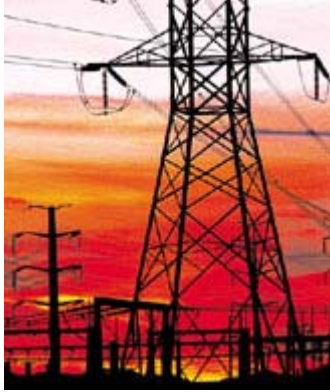


## Ethernet has left the building

1/29/2004 10:17:44 AM - Telecom carriers, electrical utilities offering wide-area services

*by Grant Buckler*



It has escaped from the building and now it's taking over the city. The countryside will be next. No, it's not Godzilla. It's Ethernet, the 30-year-old local-area network technology that is now extending its reach into metropolitan and wide-area networks.

"Metro Ethernet has been talked about

for a couple of years now," says Bob Mott, a spokesperson for the Metro Ethernet Forum and a Nortel Networks Corp. employee, "but it was very unique a couple of years ago — especially with the telecom downturn — to see anyone actually doing anything." Today, Mott says, essentially every carrier is either offering the service or conducting trials.

Metro Ethernet services are widespread in Canada. All major national carriers currently offer wide-area Ethernet services. A growing number of telecom startups affiliated with electrical utilities are putting their optical fibre to use with similar offerings for business customers.

"Ethernet is obviously the access vehicle of choice," says Patrick Matthews, a senior analyst at The Yankee Group, a Boston-based research firm. Worldwide, The Yankee Group estimates revenues from metro Ethernet services will grow from US\$900 million in 2002 to \$6.9 billion in 2007.

Bell Canada offers wide-area Gigabit Ethernet services in all major metropolitan areas in Ontario and Quebec and in some other Canadian cities through its Bell West unit and through agreements with other carriers, says Roger Roney, senior leader for access services of the carrier's large enterprise group. Bell can also extend wide-area Ethernet services to smaller centres over T1 lines, though that approach limits the bandwidth.

### VERTICAL MARKETS INCLUDE FINANCIAL SERVICES, ENERGY

Telus Corp. offers metro Ethernet services in Vancouver, Calgary and Toronto, and is extending services to Vancouver Island and the British Columbia interior, says Neil Van Seters, technical solutions architect with the Burnaby, B.C.-based carrier. Telus can provide service at speeds ranging from 10 Mbps to a gigabit per second (Gbps).

Allstream Corp. of Toronto (formerly AT&T Canada) started with service in a few large cities and has expanded to offer wide-area Ethernet over its own fibre in 29 communities. The firm also provides links among those centres and access over digital subscriber line (DSL) connections and through agreements with other carriers. "We've taken a lot of steps over 2003 to expand our reach," says Eric Fletcher, Allstream's vice-president of product

management for connectivity services.

Electrical utilities are also getting in on the game. Toronto Hydro Telecom Inc. began offering metro Ethernet services in April 2002, at speeds ranging from 10 Mbps to 1 Gbps. Enersource Telecom does the same in neighbouring Mississauga. Brad Randall, general manager of Enersource Telecom, says the services are popular with businesses that want to link multiple locations in the metro area, particularly for high-speed data backups. A number of other utilities' telecom units offer similar services.

Major customers for metro Ethernet services include the financial sector, oil and gas, and the so-called MUSH sector - municipalities, utilities, schools and hospitals.

"The thing they have in common is they're typically pretty big customers with pretty high bandwidth requirements," says Ian Miles, president of Toronto Hydro Telecom - although Roney says some smaller companies with high bandwidth needs use metro Ethernet too.

Van Seters says the greatest initial interest in Telus' services has been in the health-care sector, which uses them for bandwidth-hungry applications such as remote radiology. This application is one factor driving Telus' push to extend its metro Ethernet services into B.C.'s interior, he says.

Roney says Bell Canada made its first moves into metro Ethernet with municipal and educational customers. Hospitals and the financial sector have also become important markets, he says. Roney says about 80 per cent of metro Ethernet customers need service within a single metropolitan area, while the remainder, notably banks, want links from city to city.

Roney suggests metro Ethernet is growing faster in Canada than in the U.S. because of the countries' different geographies. In Canada, many businesses need high-speed communications within one metro area, whereas in the U.S., more customers need longer-haul links, which can be provided using Ethernet but are taking longer to establish.

The overriding reason for metro Ethernet growth is cost, says Nan Chen, president of the Metro Ethernet Forum. Van Seters says wide-area Ethernet is 50 to 75 per cent cheaper than Synchronous Optical Network (SONET) or Asynchronous Transfer Mode (ATM).

The other big factor propelling metro Ethernet is that it is Ethernet. Chen maintains that about 98 per cent of all Internet access end points use Ethernet, which dominates local-area networking. Using Ethernet across longer distances makes for a simpler network, avoiding multiple translations among protocols. And Ethernet's familiarity is a benefit for customers.

#### DON'T BID ADIEU TO SONET JUST YET

While the popularity and widespread knowledge of Ethernet are the major reasons for extending it across the wide area, Chen adds that the protocol also handles traffic with large spikes as well.

This is not to say pure Ethernet is the only choice for wide-area network providers. Some carriers run Ethernet over SONET or ATM network transports, Chen says, which provides compatibility with customers' Ethernet networks while taking advantage of the carrier's installed base.

"If you were starting from a greenfield solution and didn't have any network in place, you may want to keep it all Ethernet," Mott says. But that's a rare situation. Don't expect SONET to go away any time soon — in fact, Chen predicts, Ethernet over SONET will be one of the major growth areas over the next five years.

Now that carriers' metropolitan Ethernet services have become common, the next step is to link those services so customers can transport data over longer distances. This is particularly important to the data-carrier arms of electrical utilities, which typically serve a single city or a relatively small region.

In and around Toronto, for instance, a handful of carriers operated by electrical utilities have already interconnected to offer customers service between downtown Toronto and

neighbouring suburbs. Miles says Toronto Hydro Telecom has connected its network to those of Enersource Telecom in Mississauga, Markham Hydro Telecom to the north and Hydro One Telecom, a unit of the provincial electrical utility. Together the companies can deliver longer-haul services.

#### BELL EXECUTIVE ANTICIPATES NATIONAL ETHERNET SERVICES

Over time, Miles expects to see more of this interlinking of small utilities. In particular, he hopes to strike deals that will widen his company's reach into the "Golden Horseshoe" region that extends around the western end of Lake Ontario to the Niagara peninsula.

Those types of interconnections are not the exclusive preserve of smaller companies. Allstream has already connected its wide-area Ethernet network to that of Telus, and is negotiating with Bell, Fletcher says. Roney says Bell works with other carriers and will probably do so more in the future. He predicts customers will eventually be able to get Ethernet services across Canada.

In an effort to simplify such interconnections and to make it simpler for customers to buy Metro Ethernet services, the Metro Ethernet Forum recently completed the first formal definition of metropolitan Ethernet service. The MEF Technical Specification — Ethernet Services Model Phase 1 — was ratified in October. Chen says it gives service providers a conceptual tool to model point-to-point and multipoint services."

The forum is also planning a companion services definitions specification. Metro Ethernet needs such standards to proliferate, Chen says.

The Yankee Group's Matthews agrees.

"When you're talking a telco world, standards are a key factor."

As standards evolve and as carriers continue expanding their metro Ethernet offerings and complete agreements to link their services, the Ethernet juggernaut looks set to roll on from the LAN to the wide area.

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