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Soaring Into 2005

Network security and business continuity will drive much of the business next year and beyond. Although fiber solutions will make some inroads, notably for mission-critical applications among healthcare providers and financial-service firms, copper remains the standard for a majority of enterprises.

By Perry Greenbaum

The last time we witnessed such intense activity was during the Y2K threat when companies in Canada and the United States spent billions of dollars to update their computer systems.

Five years later after a period of retrenching and penny-pinching, companies appear ready to loosen their corporate purse-strings and invest in their networking infrastructure.

The overseers of information-technology networks are seriously looking at four areas: storage area networks (SANs), network security, higher-capacity cable, and voice over IP (see sidebar).

If there is one overarching theme clearly associated with today's sentiments, it is ensuring that the network infrastructure can not only handle more data, but also move the bits and bytes around on secure high-speed lines without interruption.

Network security & SANs

Security concerns over protecting information will likely enable the increased use of SANs. Canadian and American legislators have enacted federal legislation that mandates the safeguarding of personal data.

In Canada, there is the Personal Information Protection and Electronic Documents Act (PIPEDA), which regulates how organizations collect, use and disclose personal information. (All provinces, except Newfoundland have similar legislation.)

Equally important, in the U.S. two pieces of federal legislation are driving the network-storage business: the Sarbanes-Oxley Act, passed after 9/11, which impels companies to examine how data is managed, archived, retrieved and authenticated; and the Health Insurance Portability and Accountability Act (HIPPA), which requires the establishment of a secure IT infrastructure by April 2005.

Concerning the latter, health-care providers must improve their storage keeping, which might translate to a market boom for firms involved with the storage area networks (SAN) enterprise market.

A SAN is a high-speed special-purpose network that interconnects various data-storage devices. SANs operate on competing technologies, Fiber Channel or Gigabit Ethernet. For example, a company may keep various bits of information on a variety of databases, and the use of SANs make it easier to integrate and access the information. (For both technologies, copper cabling can be used, but then the Fiber Channel has a maximum range of 30 metres rather than the 10 km. that fibre-optic cables provide.)

When SANs came out a few years ago, they were very expensive -- costs ran into millions of dollars -- thus large enterprises were the chief users of them.

Nevertheless, the technology now costs less and has become easier to install, making it conceivable that many more small- and medium-sized firms will be installing SANs in 2005 and beyond.

"There has been a very systematic decrease or about 15% per year in the price per port of SANs," says James Opfer, an analyst with Gartner.

Revenues for the SAN market approached US\$1.7-billion worldwide in 2003, Opfer points out. "The storage network infrastructure market revenue is forecast to grow at an average annual compound rate of 21%, and hit \$4.9 billion by 2008," he says.

In the years after 9/11, firms dedicated to network management have focussed on securing the huge array of data contained in enterprise networks.

To be sure, network security is on everyone's mind, a thought made more valid by the constant reports of intelligent, knowledgeable and malicious hackers achieving some measure of success in disrupting normal business activities.

"Enterprise networks are the backbone for real-time business activities, communications and customer service, which makes them an irresistible product for a growing range of threats and attacks that compromise proprietary information and cripple business productivity," says John Roese, chief technology officer of Enterasys Networks in Andover, Mass.

Enterasys, a manufacturer of intelligent infrastructure products, has developed an automated security product, which is essentially a threat-detection and intrusion system that the company says effectively deals with such cyber attacks.

Business continuity & fiber

Dovetailing nicely with network security is a growing area of business: disaster recovery and business continuity. In disaster recovery, firms work out a strategy to get the business up and running after a major incident such as a fire, flood and hurricane.

Business continuity tends to focus on reducing the possibility of a disruption by building in redundancies and moving data-centres a suitable distance off site.

The SARS crisis that hit the Toronto area two years ago, resulting in the quarantine of some financial-services firms, gave companies reason to pause.

"When that happened some of our financial-services customers stepped back and started to think not only of their IT infrastructure and how to back that up, but also to provide a backup environment for their people to work in," says Ian Miles, president of Toronto Hydro Telecom Inc., a subsidiary of Toronto Hydro Corp.

The main premise of business is to set up safe places where employees can work so that they can continue to send and store data. The emphasis is to keep businesses operating, and thus avoid disruptions.

One of the best ways to achieve this, the thinking goes, is to build in system redundancies by adding at least one other dedicated distribution line and data centre. (One financial-services firm has four levels of redundancy. The reasoning being that if one centre crashes the other can still operate.)

"Since 9/11, there has been an increased interest in separating the data centres," Miles says. "The rule is at least 25 kilometres between centres."

