Campus Safety: Five Advances in Physical Security for Schools

Physical Safety in a More Complex World

Recent headlines underscore the need for better ways to protect students and staff from threats including armed intruders, abductions, fights, natural disasters, bullying, vandalism, and thefts. Safe and secure campuses are better learning environments. They help attract and retain teachers. And preventing theft and vandalism frees up money for next-generation learning programs.

To help create a safe and secure environment, your school has already taken smart steps such as planning, training staff, and implementing technology, including video surveillance cameras, physical access controls, and paging and radio systems. And yet serious security vulnerabilities persist:[1]

- 43 percent of schools lack a visitor management system
- 39 percent of school video surveillance systems are not integrated with physical access control or communications systems, which means that schools lose the opportunity to more quickly identify and apprehend intruders
- 33 percent have radio systems that cannot interoperate with first responders' radio systems
- 25 percent are not prepared to respond to active shooter incidents

Now you can improve campus safety by taking advantage of five advances in physical security fo schools.

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EXECUTIVE SUMMARY

Assessing the Physical Safety Challenge

The National Center for Education Statistics reported the following physical safety incidents from 2009 to 2010 for students ages 12 to 18:

- 470,000 victims of theft, with 44 percent of schools reporting at least one incident
- 359,000 victims of simple assault and serious violence
- 74 percent of public schools reported at least one violent incident of crime
- 16 percent reported at least one serious violent incident

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[1] Campus Safety Yearbook 2013, http://www.campussafetymagazine.com/files/resources/CampusSafety2013Yearbook.pdf

1—Operate All Physical Security Systems over the District's IP Network

Implementing and managing separate networks for video surveillance, physical access control, and communications increases costs. Proprietary networks also limit your freedom to choose any vendor's cameras and door controllers.

Connecting all physical security solutions to the district's existing IP network lowers network costs. It also helps to improve campus safety and security because your different systems can work together to accelerate incident detection and response. For example, with integrated video surveillance and physical access control systems, you can identify the person who used a stolen access card by viewing video captured at the door. And Cisco® Unified IP Phones in classrooms and offices can serve as easy-to-use security consoles:

- **Lockdowns:** Teachers and staff can press a button on a Cisco Unified IP Phone to lock down a classroom, building, or the entire campus. This helps schools isolate intruders more quickly than they could if lockdowns had to be initiated from a specialized console in the campus safety office.
- **Visitor management:** When a visitor presses a button to request access, a staff member hears an alert and sees real-time video on the Cisco Unified IP Phone's built-in display. After the visitor looks into the video surveillance camera to explain the purpose of the visit, the staff member can press a button on the phone to unlock the door.
- **Panic message:** A teacher who hears alarming noises in the hallway can push a button to send a panic message by email or instant message to predefined personnel, such as the security staff and principal.
- **Partnership with local police:** With Cisco IP Interoperability and Collaboration System (IPICS), first responders, school superintendents, principals, and campus safety teams can join talk groups to collaborate on incident response. They can use any type of radio system, traditional phone, IP phone, smartphone, tablet, or laptop.

2—Invest Once for the District, Not Once for Each School

Traditionally, each school in a district needed its own servers and software to manage its physical security solutions. This led to redundant technology investments and, in some cases, uneven security across schools.

> "To add physical access control in other buildings, we only need to purchase the door gateways that connect the door hardware and badge readers to the network, not an expensive control panel."
>
> **—Steve Young, Chief Technology Officer, Judson Independent School District, Texas**

Cisco physical security solutions scale to manage hundreds of thousands of endpoints, which means you can implement a centralized solution to monitor and manage endpoints throughout the district. The only equipment needed in individual schools is cameras and door controllers. The benefits of a district-wide solution include:

- Uniform level of security for all schools
- Lower capital costs
- Lower staffing requirements because staff can centrally view and manage the system from anywhere, using any device, including iPhones, iPads, and Android devices

3—Lower Data Center Costs with Virtualized Servers

Until recently, the management software for physical security solutions required a physical server. A district with 20 schools, each with video surveillance, physical access control, and unified communications, required at least 60 servers. The proliferation of physical servers strained data center space and power capacity.

