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CRN Cover Story - Citywide Network Exceeds Promise

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Buffalo, Minn., is discovering some unexpected benefits from its new citywide wireless network, deployed by solution provider Scientel America: Now that city workers can pick up e-mails and work orders directly from their tablet PCs, they are cutting down on drive time and saving money on gas

“The public-works superintendent came in and said, ‘Do you have any idea the amount of fuel we will save using this system?’ ” said Buffalo City Administrator Merton Auger. With prices at the pump reaching an all-time high, the system “came at the perfect time,” he said.

Buffalo city officials originally conceived the wireless network as a way to support emergency services but broadened the scope of the project along with Scientel to offer the private network to public-works and a city-owned utility as well. Though city officials estimate that the return on its approximately \$580,000 investment will take about seven years, the additional savings for unforeseen areas such as the public-works gas bill have pleased all involved, Auger said.

Today, public-works and utility employees can use the network designed by Scientel to field work requests, view maps and building plans online, and update records—all in realtime—while police can access records from a state-run database, communicate with city emergency services and issue citations with the swipe of a driver’s license. Firefighters can communicate with city emergency services or view detailed access to building plans and potentially hazardous materials at the location as they travel to the site of a fire.

To provide all these services, Scientel recommended mesh networking technology from Mesh Networks, a company acquired by Schaumburg, Ill.-based Motorola (NYSE: [MOT](#)) last year. “The key requirements were mobility and security. They also wanted broadband speeds,” said Nelson Santos, chief technology officer of Scientel, Lombard, Ill.

Mesh Networks offers a proprietary radio in the 2.4GHz band and 4.9GHz public safety band, as well as an 802.11-compliant radio. Each radio supports throughput of up to 2 Mbps. The system also can hand off signals from one access point to another without losing a connection, and can send and receive signals even when vehicles are traveling at a high speed, something Santos said 802.11 networks can’t support.

Mesh networking differs significantly from point-to-point wireless networks. Rather than sending data from one point to another in a specific pathway, as most hot spots do, Mesh Networks’ technology seeks the quickest and most efficient path through the network. Data can hop through a variety of routers or other mesh-enabled laptops to reach its destination. If one node on the network goes down, traffic automatically will be routed through all other available nodes, ensuring the network stays active even during the most severe technical problems.

The network in Buffalo, located about 40 miles outside of Minneapolis, serves a population of about 13,000. Scientel set up a network with proprietary 2.4GHz radios for security. The system required about 75 routers and nine intelligent access points (that connect to 10/100 Ethernet) to cover the approximately 8.5-square-mile city, Santos said.

The trick was to lock down the network enough to satisfy state officials, which up until this point have not allowed access to their data stores from mobile systems. "Buffalo already had several discussions with the county, so we knew security was going to be an issue," Santos said. "The way we got around it was to come up with a good security plan and show where each firewall would be located."

Auger credits the additional security layer to Seattle-based NetMotion's security server. "[The state] came out, tested and was happy with the inherent security in the mesh network. When you layer on NetMotion, it becomes iron-tight, a really secure system," he said.

Mesh networking has been popular in city installations because of its built-in redundancy. But a lack of unified standards has held the technology back from wider public consumption. A number of standards are being discussed as options, including 802.11s, backed by Intel (NSDQ: [INTC](#)).

Scientel will manage Buffalo's network for one year before turning it over to the city. Scientel did most of its work on the network from the company's U.S. offices, Santos said. Scientel is a privately held solution provider with about \$10 million in annual revenue that specializes in wireless networking for local governments. Santos said the integrator has rolled out wireless networks for other cities including Coco Beach, Fla., Paris, Ky., and South Haven, Miss.