A lesson in integrating emergency communications.

Sheridan School District overhauled its security system with Axis cameras, speakers, intercoms, and audio system.

Organization:
Sheridan School District #2

Location:
Englewood, Colorado, USA

Industry segment:
Education

Application:
Safety and security, audio-video integration

Axis partners:
Johnson Controls International, Shooter Detection Systems

Mission

With the rise in metro-area violence spilling onto its campus, the Sheridan School District knew it needed to transform its security landscape. In addition to expanding video surveillance, administrators wanted to replace aging analog speakers and disparate paging systems, implement a more effective mass communication system for emergencies, and install gunfire detection sensors to instantly alert police and staff if an armed assailant entered school property.

Solution

Johnson Controls, a technology integrator and Axis partner, helped Sheridan apply for a CO state grant to fund its ambitious and comprehensive video/access/audio solution. The grant covers new multisensor, panoramic, and fixed dome Axis network cameras; Axis network speakers; 2N two-way intercoms; and a programmable Axis audio system to control a bell schedule and play prerecorded messages or live pages based on specific events.

The Axis network audio bridge and audio management software also integrate the district's Cisco phone system, RF radios, and The Guardian Indoor Active Shooter Detection System into this all-encompassing security solution.

Result

The high-resolution, vandal-proof Axis multidirectional cameras improve surveillance around corners and down corridors, eliminating previous blind spots. If an active shooter triggers the gunshot sensors, AXIS Audio Manager automatically broadcasts a lockdown message to all speakers and intercoms inside the school. It also activates a warning message through exterior speakers that an emergency situation is in progress. The two-way 2N® IP Verso intercoms allow staff and responders to communicate with individual classrooms and hear what's going on.

AXIS
COMMUNICATIONS

Small town school district, big town challenges

Sheridan School District #2 considers itself a small town in a big city. Located in the metro-Denver area of Englewood, Colorado, the district has, unfortunately, faced several incidents of violent crime spilling onto its campuses. While the district passed a bond initiative to address school safety and security, the administration had bigger ambitions than those funds could address.

"We were aggressively looking at ways to implement additional layers of safety and security," says Cyndi Wright, chief operating officer for Sheridan School District #2. A grant writer from Johnson Controls, the school's technology partner, assisted them in applying for a CO state grant that would help them achieve that goal.

"We bundled everything into that grant," says Jo Napoleon, performance infrastructure account executive for Johnson Controls. "We knew Sheridan wanted to integrate a lot of technologies together: intercoms, PA systems, burglar alarms, surveillance cameras, and access control." Napoleon recommended Axis as the vendor for much of the technology since she knew their products could seamlessly integrate with Johnson Controls' access control system.

Building a bigger surveillance footprint

Sheridan initially installed Axis cameras to augment existing cameras in its five schools and transportation operations, maintenance, and administration buildings. "Our first goal was to cover blind spots and areas that weren't being covered particularly well," says Bill Roberts, advanced services and sales manager for Johnson Controls. "Eventually we began replacing specific legacy cameras with Axis cameras because they gave the schools better views or better coverage," reports Roberts.

For example, Johnson Controls swapped out a legacy nine-millimeter camera with a four-sensor, 360-degree field of view Axis multidirectional panoramic camera. "Instead of just looking down at a door, now we can see the door and 270-degrees around the corner of the building," explains Roberts.

With their infrared illumination, Lightfinder technology and forensic wide dynamic range, the Axis cameras can capture sharp images in virtually any lighting condition.

The integrator installed several Axis multisensor panoramic models with 180-degree fields of view in areas where 360-degree visibility wasn't needed. The district also deployed Axis fixed dome cameras, running them in corridor format to monitor school hallways.

When COVID-19 hit, the district had to step up plans to add more cameras to its campuses. "We converted schools from single point of entry to multiple points of entry to maintain social distancing," says Cyndi Wright. "That meant adding more Axis cameras to cover the additional entry points."

Creating a sophisticated communications network

"I think the most important and compelling piece of this project is the audio system," claims Wright. "We've gone from a mix of disconnected paging systems to a fully integrated communications solution that can handle any emergency situation."

