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The Open Platform Company

Whitepaper

Schools Improve Security and Save Money with Open Platform IP Video Surveillance

A guide for administrators and security departments on the benefits of open platform IP video surveillance technology

Prepared by:

Eric Fullerton, Corporate Chief Sales & Marketing Officer,
Milestone Systems

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Introduction

Schools should be safe havens for education. New developments in video surveillance technology based on IP technology are helping primary and secondary schools, colleges and universities improve security, as well as enhance operations and minimize losses in commercial areas (such as bookstores, cafeterias, and vending machine halls). Compared with traditional analog solutions (also known as CCTV or closed circuit television), IP-based solutions are much more versatile and cost effective. In fact, the advantages can be even more dramatic when an IP video surveillance system is based on an open platform capable of incorporating both IP network (digital) cameras and a school's existing analog cameras (connected through the use of inexpensive video decoders).

While analog video surveillance solutions are generally proprietary (designed as a closed system only available from a single company), open platform systems use video management software specifically designed to allow a variety of hardware and software applications from different manufacturers to interface with it. This enables the platform to function in new and different ways beyond what was originally intended. For this reason, open platforms provide a base on which to continue to build and expand the capabilities of a system for years to come.

Some of the advantages of open platform IP video surveillance system include:

- Seamless integration with other security systems (building management, access control, retail point of sale applications) and a single point of control for integrated security systems
- The ability to add situational awareness to improve response times in emergency situations
- Superior information sharing with first responders, such as police and fire departments
- Lower total cost of ownership (TCO) and substantial cost savings through the use of commercial off-the-shelf (COTS) components and third-party applications
- Protection against future obsolescence and extensive "forklift upgrades"
- Easy and cost-effective expansion as needs grow
- Ability to add new innovations as they become available

For many educational institutions, this shift from traditional analog technology to open platform IP video surveillance comes at a perfect time. Most schools and university systems need to make the most of their budgets now and in the future. They've already seen significant cost-saving and productivity benefits from IP-based IT (information technology) and networked solutions in everything from administration and student records to accounting and communications. They have the necessary IP network infrastructure in place. Now it's time to make the move to IP video surveillance – particularly with a solution

that enables them to leverage the significant investment they've already made in analog cameras.

There is one more consideration that should be paramount in such a decision: selecting a solution well-supported by a strong ecosystem of certified solution providers and system integrators. Certification ensures greater expertise and superior implementations. And a strong ecosystem provides greater choice in cameras and other components, proven interoperability, stronger service, and a more reliable future.

The IP open platform video surveillance company with the industry's largest ecosystem of certified resellers, hardware and software partners is Milestone Systems. A leading global developer of open platform software for managing IP network-based video, Milestone makes the most versatile solution for video enabling operations, managing risks, reducing costs, optimizing processes, and protecting people and assets. Milestone XProtect™ open platform video management software is being used in more than 50,000 customer installations worldwide and is sold through authorized and certified partners in more than 100 countries. The Milestone open platform provides the widest choice in hardware and software, supporting over 900 IP cameras, encoders, and nonproprietary DVRs (digital video recorders) and NVRs (network video recorders) from more than 80 different manufacturers. These numbers continue to grow.

This white paper discusses how colleges, universities and K-12 schools can save money and improve security through choosing to buy or migrate to video surveillance systems that are IP-based and built on open platform video management software. We discuss the advantages of IP networking for video surveillance. We examine what to look for in an open platform IP video surveillance solution to ensure that it truly is open. And we explain how video surveillance is moving beyond “just security” and transitioning to a world where video-enabled applications provide situational awareness to improve effectiveness, speed up incident response time, reduce loss of life and property, and help educational facilities achieve better TCO on their system investment.

The need for video surveillance in schools

In schools and college campuses around the world, non-violent and violent crime is a daily concern. In the United States, a substantial number of students and teachers experience some type of violence and related incidents in their educational career. One U.S. study found that approximately 17 percent of students reported experiencing violence or harassment in the previous year.[1] Colleges are constantly besieged by student requests to do something about everyday crimes like theft (laptops, cars, bicycles, etc.) and vandalism. Institutions that do not have adequate campus-wide surveillance face seeing attendance and tuition fall as parents and college-rating services use campus security as an important criterion in their decisions. In the United States, schools are required to annually disclose information about crime (including specific sexual crime categories) and their prevention policies in and around campus.

Violent and nonviolent crime is also commonplace in primary and secondary schools. The 2010 rash of stabbings in primary schools in China brought international attention to the need for security in schools everywhere. In the United States, data from the U.S. Department of Education shows that in 2007, there were 31 thefts and 26 violent crimes per 1,000 students at school.

