

Superfast network handles proteins to pianos

It might not have a fancy name, and its dramatically enhanced capabilities will probably not even be noticed by many of the people using it. Nevertheless, the upgraded University computer network linking various Ottawa-region research institutes is bound to be welcomed by a number of key researchers who have been seeking to move larger amounts of data more quickly than ever before.

Computing and Communications Services will activate this system within the next few weeks. Formally known as a Metropolitan Area Network, it will allow information to flow from site to site around Ottawa, at speeds ranging from 100 megabytes per second to more than a gigabyte per second.

Those levels dwarf the 10 MB/sec that has been the average on the network. That rate had been proving inadequate for many researchers to transmit or receive large files, and it was holding back some of the online applications people wanted to try, such as giving music lessons to children in Québec's far north.

This information bottleneck became especially problematic a few years ago, after the University became the headquarters for the Canadian Stroke Network and the Stem Cell Genomics and Therapeutics Network (StemNET). These two national research organizations focussed on the intricate details of protein chemistry, employing data files much larger than most of what travels over the Internet.

What these researchers were demanding was bandwidth, the technical term for the combination of speed and volume that defines the limits of what a computer line can carry. With the aim of enhancing the system's bandwidth, associate vice-rector for research Yvonne Lefebvre led an application to the Canada Foundation for Innovation to create high speed connections to all parts of the regional research community. The \$3.2 million project, which was also championed by the vice-dean, research in the Faculty of Science, André Dabrowski, eventually included some 28 researchers in a dozen different departments. The projet received the go-ahead at the beginning of 2002.

The next two years took assistant director of Computing and Communications Services Pete Hickey on a search for "dark fibre". This is optical cable that has already been installed in the ground but which is activated by the organization acquiring it. Hickey knew that it would be a challenge to find such a valuable asset, since large cable firms prefer to ask customers to sacrifice some control in order to obtain service over lines that the company is already operating.

Eventually Hickey struck a compromise with Telecom Ottawa, which provided the University with some dark fibre and some managed service, both at a reasonable price. And now that the new network is essentially complete, Hickey marvels at its possibilities.

For example, the Élisabeth Bruyère Research Institute in the Byward Market now has access to these high speed connections. "There's no way normally that researchers there would be able to get any kind of high bandwidth connectivity," he says. "But now they have it. They might not have the need right now, but it's there and the infrastructure is in place. That's the spirit of the CFI, to build infrastructure."

Even more remarkable to him has been the work of a piano teaching laboratory mounted by the Department of Music. Laboratory director Gilles Comeau has been using live, instantaneous

transmissions over the World Wide Web to teach eight secondary school students in Kangiqsualujjuaq in northern Québec.

"A year ago, I never would have thought that someone in music would be asking me for a steady 400 MB stream going out of the University," says Hickey. "Now we have the infrastructure to do that work."

He adds that the network also provides a more robust connection with CA*net, providing high speed connectivity with other universities through the Ontario Research and Innovation Optical Network (ORION).

"Through ORION they could have pretty much the bandwidth they want to any university in the province," says Hickey, expressing his sincere desire to see the system start to fill up. Perhaps already anticipating the next upgrade, he suggests, "I'd love to see that I don't have enough bandwidth."

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