In the case of Toronto Hydro Telecom, it supplies the infrastructure, including highly secure fiber-optic lines.

Business has been steady. Toronto Hydro Telecom, owner of a fiber-optic network spanning 450 kilometres and connecting 400 commercial buildings in Toronto, began operations in 1995 by leasing dark fiber.

And although it continues to do so, its core business has shifted. Today, business continuity is the fastest-growing segment of its business and accounts for about 35% of the company's annual revenues. (The company would not reveal revenues, citing confidentiality.)

One of its recent projects was connecting the Toronto's University Health Network, an association of three hospitals in metropolitan Toronto, to a data centre off-site. The health-network had long maintained a data centre in the basement at one of the hospitals.

"It was susceptible to flooding," Miles says. "They wanted to move the data centre off-site because they felt that the hospital site was inadequate to secure their needs."

Hewlett-Packard Canada Co. provided a site in Mississauga, Ont.

After the hospital network negotiated a contract with HP to move the data-centre, Miles says, "we supplied a robust connection from the data-centre to downtown Toronto to all three hospitals."

They ended up with a private OC-48 network with a full gigabit capacity with an option to upgrade. As it now stands, Toronto's health-care network can send voice and data over its network, but might soon add medical-imaging files to its transmissions.

Copper vs. fiber

Miles, understandably, is a strong proponent of the fiber optic solution, particularly for mission-critical applications.

"Fiber is the standard for these more sophisticated disaster-recovery solutions, and will remain the standard for some time," he points out.

"There is no other medium that can deliver the amount of bandwidth and security that fiber can."

If that is the case, will fiber to the desk (FTD) finally become a reality in 2005? Even an advocate as bullish as Miles thinks it unlikely.

Although fibre has become less expensive, it remains more expensive than copper. "One is more likely to see fiber to the backbone," he says. "Fiber to the desk's time has not yet come."

Paul Kish of Nordx/Belden CDT Networking Division in Pointe Claire, Que. agrees.

"Fiber to the desk is limited by the cost of electronics and equipment. For most computers, you would need a NIC card with a fiber interface, which are two or three times the cost," he says. "You essentially require a special interface to connect a fiber cable to your computer."

While copper remains the leading connection to the desktop, one option is fiber to the zone, and then copper to the desk, which is a viable alternative to firms that want a faster in-house connection.

Another looming question is whether CAT 7 will become popular. Currently, CAT 7 represents an insignificant portion of the world's structured cabling market. "The trend is more towards CAT6, especially in North America," Kish says.

According to Alan Flatman, principal consultant of LAN Technologies UK, CAT 7 will account for 0.4% of the world-wide installed base of 925 million outlets by December 2005. That's fewer than 4 million outlets.

As a comparison, CAT 6 will have an installed base of 314 million outlets, or about one-third of all installed cable. (CAT 5e represents half of all worldwide installations, or more than 400 million outlets.)

The largest area of growth for CAT 7 is in Austria, Germany and Switzerland. Kish, who was in Germany recently, explains the reason as historical.

"For the Germans, it's always been traditional to install shielded cable for data circuits," he says.

Kish attributes that to concerns among many European nations that shielded cables address environmental concerns such as stray electromagnetic interference (EMI) better than unshielded twisted pair (UTP).

Even so, the norm in North America since the early 1990s has been unshielded cable, driven in large part by Ethernet.

"All the equipment that runs using UTP meet the noise and EMI standards," Kish says, "so it seems that CAT 7 has not found a sizeable market in North America."

Another problem with CAT 7 in North America is that CAT 7 connectors are either not readily available or are not backward-compatible with RJ45 (8-pin module) connectors.

"If you install a CAT 7 connector in the wall, you would need a special patch cord to adapt existing equipment, which is RJ45 modular in style," Kish says.

"As well, you would need a connector that's backward-compatible. I am not sure how readily available such a solution is in Canada and the U.S. right now."

Network speeds increase every five years. In the early 1990s, when 1-Gbps was introduced it became the operating standard yet in 2006, network speeds will likely reach 10-Gbps.

CAT 7 might find some market when the 10-Gbps standard is released in 2006, Kish says. Even so, there will likely be good UTP solutions, namely, variations of CAT 6. Currently, CAT 6 copper operating at 10 Gbps is good for only 55 metres.

Analysts predict that 10-Gbps copper will become useable for data centres, even though fiber is the norm, but where copper can be used for short distances.

"The industry has introduced 10 Gig for a reason," Kish says. "The cost of copper is lower than fiber."

Even so, predictions are only that, estimates based on the best-available information.

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