

BCNET GRANTED \$3.15M TO EXPAND ADVANCED NETWORKS



Ida Chong, Minister of Advanced Education

"I wish to acknowledge the success of BCNET in the development of a communications infrastructure that supports advanced research in British Columbia's public post-secondary sector, as well as government and non-government research organizations provincially, nationally and globally."

On February 14, 2005, BCNET received capital funding of \$3.15M from the BC provincial government to fund the BCNET 2010 expansion project, creating a next-generation network for research and education within the province.

Inter-connecting Campuses at Lightning Speeds

The BCNET 2010 project will build high-speed dedicated wavelength connections using lightpaths between all major research institutes, including UBC, SFU, UVic, UNBC and BCIT. Travelling at the speed of light, this dedicated optical fibre can transmit massive quantities of data and enable interconnection between such tools as scientific equipment, instruments, sensors and databases. Lightpaths will connect universities and institutes across the province, and link researchers and educators at home, throughout the country and around the world.

Opening the Door to Research in the Okanagan

As part of BCNET's 2010 project, new transit exchanges will be built in Surrey, Kelowna and Kamloops, enabling campuses in outlying BC communities to connect to a local exchange – greatly enhancing the network speed and bandwidth available to these communities. UBC Okanagan Deputy Vice-Chancellor Dr. Barry McBride and Okanagan College President Jim Hamilton have been promoting the expansion of BCNET's ORAN throughout the Okanagan.

The development of the high-speed optical regional network in the Okanagan will support world-class research and education at regional institutions.



**Jim Hamilton, Okanagan
College President**

“An expansion of the ORAN is good news for the entire Okanagan. The project will bring us closer to bridging the digital divide in this province and enable the medical community, businesses, educators and researchers to connect and share valuable information across BC and around the world.”



**Tom Calvert, Emeritus
Professor at the School of
Interactive Arts & Technology**

“With technology, such as lightpaths, we have the opportunity for high-definition images and streaming video. This will enable students and faculty to attend rehearsals across the country.”



**Brian MacKay, Director of IT
Services, Thompson Rivers
University**

“Connecting to BCNET will provide us with the backbone needed to become the largest distance educator in the province.”

EXPANDING BC'S NETWORKS FOR 2010

Building the Infrastructure

Plans are underway to build the infrastructure for the BCNET 2010 project. New Transit Exchanges are currently being planned for Kelowna, Kamloops and Surrey.

What is a Transit Exchange?

BCNET pioneered the “Transit Exchange” model for research and education in BC. Our unique model provides a central site or meeting place, strategically located close to commercial telecom providers in university communities. Today, these communities are Vancouver (VanTX), Victoria (VicTX) and Prince George (PGTX). At these three exchanges, member institutions and affiliates connect with dedicated fibre to the TX to share data among themselves as well as to obtain access to the worldwide Internet from telecom providers.

Kelowna

BCNET is ramping up to build a Transit Exchange in Kelowna and establish connectivity for this region by September 2005. UBC Okanagan (UBCO) will be the first facility connected to BCNET's ORAN. Opening its doors in September 2005, the new University of British Columbia campus will have the bandwidth and collaboration capabilities to meet the research and academic needs of its members.

Kamloops

The infrastructure for the Kamloops Exchange is being planned, and a location has been selected at Kamloops City Hall. BCNET plans to establish connectivity by September 2005. For local colleges, like Thompson Rivers University (TRU), connecting to the ORAN will help to increase their enrollment rates, as well as fulfill their new mandate for developing applied research. Connecting to high-bandwidth networks will provide the backbone TRU needs to become the largest distance educator in the province.

Surrey

SFU Surrey has been pushing hard to get high-speed advanced networks to the campus. With BCNET's 2010 plans, increased bandwidth and optical lightpaths for the School of Interactive Arts & Technology will mean high-quality connections for artistic productions and better collaboration. Plans to build a Transit Exchange in Surrey are still in development.



ENABLING COLLABORATION FOR BC'S HOSPITALS AND RESEARCH CENTRES

The UBC Medical School has identified a number of academic health centres that require advanced networks for collaboration and innovation in research. Over the last quarter, BCNET connected Vancouver hospitals with dark fibre to the Exchange including: St Paul's Hospital, Vancouver Hospital, UBC Hospital, Women's and Children's Hospital and Prince George Regional. As well, Genome Research and the BC Cancer Agency have been connected.

Don Henkelman, CIO, Provincial Health Services Authority (PHSA) was influential in ensuring the Provincial Health Services Authority was connected to BCNET's Optical Regional Advanced Network. Today, PHSA is connected and can take advantage of the collaboration and peering services provided at the Vancouver Transit Exchange.