Clearly, school systems and colleges cannot afford security forces large enough to watch thousands of students and monitor buildings 24 hours a day, seven days a week. Consequently schools and colleges look increasingly to video surveillance for assistance. According to the National Center on Education Statistics (U.S.) already nearly one third of elementary schools, 42 percent of middle schools, and 60 percent of high schools in 2003-2004 were using surveillance cameras. A special report from College Planning & Management magazine found that 84 percent of the colleges interviewed used external video surveillance for residence halls and nearly 61 percent used internal video surveillance. After the 2008 Virginia Tech shooting, many colleges announced new video surveillance and other security projects.

[1] National Probability Sample Study, Core Institute, Student Health Programs, Southern Illinois University, Carbondale, Ill.

Why IP technology is more cost effective for video surveillance

Video surveillance has been around for decades, but the way the video is captured and stored has undergone a major revolution in recent years. Most security operators are familiar with traditional analog (CCTV) systems. They require expensive coaxial cabling and dedicated power outlets for each camera.

Today, there is a much easier, less expensive solution already within most walls – the category 5 (Cat 5) cable for computer networking. It's the same cabling used for connecting IP network cameras for video surveillance. IP network cameras plug into cost-efficient standard Ethernet cable or wireless technologies (such as IEEE 802.11b/g/n) just like a computer. Changing camera placement is equally simple – just remove and plug the camera into another network jack somewhere else.

Wired IP network cameras have an additional advantage when powered by IEEE 802.3af Power over Ethernet (PoE). This technology enables a camera to be connected and powered by the same cable used for network connection. This drastically simplifies installation and reduces costs by eliminating the need for power outlets at camera locations. The State University of New York at Buffalo estimates it saved approximately US $500 per camera location because the IT staff used inexpensive Ethernet cabling rather than wiring new power outlets around their medical complex. Treviglas Community College in Cornwall, England, took advantage of PoE's potential to add more resilience into the surveillance system by connecting an uninterruptible power supply (UPS) to each network switch. This enables the surveillance system to continue running alongside the college’s computer network should the electricity go out.

Wireless cameras can be even simpler to connect and move, depending on the range and extent of the wireless network. Use of standard wireless technologies enables cameras to be placed almost anywhere there's a power source.

From an information technology (IT) perspective, IP video surveillance is just another network service. Network technology uses the Transaction Control Program/Internet Protocol Suite (commonly known as TCP/IP, but often shortened to "IP") that has been around since the 1970s. The Internet is based on this protocol.

Better use of staff and equipment resources

The seamless integration of an IP video surveillance solution with the rest of a school's IP network enables more reliance on internal resources – everything from IT staff to sharing network resources like servers, storage systems, computers, wiring, and security software. This saves money because rather than running two networks – an analog one for security cameras that feeds into tape-based video recorders or DVRs, and an IP one for everything else – everything runs on one network. In-house IT departments can work with a systems

integrator to help implement and maintain best practices for security and backup to ensure the reliability and security of the video management system.

For installation, it pays to use an experienced and certified system integrator. Their knowledge of industry best practices for optimal camera placement, optimizing bandwidth, configuring servers and storage, and other facets of IP video surveillance implementation can be invaluable.

Superior scalability for changing needs and budgets

A strong advantage of IP network-based video surveillance systems over analog video systems is scalability. IP-based systems scale easily from one to thousands of cameras in increments of a single camera. There are none of the mandatory 16-channel jumps dictated by pre-configured analog systems using digital video recorders (DVRs). This makes IP-based solutions ideal for growing a system as budget allows. Installation can be done in stages and video encoders can be used to incorporate existing analog cameras, creating a hybrid system that preserves the existing security system investment. It's nearly always less expensive to set up a hybrid IP video surveillance system and gradually replace existing analog equipment with the superior functionality of IP network cameras and other components rather than do a ‘forklift’ replacement of an existing analog system to the latest analog technology.

Centralized operations for greater efficiency and effectiveness

A good open platform IP video management solution enables centralization of operations. For a school system or university with multiple campuses, this means all video surveillance operations can be housed in one facility. This enables staff to effectively use resources and space (monitoring more sites with less staff), as well as provide security officers a better overview of what's happening in security throughout the institution from a single command point.

One software solution, Milestone XProtect™ Smart Wall, makes monitoring easy for command center staff by giving them dynamic control of screen layout and camera feeds. Operators can populate layouts by dragging and dropping cameras into the monitor views. They can also set up rules to handle events, such as bringing up a camera view where

Milestone XProtect™ Smart Wall enables dynamic screen control for superior situation management.

motion has been detected. Any combination of monitors can be incorporated in one Smart Wall and there can be any number of Smart Walls in a video surveillance system.

