Urban School District Centralizes Physical Security Systems

Memphis City Schools implemented high-definition IP-based video surveillance cameras and physical access controls.

EXECUTIVE SUMMARY

Memphis City Schools (merging with Shelby County Schools in 2013)

- K-12 Education
- Memphis, Tennessee
- 105,000 Students; 16,000 Employees

CHALLENGE

- Capture high-definition video for incident investigation
- Provide uniform level of security at more than 100 schools
- Minimize total cost of ownership

SOLUTION

- Captured high-quality video with Cisco Video Surveillance High-Definition IP Cameras
- Centrally configured, managed, and monitored cameras with Cisco Video Surveillance Manager
- Centrally managed physical access controls with Cisco Physical Access Control solution

RESULTS

- Increased coverage, quality of coverage, and storage duration
- Helped enable authorized personnel to view real-time or archived video from any browser, anywhere
- Lowered cost of configuration and cabling

Challenge

Memphis City Schools in Tennessee serves 105,000 K-12 students in 205 schools. In 2013, the district will merge with Shelby County Schools, bringing the total population to 150,000 students in 250 schools, the largest school district consolidation in U.S. history. “To protect students, staff, and property, a district this large needs a highly effective physical security solution with centralized management,” says Clarence Taylor, alarm and CCTV technician for Memphis City Schools.

The district’s security department, staffed by more than 90 security officers employed by the district and more than 40 Memphis police officers, uses video surveillance cameras to investigate fights, theft, harassment, and other incidents. But the existing analog video surveillance system provided limited value. For example, video quality often was not good enough to positively identify people, and officers could not zoom in on archived video. The pan-tilt-zoom cameras sometimes failed to capture an incident because they were pointed somewhere else.

Another drawback of the previous system was the time and effort needed to retrieve video. Larger campuses with dozens of cameras needed up to four digital video recorders, and officers sometimes had to review video on all DVRs to find a specific incident. Some DVRs could not be accessed over the network, requiring officers to drive to the school to view the video. “Once we had to spend an entire day retrieving 10 minutes of video pertaining to a

stolen purse," says Jason Boyd, CCTV assistant. What's more, the storage system only had enough capacity for seven days of video, so evidence might be gone by the time the security department was asked to investigate.

Finally, the timestamps from the different schools' systems were not synchronized. When a student reported a harassment incident that occurred at 10:30 a.m., the security department needed hours to locate the video evidence, because the camera had time stamped the incident as 11:20 a.m. "A case brought to court is weaker if the time is under question," says Taylor.

> "The comparison between the Cisco Video Surveillance system and the previous analog system is like day and night. Now administrators and security officers can view real-time or archived video from anywhere, including home, if there is an incident. And multiple people can view video at the same time."
>
> **— Carolyn Jackson, Director of School Security, Memphis City Schools**

Solution

With its new Cisco® Video Surveillance solution, Memphis City Schools captures high-definition video that security personnel and administrators can retrieve from any browser, even from home. In addition, a Cisco Physical Access Control solution centrally manages and logs attempts to enter main school entrance doors. "An IP-based physical security system helps the district get maximum benefit from its network," says Eric Saunders, networking and telecommunications services manager for Memphis City Schools. "Our Cisco network supports voice, Cisco TelePresence systems for videoconferencing, environmental controls, and now our video surveillance cameras and physical access controls."

The district has implemented the Cisco Physical Security solutions at eight schools so far, and will continue adding more schools as budget permits. The federal government E-Rate program helped pay for the Cisco Catalyst® switches that connect the cameras to the district's existing IP network.

Security department personnel installed Cisco Video Surveillance High-Definition IP Cameras in outdoor areas such as parking lots, and Cisco standard-definition IP cameras indoors. Each school has from 8 to more than 100 cameras, providing nearly 100 percent coverage of indoor and outdoor areas. Cisco Video Surveillance Manager collects video from all cameras on campus, and authorized personnel can view real-time and archived video from any web browser.

