

HIGH SCHOOL Goes High Tech



Jackson High School was equipped with a networked security system, including 48 IP cameras such as the one that views the interior hallway area shown in the inset photo.

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CASE STUDY IN BRIEF

Subject: Jackson High School in Stark County (Ohio)

System: A fully IP-based integrated access and video surveillance system upgrade using network-attached storage with 48 IP cameras and 14 proximity card readers

Installing Company: ProTech Security Inc.

Location: North Canton, Ohio

Years in Business: 29

Recent horrific events have raised awareness like never before of the urgency to make American schools safer and more secure. A recent project by ProTech Security at Jackson High School in Stark County (Ohio) is helping education officials learn the benefits and value of IP-based security.

Schools are intended to be safe, secure havens of educational opportunity for children of all ages. Unfortunately, as we have all seen played out through the media, those hallowed halls and grounds can sometimes become the site of violent incidents that lead to injury and even death. Thus, finding a means to protect and safeguard students, teachers and other authorized individuals has become a focal point for school officials and parents.

In particular, since 9/11, an enormous amount of time, energy and money has been expended within the public sector to reduce the likelihood of violence in public schools. Statistics show these efforts have paid off. For example, in 1998 there were more than 2.7 million criminal acts performed on school property across the nation, but by 2000 that number was more than cut in half to 1.2 million.

Despite this overall decline in campus crime, the magnitude of some of

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the incidents that do occur — such as Columbine and Virginia Tech — is on the rise. And there's no magic wand that can be waived to eliminate such tragedies; even professionally trained campus security personnel can't be everywhere at all times. But with research, planning, hard work and the assistance of modern technology, the odds can at least be balanced in a given learning institution's favor.

As Jackson High School of Stark County (Ohio) discovered, this is where network-based video surveillance and access control systems come into play.

School officials enlisted local integrator ProTech Security to design and install a fully IP-based video, access control and intercom system to look out for its student body. The decision to move away from an existing analog

CCTV system toward cutting-edge security technology was made during the planning stages of a two-year, \$50 million building and renovation project. Find out how the objectives of this project were achieved to perfection.

School Officials Had Taste of IP Video Before Project Began

Jackson Local is comprised of six buildings — four elementary schools, a middle school and a high school. In 2005, Jackson Local School District began a large building renovation project at its high school facility that has effectively increased its size by 50 percent — from 310,000 to 460,000 square feet.

"This is a new addition with two renovations. The new building was Phase 1. Phase 2 started after Christmas 2006 when they moved the students into the new building," says Arthur Morrison, operations manager with ProTech. "Later this summer we'll start Phase 3 to complete the existing building in the fall of 2007."

One of the things that caused Jackson school officials to go with a full IP solution was the fact that traditional analog systems can sometimes fall short in providing clear, concise images.

"There's no denying that we did have trouble identifying students and events with our previous [analog] video system," says Doug Winkler, business manager for Jackson High School. "The IP video system we now have has proven itself capable of providing extremely detailed images that make it easier for us to work with."

Before the renovation project began, the existing portion of the high school was equipped with a CCTV system comprised of 32 analog cameras and two 16-channel DVRs. That system might have simply been expanded with additional cameras rather than replaced had ProTech Security not provided Jackson Local school officials with a taste of what digital IP video can do.

"Instead of installing another DVR and a number of analog cameras to fill the immediate need, we suggested that they take a look at a Mobotix IP camera," says Morrison, who designed the new IP-based system. "We



Greg Coons, service manager with ProTech Security of North Canton, Ohio, and J.J. Lenevier, safety officer with Jackson Township Police Department, discuss the different camera layouts and the possible views available using Milestone software. IP cameras that connect to the head-end using the school's LAN provide the video feed.



An alarm technician with ProTech Security Inc. of North Canton, Ohio, adds the finishing touches to an IP camera installed at Jackson High School in Stark County (Ohio).

started Jackson High School with the Mobotix D10-D-Secure dome series camera and we recorded them to network-attached storage [NAS] they had on the network.”

Many security integrators prefer the NAS solution because it allows data sharing by connected hosts at more than one location. At Jackson Local, video from several school buildings is collected, stored and made available to school officials who have the authority to view it. NAS appliances also deliver the lowest total cost of ownership of any storage approach while offering enterprise-level performance, scalability and data availability.

Capabilities and Benefits of Open Architecture Demonstrated

When it came time for the renovation project in 2005, Jackson Local officials took a serious look at the types of network-based video systems available on the market. As it happened, multiple security firms were asked to demonstrate their approach to video surveillance in a meeting attended by officials representing several institutional concerns in the area. ProTech was one of them.