Better storage options

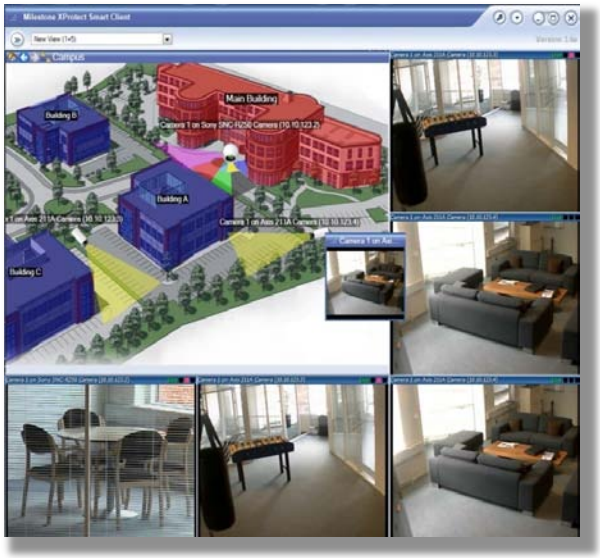
With IP video surveillance solutions, video can be saved on in-camera buffers, standard DVRs/NVRs, or directly onto computer servers. Larger installations can use dedicated storage systems, such as a storage area network (SAN). If a crime incident occurs, digital storage enables archived video to be quickly and easily searched by date and location. It can also be immediately shared through the Internet with authorized first responders. IP storage components also make it easy to provide backup storage by increasing redundant infrastructure (server and storage architecture). In general, the use of standard server and network equipment makes redundant systems and replacement considerably less expensive and time-consuming than proprietary solutions.

The cost for storage can also be much less. Compare a modern analog system's "black box" proprietary DVR that can cost $5,000 to a high capacity server disks used in IP data storage that cost as little as $150. One reason the IT Department for New York's University at Buffalo's Faculty Student Association is switching to open platform IP video surveillance is to manage video storage operations on ordinary servers.

For schools still using VHS tape, making the switch to IP video surveillance is a vast improvement. Searches of archived digital video are nearly instantaneous compared to the hours it can take to pull a video tape out of storage and fast forward through it looking for a particular time or event. Daily tape changes, poor recording quality, VCR breakdowns, and finding space to store tapes also become a thing of the past. What's more, modern IT security practices make digital storage much more secure than tape stored on shelves in a storeroom.

More efficient information sharing

With IP video surveillance, live and recorded video from the system can be set up for remote viewing via authorized desktop computers, laptops, PDAs, and smart phones from companies such as Apple (iPhone) and Blackberry. The Canby School District (5,000 students) in Oregon, for instance, set up their 50-camera system so law enforcement agencies could also monitor school cameras remotely from their squad cars. The officers log onto the school district's

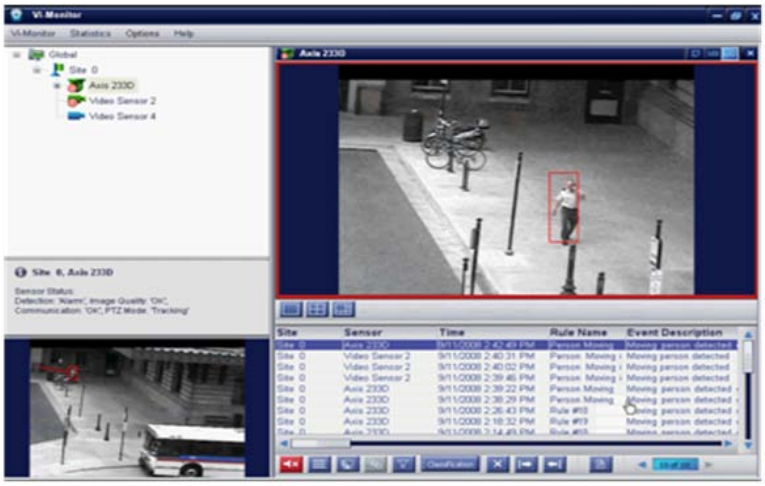


Sample screen from an open platform IP video surveillance software solution.

IP-based Wi-Fi network. Such remote viewing capabilities enable first responders to view an incident in progress and respond more intelligently. What's more, in conjunction with today's more sophisticated surveillance cameras, video management solutions enable all kinds of remote camera control – such as pan, tilt and zoom – with keyboard, mouse or joystick. Some solutions even allow security operators to quickly review captured video from a number of cameras while cameras continue to record and stream real-time footage of an incident. This can be vitally important when investigating something such as a shooting incident in progress.