You can lower data center costs by operating Cisco Physical Security solutions and Cisco Unified Communications applications as virtual servers on a Cisco Unified Computing System™—the same one you might already use for learning or administrative applications. Multiple virtual applications can operate on the same physical server, lowering space, power, and cooling requirements. Each Cisco Video Surveillance Manager virtual server can support up to 10,000 IP video surveillance cameras.[2]

In addition to reducing costs, virtualization can improve availability. One reason is that the Cisco UCS® has built-in redundancy. To perform maintenance on a Cisco UCS blade server, the district IT team can move the virtual servers to any other available blade server in the system—in minutes.

4—Simplify Large-Scale Camera Deployments with Automated Configuration and Medianet Capabilities

In the past, schools had to hire skilled technicians to configure each camera, which took 30–45 minutes per camera. This meant high costs and lengthy deployment timeframes for districts with hundreds or thousands of cameras. With new Cisco Video Surveillance 6000 Series IP Cameras, configuration is as simple as connecting the camera to the network. Medianet features in the cameras, the Cisco network, and Cisco Video Surveillance automate configuration, so the camera can begin transmitting video just seconds after being connected.

5—Capture the High-Quality Images Needed to Identify People

Only with high-video quality can you positively identify people and see car license plates. New Cisco Video Surveillance 6000 Series IP Cameras are 2.1-megapixel, high-definition cameras that produce video streams in full 1080p resolution. When they detect motion, they can send an alert to the appropriate district personnel. Models are available in box, dome, and bullet form factors with options for indoor or outdoor mounting. Some models have an integrated infrared (IR) illuminator for night-time surveillance.

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[2] Up to 100,000 cameras when combined with Cisco Physical Security Operations Manager (PSOM).

Compare the Old Response to the Modern Response

The Old Response
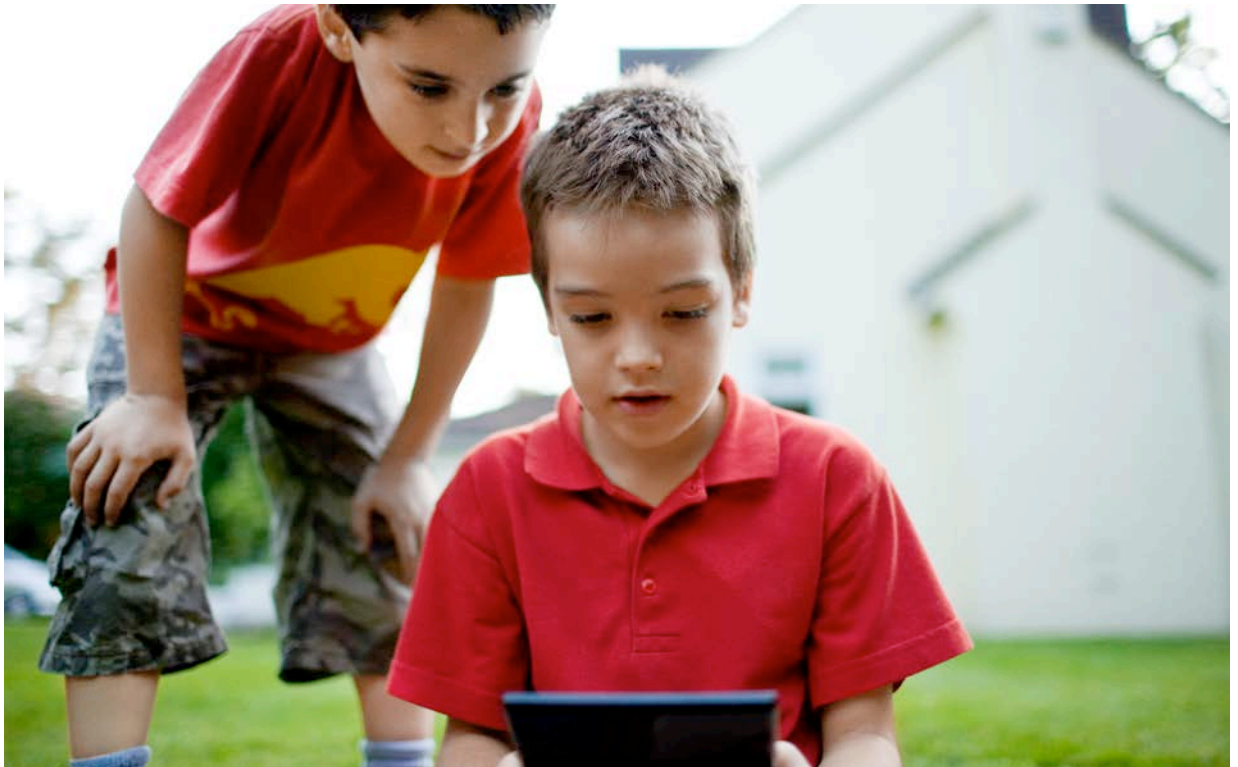
School resource officers who are away from the office patrolling the campus are not necessarily immediately aware of intruders because video of the breach is available only on one console, in the security office. Administrators and police have to wait for the security officer or IT department to create a copy of the video before they can circulate the intruder's picture.

