



City of Round Rock, Texas

An ENCOM Wireless Client Success Story





THE CHALLENGE

Growing city, growing needs

Round Rock, Texas was recently rated as the seventh-best small American city in which to live.

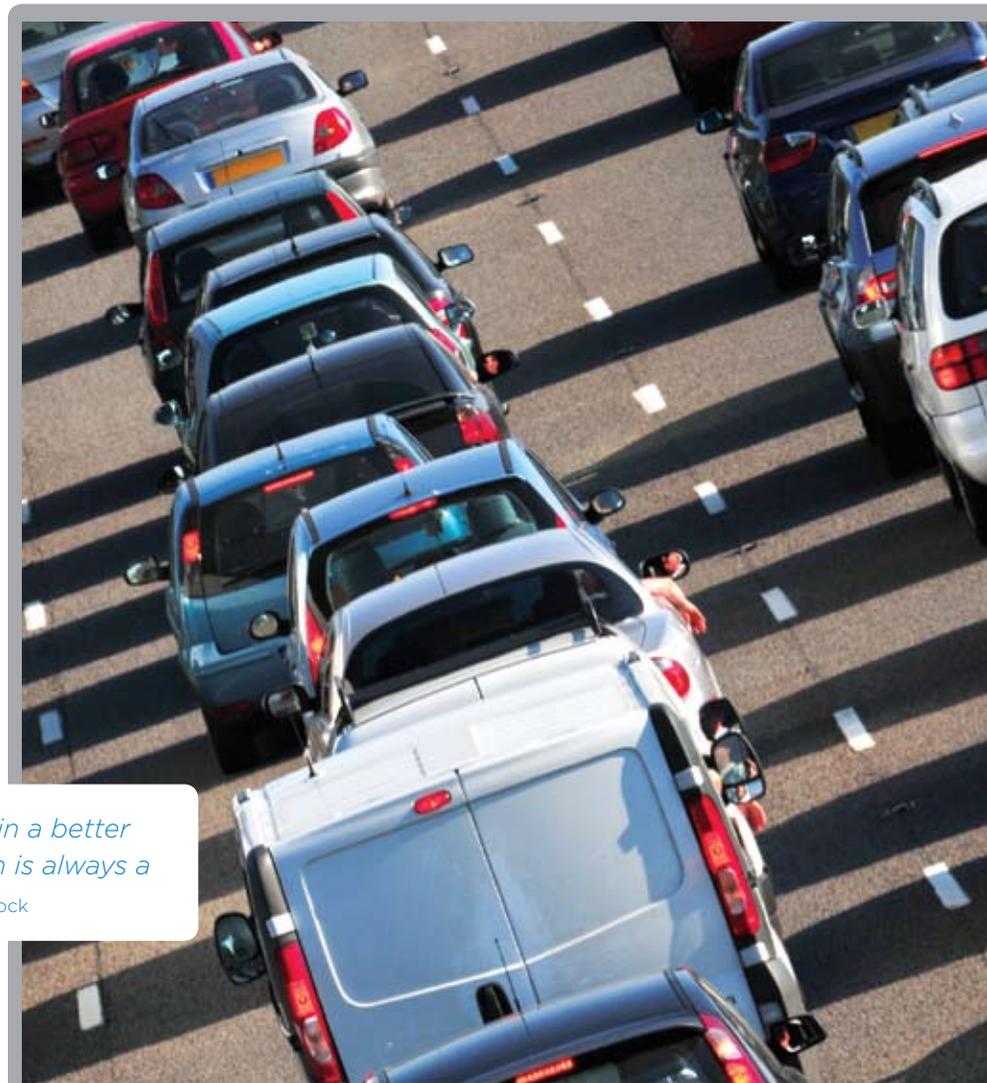
The irony? It may not be a small American city for much longer.

No one quite knows where or when this suburb of Austin's unchecked, unbridled growth spurt will stop. It's currently the second-fastest growing city in the United States, and its population has tripled in the past 10 years, topping 104,000 in the latest census.

And that's exactly why City of Round Rock traffic officials felt they needed something more than a 900 MHz radio system to manage their ever-expanding burg.