Superior image quality and situational awareness

In response to the growing popularity of IP video surveillance systems, many surveillance camera manufacturers now devote most of their research and development to IP network (digital) cameras. The result is an enormous variety of IP network cameras at outstanding values. This includes everything from 360-degree megapixel cameras providing ultra-sharp images to tiny wireless cameras for covert operations (such as investigating vending machine vandalism and theft). Schools can even purchase high-performance multi-sensor cameras (e.g., 8 megapixel quad-sensor 180° and 360° panoramic cameras) that can reduce cost per unit area under surveillance by covering more area with fewer cameras. Also available from some camera manufacturers are automatic PTZ (pan/tilt/zoom) tracking cameras that keep a moving target in sight and focus to provide numerous identification and information-gathering opportunities.



Automatic PTZ tracking cameras keep a moving object in sight.

Delivering even more value, IP network cameras enable easy use of a revolutionary new capability in video surveillance: situational awareness. Moving beyond simple motion detection with all its limitations and false alarms, advanced software using video analytics analyzes digitized video from cameras to detect, recognize and analyze objects and events. Also referred to as video intelligence and video content analysis, video analytics can identify a variety of different types of behaviors, actions and objects:

- People loitering in a particular area for example outside a dorm
- An object left behind in a campus courtyard, student union, administration lobby, etc.
- Illegal parking in a restricted area, for example, a truck loading zone
- People gathering into a crowd
- The number of people entering and leaving buildings (people counting)
- License plates of cars (a great way for monitoring parking lots and automating entry)
- “Tailgating” into a parking area (i.e., two cars for one gate entry)
- Unauthorized movement in a restricted area or time period

Video analytics addresses a major limitation of older video surveillance solutions – they were only as good as the people watching the monitors. Research shows that although nothing is more accurate than a trained human eye, a human observer's effectiveness degrades quickly after short periods of time and as the number of cameras increase. In fact, attention can degenerate to well below acceptable levels often in just 20 minutes of watching monitors.[2] *Software, on the other hand, never tires.* Software is always watching, always analyzing, always ready to sound an alarm or send an alert. Some solutions integrate multiple video analytics systems (both server- and camera-based) under a single, easy-to-use interface to correlate alerts from different systems to reduce false alerts and give security the best intelligence of a potential incident.

Better image quality

Along with more innovation in IP network cameras, there's improved quality in the imaging. IP network cameras can provide up to 16 times the resolution of traditional analog cameras. A great deal of this higher quality results from how the images are created. Analog images are composed of lines, and each image is formed from two interlaced fields. Unfortunately, this means that images become blurry when there's a lot of movement. Many IP network cameras, on the other hand, use digital pixel image sampling to ensure an entire image is captured moment to moment. They provide crystal clear images even when there's a high degree of motion. This increases the utility of the video as evidence (resulting in higher conviction rates) and for situational awareness.

General Surveillance | Forensic Detail | High Detail

Images courtesy of IQInvision

As IP network cameras continue to improve, the gap in image quality will continue to widen. Already IP network cameras are capable of providing rich enough detail to allow reading the numbers on a license plate or a person's badge. Guernsey College of Further

[2] "The Appropriate and Effective Use of Security Technologies in U.S. Schools," Mary W. Green, Sandia National Laboratories, September 1999

Education (UK) moved to an IP network camera solution that quickly showed its worth by providing superb images of a bike theft. Using the images, police caught the offender.

Superior zooming

PTZ IP network cameras offer great user control and the superior digital zooming to see details more clearly. Staff can remotely control individual cameras and zoom in on an activity. Zoom capabilities on some cameras enable reading the label of a cigarette pack in someone's pocket from as far away as 1,000 feet.

Real-time video intelligence

Video analytics technology has significantly advanced over the past few years, improving its ability to provide real-time intelligence. Today's video analytics software can provide alerts of suspicious actions, such as a person abandoning a bag or backpack – a possible bomb threat. Video analytics software can count people or detect if they are grouping too tightly together, an action that might indicate a fight or gang activity. More advanced programs actually learn normal human patterns in a location such as a classroom or hall and can highlight and log behaviors of individuals who act or move in unusual ways. Mike McCormack, campus service manager at the University of East Anglia in the U.K., notes that "instead of my guards sitting and viewing screens all day, looking for suspicious behavior, the new system does this for them …This means that more of my security staff can be out on patrol and targeting the areas where these incidents occur."[3]

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Conserving bandwidth

Video analytics, particularly when installed at or near the camera (the edge of the network) can often provide both greater accuracy and bandwidth savings. The greater accuracy comes from edge-based analytics devices receiving and analyzing pre-compressed, high quality images. The bandwidth savings come from not having to send video across the network until truely suspicious or noteworthy behaviors are detected. The transmission of high frame rates and high resolution streams can be set up to only occur during incidents. This is one way bandwidth and disk space can be conserved during the long periods of time when nothing interesting happens.