From a user's perspective, the system is the epitome of simplicity. If an event occurs, the Axis audio system automatically airs an appropriate recorded message to all the speakers or a specific zone of speakers. Staff can also pick up any school phone or RF radio to broadcast a live message to any speaker in the system. The underlying Axis technology makes it all possible.

Guardian Active Shooter Detection Sensor

Axis network ceiling speaker

2N® IP Verso intercom

The system is also designed to allow for the recording of site-specific familiar voices. "For example, the high school might want to use an authoritative voice of an administrator while the early childhood center might opt for the comforting voice of a teacher," says Napoleon.

The solution uses an Axis network audio bridge to link legacy analog PA speakers and, in one school, an AMX Audio-Visual System, to AXIS Audio Manager at the headend. This allows digital audio signals and messages initiated by the network audio bridge to convert to analog so that they can play through the analog speakers.

AXIS Audio Manager also ties in with The Guardian Indoor Active Shooter Detection System, providing critical communications if an armed assailant enters the campus. Bill Roberts lays out the scenario like this: "If someone fires a weapon within range of a sensor, a relay triggers the access control system to immediately lock down the school. At the same time, the relay triggers the AXIS Audio Manager software to send lockdown messages to all the speakers in the system, automatically overriding any other audio that might be playing at the time. The internal speakers broadcast lockdown procedures to everyone in the building while external speakers tell people not to approach the building because there's an emergency in progress."

According to Roberts, the whole scenario happens in less than three seconds. At the same time, information from the active shooter sensors is being relayed to the local police and sheriff's office pinpointing the exact location of the gun shots. First responders use special key cards to override the lockdown mechanism and enter the building.

In keeping with its layered approach to safety and security, Sheridan also had Johnson Controls install 2N® IP Verso intercoms in each classroom. "Having two-way communication with every classroom helps us exchange critical information in a crisis," explains Roberts. "We can notify the teacher if there's been an emergency event and the teacher can tell us what's happening in their room. And if, for some reason, they can't talk to us, we can still hear what's going on."

Replacing an antiquated bell system
"One of the things we didn't realize when we started this project is that the Axis audio software system is capable of doing bell schedules," says Cyndi Wright. "But once our Axis representative told us about the feature, we jumped right in and said let's make it happen."

Once the decision to replace the antiquated bell system at the high school was made, Johnson Controls turned to Axis Professional Services to work with engineers in Sweden to address the complex, precision programming in the system to maximize and automate the audio solution to Sheridan's operational needs. The tasks included signaling the start of school, the change of classes, lunchtime, and dismissal, as well as creating a separate bell schedule for half-days, holidays, and special events.

"Now we finally have a top-notch, state-of-the-art bell system that actually works," states Wright.

Optimizing speaker volume and placement
Johnson Controls relied on Axis's speaker coverage calculator to advise them on the placement of speakers and the setting of volume levels. "Axis has this great speaker coverage calculator that tells us what the decibel level will be at a certain distance from the speaker," explains Bill Roberts. "So, we can determine how far to space the speakers or whether the decibel level is sufficient to be heard down the hallway and around the corner."

Responsive partners make it happen
"Thanks to Axis and Johnson Controls we've been able to accomplish what we set out to do," says Cyndi Wright. "It's a pretty comprehensive package, but it's one we think every school should explore."

What's next for Sheridan? "We're already starting to think about what more we might want do to make our school district safer," shares Wright. "And we expect that Axis and Johnson Controls will be integral to achieving those next milestones, whatever they might be."

SHOOTER DETECTION SYSTEMS
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About Axis Communications

Axis enables a smarter and safer world by creating network solutions that provide insights for improving security and new ways of doing business. As the industry leader in network video, Axis offers products and services for video surveillance and analytics, access control, intercom and audio systems. Axis has more than 3,800 dedicated employees in over 50 countries and collaborates with partners worldwide to deliver customer solutions. Axis was founded in 1984 and has its headquarters in Lund, Sweden.

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