ENVIRONMENT CANADA CONNECTS

Increasingly, scientists at Environment Canada need to collaborate with the Department of Fisheries and Oceans (DFO) researchers. As a new affiliate, Environment Canada is connected through lightpaths to BCNET's Optical Regional Advanced Network (ORAN), which is connected to the national network, CA*net4, operated by CANARIE, which then connects to the

worldwide research network. Linking to the advanced research network through lightpaths, provides Environment Canada with the opportunity to collaborate with researchers across the country and around the world. This juncture brings together government, community and research that is important for world-class research in BC.





VIDEOCONFERENCING ENRICHES MEETINGS AND SAVES MONEY



BCNET 2005 Videoconferencing Survey

Over 88% of respondents rated their experience with videoconferencing as very good to excellent.



93% of videoconferencing users stated that saving money is the primary benefit.

In March, 2004, BCNET kicked off a videoconferencing pilot project to test the technology as a viable collaboration tool for our members. BCNET members, including researchers, faculty and staff, were invited to participate in the project. Videoconferencing was enabled through BCNET's advanced network, ensuring uninterrupted high-speed links for service. Users could tap into the network at any time for a no-fee connection to colleagues around the world.

Today, videoconferencing has gained widespread acceptance and is being used for an extensive array of applications, including thesis defence, long-distance meetings, recruitment interviews, special events, committee reviews, distance learning and research. With a total of 51 videoconferencing units deployed in BC, it is safe to surmise that university members have widely adopted the technology—validation that videoconferencing is firmly entrenched with our members.

Videoconference Survey Results

To gain a better understanding about this technology, how it is being used and users's overall satisfaction, BCNET conducted a survey of all pilot project participants. Survey results indicate the project has been an overwhelming success. Over 88% of respondents rated their experience with videoconferencing as very good to excellent. The technology has been very well utilized, with over 18% of respondents exceeding 100 sessions over the last year.

Cost Savings are Primary Benefit

Cost savings are a huge advantage for videoconferencing users: over 93% of users stated that saving money is the primary benefit. Respondents stated that videoconferencing enabled them to participate in distance meetings that they otherwise might not have attended or conducted.

Usage

BCNET's multi-point videoconferencing units can simultaneously include up to 12 sites in one conference. However, the survey found that most users are typically connecting between 2 to 4 sites.

Overall, the findings show that videoconferencing has enriched many member projects at regional, national and international levels, improving collaboration and saving money.

TECHNOLOGY PERFORMANCE GETS HIGH RATINGS AT UBC MEDICAL SCHOOL

Beginning this year, UBC officially commenced the distributed learning portion of the Medical Expansion Program. With the launch, medical students are now attending courses simultaneously from three campuses — UBC, UNBC and UVic. The first of its kind in Canada, this innovative curriculum is delivered remotely through cutting-edge technology over BCNET's high-bandwidth advanced networks.

BCNET Provides the Backbone for Distributed Learning

BCNET's dedicated network is the telecommunications backbone between UNBC, UBC and UVic. Lightpaths provided by BCNET provide the gigabit capacity needed for each of the three video streams, labs and eLearning. Dedicated lightpaths ensure optimal high-speed links between universities.

Stan Shaw, IT Strategic Initiatives Lead at UBC Medical School, reported that there has been excellent technology performance. The technology has been working extremely well and classes are being transmitted smoothly over BCNET's advanced networks using dedicated high-speed lightpaths, videoconferencing equipment, television and quality of service (QOS) networks. BCNET's specialized QOS network delivers guaranteed service and rock-solid quality, so that transmissions are very stable and uninterrupted.

Students have also had the opportunity to rate the technology. UBC has formed a Technical Advisory Group (TAG), made up of students from all three sites, to provide feedback regarding the technology and the student interaction. Here is what they had to say...

Technology perception

Overall, students were very satisfied with the technology and gave it high quality ratings as well as the IT supporting staff.

Technology impact on learning

Students commented on a learning resource called "The Virtual Slide Box" They liked the accessibility of this standardized resource from any Internet connection at any time.

Learning via a distributed curriculum

Students cited that the use of videoconferencing technology helped them to better collaborate and develop team building between sites.



Stan Shaw, IT Strategic Initiatives Lead, at UBC's Faculty of Medicine

"The real showpiece of technology is the ability to connect teaching areas in the Life Sciences Centre— including two 350-seat lecture theatres, the multi-purpose Histology lab and Gross Anatomy labs— with their counterparts in two other universities, UNBC and UVic."



UBC Medical Student

"Things are going great! "The technology is working better than I ever thought it would. The technology people are working really hard and deserve thanks."



LIGHTPATHS FOR RESEARCH



Increasingly, researchers are requiring high-bandwidth, gigabit streams for experimental research projects – requirements that cannot be met over the Internet. As the pressure to innovate increases, massive quantities of data are constantly being created and utilized. For example, bioinformatics research requires scientists to search large genome databases; while physicists require dedicated high-speed connection to the super collider at CERN in Switzerland and the Stanford Linear Accelerator. BCNET enables these unique, extremely large datasets to be shared throughout the network, at the speed of light through lightpaths.