[3] As quoted in "Axis Helps University of East Anglia Realize IP-Surveillance Vision," a case study by camera manufacturer Axis Communications.

Open platform versus proprietary DVR/NVR solutions

The days of recording surveillance video on video tape are over. Many colleges, universities and schools already partly connect analog cameras to DVR and NVR systems for digitizing and recording. In many cases, these DVRs/NVRs are then connected to a network switch so their feeds can be viewed through a PC connected to a local area network (LAN).

Unfortunately, this solution has many limitations. Most of these systems are proprietary (non-standard) setups that lock a school into a single company's solution.[4] Proprietary DVR/NVR systems limit choices and price competition for software, hardware, add-ons, support, and replacement parts – even components as simple as hard drives. What's more, proprietary DVR solutions require cameras to be added in multiples of eight. This makes it expensive when all that's needed is a few more cameras. When such a system reaches its end of life and needs to be updated, it will most likely mean a "forklift upgrade." Instead of being able to just replace components, the entire system (software and hardware) will need to be replaced to get next generation features and performance.

For this reason, the best solutions are open platforms. An open platform is a software system with published external programming interfaces that enable its use – without modification to the source code – in ways beyond what the original programmers intended or imagined. Open platforms allow other companies and developers to develop products that add additional functionality and versatility to a solution such as IP video surveillance. These solutions then enable the platform to meet more specialized needs and serve a wider variety of purposes. Open platforms also enable selection of the best combination of hardware and software for a budget – and add and replace components as needed or desired.

Earlier in this paper we stressed the importance of selecting an open platform IP video surveillance solution supported by a strong ecosystem of hardware and software vendors. This allows users to take full advantage of the cost-savings and new capabilities IP video surveillance technology provides.

Based on ecosystem and market acceptance, the industry's leading open platform IP video surveillance solution is demonstrably the Milestone Systems XProtect™ line of products. This software platform was designed from the start to introduce the advantages of an open platform for video surveillance. According to John Blem, chief technology officer and co-

[4] Note: Proprietary DVR/NVR systems are not to be confused with DVR and NVR units designed to work as components with open platforms.

founder of Milestone Systems, the company's XProtect products were envisioned to decouple software from hardware so customers can choose the best combinations of products to meet their needs. In fact, the company goes much farther than most other offerings:

- Unlimited integration capabilities through extensive Application Programming Interfaces (APIs)
- Well documented software development kits (SDKs)
- Continual upgrades and expansions to the SDK
- Training of third-party programmers
- Project consulting and engineering for customized or comprehensive integrations

An open platform IP video management system like Milestone XProtect could be the last video management solution a school or institution needs to buy. It will grow and evolve with a school's needs. In fact, Milestone is viewed as one of the few open platform companies in the industry that actually "walks the talk" by following through on all the factors stated above that make an open platform a solid foundation for integration and expansion.

Frank Yeh, senior security architect at IBM Global Technology Services, says: "My experience with the Milestone SDK has been very positive. The solution is flexible and extremely easy to use. We are able to use our preferred development environments and operate on platforms that some other vendors do not support. In addition, remote support was top notch and our requests for enhancements to SDK components were turned around quickly."

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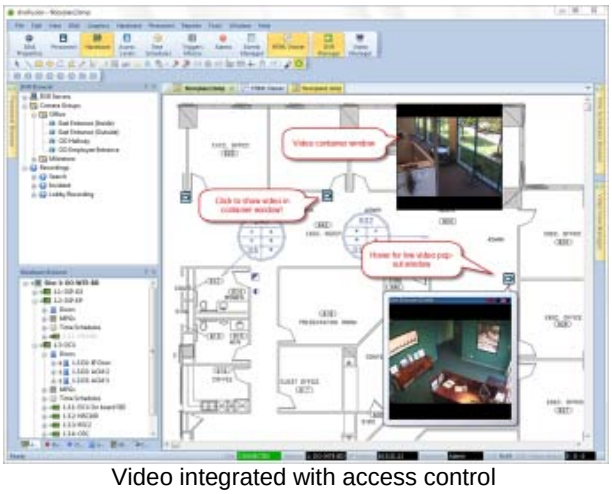
Advantages of an open platform IP video management solution

1. **Hardware and software independence.** Open platform IP video surveillance solutions provide the freedom of choice to use best-of-breed components from a wide range of manufacturers, not just one. This creates real value, enabling an IT department or system integrator to build a solution that truly meets an institution's needs at an affordable cost. Milestone XProtect, for instance, with its extensive ecosystem of partners, opens up an enormous marketplace of choices. This includes the best products and prices to implement a video surveillance system

now, as well as each time it becomes necessary to change or expand it. Such choice lowers total cost of ownership (TCO) and provides greater flexibility in meeting evolving security or other surveillance needs. Since Milestone XProtect is designed to work with common IP networking products, it enables the purchase of commercial off-the-shelf (COTS) products for system components. This provides significant cost savings on such items as servers, switches, routers, backup power supplies, etc.