> "The new Cisco cameras help to encourage good behavior, because students know we have the high-quality video we need to identify people. We can zoom in on both live and recorded video without distortion."
> — Clarence Taylor, Alarm and CCTV Technician, Memphis City Schools

If a lockdown is imposed, facilities personnel walk from building to building to lock doors, increasing the time that buildings remain vulnerable. The school office needs to send someone to each classroom to alert teachers to the incident and issue instructions, possibly compromising the messenger's safety.

Campus safety officers, the principal, and superintendent cannot communicate directly with first responders because they don't have the right kind of radio system. In the absence of official communications, parents flood the school and district office with phone calls, potentially blocking out calls from first responders.

The Modern Response

The scenario unfolds more efficiently in districts that use Cisco Physical Security systems. A high-definition Cisco Video Surveillance IP Camera detects motion near the fence and automatically sends an alert and real-time video feed to the campus safety officer's iPhone, iPad, or Android device.

The safety officer or an administrator remotely locks doors by pressing the button on a Cisco Unified IP Phone. The office sends a text or audio page to phones in classrooms, notifying teachers about the intruder and providing up-to-date information and instructions. As parents and first responders arrive on campus, office staff can see who is requesting entry on their IP phone displays and selectively open the door.

> "There's no question that, from an operations standpoint, Cisco Video Surveillance Manager 7.0 is making us more efficient, since it's putting more eyes on more parts of our campuses without an increased physical presence. And principals are saying the increased scrutiny absolutely reduces discipline issues."
> — **Lonnie Owens, Director of Technology Operations, Katy Independent School District**

Using Cisco IPICS, campus safety officers, the superintendent, and administrators use ordinary phones, smartphones, tablets, and radios to communicate directly with police and each other on their radios. They can share their status, school maps, and video and photos of the intruder. And as the incident progresses, the school can proactively notify and inform parents and the wider community by using Cisco Unified Communications to send voicemail messages.

Cisco Solutions for School Safety

Cisco Physical Security Solutions harness the power of your district's existing IP network to help protect people and property and encourage good behavior. Unlike proprietary physical security solutions that only work with equipment and software applications from the same vendor, Cisco solutions are based on open standards to interoperate with cameras, sensors, and applications from other vendors. This preserves your investment in existing endpoints and gives you the flexibility to add new safety capabilities as they become available, extending the life of the investment.

The complete portfolio of Cisco Physical Security solutions supports the safety plans developed by your school resource officers and community police (Figure 1):

Figure 1.   Cisco's Unified Command and Control Solutions for Schools

Table 1 lists Cisco and Cisco partner solutions and how they make campuses safer.

