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Video Surveillance reduces crime in an inner-city, public housing site.

Case Study: Housing Authority of Joliet

An Innovative Solution that Deters Crime

Crime, loitering and general disorder are common problems at inner-city, public housing sites. Most of the crime is committed by outsiders who typically come into the facility to deal drugs, gamble, drink or congregate. At the very least, this is disturbing to the housing residents and often progresses to include property damage, vandalism and theft. At its worst, residents may be verbally and/or physically assaulted as they enter and leave their homes. Such was the case with the Housing Authority of Joliet, located in Joliet, IL. Since the housing authority's security force is limited and local police cannot be everywhere, an innovative and cost-effective solution was required. The solution was to install a video surveillance system that would not only record criminal activity, but deter it.

Most video surveillance systems could be considered passive systems that trigger an active response, that is, some activity is observed and guards or law enforcement are deployed to the site to investigate, intervene or make an arrest. As video systems have evolved and technology has advanced, this is beginning to change with on-site equipment now able to provide a primary level of deterrence without the need for security

to deploy to the site every time an incident occurs. A highly effective solution Commercial Electrical Systems (CES).

It's All in the Integration

CES, a systems integrator located in Joliet, IL, recommended a custom designed system that combined the latest in IP Video Surveillance, Wireless Mesh Networking and an on-site method of deploying the system that both protects the equipment and provides an active alarm when the security team wants to let the "bad guys" know that they are being watched and that they should leave. To provide this solution, CES led a team consisting of Vicon® Industries Inc, a leading supplier of IP Video Surveillance systems and Firetide® Inc, a leading provider of multi-service mesh networks, who joined forces to develop an innovative system that has the residents of the Housing Authority of Joliet feeling safer and more secure. CES coordinated the design of the system, including selection of the equipment, and oversaw the installation of the system and the training of the security personnel.

The Video Surveillance System

Vicon Surveyor VFT pan-tilt-zoom cameras, Kollector™ Network Digital Recorders/Servers and a Firetide wireless transmitter mesh node are mounted in Montel Technologies Eagle Armor enclosures approximately 30 feet above the ground. The enclo-

tures bullet-proof and almost impervious to damage or vandalism. To deter the offenders, powerful flashing lights are mounted above the enclosures that are set off by the security staff when suspicious activity is observed. This provides immediate feedback to anyone doing something that they shouldn't be, and lets them know that if they do not leave immediately, a response is coming. Visibility is superb with the cameras mounted at the 30-foot height. Each one has a clear view extending up to four blocks away. The cameras' ability to pan, tilt or zoom by remote command allows the security staff to see and anticipate problems before they happen.

Paramount to the effectiveness of an installation like this is the system's scalability, data preservation and security capabilities and the ability of the various parts to work together seamlessly. The experience of system designer and installer, CES, the power of the Vicon ViconNet® IP Video Management software and the reliability of Firetide's wireless mesh networking system make this system both dependable and secure.

Vicon provides a totally integrated system that includes all of the hardware required including the cameras, DVRs, servers and workstations and the ViconNet software that provides the video management system for transporting, storing and managing digital video from multiple sources. ViconNet is highly scalable and will allow the housing authority to expand however and whenever it wants. The current setup has 5 cameras



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Case Study Continued

located throughout the complex providing video feeds through the wireless mesh network to the housing authority's recreation center. From there a VPN provides the video feeds to the security control center. The Joliet Police Department can also view the video through wireless connections to laptop computers in its patrol cars.

Wireless Mesh Technology Makes it all Possible

The Firetide wireless mesh network provides the flexibility to expand the system at any time, since most, if not all, of the issues associated with locations that are too difficult, large or expensive to wire are eliminated. The wireless network backbone enables cameras to be installed just about anywhere without the need for running network cabling. On each pole, the cameras' MPEG-4 video feeds are sent to a 2.4 GHz wireless transmitter made by Firetide. These transmitters are incorporated into integrated hardware packages that serve as mesh nodes. With the ability to deploy cameras quickly and cheaply, the housing authority can expand the system with minimal additional staff or installation costs. Security is not an issue because the proprietary ViconNet software must be used to view the video.

The mesh network allows every transceiver (or node) to communicate with any other transceiver on the network. This allows the signals to take the fastest possible path from one node to another, as they make their way to the local video monitoring center. The mesh network architecture also ensures signal path redundancy. If the path in one direction is blocked, the signals automatically

find another way to get to their destination. A mesh network doesn't suffer the kind of bottlenecks suffered by conventional networks, due to the multiple signal paths available. System throughput is typically 25 Mbps, but speeds as high as 34 Mbps are attainable.

The video is also simultaneously recorded to the video recorder/server mounted in the enclosure along with the other equipment. Again, using the mesh network, the archived footage can be managed and retrieved by ViconNet software from any place connected to the mesh network or the VPN, including transmission over the Internet. The local servers can store up to 800 GB of video, with more storage available on the workstation at the control center. Video can be copied and saved for use when prosecuting crimes. The ViconNet navigator window graphically displays a timeline of recorded video. It contains all function buttons necessary to control the playback of video. A scalable timeline can be set to define the "from" and "to" time/date intervals of video. A "Create AVI" button can be used to create an AVI file of the selected video segment. Another powerful feature that aids in searching and retrieving video is Museum Search, which allows the user to review playback video using Areas of Interest (AOI) and scalable motion detection to capture video events.

Everyone's Happy But the Bad Guys

The system has been a great success. Crime and loitering has diminished immensely, and the residents and employees feel safer. The Housing Authority of Joliet has just placed an order to expand the current system with 2 more cameras. It also plans to equip other housing sites with the sys-

tem. This combination of technologies that was not available just a few years ago has provided the housing authority with the following benefits:

- ✦ The deterrence capability of the system allows the guards to employ the flashing lights to disperse intruders. This is usually all that is needed to clear an area.
- ✦ The scalability of the system. The ViconNet software will allow the housing authority to add as much capacity it needs in the future.
- ✦ The flexibility of the Firetide Mesh Networking system. This allows for the placement of monitoring units anywhere they are needed without concern for running network cabling.
- ✦ The security of the system. The proprietary ViconNet software cannot be intercepted by unauthorized users. The seamless integration and cost-effectiveness of the system.