

Education

Huntsville City School District

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Travis Tow
Security Systems Technician,
Huntsville (AL) City Schools



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Huntsville, Alabama

Profile:

Huntsville, Ala. is home to NASA's Marshall Space Flight Center, the U.S. Space and Rocket Center, Redstone Arsenal and many leading technology corporations. The community and school district reflect this high-tech focus. As a result, the Huntsville City School District has a reputation for excellence and was rated in the top 20 school districts in the U.S. in a study by Expansion Management magazine. The District provides 28 elementary schools, 12 middle schools and six high schools for its more than 22,000 students.

Even so, not that long ago, Huntsville faced a crisis. Over a three-year period, its city schools suffered \$6 million in fire, theft and damage losses and were becoming uninsurable. Insurance was running \$1 million per year for asset protection. With all these facilities and a half billion dollars in fixed assets, something needed to be done.

That's when Sharp Communication, a local security consultant/integrator, was called in to help and became instrumental in the design, installation and maintenance of a new high tech security system. The system, which currently features GE Facility Commander, the GE Picture Perfect access control system and security surveillance system, integrates and covers all facilities by communicating with a separate central location.

The first school went online with a security system, including access control and CCTV surveillance, in September of 1986. Shortly after implementation, the system was featured on "Good Morning America" on live television. During that first year, the district's insurance premiums were reduced by \$300,000.

With its new system, the district can determine precisely who receives access to designated areas and at what time. Information can be printed out on a report. As an example, district officials can enter a badge holder's name and determine the time and place that individual entered or exited. With the system, the district centralized its security operations for tighter control and is using personnel at maximum efficiencies, even though the schools are spread across the city.

The results of this new integrated system are truly remarkable. The district has gone from having anywhere from eight to 12 burglaries a week district-wide, to about only three attempts per year. And, typically, those break-ins result in zero loss of property and only minimal damage, if any, because the perpetrators just don't have time to do anything. As a result of cutting break-ins and burglaries from approximately 120 per year to only three, the district's insurance premium is \$900,000 lower.



Evolution of a System

The Huntsville City Schools security system was originally designed to include microwave transmitters that would feed both visual and aural information, video and data transmission. A number of video cameras, sound sensors and intrusion detection devices were installed, with signals demodulated and connected to a computer system or video monitors in the Security Central office. Since that time, the system has gone through a metamorphosis in terms of how information is sent from the disparate school sites to a central monitoring room. As new technologies have become available, the district has incorporated them to protect students and assets and increase its return-on-investment.

Picture Perfect is a critical component of its access control and security surveillance systems. Picture Perfect covers all facilities by communicating with a separate central location. With Picture Perfect, the district can support an unlimited number of badge holders and card readers. Picture Perfect also provides access to advanced features such as database partitioning and occupancy control. School officials can delegate facility administration while still maintaining centralized control. Importantly, the district is provided real-time monitoring and audit trails.

By centralizing security operations, the district achieves tighter control and uses its personnel at maximum efficiencies, even though the schools are spread across the city. Some facilities are up to 10 miles away from the central control room.

The central control room contains four computers. It is manned 24 hours a day by two to three employees during the day, with two people working at nights and on weekends. One employee monitors while the other is available for response.

Approximately 300 video cameras, including some pan-tilt-zoom outdoor cameras at the high schools, watch over the campuses. The system also includes sound sensors and intrusion detection devices, including more than 100 GE proximity card readers, proximity cards and digital input (DI) cards, connected to a computer system at Security Central. The district also uses GE digital video multiplexer recorders with Ethernet capabilities (DVMRes).

The Picture Perfect access control system lets the district determine precisely who receives access to designated areas and at what time. Information can be printed out on a report. As an example, district officials can enter a badge holder's name and determine the time and place that individual entered or exited.

Tying it all Together— Facility Commander

The newest aspect of Huntsville City Schools' security system is the addition of GE Facility Commander, which features an open architecture, based on industry standards. It runs on commercial, off-the shelf operating systems including Windows, Linux and AIX. It supports popular databases like SQL, Informix, DB2 and Oracle. Built-in drivers support GE's Picture Perfect access control system, as well as digital video, analog CCTV switchers, intercom and intrusion systems.

By integrating all schools under Facility Commander, the district now has a single intuitive, integrated console for all access control, video surveillance and alarm management functions. This platform provides the district with advanced access control, alarm monitoring, intrusion detection, fire alarm, intercom and personal safety/duress systems, credential production, and employee and visitor management functionalities. It also addresses and enhances security management system capabilities by integrating digital video from multiple manufacturers, including legacy components as well as integration and support for fire, intrusion, personnel and complete facility management.

With this command and integration platform, the district now has a single window on all of its facilities, employing a centralized, consistent user interface for managing security and alarms and events across all schools and offices. As a result, the district expects to reduce training time and costs, as well as operator errors at Huntsville City Schools. It will be able to monitor all 42 sites and will help users respond more efficiently to serious security incidents and allow fewer operators to manage more locations.

