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Public Safety & Wireless Networks

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Twenty years ago, it was impossible to imagine how Internet access would change our lives. Few of us could have foreseen the thousands of applications that have arisen due to the widespread availability of high-speed Internet. Nearly every home in America has the option to connect to the most expansive wealth of information in the world in a matter of seconds. Today, we are on the verge of another revolution—moving the availability of high-speed Internet access from desks and wireless hotspots to having mobile access anywhere within a city limits.

Municipalities across the country are beginning to recognize the possibilities of implementing a city-wide high-speed wireless network, and in all the recent excitement surrounding the possibility of a low-cost, high-speed Internet service offering, some of the attention that should be given to potential public safety applications has been lost. In fact, a number of municipalities in the United States and worldwide have built systems solely for public safety purposes. Cities from Corpus Christi to Philadelphia to Oklahoma City have already invested in building such a network, and are only beginning to realize its potential benefits.

Perhaps the greatest issue municipalities with wireless mesh networks are faced with is actually identifying all of the uses and applications a system of this kind can support. Because this is still a fairly new concept, there are not many good examples to follow. Cities must rely on their own imagination and insights as to how they can utilize this revolutionary technology.

Today, there are essentially three types of benefits gained from wireless mesh networks for municipalities: replacement cost savings, efficiency enhancements and the ability to allow for process redesign.

Replacement Cost Savings

Replacement cost savings benefits are those that involve replacing old technologies with more cost-effective applications of the wireless technology. For example, many public safety officers in the field currently rely on cellular phones. With a high-speed wireless network, Voice over Internet Protocol becomes a much more cost-effective (and in some cases, free) method of voice contact. In addition, the network allows public safety users high priority on bandwidth use, so their connection has priority over other residential or commercial users. Cellular phone signals do not have this capability, and during peak use times (which could be the result of a large-scale

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emergency, for example), it is not unlikely to hear a frustrating "network unavailable" message. Similarly, squad cars currently use mobile data terminals to access criminal records, vehicle administration reports and other information. These MDTs, which require expensive software applications, can easily be replaced with laptops in hot cities.

Efficiency Enhancements

In addition to saving the city money, the replacements made possible by wireless mesh networks can also greatly improve efficiency and as a result, improve the safety services provided to the city's residents. MDTs have historically been slow, cumbersome, and allow the transmission of limited information. Conversely, squad cars equipped only with laptops have instant access to criminal records complete with high-resolution photographs. They can quickly file reports and access vehicle administration reports from anywhere in the city. Access to the Amber Alert System and the Sex Offender Database are at their fingertips. Coupled with remote video monitoring, police can view video surveillance of crime scenes even before they arrive.

The system has benefits for fire and ambulance services as well. Fire fighters can download floor plans of a burning building while en route to the site of a fire. Ambulances can retrieve patients' medical records and forward vital signs to hospitals in order to help them better prepare for the patient's arrival.

Additionally, because the wireless mesh network is "self-healing" (if one antenna loses its signal, other surrounding antennas fill in for it), some security and reliability issues correct themselves.

Process Re-Design

Certainly the most elusive benefits of a wireless network are those that will completely re-design the ways processes are completed. These are the benefits that make themselves apparent after the network is implemented and will actually change the way that public safety services are carried out. It has already begun in some cities, in which many of the activities that formerly required a trip back to headquarters are being done remotely. For example, cities have begun conducting photograph line-ups at the scene of a crime, improving witness recall and accuracy.

This is only the beginning. The concept of the city-wide wireless network is new, and the resulting applications are still developing. Once again, we find ourselves in a position requiring foresight and imagination. When personal computers were introduced, many people questioned the viability of mass producing them; they couldn't imagine why an average person would ever need one. When the Internet was being developed, people never could have predicted what kinds of applications it would have, not only for businesses, but for millions of homes around the

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world. Today, we are in a position to ask ourselves what kinds of applications could develop not only if every home had high-speed Internet access, but if entire cities had high-speed Internet access.

The most successful cities will be those that remain pliable and forward-looking in their public safety efforts. The potential benefits derived from a high-speed wireless network are only beginning to reveal themselves and will continue to develop with time. Given this, it is the city's responsibility to continually research and identify the potential uses and benefits of a wireless network, keeping in mind the ultimate goal of providing public safety agencies with all of the tools necessary to keep citizens of your community safe.

For more information on the public safety applications of wireless mesh networks, contact Tom Asp at 410.964.5700 or tasp@internetCTC.com.

About the author: Thomas Asp has been serving public power systems for over 20 years. Tom is recognized as an expert in evaluating and offering recommendations regarding municipal broadband communications systems. He has been actively involved with telecommunication market research and feasibility analysis for over a decade.

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