Table 1.   Cisco and Partner Technologies for School Safety

Solution	School Safety Benefits
Physical Security	
Video Surveillance *Cisco Video Surveillance Manager* enables you to easily access real-time and archived video from any camera in the school district.	• Freely place cameras in any location with a wired or wireless network connection, avoiding new cabling costs. • Securely access video from anywhere, at any time. • Store video on or off campus. • Connect existing and new cameras, video analytics, and other systems using open standards.
IP Cameras *Cisco Video Surveillance IP Cameras* are based on open standards and are available with a variety of indoor and outdoor mounting options.	• Avoid the time and costs of professional camera installation. Just connect camera and it's operational in seconds, thanks to Cisco medianet technologies. • Capture high-resolution images that enable positive identification and stand up in court. • Use power over Ethernet (PoE), avoiding the expense of bringing power cables to out-of-the-way places.
Incident Response *Cisco IP Interoperability and Collaboration System (IPICS)* allows schools to rapidly respond to incidents and emergencies in the facility and collaborate with first responders.	• Provide communications interoperability among people using practically any analog or digital radio system. • Consolidate all information relating to an incident. • Share rich media such as video, images, web links, and alarm status. • Activate predefined security notification policies with a single click.
Security Operations *Cisco Physical Security Operations Manager (PSOM)* provides a unified command and control interface for Cisco Video Surveillance Manager, Cisco Physical Access Manager, and Cisco IPICS.	• Accelerate investigations by viewing all sensors and alarms on an intuitive, map-based interface, and clicking for detail. • Automate response with powerful workflow features and a business logic engine.
Access Control *Cisco Physical Access Control* lets you manage a schedule for unlocking building doors and indicate who can enter.	• Help prevent unauthorized access to school buildings. • Initiate lockdowns with the push of a button on a Cisco Unified IP Phone, quickly isolating safety incidents. • Reduce personnel requirements for entry monitoring. • Create an accurate log of who enters your buildings. • Increase situational awareness by automatically tagging video when someone swipes an access card.

Solution	School Safety Benefits
Other Cisco Technologies	
Virtualized Applications Cisco Physical Security and Unified Communications applications are available as virtual machines for Cisco Unified Computing System (Cisco UCS).	• Reduce data center space, power, and cooling costs. • Accelerate deployment. • Simplify management. • Increase availability.
Security Solutions Cisco security solutions include: • Identity management • Network Admission Control (NAC) • Firewall • VPN • Intrusion prevention system (IPS) • Cisco Security Agent • Email and web security	• Protect the network from intentional or unintentional damage, helping to keep it available for vital communications and security systems. • Protect confidential student and staff information. • Help prevent infections that may introduced by personal devices used on campus.
Mobility and Wireless *Cisco Unified Wireless Network* enables anytime, anywhere access to critical information and accelerates mobile emergency responses.	• Provide mobile administrators with Cisco Unified Wireless IP Phones so that they can be reached at the same number from any location • Provide secure guest network access • Pinpoint the location of school laptops and track the location of people wearing RFID bracelets and assets with RFID tags, such as lab equipment
Unified Communications *Cisco Unified Communications Manager* enhances communications within the district, with first responders, and with parents. The solution includes SingleWire InformaCast software, which uses Cisco phones and overhead speakers for paging and emergency notification.	• Provide one-touch phone access to first responders • Enable emergency alerting to multiple devices using text messaging and recorded voice announcements • Report the precise location of the phone used to dial 911, and send emails to administrators' inboxes or IP phones so that they can confirm the emergency and provide help sooner • Integrate your communications systems with public safety answering points and first-responder agencies • Consolidate phone lines needed in district, lowering monthly costs • Broadcast announcements to Cisco Unified IP phone speakers and external IP speakers
Cisco Jabber® provides a unified interface for presence, instant messaging, and click- to-call capabilities, and works on Windows, Mac, iOS, and Android devices. *Cisco WebEx*® *Meetings* provides audio, video, and web conferencing for training and to plan incident response	• Collaborate with colleagues from anywhere, on any device
Cisco Partner Solutions	
Video Analytics Video analytics detect motion and sounds and alerts the appropriate people.	• Reduce the need for manual building checks and accelerate incident detection. • Initiate predefined responses to reduce response time.
Notification Services Notification services Enable school officials to broadcast announcements to Cisco Unified IP Phone speakers and external IP speakers.	• Integrate intercom, bell, and alarm systems to reduce maintenance and management costs. • Centralize pages and automatic emails and phone notifications. • Integrate with student information systems.
Visitor Management Systems These systems automatically capture images of visitor's face and ID credentials, making it unnecessary for a staff person to always be at the desk; they can also check visitor names against databases of unwanted persons.	• Replace inefficient, paper-based logging systems. • Maintain an accurate visitor record for auditing and safety-incident reporting. • Identify unwanted visitors and deny them access to school buildings.
School Transportation School transportation systems can monitor and track school buses during travel.	• Provide remote video monitoring capabilities to school resource officers, police, and first responders. • Accelerate response to safety incidents on school buses.
Mobile Client Applications These applications let district personnel use iPhone, iPad, or Android device for video viewing, video capture, and people tracking. They can also be used as mobile sensors.	• Increase situational awareness for mobile district staff. • Avoid the cost of purchasing specialized devices.