2. **Future proofing.** True open platforms, particularly those backed by a large partner ecosystem and strong ongoing support for external hardware and software solutions, enable an institution to continuously take advantage of new advances as they become available. This "future proofs" a solution. For video surveillance, that means being able to add new cameras with advanced capabilities the industry can't even anticipate today. It means being able to adopt new storage solutions, video analytics software, client options, and other innovations, as they become available. It also means that instead of being dependent on one company's product roadmap, a school can take advantage of an entire industry's innovation. That will enable keeping up with the speed of innovation no matter who drives it – a real concern right now in the IP video surveillance industry as the number of vendors and products continues to grow. With an open platform, a school, college or university will be able to continually keep its options open for the best deal, the latest innovations, and the greatest return on investment over time.
3. **Easier integration with other security devices**. An open platform IP video surveillance management solution like Milestone XProtect can do much more than video management. It's really an operating system for security solutions. Its functionality can be extended through third-party solutions just as one might add software applications and additional hardware for a computer's operating system to run. Open platforms make it much easier to integrate with other security elements like access card systems, lighting, gates and doors. Since many IP network cameras have digital outputs (I/O), XProtect can be used to program cameras to activate switches upon alarms to close or open doors, turn lights on or off, set off alarms, or other actions. With XProtect and a video analytics solution, for instance, a system can be set up that uses situational awareness to recognize shooting noises and then activate doors that would lock the armed person into a



Video integrated with access control in an administration building.

confined space, such as a hall or room, or lock him out of a building. A system that can recognize a struggle (versus a hug) could be set up to sound an alarm. Many schools and campuses have access control systems, older CCTV systems, and other security devices that they need to integrate and grow with in the future. A good place to start is to integrate them under a single open platform management system so they can be centrally controlled and managed with one interface.

4. **Video enabling.** Today, a momentous shift is occurring in the video surveillance market. IP network cameras are being combined with other applications and systems not just for security purposes, but also to "video enable" a variety of other functions and operations. For instance, surveillance cameras in labs at Georgia Tech's Woodruff School of Mechanical Engineering (U.S.) allow students to access cameras online to determine if labs are too crowded at the moment for them to work on a project. Faculty can log on to determine whether safety procedures are being followed and students are taking proper care of equipment. Many institutions are also taking advantage of video surveillance integrated with point-of-sale systems to help manage and control retail operations on campus.
5. **Scaling and interoperability.** While IP networking makes it easy to connect IP network cameras and other IP video surveillance components, it does not mean "interoperability" or "open platform." "IP camera" simply means the product uses the Internet Protocol (IP) to exchange data. It does not guarantee that two products that are IP-based will "plug and play" and instantly work together. . Many manufacturers of video surveillance hardware (particularly proprietary DVRs and NVRs) encode equipment to only work with their own system or software. They lock you in to their solutions. Such proprietary solutions can make it difficult to scale a video surveillance system to include offerings like access control, intrusion detection, and video analytics from other vendors. They also keep you from being able to buy best-of-breed components at the lowest price. Choosing a true open platform IP video surveillance solution ensures the greatest amount of choice in selecting cameras and other components, and the least amount of trouble in scaling your solution as you add them. An open platform like Milestone XProtect scales to handle any number of cameras, as well as to incorporate virtually all the networking components and third-party integrations you could need. This last point is particularly important because new advances come quickly in the IP world and it's important to be able to take advantage of them.

Integrating IP and analog video surveillance systems

IP video surveillance isn't the wave of the future. It's the state-of-the-art now. That's why no matter how well entrenched a school's operations are with its current analog video surveillance system, there's no time like the present to begin the transition to latest technology by implementing an open platform IP video surveillance solution, particularly since a school can leverage an existing investment by incorporating existing analog equipment (such as analog cameras equipped with video encoders and standard DVRs and NVRs) into a new IP video surveillance system.

