

PIPE DREAMS:

Bandwidth Help Is On The Way

by TERESA MURPHY

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he key to using online resources effectively is quick and cost-effective access and delivery. As the World Wide Web and commercial online vendors offer more and more content to an expanding customer-base, stresses on the information highway's infrastructure increase accordingly. As more bandwidth is used, transmission slows down.

Accessing electronic resources with a standard 28.8 kilobit-per-second (Kbps) modem on a telephone line is no longer fast enough when delays result in declining productivity.

"The good news is that options for bandwidth access are expanding," says electrical engineer Ellen Koskinen-Dodgson, a partner in TMC Telecommunications Management Consultants and publisher of Telecom Advisor Magazine. "Telephone and cable companies are upgrading their infrastructure and services, and new

companies are emerging that provide high-speed bandwidth options. This means real competition which will result in greater choices for consumers."

To help you understand your choices, INFORMATION HIGHWAYS surveyed leaders in the forefront of bandwidth development.

Telecommunications Companies

Canada's nine major telcos (telecommunications companies) in the Stentor Alliance are keeping pace with the demand for bandwidth. Across Canada they are revamping their infrastructure of millions of miles of copper wires, adding fibre-optic cabling and developing innovative services.

ISDN (Integrated Service Digital Network) is a high-speed, dial up service that uses a dedicated telephone line and a digital switch-

ing system. Koskinen-Dodgson explains that digital communications are carried over two 64 Kbps channels for a maximum speed of 128 Kbps. This means end-users can access computer data, voice, image and video at a rate that is five times the speed of a 28.8 Kbps modem.

One of ISDN's best features is that one ISDN line can be used concurrently for two different functions. This means you can download information from a commercial database vendor while sending a fax. Or you can search the Internet, while talking on the phone.

The catch, says Koskinen-Dodgson, is that both your Internet service provider and anyone you plan to dial up must also have an ISDN line. If you plan to videoconference, teleteach or telecommute, ISDN could be for you.

ISDN is available in most Canadian cities for as low as \$55 per month for home users, and from \$90 - \$120 for businesses, plus an installation fee. By 1997, most smaller communities throughout Canada will have ISDN access.

ISDN requires a dedicated ISDN line, a terminal adaptor or digital modem which costs \$400, and a Network Terminating device. For information contact your local telephone company.

ADSL (Asymmetric Disk Subscriber Line) is another innovative telcos initiative which promises to dramatically increase hyper-speed bandwidth access, according to Koskinen-Dodgson.

Now at the commercial trial stage, ADSL works with two modems connected by the telephone lines. One modem is located at the telephone company's central office. The other is in your office or home. This creates a dedicated pipeline. The modems convert unused telephone line capacity into three information channels, integrating computer data, image and video, and voice. This means you can access an online database vendor, transmit large amounts of data such as multimedia from the Internet, and talk on the phone at the same time.

How fast is it? ADSL now provides 1.5 megabit per second (Mbps) access. Future speeds of up to six Mbps are planned, which means access will be at speeds of up to fifty times faster than a 28.8 Kbps modem.

ADSL service will be offered in major Canadian cities by mid-1997. For information, contact your local telephone company.

Cable Companies

To compete with the telcos, cable companies in the vision.com consortium are tackling the demanding challenges of improving and expanding high-bandwidth access. Their WAVE service is now being tested in select Canadian cities.

Developed to bring affordable high-speed Internet access to Canadians, The WAVE now offers access of up to 500 Kbps over the same type cable that connects your television set to its channels.

Future speeds of an amazing 30 Mbps are planned. That means you'll search the Internet at 1000 times the speed of a 28.8 Kbps modem.

Here's how it works. The WAVE connects your computer through a cable modem that is directly connected to the Internet through the cable company's network of fibre optics and coaxial cable. There are no phone lines and no logins and, therefore, no busy signals and long waits.

But there is a catch, according to Koskinen-Dodgson. "Cable modem technology is a shared service. The cable that runs in front of your home is shared by other end users on your street. It's still unclear what would happen if all the users simultaneously downloaded large files."

In any case, the WAVE now leads the pack in high-speed Internet access. Telecommuters, home based businesses and students will be an eager market for WAVE technology.

The WAVE costs \$55 per month plus an installation fee of \$150. By 1997, more than two million Canadian homes will be what the cable companies call, "WAVE ready."

