A Higher Degree of Protection for Schools: IP Video Surveillance

A guide to the advantages of IP video surveillance technology for schools and colleges.

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Introduction

Schools and colleges should be safe havens for education. Unfortunately, like every other part of society, they suffer their share of crime and violence. News events like the shootings at Columbine High School and Virginia Tech, and local school crimes in many communities, have parents, students, teachers and administrators looking for an extra degree of security. For colleges, it is a category in which they are rated and compared by prospective students and parents.

Providing physical protection can be difficult and expensive throughout a school system or college campus. Preferring to devote their budget to enhancing education rather than security, most educators look for maximum value in every security purchase. Two important components contributing to this value are the ability to help prevent crime and help maintain a low-crime record. Since video surveillance systems help deter crime by signaling people that they're being watched and evidence is being collected against them, they are of high interest to educators.

This paper will introduce administrators and school security managers to IP (networked) video surveillance systems. It explains how these systems improve the quality of video surveillance, providing many advantages over analog video systems, while at the same time being more cost effective for tight school budgets.

Authors:

Eric Fullerton, President, Milestone Systems Inc., the world's leading developer[1] of open platform IP video management software.

Lars Thinggaard, President & CEO, Milestone Systems A/S.

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[1] Source: "The EMEA and World Markets for CCTV and Video Surveillance Equipment" IMS Research reports from 2004 & 2005 (published 2006).

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The Need for Greater Security in Schools

Non-violent and violent crime continue to be prevalent in many educational institutions around the world, signaling the need for more security. In the United States, for example, a substantial number of students experience some type of violence and related consequences in their college career. One U.S. study found that approximately 17 percent of students reported experiencing violence or harassment in the previous year.[2]

Institutions that do not have adequate campus-wide surveillance face a good chance of seeing their attendance and tuition fall as parents and college-rating services use campus security as one of the criteria to rate colleges. In 1990 Congress acted to ensure that institutions of higher education provide students and parents accurate information about campus crime through the Student Right to Know and Campus Security Act of 1990 (the "Clery Act"). Schools are required to annually disclose information about crime, including specific sexual crime categories, in and around campus. An amendment requires schools to develop prevention policies.

Pre-kindergarten to Grade 12

Violent and nonviolent crime is also commonplace in primary and secondary schools. U.S. Department of Education data on fatal victimizations show U.S. youth ages 5–18 were victims of 28 school-associated violent deaths from July 1, 2004, through June 30, 2005. In 2004, U.S. students ages 12–18 were victims of about 1.4 million nonfatal crimes at school, including about 863,000 thefts and 583,000 violent crimes—107,000 of which were serious violent crimes (rape, sexual assault, robbery, and aggravated assault). These U.S. Department of Education figures add up to victimization rates of 33 thefts and 22 violent crimes (including four serious violent crimes) per 1,000 students at school.

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

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The Importance of Video Surveillance in Education Settings

School systems and colleges cannot afford security forces large enough to watch thousands of students and monitor multiple buildings and wings 24 hours a day, seven days a week. Consequently schools and colleges are looking increasingly to video surveillance for assistance.

Nationally almost 20 percent of K-12 public schools use security cameras.[3] According to *The New York Times*, nearly 1,000 new public schools opened in 2002 and 75 percent of them were equipped with surveillance cameras. In College Planning & Management's 11th annual survey (2007) of completed college housing projects, 75 percent of the larger projects included external video surveillance and more than half reported internal video surveillance.

