thing to consider in purchasing an IP video system is that it have the flexibility and scalability to handle a wide range of video tasks and future uses that may not be immediately evident at the time of purchase. This means starting with an open platform IP video management software solution. By purchasing true open platform management software, organizations ensure they will be able to add new and different types of cameras, digital displays, video analytics software, and storage solutions, as well as add new capabilities as they become available. True open platform solutions also make integrations with a wide variety of other systems, such as access control and RFID systems, possible.

Criteria for selecting open platform IP video management software and the company that makes it include:

- Leadership and a solid track record in the industry
- Unlimited integration capabilities through extensive APIs
- Well documented SDKs
- Continual upgrades and expansions to the SDK
- Training programs for third-party programmers and system integrators
- Project consulting and engineering for customized or comprehensive integrations
- An extensive ecosystem of partners that includes leading hardware and software vendors (particularly top camera manufacturers and video analytics companies) as well as system integrators, and security system manufacturers

By starting with open platform IP video management software that meets all these criteria, businesses can future proof their IP video system and ensure years of increasing ROI as uses for IP video proliferate throughout their organization.

About Milestone Systems

Founded in 1998, Milestone Systems is the global industry leader in open platform IP video management software. The XProtect® platform delivers powerful surveillance that is easy to manage, reliable and proven in thousands of customer installations around the world. With support for the widest choice in network hardware and integration with other systems, XProtect provides best-in-class solutions to video enable organizations – managing risks, protecting people and assets, optimizing processes and reducing costs. Milestone software is sold through authorized and certified partners. For more information, visit: www.milestonesys.com

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