At Huntsville City Schools, security personnel use Picture Perfect to schedule and lock and unlock individual doors and will use Facility Commander to monitor security, cameras and alarms. In the not-too-distant future, the district will have terminals with one computer and two monitors. One monitor will display Picture Perfect and the other will display Facility Commander.

Another major advantage to using Facility Commander is the school district's ability to switch from costly ISDN lines for transmission to using its own private network.

Laying a Foundation for Future Expansion

"There was simply no question that we needed a reliable system that we could grow into and build upon. The ability to expand was imperative. One of the first items implemented was putting proximity card readers at school doors and DI-cards at places not needing readers," reports Travis Tow, Security Systems Technician, Huntsville (AL) City Schools.

"We have the 100 card readers on multiple types of doors including front entrances, kitchens and an auxiliary door at each location. Some ask, why the kitchens? In our District, these kitchens are contracted out. As separate entities, it is important to us that their assets are safeguarded," he added.

The entire system includes a master locking system, alarm points, motion detectors, standalone system features, and CCTV. These components are described in detail below.

Master locking system: Today, the system includes a master magnetic lock system for each building, which allows Security Central to lock or unlock selected exterior doors from the Central Control Site. All other doors are locked from the inside. Keys and locks have been standardized throughout the schools so that buildings can be compartmentalized to limit access to specific areas of the school. For instance, not all can enter the computer room or any classroom. Also, any or all schools can be locked down at any time for emergency or danger.

During the school year, the schools unlock automatically at a specified time in the morning so students, teachers and staff can enter and then lock at a determined time after school has ended. At any time other than regular school hours, employees must use their proximity cards to enter the school. In addition to the security ramifications, the system makes teachers and staff accountable. Administrators can determine, via audits of the system, who shows up and leaves when.

Alarm points: In addition, ID-cards provide additional digital input or alarm points for locations, such as windows, that do not require readers to gain access, but need monitoring nonetheless. In addition to the more common fire detection alarms, the district also monitors the boilers and freezers. Boiler and freezer temperatures are monitored to provide an early warning to an impending disaster.

As a backup to the fire alarm at each school, the system monitors each alarm point on a 24-hour basis. This ensures continued monitoring and additional notification when necessary.

This investment has paid dividends for the district. The access control system had an alarm tripped with nobody in the building. Automatically turning on the CCTV system, security officers were able to see smoke in the building. Knowing which facility and where in the facility the fire had started, they called the Fire Department, which quickly saved the building.

Motion detectors: Passive infrared devices detect motion in high-risk areas such as the computer rooms, A/V storage areas and the aforementioned kitchens. Multiple break-ins have been foiled. Being able to respond quickly, almost 95 percent of the perpetrators are caught in the act.

Stand-alone when needed: At the facilities, the access control system feeds into GE Security microcontrollers which act as the brains of the system. The district has installed one at each school so that the facility can continue to function independently of the central station in case of emergency. Their job is to communicate the badge and alarm transactions to the Picture Perfect access control system over the district's local area network.

CCTV: Cameras in any given building are sequentially switched so that, every few seconds, a different section of the building is being viewed. Time-lapse video recorders are used at Security Central to constantly record the sequential cameras at the different buildings at different times.

Exterior cameras are also in place that can be remotely controlled from Security Central. They provide additional security for parking lots, especially when extra-curricular activities are going on at night. Monitors installed in high school principal's offices allow our principals to view areas and quickly head off any problems that may arise.

Going Forward, Saving the District Money

As new buildings and schools are added, the access control system is easily migrated.

"That way, hopefully, we can keep our insurance policy to \$100,000 per year or 10 percent of what it was going to be a couple of years back," Tow concludes. "That extra \$900,000 provides a plethora of teachers, equipment and services that keeps Huntsville City Schools among the nation's leaders."



Challenges and Solutions

Challenge: To implement an effective access control system that would better protect district assets, result in greatly reduced asset protection insurance costs, and grow with the district.

Solution: GE Security's Picture Perfect access control system covers all facilities by communicating with a separate central location. It has cut the district's insurance costs by \$900,000 per year, and it can easily be migrated to new school sites.

Challenge: Tie together all aspects of security, including access control, CCTV and intrusion detection across 42 campuses spread throughout the district.

Solution: A world-class integration system using GE Facility Commander, GE CCTV system including DVMRes, and GE Proximity card readers.

Specifications

- GE Facility Commander
- GE Security Picture Perfect Access Control System
- GE Security Proximity Card Readers
- GE Security CCTV System
- GE Security DVMRe's

GE Security

North America

T (561) 998-6100
T 888-GE-SECURITY
888-(437-3287)
F 561 998 6224
E rs-bctinfo@ge.com

Asia

T 852-2907-8108
F 852-2142-5063

Australia

T 61-3-9259-4700
F 61-3-9259-4799

Europe

T 32-2-725-11-20
F 32-2-721-86-13

Latin America

T 305-593-4301
F 305-593-4300

www.gesecurity.com

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