Video surveillance provides many benefits:
- **Stretches security budgets.** Enables coverage of more locations with less security personnel.
- **Deters crime.** The presence of a "watching eye" can stop many would-be criminals in their tracks.
- **Provides forensic evidence.** When students or teachers are brought into a school office and see a video showing them committing an illegal or unacceptable act, they will usually admit to the incident. If the incident requires legal action, a recorded video can be invaluable in securing a conviction and may help avoid a lengthy and expensive trial.
- **Catches people in the act.** Enables faster response to crimes, emergencies and other situations by catching it as it happens.
- **Provides a greater sense of security.** Students, parents and faculty feel safer when doing everything from remaining in buildings after class hours to using parking lots.
- **Demonstrates investment in a secure campus environment.** Whenever a violent crime at a school makes national news, parents immediately start thinking of the safety of the institutions they are considering for their children or their children are attending. Being able to assure parents you provide a secure environment is a strong marketing advantage and becoming a necessary standard in public education. Colleges, in particular, that fail to take measures to secure their campus will gradually see reduced enrollment and a loss of reputation.
- **Supplies solid documentation.** Surveillance videos provide excellent protection against fraudulent liability claims, ensuring that testimony regarding an incident does not consist solely of hearsay.

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[3] National Center for Education Statistics Indicators of School Crime and Safety 2005 Report.

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A Better Idea: IP Video Surveillance

While video surveillance has been around for decades, the way the videos are captured and stored has undergone a major revolution in recent years. Most people are familiar with the older analog video surveillance systems, also known as closed-circuit television (CCTV). The trouble is, these systems require dedicated security staff to constantly view live video in a room full of monitors. They also require schools to wire their buildings at a significant cost with coaxial cables. There are other issues as well. CCTV video quality is generally poor. The video is recorded on VCRs that require tape changes every few hours. And it can take hours to wade through footage to find evidence of a particular incident.

For a better solution, school systems and colleges are turning to IP video surveillance. These systems connect to your local area network (LAN) or wireless network. Video is saved in on-camera buffers, digital video recorders (DVRs) or directly onto computer servers. If a crime occurs, archived video can be quickly and easily searched by date and location.

One of the most remarkable things about IP video surveillance is the *intelligence* of the cameras. Video analytics enables them to be programmed to recognize certain types of activities and issue alerts to security staff. For instance, Johns Hopkins University is using a system that will alert a security officer if it detects someone climbing up a fence, walking down an alley late at night, or lingering by a windowsill. Some systems can even identify whether a person is carrying a gun or has abandoned a package or briefcase (a potential bomb scenario). Other video analytics include suspicious parking lot behavior, such as loitering and moving from car to car.

Overall, IP video surveillance brings many new benefits and capabilities to campus video surveillance. These include everything from easier operation, less expensive installation and better image quality to automation and improved cost effectiveness. What's more, by installing or transitioning to IP video surveillance, schools and colleges can both significantly improve their security operations and assure students, parents and teachers that appropriate measures are in place to ensure their safety.

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Reducing video surveillance installation costs with IP networking

One big advantage of IP video surveillance systems is that they are easier and less expensive to install. They use IP network cameras that can be connected to a LAN just like any other network device.

Here are some of the many other reasons they're ideal for setting up video surveillance.

- Cameras can be connected and powered by Power over Ethernet (PoE), a technology that enables power to be provided to a camera using the same cable used for network connection. PoE eliminates the need for power outlets at the camera locations and enables easier application of uninterruptible power supplies (UPS) to ensure 24 hours a day, 7 days a week operation.
- Multiple cameras can use the same cable.
- Changing camera placement is simple—just remove and plug into another network jack somewhere else.
- Cameras can be placed almost anywhere using cost-efficient standard wireless technologies such as IEEE 802.11b.
- Live video can be accessed via desktop computer, laptop, PDA and even cellular phone.
- IP video surveillance systems scale easily from one to thousands of cameras in increments of a single camera.

Already have an analog CCTV system? No problem. Many analog (CCTV) video surveillance users take a staged approach to their transition to IP video surveillance. They run hybrid digital-analog systems while they wait for their analog systems to reach their natural "end of life." This is easy to do with a comprehensive IP surveillance software platform like Milestone Systems' XProtect™ that can integrate digitized video from analog cameras. You simply add video digitizers to your analog cameras.

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IP networking advantages

Most school systems and campuses already have the in-house expertise they need to take advantage of an IP video surveillance system. Since cameras have IP addresses just like any other network device and can be controlled centrally via software, your Information Technology (IT) department has the necessary know-how for installing, maintaining and managing the system. What's more, the system can leverage existing network infrastructure such as servers, switches and cabling. In fact, since schools often have more money for network infrastructure than security, you can leverage regular IT expansion with security applications to save money and simplify control.