> ***"It is one of the biggest advantages in choosing standard solutions over proprietary systems. We can freely pick camera models, just as we have had the freedom to choose the cheapest and best servers."***
> – CEU Kolding vice president Sven Erik Rasmussen and consultant Alex Jorgensen

The key to building this hybrid system is to start with a "future-proof" open solution IP video surveillance solution that allows a school to:

- Incorporate existing hardware elements
- Centralize surveillance operations
- Integrate other security systems such as intruder alarms, access control, and building management systems
- Add new video surveillance technologies and other innovations as they become available
- Continually grow security operations without restriction
- Mix and match best-of-breed COTS hardware and software components
- Add situational awareness (allowing the system to take over the watching)
- Take advantage of the superior imaging of IP network camera technology

In talking about the open platform Milestone XProtect solution used by Denmark business school CEU Kolding, CEU vice president Sven Erik Rasmussen and consultant Alex Jorgensen remark: "It is one of the biggest advantages in choosing standard solutions over proprietary systems. We can freely pick camera models, just as we have had the freedom to choose the cheapest and best servers."

Improving school security through open platform IP video surveillance

Schools, colleges and universities all over the world are realizing the improved cost, freedom of choice, and surveillance advantages of implementing open platform IP video systems. Montgomery County Public Schools in Maryland with 200 sites and facilities, 138,000 students, and over 21,000 employees, is a good example. They switched to an open platform IP video surveillance system after tiring of how fast the equipment for their analog video surveillance system using VCRs broke down. They were able to integrate their alarm monitoring systems for perimeters, boilers, water flow, window breakage, and more, with both access control and video surveillance for all schools on the county's network in one command center.

The chief of police at Southwest Tennessee Community College in Memphis has said of their open platform IP video surveillance system: “I couldn't put a price tag on this system – it's just invaluable to us in our work to serve and protect our campus.” The system was installed on the seven-campus school to help with problems including destruction of property through vandalism and gang graffiti, false fire alarms, disorderly conduct, theft from the buildings and auto theft, stolen books and computers, and vagrants. The school has seen a sharp decrease in vandalism, theft from the offices, auto burglary, and computer thefts. Because the whole system is tied into the school’s fiber optics, there was not a lot of wiring that had to be run. However, there was no network connection to the buildings across the street for the physical plant, nursing school and three big parking lots, so the integrator put in a wireless connection for the surveillance there that saved the cost of installing new fiber optics.

The Center for Education and Business (called CEU Kolding and serving 1,600 students) in Kolding, Denmark had a theft problem and installed an open platform IP video surveillance system. It quickly paid off. In one month, the school was the object of seven robberies at a total value of 250,000 Danish crowns (approximately US $41,500). Simple searching on the digital video recordings showed that the thieves were known locally. The images were immediately sent to the police, who used them to make their arrests.

“We have experienced a 98 percent reduction in school vandalism and theft – combined with an efficient way to accurately identify responsible parties associated with student conflicts.”
– Mike Vincelli, Director of Information Technology, Shasta Union School District

After installing an open platform IP video surveillance system that covers four schools, Mike Vincelli, Director of Information Technology at Shasta Union School District in California (6,000 students and over 540 staff), said: “We have experienced a 98 percent reduction in school vandalism and theft – combined with an efficient way to accurately identify responsible parties associated with student conflicts.”

Unified School District 475 (6,300 students; 1,300 staff) near Fort Riley in Junction City, Kansas, found excellent payback in several ways for their investment in an open platform IP video surveillance. There was a significant drop in vandalism from the preventative effect of surveillance. There was a significant operational time savings from not having to go through video tapes anymore to find evidence. And they were able to incorporate existing analog cameras into the IP system and preserve their investment.

Conclusion

Crime and other threats to student and faculty safety may be the reality in today's world, but open platform IP video technology is dramatically increasing the capabilities and value of video surveillance to help make schools, colleges and universities safer. The time is now to look beyond traditional analog systems and explore the many advantages of open platform IP video technology. The benefits include everything from the ability to contain costs through freedom of choice in hardware and software components to the avoidance of equipment obsolescence through the future proofing that comes from an open platform with a well-established ecosystem of partners. Schools of all types and sizes stand to see lower total cost of ownership, greater effectiveness, and more opportunities for integrations by choosing a genuine open platform IP based video surveillance solution.

In this white paper, we've provided an overview of what's possible with open platform IP video surveillance. The years ahead are sure to bring even more dramatic cost advantages, performance improvements and new capabilities to be gained, such as new IP camera features and improved video analytics software. One of the biggest advantages from the administrative point of view will come from continuing to centralize the management and control of security systems. Educational facilities will increasingly have comprehensive video surveillance integrated with access control and other building management systems, all centrally managed and controlled through an open platform solution. Such systems will enable faster, more informed decisions and better coordinated responses that can save the lives of students, faculty and emergency response personnel.