Solution	School Safety Benefits
Intrusion Detection Intrusion detection systems send an alert when video surveillance cameras detect motion.	• Eliminate the cost of monthly alarm company contract

Why Cisco?

Cisco offers comprehensive physical security solutions for schools. Simple management interfaces, including Cisco Unified IP Phones, lower training costs and enable more district personnel to use the systems. And because Cisco solutions are based on open standards, you can easily integrate them with products from Cisco partners to meet your district's specific requirements.

> "With Cisco Video Surveillance Manager], campus resource officers need only a couple of hours to learn how to switch between video feeds, review the 14-day archive, and export a video to a DVD to share with local police."
> **— Matt Frederickson, Director of IT, Council Rock School District**

The top reasons schools worldwide choose Cisco solutions for campus safety and security include:

- **Ultra-scalability:** A single virtualized server can support up to 100,000 video surveillance cameras, simplifying infrastructure and lowering costs.

- Ease of management: Getting a Cisco Video Surveillance Camera ready to use is as simple as connecting a cable. Cisco medianet technologies do all the work in the background, and the camera begins transmitting video in approximately 15 seconds.

- **Cisco Capital® finance programs:** Innovative financing enables schools to easily acquire, deploy, and optimize their solutions. Options include Tax-Exempt Lease Purchase (TELP), Fair Market Value Lease, and Cisco Technology Migration Program.

- **Remote Management Services:** To offload the task of monitoring your physical security solutions from the district IT team, sign up for Cisco Remote Management Services. Trained Cisco engineers monitor your network and equipment to help make sure your Cisco Unified Computing System and physical security solutions are operational and performing optimally.

- **Strong understanding of and commitment to education:** Cisco recruits employees with education backgrounds to help guide product development for all sizes of schools. Cisco is a strategic partner in the Global Education Initiative, led by the World Economic Forum, as well as other worldwide education programs. Cisco's largest education initiative is Cisco Networking Academy®, a proven model for next-generation learning that equips students with the IT and networking skills necessary to compete in a global economy. Networking Academy is available in more than 160 countries and serves more than 900,000 students in the United States alone.

- **Commitment to your success:** Cisco can help your school resource officers and community first responders create safety plans that take advantage of the power of your IP network to improve school safety.

Conclusion: Provide Uniform Safety and Security Throughout the District

You can take advantage of your existing IP network to increase campus safety and provide a uniform level of security in all schools throughout the district. The combination of Cisco solutions for video surveillance, physical access control, unified communications, and interoperable communications helps you to:

- More effectively prevent, deter, detect, and respond to safety incidents
- Enhance collaboration between schools and first responders
- Communicate quickly to students, teachers, staff, and parents during an event
- Improve operational efficiencies of your physical security systems and resources
- Reduce financial and legal liability
- Reduce costs compared to deploying standalone security systems, freeing up funds for next-generation learning programs and teacher salaries

For More Information

To learn more about Cisco Safety Solutions for Schools, contact your Cisco representative or reseller, or visit: www.cisco.com/go/schoolsafety.

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

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