“Last year, we were approached to give a demonstration of IP video to several schools and hospitals. It came down to two companies, our own and another,” says Morrison. “The other company brought in products, set everything up on a table and talked DVR and PC lingo. My approach was simple. I showed them the world outside the classroom using IP video. All I used was a laptop and a wireless Internet connection to sell it.”

Morrison showed attending officials that the open-architecture approach taken by ProTech results in benefits that far surpass the DVR method commonly used by the other firms that participated.

“The beauty of IP technology and open architecture is that it affords one to be virtually anywhere and yet have full access and control of systems via a secure network connection,” says ProTech Security President Daniel McKimm, a former law enforcement administrator and FBI academy graduate.

In Jackson Local’s situation, the IP method not only provides school officials and ProTech’s technicians with immediate access to critical video information using common computer equipment and software, but it allows law enforcement and other first responders to look inside the school to see what’s going on using the mobile IP network gear already installed in their patrol vehicles using TCP/IP (transfer control protocol/Internet protocol).

“Using my laptop, we ran our PowerPoint™ presentation and logged onto some existing IP cameras; one or two network video recorders [NVRs]; and an S2 Security NetBox, which is an IP-based access control system. I pulled up archived video using Milestone integration software so school officials could see the quality of the digital images,” adds Morrison. “We kept it simple but they all got the idea about what IP can do.”

ProTech Security Propelled by Progressive Thinking

ProTech Security Inc., located in North Canton, Ohio, is an IP-based security and surveillance integration company with a 28-year history of providing advanced security solutions to a range of clients, such as the Jackson High School project. The company realizes 50 percent of its revenues from commercial business, 30 percent from institutional projects and the remainder from residential work. In total, ProTech has 3,500 accounts that it monitors via its two central stations.

ProTech Security Founders Dan McKimm and Dean McKimm have extensive law enforcement experience that has helped the company focus on how to offer a third and missing piece to the physical-logical security convergence puzzle.

“That is how we adapt the physical and logical security into an effective tool for first responders,” says Dan McKimm (Dean left the company for a career in law enforcement in 1984). “Convergence is not complete until we include the law enforcement and entire public safety community in the process. ProTech has accomplished this by adopting IP within our security solution process.”



McKimm



Morrison

ProTech’s forward-looking philosophy distinguishes it from its competitors. The integrator’s design philosophy centers on IP and IT platforms in an open-architecture environment.

“With the evolution of IP technology, we’ve begun to emphasize more convergence of access control and camera surveillance and IT areas,” adds McKimm. “We’ve also committed considerable resources in time and funding to bring some of our key personnel into the IT, digital age. This allows us to translate and speak to IT people at various corporations.”

Operations Manager Art Morrison, who served as chief designer for the integrated, IP-based security system installed at Jackson High School, shares that mentality. His view of the security system of tomorrow includes a heavy dose of IP and the eventual abandonment of traditional analog technology.

“My prediction is that in the next two to five years we’ll be able to tell if it’s an intruder or an authorized user simply using IP cameras with built-in analytical software,” says Morrison. “Without the use of door switches and motion detectors, we’ll be able to detect an intruder using intelligent video. Our system will then call our central monitoring station and one of our operators will notify the police just as they do now, only with an image of the intruder, which will be sent to the police department or mobile unit directly.”

In Morrison’s security system of the future, there will be very few false alarms. That’s because the IP-based, network will be able to tell the good guys from the bad. “Ninety-five percent of alarms that come in are false where someone messed up. In some cases, the user doesn’t even know he’s made a mistake,” says Morrison. “IP-based video with analytics built-in at the edge of the network will filter out most of them.”

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Greg Coon, service manager with ProTech Security of North Canton, Ohio, programs a fully IP-based security system that includes an S2 NetBox access control device using an ordinary LAN connection at Jackson High School.

School's Integrated Security Solution Hinges on Networking

The IP-based integrated security system that ProTech installed at Jackson High School consists of IP cameras, a network-based intercom and an IP-based access control system.

"We currently have 48 cameras and 14 card readers installed at Jackson. We also have a number of other doors equipped with electric locks in the facility to provide access according to a preprogrammed schedule," says Greg Coon, service manager with ProTech. "We also have status switches on the access as well as nonaccess doors so we can generate an alarm message and audible sound from the security PC if someone violates one of them."

The IP cameras ProTech installed also have the ability to identify motion during restricted periods and to report it to the security kiosk. This capability could be utilized at a later time to notify operators at the integrator's dual-redundant central stations of an unauthorized individual during restricted periods. When used in this manner, images can be viewed by the central station as well as law enforcement as they approach the location.

The IP-based intercom is used in real-time to allow the school's safety officer to verify identity and allow or disallow access from a central security command post.