User-controlled lightpaths allow the users themselves to remotely connect optical network endpoints: it as simple as administering software from the desktop.

New Lightpath Projects

Currently, BCNET's Network Engineering department has been developing lightpaths for a number of projects including: Fermilab/Westgrid Project, Emily Carr ArtGrid, and 9K Jumbo WestGrid Project. BCNET is also anticipating the development of lightpaths for Ultra High Definition Videoconferencing, a project between UBC and McGill University.



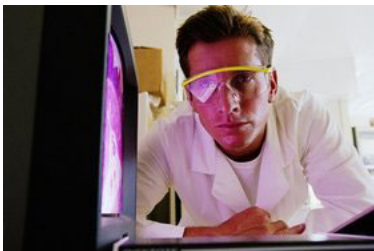
New Lightpath Projects

Currently, BCNET is developing lightpaths for:

- Fermilab/Westgrid Project
- Emily Carr ArtGrid
- 9K Jumbo WestGrid Project

What are Lightpaths?

Lightpaths are direct point-to-point channels or dedicated wave signals for guaranteed bandwidth. Providing massive bandwidth capabilities, lightpaths can dramatically increase data-transport capabilities at low costs and customize traffic flows.



FOSTERING INNOVATION: BCNET'S COMMITTEES AND WORKING GROUPS

BCNET's committees and working groups continue to play an advisory role for new applications and technologies.

Applications Advisory Committee (APAC)

The Applications Advisory Committee advises the BCNET Board and President on matters related to the conceptualization, functionality, technical design and development of applications for research and education that utilize advanced networks. This committee involves and exposes BCNET to a wider circle of stakeholders and provides technical expertise.

Collaboration Technology Working Group

The Collaboration Technology Working Group explores new applications that present opportunities for better collaboration. Still in the testing phase, desktop videoconferencing is currently being tested with BCNET staff with the goal of piloting it to a wider audience. As well, we are on the road to getting our own SIP proxy server. This software control package will enable BCNET to build a scalable, reliable Voice-over-IP network that will maximize network performance.

BCNET has established a partnership with Xten for free software licensing of Xtens's EyeBeam™, multi-platform, multi-point desktop videoconferencing solution.

The plan is to roll out a pilot project to member stakeholders once further testing has been done.

Other Working Groups

An identity management and disaster recovery working group have been formed with representatives appointed from all BC universities. They will be advising on important issues. The High Performance Working Group has been instrumental in developing the 5th Annual Advanced Networks Conference, scheduled for April 26 and 27.

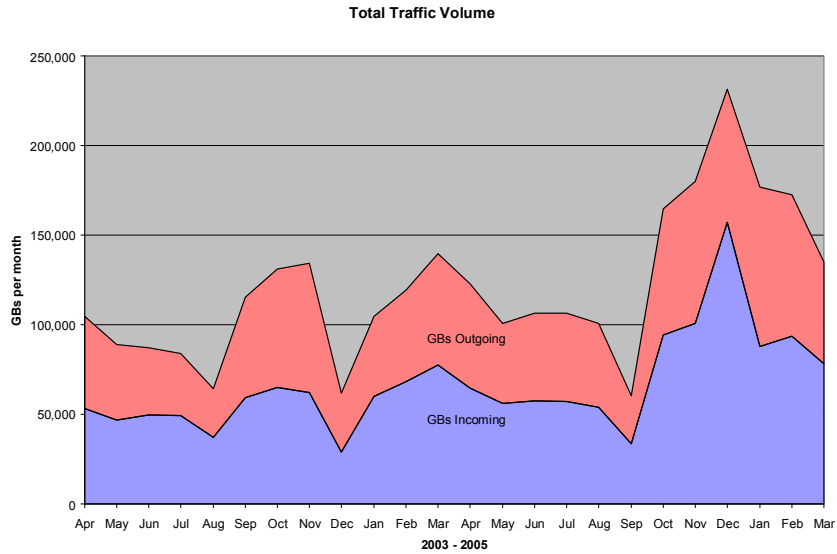
The Network Research Advisory Committee provided input into BCNET's operational planning for the next fiscal year. They will be collecting network statistics to further research networking technologies and their usage.



BCNET'S NETWORK USAGE REPORTS

APRIL 2003 - MARCH 2005

The total number of gigabytes transferred in and out of BCNET for each month has grown dramatically, as shown in the chart below.



APRIL 2003 - MARCH 2005

The BCNET Transit Exchange model provides significant cost savings, as traffic that comes into the exchange, between members and affiliates do not incur traffic fees.

