Wireless meshes uptown, downtown, across town

by Richard Bray

MUNICIPALITIES ARE GOING wireless. They have decided their downtowns, and in some cases, every part of town, need to be connected without cables. In recent months, Mountain View, California set a new standard, if not an impossible one, for other wireless implementations by offering free broadband wireless everywhere. Other towns and cities suffer from the distinct disadvantage of not having the mighty Google Internet company as its leading corporate citizen and wireless benefactor.

Here in Canada, as *Summit* magazine (April 2004) pointed out, Fredericton, NB's downtown E-Zone was probably the first municipal wireless implementation, but other cities and towns are now following. Waterloo, Ontario is best known for RiM Technologies, the maker of the ubiquitous BlackBerry wireless devices, but its latest wireless initiative is the UpTown Waterloo Wi-Fi Zone.

As with other cities in Canada, a municipally owned utility company in Waterloo is spearheading their push to wireless connectivity. In Waterloo, Atria Networks Inc., a municipally-owned utility company formed from other regional companies, launched urban wireless last October, bringing wireless Internet services to business and individual subscribers in the downtown district. In Ottawa, the telecom division of the local hydro company rolled out a downtown wireless trial several years ago, while Toronto Hydro Telecom announced a very ambitious deployment in the spring.

When municipally owned utility companies like Atria Networks or Toronto Hydro Telecom are chosen to deploy wireless, they have significant competitive advantages. Above ground, they often own or operate the streetlights and traffic signals where wireless equipment will be installed. Below ground, they already maintain power networks that go everywhere. Their workforce is already trained in most of the skills they need for wireless installations and their management usually has incentives to find new ways of making money for their owners – the tax-paying citizens.

Waterloo Councillor Mark Whaley said, "We now have about 50 restaurants and coffee shops connected, in a town of about 100,000. In the morning, virtually every one has people online, having their coffee with their laptops open."

The economics of wireless can be excellent from a political point of view. As Councillor Whaley said, "It doesn't cost us anything at all. We actually receive a small stipend from the rental of our poles so we get some revenue that way. But it has cost the city nothing." If the deployment goes well, local politicians can claim credit for their wisdom in managing the local utility. If it goes poorly, they have at least one layer of distance from the problem.

There are a number of excellent reasons for cities and towns to enter the municipal wireless field. At the top of the list is economic development, from both a business and an individual perspective. Companies and citizens who are better connected to the Internet are better able to make an economic contribution to their communities. For many cities, the cost of getting in the game is very low, where there is any direct cost at all.

Most municipal wireless systems differ significantly from the kinds of networks installed in homes and offices because they use 'mesh' technology. Instead of connecting each wireless access point directly to the Internet, mesh access points can connect with each other, concentrating the data before attaching to wire or fibre. This lowers installation costs considerably and makes the network more failure-proof because access points can 'sub' for each other in case of failure or overload.

Ottawa-based BelAir Networks is in a happy position at the forefront of mesh technology and is enjoying the current boom in municipal wireless. Marketing Vice President Jim Freeze said that across North America, towns and cities all want wireless but differ greatly in how they plan to finance and deliver it. As he said, municipalities' business plans for wireless are all over the map.

"Today many of the municipal deployments have been based on discounted or free advertising-based models, or even as in the Mountain View area, the Google launch, a totally free deployment," Freeze said. "The problem is none of them have been deployed yet and we think the problem is that the bar was set pretty low – limited coverage, low bandwidth expectations."

Freeze said that in many cases there is a false expectation that everything is going to be free. "Cities that have those expectations will ultimately be dissatisfied and have WiFi networks that will not deliver on what the city is hoping for. What we are seeing more of is cities issuing RFPs with much higher standards. They truly want broadband, not 'wireless dial-up.' They truly want mobility. They want to be able to support a whole host of different technologies," Freeze said.

Supporting a whole host of different technologies is critical. In the case of Toronto, city-owned Toronto Hydro Telecom is launching a four-tiered service in the commercial and financial heart of the city, where customers will range from the casual user look-

ing up a telephone number on a handheld PDA to giant multinational corporations that want not only reliable and fast Internet connections, but the ability to add innovative new applications at short notice. For many such companies, high quality, high-bandwidth video-conferencing is quickly becoming a standard business tool and they will want their networks to scale quickly to meet added demand.

Toronto must also comply with Bill 210, provincial legislation that states all electricity meters have to produce consumption information every 15 minutes, and that data must be available back to power consumers from central collection points within 24 hours. The business case for that wireless application practically writes itself.

Of course, private sector companies are also competing for the wireless consumer and in Canada that usually means Rogers, Bell and Telus. In their opinion, they already had the situation covered, without competition from publicly owned companies.

Chris Langdon vice-president for network services at Telus Corp. said, "We think consumers are well served by the current commercial providers. At Telus, we cover 97 percent of the population with our 1X service, for example."

That said, Langdon made it clear that municipally sponsored wireless is probably here to stay. "From our perspective we welcome both partnership opportunities as well as competition because competition will urge us on to introduce more innovative services and maintain the ones we already offer to a high standard."

Municipalities have been warned by commercial wireless Internet service providers that installing a wireless network is probably the easiest part of the whole experience. The headaches are in customer service, billing, maintenance and meeting the demand for tomorrow's new services and standards with today's revenue stream and yesterday's technology.

In business terms, the municipal wireless market is one of the biggest new opportunities now available for telecommunications companies, so there will probably be fierce competition for each project and many innovative solutions.

As BelAir Networks' Jim Freeze said, "We believe that business models are going to work themselves out over the next year, and that there are examples of cities that have figured out successful business models. We think increasingly cities are going to replicate that."

At the beginning of the 20th century, to bring their citizens the economic and social benefits of telephone service, municipalities often built and owned their own telephone company, some of which still survive in Canada. Today, the distant relatives of those pioneering telephone companies are designing their wireless networks to provide telephone functionality through VoIP (Voice over Internet Protocol). Today, Internet telephone service is just one more item in a growing range of choices offered by governments to their citizens. ᗯ

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