"We also have an intercom located at the student entrance, tied through the phone system, that rings the security desk. The student can be verified using both audio and video, and he can release the door to allow them access if needed," says Coons.

An audio component built into the system integrates with the IP cameras. In this case, the Mobotix IP cameras are equipped with a microphone and speaker that could be used by first responders to listen in as well as see

inside the school building during an incident, such as that which took place recently at Virginia Tech.

"This was critical thinking in the design process and the recommendation we gave to the school," says McKimm. This level of integration is not usually available with analog cameras that operate in an IP environment using A/D conversion.

At this juncture, the mechanics behind the integration of video, intercom and access control is purely manual by nature, but the infrastructure for complete integration during Phase 3 between all three security systems is in place.

"We expect to implement the full integrated capability of our system in Phase 3, or perhaps later," says Morrison. "But the groundwork has been laid and the capability is there once school officials give us the nod."

Computer-Based Video Effectively Integrates Multiple Facilities

Because the entire school system operates over the same wide area network (WAN), the integrated video/access control system brings the entire security network together under one umbrella so officials at any location in the school district can effectively view the high school's video and access data on the network. In addition, school officials as well as the authorities can view these same images and data from anywhere outside the school's WAN using traditional Internet connectivity.

"An open-architecture platform allows us to 'talk' between systems as well as from outside. We live in a world



TCP: t/k

where our children can be exposed to violence at any time and having a system open to local law enforcement makes perfect sense,” contends Morrison. “Today, we are seeing more and more first responders with broadband connections in fire, EMS and police vehicles. They are using CAD [computer automated dispatch] systems with Web-based drawings of the building right to the vehicle. Why not our cameras and access systems?”

These capabilities are being welcomed with open arms by law enforcement across the country, especially in the face of increased demands and responsibilities since 9/11 and often shrinking budgets.

Jackson High School Equipment List

Quantity	Make	Description
1	Dell	Hot spot monitor
1	Dell	Multiview monitor
1	Dell	CPU



2	Dell	Video servers
14	HID	Card readers
48	Mobotix	IP-based dome cameras
1	S2 Security	NetBox main controller
7	S2 Security	NetBox network nodes
1	Viking	Door station intercom
46	N/A	Electric crash-bar door locks
57	N/A	Recessed 3/4-inch magnetic door switches

“With the system that Jackson High School installed, I can monitor activity inside the school building. Because the system stores video I’m also able to visually review the details of an incident to establish responsibility,” says J.J. Lenemier, safety officer with the Jackson Township Police Department. “The intercom allows me to verify the identity of people at the door. Using my PC, I can either grant them access to the building or I can have them come around to the entrance at the security desk where I can better work with them.”



TCP: t/k

System Quickly Proves Its Versatility and Effectiveness

In a network environment, such as that established for the Jackson High School system, it’s much easier and faster to deploy additional card readers and cameras when needed. Not long after the new integrated video system was installed, the school learned the value of an open-architecture approach firsthand.

The school system experienced vandalism at its remote bus garage. ProTech was able to quickly cover the affected areas by adding IP cameras to the new video system. Best of all, this was accomplished without leasing expensive telephone lines or installing additional network resources. Instead, the integrator simply plugged these new IP cameras into the school’s existing LAN/WAN.

“It didn’t take school officials long to find out just how versatile and effective network-based security can be,” says McKimm. “The ability to grow the enterprise in an open, efficient and seamless fashion through this existing network was recognized early on when an immediate need was addressed to deploy cameras within the bus compound to deter and detect acts of vandalism.”

By all accounts, the system deployment has instilled a greater sense of safety for school officials, teachers, school staff, parents and their chil-

dren — even though the students realize they may not be able to get away with past mischief.

“By monitoring our school using video we can better protect our young charges as well as school staff,” says Winkler. “And when students know that there’s video in the facility, they seem to behave themselves better.”

According to Winkler, many Jackson Township residents have expressed approval of the school’s decision to monitor their children using video. “These parents have told us that they appreciate the fact that we’re able to offer a safe environment where their children can learn.” Jackson is one of the first schools in Ohio to go with a fully IP-based security solution.

“It’s a natural progression. Overall, public sentiment is more receptive toward security and surveillance as a viable tool to address crime, misbehavior, verification of action/inaction, deterrence and general resolution of disputed behavior issues,” says McKimm.

During the last phase of Jackson’s renovation and building project, ProTech will install more IP cameras, door contacts and card readers, thus furthering the ability of school officials to monitor and assure the safety of students and staff.

“We look forward to this during the final phase of our building project. The cameras we have now have become an important part of our security efforts as well as our IT infrastructure,” says Winkler. “Now that we’ve seen IP security at work, it would be hard for us to do without it.” ■