Case Study: Integrated Security System at University of Illinois

The Challenge

A 42,000-student university like the University of Illinois at Urbana-Champaign has a lot of assets to protect and sees its share of thefts and classroom problems, including written threats of shootings. Consequently, the university needs cameras for everything from crowd control to monitoring vulnerable areas. The ability to immediately deploy cameras in hotspots is critical. Although the university had cameras, the number and type of video and security systems across the campus were unknown and decentralized. This limited the ability of campus police to monitor and investigate.

The Solution

Screen capture from iPhone showing remote interface and camera views.

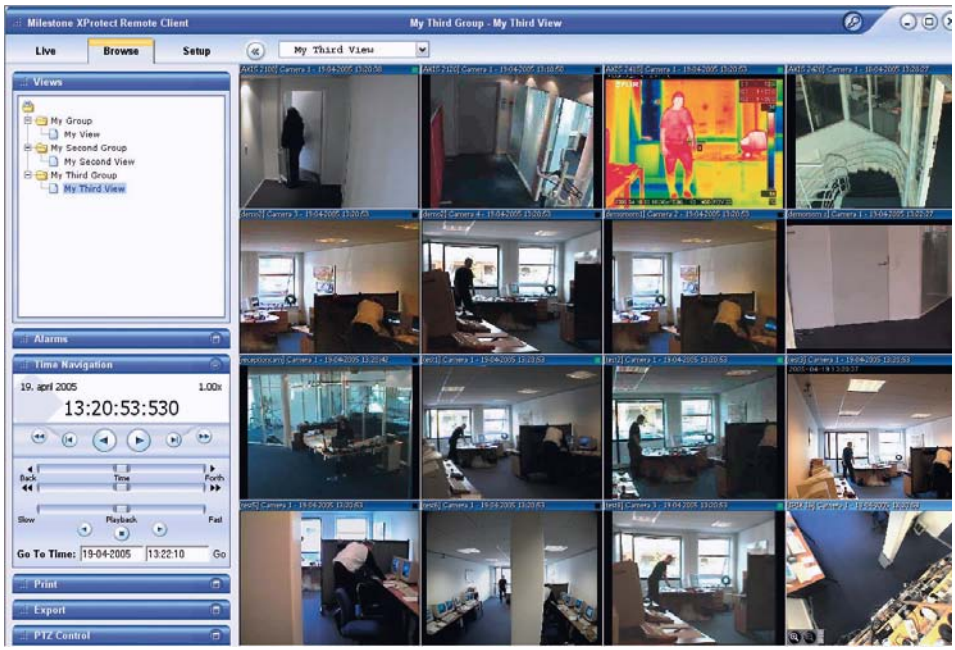
The University's approach is to use the open platform IP video management solution Milestone XProtect to integrate existing analog and new IP network cameras, security alarms, and a card access system. This solution will include a wireless mesh network on streets and remote access capabilities via laptops in police cards and iPhones. Campus Police Chief Barbara O'Connor comments: "One of the things I've learned about Milestone is that it's very versatile. An end user can choose different cameras and connect them to the system, so it's very easy to convert an old analog system to Milestone. Then the software itself is very easy for the dispatchers and police officers to look at current or archived video."

The Advantages

One advantage already discovered is the ease of adding a camera to the network to monitor a new problem area. In one incident, a camera was placed to monitor a Native American sign that was continually vandalized. The camera caught a student stealing the sign and after the footage was circulated to students and staff, the guilty party returned the sign. Commenting on the new system going in, O'Connor said: "We're using a system with wireless feed coming into the Milestone software so that by the end of the day a dispatcher

or a police officer will not necessarily know if it is a wireless or hard-wired camera. They just know they have access to the data and can use it to help solve crimes."

Overall, the University saw a number of immediate advantages to using Milestone XProtect video management software as its open platform.



Screen capture from Milestone XProtect Smart Client showing camera views.

- **Flexibility** – Cameras could be easily moved and configured. Different IP cameras (not just those from a single camera manufacturer) could be used in various areas.
- **ROI** – Within two weeks the surveillance delivered its first return by stopping a high visibility act of vandalism.
- **Integration** – Milestone XProtect readily integrated with the existing access control system.
- **Value** – With Milestone XProtect, the University was able to leverage its existing investment in IT infrastructure and analog cameras.

About Milestone Systems

Founded in 1998, Milestone Systems is the global industry leader in true 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-of-breed solutions to 'video enable' organizations – reducing costs, optimizing processes, protecting people and assets. Milestone software is sold through authorized and certified partners. For more information please visit **www.milestonesys.com**

Milestone Systems Headquarters, DK

Tel: +45 88 300 300

Milestone Systems US

Tel: +1 503 350 1100