One big saving you can look forward to is the elimination of the need for a control room at each location. IP networking enables you to centralize monitoring functions for many locations to a single control room. Live camera feeds can be accessed over the Internet from any location, making it easy to check out an alert or event from any computer, laptop or other device with a wired or wireless Internet connection. (Management software enables you to control access to surveillance videos for authorized personnel only.) Fast search and retrieval capabilities allow you to find, view and review video faster.

Here are some other networking advantages to consider.

Future Proofing

IP video surveillance systems "future proof" your video surveillance operations. They use interoperable (open platform) components, so you are never locked into a proprietary system and pricing. With IP video surveillance, you have freedom of choice in hardware, software, and other components. This assures you of getting the best value and being able to select equipment from different suppliers based on your needs.

Easy Integration with Other Security Devices

IP network cameras make it easy to integrate with other security equipment like access card systems, lighting, gates and doors. IP network cameras have digital outputs (I/O) that enable cameras, upon alarm or other cue, to activate switches to close or open doors, turn lights on or off, set off alarms, or other actions. For instance, a camera that through video analytics can recognize a gun could activate doors that would lock the armed person into a confined space, such as a hall or room, or lock him or her out of a building. A camera that can recognize a struggle (versus a hug) could 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 bringing them all on the network so they can be centrally controlled and managed.

Better Video Quality and Other Value-added Camera Features

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Being digital, IP network cameras provide up to 16 times the resolution of traditional analog cameras. IP network cameras also cover a larger area and provide superior digital zoom capabilities, providing rich detail (such as facial features or the numbers on a license plate) rather than blurry, hard-to-read images. In fact, IP video surveillance systems providing facial recognition capabilities can be used with access control systems (such as card readers) to ensure positive identification.

Programmable intelligence at the camera level can include detection of motion, directional motion, abandoned objects, object removal, human presence, camera tampering and identification. This intelligence provides early alerts to situations needing attention from security or other personnel. IP network cameras are also often equipped with image buffers to save and send video collected before and after an alarm occurred. Pan/tilt/zoom (PTZ) controls allow a viewer of live action to zero in on areas of interest.

One thing to note: Innovation in camera technology is directed almost totally on IP network/digital cameras. Analog camera technology is on its way out. Consequently, manufacturers today are devoting most of their energy on developing advanced digital camera features. This means buyers of IP network cameras will see even greater quality and advancements in the future.

Excellent Return on Investment (ROI)

The Huntsville School District in Alabama provides a good example of how cost effective IP video surveillance can be. This school district installed an active wireless camera surveillance system in over 40 schools to combat campus burglaries and other crime. Personnel at a centralized security facility now monitor images from all the school locations. In the five years prior to the installation, the school district lost $6 million to theft, fire and vandalism. Since 1995, these types of losses have nearly disappeared and the district's insurance premiums have yielded a $700,000 savings. The district also reports a positive impact on students. They now have a greater sense of security than they had before the installation of the cameras.[4]

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[4] Nieto, Marcus, *"Public Video Surveillance: Is It an Effective Crime Prevention Tool?* California Research Bureau, June 1997.

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The place to start

If your campus, school system, or school is ready to invest in an IP video surveillance system, the place to start is with the video surveillance management software. It is the single most important component because it is the interface through which you connect, share and manage all the cameras and other devices connected to your video surveillance system.

The usual purchase channel is through a systems integrator or security dealer. You will want to get your IT department involved in the purchase process since they will be responsible for installing, integrating and maintaining the system.

If you already have an existing analog video surveillance system, you can begin to reap the benefits of IP video surveillance by turning your system into a hybrid solution. The ability of IP video surveillance management systems such as Milestone Systems' XProtect to integrate video from both analog and digital cameras enables you to manage all your surveillance operations with a single solution.

