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Dallas PD Fights Crime With Video Surveillance

Wireless system makes citizens, businesses and tourists feel more secure in the city's downtown area

By [Gregg Levin](#)

For the Dallas Police Department, protecting the nation's ninth-largest city requires an unblinking focus on crime prevention while continually orchestrating the next series of moves to improve the overall security of citizens, businesses and visitors alike.

In this quest, the Dallas PD has relied on an enabling and increasingly effective partner: the deployment of the newest technology tools for deterring, detecting and investigating crime. The department, which includes some 3,000 officers and 500 civilian employees, was an early proponent of using video surveillance technology to reduce crime. The success of its pilot project, launched in early 2005, proved the viability of video surveillance cameras as an effective security, apprehension and crime-reduction tool.

In particular, the results gained by being able to

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area of Dallas added a new dimension to the department's law enforcement capabilities. The evidence is overwhelming: In the first four months of operation, there were substantial reductions in the number of both violent and non-violent crimes. This impressive showing made it very clear that extending the use of video surveillance could provide even greater benefits citywide, especially in the busy downtown area.

With the assistance of a grant from the Meadows Foundation, a private philanthropic institution, the Dallas Police Department gathered the incentive to deploy a state-of-the-art wireless video surveillance system to aid the city in deterring, detecting and investigating crime in its central business district. The effort would focus on reducing crime by 30 percent in "hot spot" areas within the downtown freeway loop, where many business, tourist, residential and entertainment venues are located, with in the first six months after deployment.

In mid-2006, the Dallas Police Department issued a Request for Proposal (RFP) for a turnkey video surveillance solution. The document detailed that potential plans must include the ability to install the necessary equipment on utility poles and building facades at major points in the city's central business district. During the research effort, officials were informed that the city's existing wired network infrastructure could not accommodate the additional traffic that would result from 24-hour video monitoring. This meant finding a new network solution — one that could provide for expedited delivery of large video files. The system also needed to deliver outstanding image clarity as license plates had to be clearly readable from 300 yards away and different camera angles had to be viewable without time delays.

High-Throughput with Quick Expandability

The challenge required a high-throughput network that could scale quickly to support more cameras and new locations as the application grew to cover more areas. Over time, the Dallas Police Department planned to expand the video surveillance system substantially, so they needed to be able to grow significantly without any drop in image quality or speed of delivery. The network had to deliver the same performance if 20 or 40 officers were monitoring videos at the same time.

The Dallas PD reviewed six proposals before narrowing the contenders to three. The eventual winner was Bearcom, a Dallas-based provider of wireless communications equipment and solutions. "Initially, we didn't approach this project with wireless technology in mind," says Tom Lawrence, deputy police chief for the Dallas Police Department. "Bearcom proved we could deploy a self-contained public safety network without overhauling our existing infrastructure. Bearcom recommended a scalable network backbone featuring both substantial bandwidth and security for handling video streams."

The system was assembled using wireless technology, including Internet Protocol (IP) video cameras and multi-radio mesh network nodes with high-capacity Gigabit Ethernet and 100Mbps backbone links. Bearcom selected Sony's multi-codec IP cameras with single- or dual-streaming codec modes, advanced motion detection and day/night functionality. Mesh network nodes from Firetide link the Sony cameras wirelessly, eliminating the exorbitant costs and difficulty of installing video cabling to each camera. The Firetide nodes are linked via seven mesh zones where video traffic is aggregated and then backhauled to the monitoring stations using high-capacity 60GHz point-to-point Gigabit and 100Mbps wireless links from BridgeWave. The seven BridgeWave links each carry traffic for up to 10 video cameras in hub-and-spoke and repeater configurations.

In January 2007, Bearcom deployed the Dallas Police Department's video surveillance system, including 40 Sony video cameras, 35 Firetide mesh network nodes and the high-capacity BridgeWave backbone links. The wireless video surveillance system operates on the secure 4.9GHz frequency reserved for public safety use, which ensures communications are interference-free. Using BridgeWave's 60GHz and 80GHz links for the network backbone also conserves the low-frequency spectrum for other public safety access applications. The high-

speed wireless bridges offer 10 times the bandwidth of 100Mbps Ethernet wireless links. They also feature extremely narrow antenna beam widths.

The wireless video cameras, mesh network nodes and backbone links were installed on utility poles and buildings as "portable pods," which can be moved easily to increase monitoring capabilities at special events or other downtown areas experiencing high incidents of crime. The new system covers approximately 30 percent of the downtown area with live, 24-hour monitoring from both City Hall and the Jack Evans police headquarters. "The small form factor of both the cameras and the wireless radios offer a big advantage as we wanted to have the flexibility to move the cameras to other downtown areas as needed," Lawrence says. The BridgeWave radios also allow direct attachment of cameras through an "add/drop" copper Ethernet port, which enables rapid, streamlined installations.

A 'Future Proof' Networking Solution

Around-the-clock remote monitoring of the video cameras is enhanced by the ability to quickly change the direction of the camera lens. BridgeWave's ultra low-latency technology enables real-time pan, tilt and zoom control of the remote cameras. "Our officers and public safety staff have been impressed by the image quality in all light conditions as well as the ease with which they can zoom in for a closer look at street-level activity," Lawrence adds.

Resounding support from the community and local businesses has resulted in a pledge to continue expanding the system with additional funds. The goal is a three-fold increase in cameras while deploying the wireless video surveillance system in other areas of Dallas .

"The Dallas Police Department has gained a 'future-proof' network backbone," Lawrence says. "The central business district is essential to the economic success of our city and the Dallas Police Department is committed to using advancements in wireless IP video and networking to make downtown safer for the residents, businesses and members of the community who live, work and visit here."

Gregg Levin is co-founder and senior vice president of product operations at BridgeWave, Santa Clara, Calif. He previously served as executive vice president and CTO at Wireless Inc., where he created the industry's first megabit-speed wireless access router and U-NII Ethernet bridge. He also worked for Hewlett-Packard leading the development of internetworking products for Unix server and workstation product lines. He can be reached at greggl@bridgewave.com

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