"As we were growing, we needed to be able to better program traffic," says David Walther, superintendent of the street and drainage department with the City of Round Rock. "When we have a ball game (involving the Triple-A Round Rock Express), we've got 10,000 to 14,000 people leaving Dell Diamond at one time, and we needed a traffic system that could communicate with us, so we wouldn't have to send a technician to the park and hang out there to know when things thinned out.

"We went from 20 to 50 intersections in a decade, and we needed to be in a better position to manage the demands. When we do surveys, traffic congestion is always a big issue. If it's not the No. 1 complaint, it's close." —David Walther, City of Round Rock



THE ENCOM SOLUTION

WiFi Hot Spots Boost Traffic Management Efficiency

Walther and his colleagues looked at the possibility of T1 or DSL high-speed wired connections for their new traffic network, but soon chose an ENCOM Wireless broadband system — thanks to ENCOM's reliability, capability, low costs and future-minded attitude.

A six-month audition of all the available candidates, including ENCOM's broadband technology, was all it took. "We had T1 and DSL lines out there that were pretty expensive and weren't able to supply the bandwidth," recalls Walther. "We had Motorola and other groups out there. Then we used two ENCOM radios, one on our building and one about four miles away on the highway . . . and we brought back video detection, traffic signal timing, and a PTZ (pan tilt zoom) camera, brought back all that information on two little radios. That really sold us."

ENCOM's engineering team rolled out a high-bandwidth, high-speed wireless broadband traffic system for Round Rock. And one of the keys to the network's smashing success was the installation of a relatively new ENCOM product, the COMMPAK BB 24/58INT, at every traffic intersection — setting up WiFi hot spots all over the city grid, and putting Round Rock on the cutting edge of an emerging trend in Intelligent Transportation Systems.

"The topic of WiFi hot spots has become an extremely important topic in our traffic signal world . . . it is the future of our business, and a welcome addition to our world," says Fidel Garza, vice-president of Texas Highway Products, ENCOM's exclusive dealer in the Lone Star State.

"To be able to diagnose a problem remotely, while out in the field, provides a very powerful tool. It seems like every month, we're designing projects for customers around the ability to communicate remotely and wirelessly from any intersection within their city."

—Fidel Garza, Texas Highway Products

Marriage of Convenience, Accessibility

The BB 24/58INT, which was developed in less than two months as the direct result of the City of Round Rock's input, is a marriage of convenience and accessibility. It combines a powerful 5.8 GHz broadband unit (the COMMPAK BB 58) with integrated antenna, for high-speed backhaul communication, with a 2.4 GHz connectorized radio (COMMPAK BB 24) and external Omni antenna that provides a remote WiFi access point — all in a completely integrated package.

To date, the City of Round Rock has 44 of its 56 traffic intersections fitted with a COMMPAK BB 24/58INT unit, and officials expect to have the project complete by early 2010.

As for the network itself, ENCOM designed for the City of Round Rock a specimen that would boost data rate, efficiency and capability — and eventually accommodate further growth and modernization — by using backbone links that could handle multiple data streams and protocols.





How It Works

Atop the city's traffic management centre tower are perched four COMMPAK BB 58 radios, each with a data transfer rate of 54 Mbps for a total capacity at the tower of more than 200 Mbps.

Each 5.8 GHz radio is linked to a dual 5.8 GHz/2.4 GHz radio (the COMMPAK BB 24/58) installed on a series of water towers that encircle the town, and each of those four dual radios communicates to a series of 10 to 12 COMMPAK BB 24/58INT units at traffic intersections.

The ENCOM system boasts bandwidth to burn, and ensures excellent signal strength to all intersections — ensuring top-notch CCTV video images from about 90 per cent of the city's grid — because of its multiple, high-capacity access points at the water towers.

Round Rock officials looked into trenched fiber optic cable, too — but only briefly. The total cost for a wired system would have been astronomical: somewhere in the neighbourhood of 10 times ENCOM's final tally.

"We have some ring structures around town in our school district, but we found that running fiber from one ring to just one intersection would have been \$7,000 for the cheapest and \$60,000 for the most expensive," says Walther. "Multiply that by more than 50, and you've still got maintenance costs on top of that.