Independent Competitive Access Providers

In the high bandwidth access market, a small, privately owned, Calgary-based company, MetroNet, is aiming to compete with the tel-

cos and cable companies.

As Canada's only independent competitive access provider (at the time of writing), MetroNet offers services similar to those of a telephone company. With its own fibre optic infrastructure, MetroNet provides broadband networking, long distance services, local network access facilities and, of course, high-speed Internet access.

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Using ATM (Asynchronous Transfer Mode) technology, MetroNet's customers include major corporations like oil and gas companies, and government offices, which have very large bandwidth requirements.

Koskinen-Dodgson believes that with its goal of making access more affordable, MetroNet will prove to be real competition for the telcos. In the future MetroNet plans to provide high-speed access to online financial information services, distance learning, interactive computer learning and video conferencing.

MetroNet has opened an office in Vancouver, and is slated to open offices in Edmonton, Toronto, Ottawa and Montreal. For further information contact www.metro.net.ab.ca

High Bandwidth Modems

Although engineers said it would never happen, the 56 Kbps modem will soon be on the market. It may be the best inexpensive alternative to 28 Kbps modems and the digital ISDN line.

But here's the catch. To achieve maximum speed both the end user and the Internet service provider must have the appropriate

technology. Otherwise the rate of speed reverts to the lowest capacity of the modems being used. That means if you transmit data on your 56 Kbps modem to someone using a 14.4 Kbps modem, the transfer will be at the lower speed.

Rockwell Semiconductor Systems of Newport Beach, California, a developer of this technology, is delivering its chip sets to modem manufacturers in early 1997. The product will be commercially available sometime in 1997. For information visit <http://www.nb.rockwell.com>

To take full advantage of advances in bandwidth access, knowledge workers need to determine exactly what they need. The type of access you buy will depend on your application. Think about it. Do you just want to power search the Internet? Or do you also need access to commercial online databases? Do you presently run a news feed, videoconference or teleteach? Or does your organization have multiple end-users on LANs who use the Internet to transfer large files, download graphics and publish interactive documents?

Once you've determined your application, you will be ready to test your options.

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G L O S S A R Y

ADSL (Asymmetric Disk Subscriber Line): emerging telcos technology which uses telephone infrastructure.

ATM (Asynchronous Transfer Mode): a method of transmission designed to switch variable information rates over a common network.

bandwidth: the range of frequencies a circuit will pass that are required for specific uses. The higher the transmission rate, the greater the bandwidth requirement. Data requires less bandwidth than voice, while both data and voice require less bandwidth than multimedia.

broadband transmission: provides a larger bandwidth due to modulation of the original frequencies into multiple "bands."

byte: a unit of data used in computer systems. Also used as a unit of data transfer.

central office: the telephone-switching location nearest the customer's home or office, which serves homes and offices connected to its loop lines.

coaxial cable: a type of cable which is used to transmit voice, data and images.

dial-up line: a communications circuit established by dialing a destination over a public telephone system.

digital: telecommunications circuits in which information is transmitted in trains of pulses.

fiber optics: a data transmission method that uses light pulses sent over glass cables.

ISDN: (Integrated Services Digital Network): a set of standard

interfaces to a digital communications network, that offers end users voice, data and images on end-to-end digital circuits.

kilobits: 1,024 bytes.

Kbps: transmission rate of kilobits per second

LAN (Local area network): a computer communications system using high-speed connections of 2 to 10 megabits per second that facilitates sharing files and resources.

megabit: approximately one million bits.

modem: a device that translates between electrical signals and another means of signaling, such as digital signals sent from a computer or terminal and analog signals sent over a telephone line.

packet switching: a transmission technique that maximizes the use of digital transmission by sending packets of digital data from many users simultaneously on a single communications channel.

The Stentor Alliance: comprises NorthwestTel, BC Tel, AGT (Alberta), MTS (Manitoba), Bell Canada, Quebec Tel, NBTel, MTT (Nova Scotia), Prince Edward Island Tel, and NewTel (Newfoundland).

vision.com Consortium: comprises Rogers, Shaw, Cogeco/Cablenet and Western Co-Axial. Other WAVE partners include Cable Regina, Delta Cable, Access Cable Television, Videon CableSystems and Videotron.

Glossary Source: Derfler, F. PC Magazine Guide to Connectivity. 2nd ed.