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Case study: Southwest Tennessee Community College cuts crime

1. The Challenge

This community college has a total of 14,000 students spread over seven campuses. One location is integrated with a high school. The campus police force uses 42 officers working three shifts round the clock. Problems range from vandalism and gang graffiti to false fire alarms, disorderly conduct, theft, and community vagrants. A merger with another school included a decrepit videotape surveillance system.

2. The Solution

With both the school's president and vice president strongly security conscious, support for a new IP video surveillance system came right from the top. Security integrator Dynamark Security designed and installed a video surveillance system using Milestone XProtect IP video surveillance software and 105 cameras, including 75 PTZ models. Another 87 cameras are slated for the future.

Cameras are monitored from a single location by a single officer who acts as a dispatcher. According to Campus Police Chief Leo Brown, the PTZ feature works so well, a viewer can zoom in on people in a parking lot two blocks away and see a Marlboro pack in a person's hand. Chief Brown can also view live video from his home should an incident arise.

3. The Advantages

The system is tied into the school's fiber optics, so not a lot of wiring was required. Wireless connections were used in places, such as parking lots, where there were no network connections. The IP approach makes it easy to add more cameras easily anytime, anywhere.

The system is excellent for catching perpetrators and making them admit their crimes. Fire alarms have been pulled seven times as pranks since the installation of the system and campus police have caught the perpetrators every time.

The system is also proving an excellent deterrent. According to Chief Brown, word gets around. "Since putting in the Milestone system this summer … we've seen a drastic drop in crime and can report that the surveillance is a huge deterrent. This saves a lot of money that the school can use in better ways to improve the educational environment.

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Case study: Kansas school district protects students, staff and property

1. The Challenge

Unified School District (USD) 475 is located nearly Fort Riley, a military post that provides a transient and growing student population. The reorganization of international military posts after the Iraq invasion was projected to grow the post's population from 11,000 to 20,000 troops, many with family and children, over three years. With the

school population projected to double, the school district wanted to add protection against vandalism, theft, and other student misbehavior typical for high schools. The school district has 230 acres of grounds and 1.2 million square feet of facilities spread over 22 buildings and 18 sites.

2. The Solution

Security integrator ISG Technology installed Milestone XProtect Enterprise IP video surveillance software, Axis network cameras, and Axis video servers to incorporate existing analog cameras into the new IP video surveillance system. Central monitoring control was installed in the school district's administrative offices. School resource officers also have access to the system for fast response to incidences and exporting evidence. According to Larry Schmidt, director of business operations at USD 475, he can "view any of the cameras in any building at any server throughout our wide area network (WAN)."

3. The Advantages

Dr. F. Miller, principal of one of the USD middle schools says, "It's been like moving from the Dark Ages to the 21st Century." Schmidt explains that instead of having to go through a whole tape for evidence, "We can now just go straight to the event in the software and burn it on a DVD for the police or save it on a memory stick."
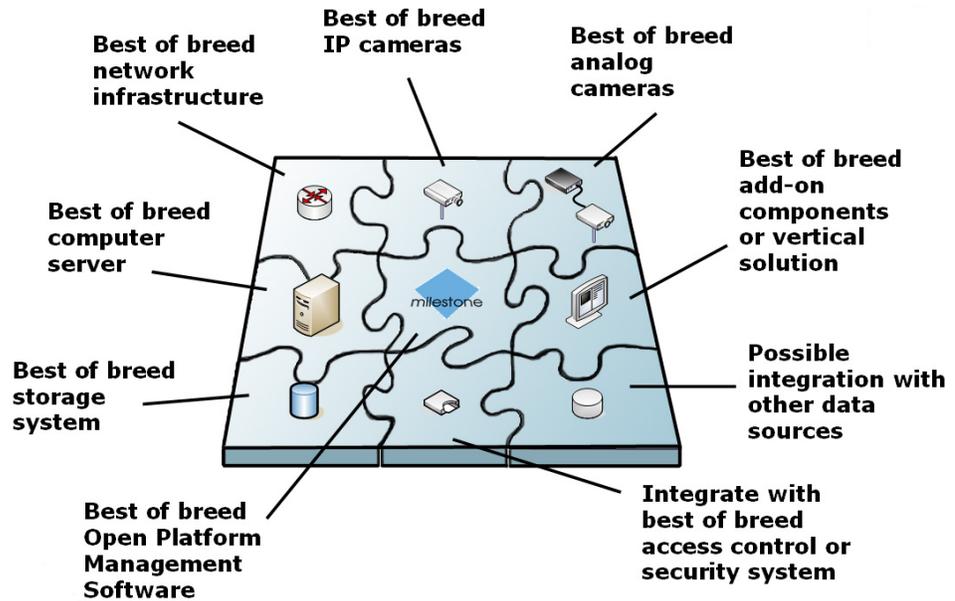
A good example occurred just after an Open House where a band instructor displayed new musical equipment. That night, a set of drums and electric guitar were stolen. Using the Milestone software, a sequence of images was found that showed the thieves climbing up a gas pipe and then using a stairwell to carry out the instruments. The equipment was recovered in a week.