"With ENCOM, we've spent less than \$150,000, and we've got 56 intersections." —David Walther, City of Round Rock



THE RESULTS

'A Whole New Perspective'

With a combination of those WiFi remote hot spots and traffic detection cameras at about 90 per cent of the city's intersections, Round Rock traffic officials have seen a quantum leap in capability and efficiency.

"That's the key point of it — the efficiency," says Walther.

"Through the WiFi and the ENCOM radios, we can pull the data back from a particular intersection and view the intersection from a laptop across town. It allows us to look at a problem intersection before we head over there on a maintenance call — and, sometimes, fix the problem on the spot." —David Walther, City of Round Rock

Round Rock's traffic officials are now dependent on video feeds to do their best work — and ENCOM's high-frequency, high-bandwidth radio networks are designed with video quality in mind. By employing specific packet routing and packet switching, and combining the latest in MPEG transmission compression and state-of-the-art wireless technology, ENCOM's COMMPAK BB broadband units provide the best possible support for multicast streaming video applications.

"It offers us a whole new perspective," notes Bob Mercer, traffic signal supervisor with the City of Round Rock.

"The system gives us faster response times and cuts down on maintenance issues, and just the capabilities of higher-speed communication mean greater versatility on equipment that we can install and utilize." —Bob Mercer, City of Round Rock

Round Rock's broadband network is also intrusion proof, like all customer systems designed by ENCOM. Security is critical to the success of any wireless network, and all WiFi hot spots in the Round Rock system use WPA2 protocol, which requires Advanced Encryption Standard (AES) for encryption of data. As for the network's backbone, all ENCOM broadband systems are equipped with the most advanced and comprehensive suite of security features on the market, including WEP, MAC authentication and radius server authentication.

"The potential to use it is far greater than just for our little application. It extends far beyond that. The capabilities are there."

—David Walther, City of Round Rock

Plenty of Potential

While the City of Round Rock is already taking full advantage of the efficiencies provided by its network of WiFi hot spots, Walther realizes that his colleagues are only scratching the surface.

"We eventually will be sharing some of that intersection monitoring capability with our public safety groups — our 9-1-1 dispatchers, our police and fire departments," he says. "If they get a call to an intersection, they'll be able to see what's going on and assess the situation in advance.

"We can also use it as a live traffic feed for the web. I know our city administration folks eventually want to pull that feed and either web-base it or put it on a satellite channel for the general public as traffic programming." —David Walther, City of Round Rock

"The potential to use it is far greater than just for our little application," adds Walther. "It extends far beyond that. The capabilities are there."





About ENCOM Wireless:

ENCOM, based in Calgary, Canada, provides field-proven, cost-effective wireless data solutions for municipal and industrial clients, with applications in the areas of:

- Intelligent transportation systems
- Public safety communications
- Municipal corporate security and IT networks
- Waste and waste water management
- Electrical utilities
- Oil and gas

ANOTHER SATISFIED CUSTOMER

What ENCOM provided the City of Round Rock:

- Instant, widespread access to the city's wireless network, thanks to COMMPAK BB 24/58INT units that provide WiFi hot spots at traffic intersections — and offer a quantum leap in capability and efficiency for mobile municipal employees;
- Video monitoring, an extremely powerful weapon in the ITS arsenal. Thanks to the technology offered by ENCOM's license-free broadband radios, video cameras with PTZ (pan tilt zoom) control provide excellent video images with minimal Ethernet bandwidth consumption;
- A reliable, field-proven dedicated wireless network with a fraction of the cost of wired alternatives, such as copper or fiber optics;
- A boost in the data rate and the efficiency of the system;
- Seamless, error-free, industry-leading radio performance in the most harsh, challenging environments;
- The flexibility to position and reposition its wireless network at will, since ENCOM's products operate at licence-free radio frequencies, and the flexibility to overcome daunting topographical challenges;
- Protection of its client's investment with one of the best warranties in the business;
- The promise of a lasting partnership and the security of knowing that ENCOM's investment will pay for itself many times over.



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