Centralized storage enables the district to store more video, longer. At a large high school, for example, instead of storing seven days of standard-definition video for 16 cameras, the security team can now store 20 days of high-definition video for 105 cameras, a 18-fold increase. To further minimize storage costs, the district is configuring the Cisco Video Surveillance High-Definition IP Cameras to only capture video after school hours in response to motion.

Results

Support for District Safety Goals

"The Cisco Video Surveillance System is a valuable tool for helping us reduce incidents," says Carolyn Jackson, director of school security. "The high-definition video gives us hard evidence to sort through conflicting statements."

The Cisco Video Surveillance solution aids incident investigation in several ways:

- Capturing high-quality video enables officers and administrators to zoom in on recorded video to see details such as license plates. "The new Cisco cameras help to encourage good behavior, because students know we have the high-quality video we need to identify people," says Taylor. "We can zoom in on both live and recorded video without distortion."
- Timestamps from all cameras are now synchronized, because all cameras connect to the same server. Accurate time stamping aids incident investigation and strengthens cases that go to court.
- Instead of driving to a school to view video, officers and administrators can retrieve video from any browser. "The comparison between the Cisco Video Surveillance system and the previous analog system is like day and night," Jackson says. "Now administrators and officers can view real-time or archived video from anywhere, including home, if there is an incident. And multiple people can view video at the same time."
- The district can store video longer. "Our security officers review archived video to identify patterns so that they can strategically plan coverage in various hotspots," Jackson says.
- If a Cisco Video Surveillance IP Camera stops transmitting, the security department finds out right away, because the district's IT team monitors all devices connected to the IP network. "This prevents situations we've had in the past, where the police department requests video to investigate a vehicle theft, and we discover the camera has not been operating for days," Taylor says. The district IT team monitors the IP video surveillance cameras with the same tools they already uses to monitor our Cisco switches and wireless access points. "Monitoring another type of device alongside the others does not increase our workload," says Saunders.

Low Total Cost of Ownership

Using district personnel to install more than 60 cameras at White Station High School cost $20,000, including overtime, compared to a contractor's fee of $93,000. "Provisioning the cameras with internal resources saved around $1200 a camera and kept jobs in the community," says Taylor. Installing Cisco cameras requires relatively little training because configuration is automated.

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> **— Clarence Taylor, Alarm and CCTV Technician, Memphis City Schools**

Network costs also decreased, because the Ethernet cables used to connect the Cisco Video Surveillance IP Cameras cost 50-75 percent less than coaxial cables and accessories used for analog cameras. Savings amount to more than US$35,000 for the 557 cameras installed to date. In addition, the Cisco cameras receive power over

Ethernet (PoE) from network switches, avoiding the cost of bringing a separate power cable to each of dozens of cameras in each location.

Finally, connecting physical security systems to the district's existing IP network eliminates the overhead of maintaining and managing a separate network. The district's IT department manages the network infrastructure, while the physical security team manages the connection from the cameras and door controllers to the servers.

Next Steps

To provide a uniform level of security for all schools in the district, the security department would like to extend Cisco Physical Security solution to all schools, using E-Rate funding for the underlying Cisco switches. "Implementing the Cisco solution districtwide will give us the coverage we need to protect people and property, the storage capacity we need, and the high image quality to positively identify people," Taylor says.

Another plan is to integrate the Cisco video surveillance and physical access control systems. If an incident occurs after school hours, security personnel will be able to quickly cross-reference door entry with the corresponding video, captured from the camera covering the door. "Instead of reviewing hours of video to see who entered at night, we'll be able to go directly to the relevant video," Taylor says.

Finally, to store video even if the network connection is down, the district is considering installing Cisco Video Surveillance High-Definition IP Cameras with a USB flash drive slot.

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For More Information

To learn more about Cisco Physical Security Systems, visit: http://www.cisco.com/go/physec.

Product List

Physical Security

- Cisco Video Surveillance Manager
- Cisco Video Surveillance 4300 Series High-Definition IP Cameras (outdoors)
- Cisco Video Surveillance 2600 Series Standard-Definition IP Cameras (indoors)
- Cisco Physical Security Multiservice Platform for Video Surveillance
- Cisco Physical Access Control System

Routing and Switching

- Cisco Catalyst 6500, 3750, and 2960S Series Switches

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