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Milestone Systems

Market leader. Milestone Systems is the global market leader in open platform IP video management software. Milestone's XProtect products operate as the core of your surveillance systems: connecting, sharing and managing all devices through a single interface that is easy to learn and operate.

Easy to use. The XProtect platform is easy to use, proven in operation and scales to support unlimited devices. XProtect products support the widest choice of network video hardware and are designed with an Application Programming Interface (API) that integrates seamlessly with other manufacturers' systems.
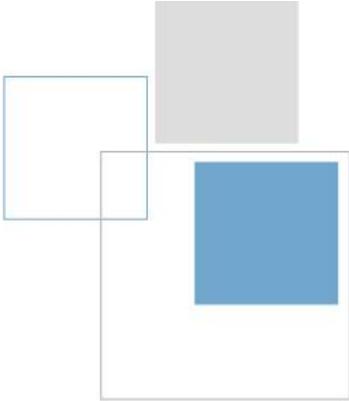
Best-of-breed. Using XProtect, you can build scalable, "best of breed" solutions to reduce cost, optimize processes, protect assets and ultimately increase value in your company's products and services.

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Milestone Systems is the industry leader in developing true open platform IP video management software. The XProtect™ platform gives users a powerful surveillance solution that is easy to manage, reliable and proven in more than 35,000 customer installations worldwide.

With support for the industry's widest choice in network hardware and integration with other systems, XProtect provides best-of-breed solutions to "video enable" organizations – reducing costs, optimizing processes, and protecting assets.

Milestone software is sold through authorized partners in approximately 90 countries.

Office Locations:

Milestone Systems Inc.
8905 SW Nimbus Avenue, Beaverton, OR 97008, United States
Tel: +1 (503) 350 1100

Milestone Systems A/S (Headquarters)
Banemarksvej 50, 2605 Brøndby, Denmark
Tel: +45 88 300 300

Milestone Systems DE
Am Kleefeld 6a, D-83527 Haag i.OB., Germany
Tel: +49 (0) 8072 442173

Milestone Systems Italy
Via Paisiello,110, 20092 Cinisello Balsamo, Milano, Italy
Tel: +39 02 6179 508

Milestone Systems UK, Ltd.
118 Codnor Gate, Ripley, Derbyshire DE5 9QW, Great Britain
Tel: +44 (0) 1773 570 709

Milestone Systems France
121 rue d'Aguesseau, 92100 Boulogne-Billancourt, France
Tel: +33 141 03 14 82

Milestone Systems Japan
c/o Royal Danish Embassy, 29-6, Sarugaku-cho, Shibuya-ku, Tokyo 150-0033, Japan
Tel: +81 (0)3 3780 8749

Milestone Systems Pte. Ltd.
30 Robinson Road, 13-03 Robinson towers, Singapore 048456
Tel: +65 6225 2686

Milestone Systems Middle East
P.O, Box 500809, DIC, Building 5 IEB, 6th floor Office 606, Dubai, United Arab Emirates
Tel: +971 50 8827093

Corporate web site: www.milestonesys.com

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