

BCNET Reports

BCNET READIES KELOWNA FOR ROLE AS BURGEONING RESEARCH, EDUCATION AND TECHNOLOGY CENTER



“With over two hundred faculty at our Kelowna campus, there are many researchers pursuing projects whose potential need for high-volume data transfer as well as the ability to collaborate with other institutions through videoconferencing or data modeling will be met by this advanced network solution.”

Gwen Zilm, Associate Vice President, Information Services, UBC Okanagan.



“I think the key benefit to the technology and business community will be in the credibility that the advanced network capability confers on Kelowna as an emerging high-tech center.” **Hans DeBruyn, Board Director, Okanagan Science and Technology Council and Principal, Okanagan Technology Consulting Inc.**

On December 01, 2005, BCNET lit-up the Optical Regional Advanced Network for Kelowna’s research and higher education community as well as opened opportunities for business development in the community. Using high-speed dedicated wavelengths called lightpaths, BCNET has interconnected University of British Columbia Okanagan, Okanagan College, Kelowna General Hospital, Interior Health Authority and the BCIT Aerospace facility at the Kelowna Airport to the world-wide research and education network. This high-bandwidth link will employ a connection that is ten thousand times faster than the commercial Internet. As well, CANARIE is provisioning the intercity lightpath connections that will interconnect Kelowna to Vancouver, Victoria, Prince George, Surrey and Kamloops. The result is improved productivity and new possibilities — research and business can now happen in Kelowna that could never have occurred previously.

Part of the need for BCNET’s expansion into Kelowna was prompted when UBC Okanagan opened its doors this fall on what was previously the Okanagan University College campus. “With over two hundred faculty at our Kelowna campus, there are many researchers who are pursuing projects whose potential need for high-volume data transfer as well as the ability to collaborate with other institutions through videoconferencing or data modeling will be met by this advanced network solution.

Fundamentally, this high-bandwidth link is a vital piece of building a world-class research facility,” said Gwen Zilm, Associate Vice President, Information Services, UBC Okanagan.

New Technology Hub

In future, businesses will be able to hook up to Kelowna’s new data hub centre, referred to as the Kelowna Transit Exchange (KELTX) for a minimal charge. As Robert Fine, Executive Director for the Economic Development Commission, Regional District of Central Okanagan, explains, “The Economic Development Commission has been a big supporter of BCNET and the KELTX, not for what it brings to the Region in the short term but rather the long term.

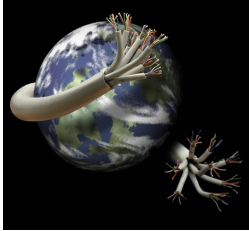
Providing bandwidth for researchers to allow UBC Okanagan and its partners to meet their full potential is the obvious short-term benefit, but the creation of the exchange in Kelowna is another key step in building up access to and availability of technology infrastructure in the community.”

It is this access to technological infrastructure that will enhance the credibility of the area as a burgeoning centre of high-tech industry. “A high-tech business looking to locate here would perceive this as evidence that the area can supply the needed infrastructure,” said Hans DeBruyn, Board Director, Okanagan Science and Technology Council and Principal, Okanagan Technology Consulting Inc.



ORAN LIGHTS UP SURREY CAMPUS

The BCNET Project 2010 has just completed the fiber build to link SFU Surrey to the BCNET's Optical Regional Advanced Network enabling extremely high-bandwidth access for the campus' programs in the interactive arts and technology, computing science, business, applied sciences, science, arts and social sciences.



KAMLOOPS SITE DESIGN UNDERWAY

The Kamloops ORAN Network is currently scheduled for completion by first quarter 2006. BCNET is working with the City of Kamloops to build the Transit Exchange and with Kamloops Community Networks for the fiber build. The fiber build is scheduled for completion by first quarter 2006.

FASTER, MORE RELIABLE NETWORK SERVICES



BCNET is continuously researching ways to provide higher-bandwidth, more cost-effective network services. Services such as commercial Internet access are provided for members at BCNET's Transit Exchange centres.

Today, BCNET has entered new agreements with three ISP's: Shaw Big Pipe, Group Telecom, A Bell Canada Division and Peer 1 Networks. Today, these ISP's will provide greater Internet capacity for our members. Not only will this agreement mean greater capacity, but cost saving of 30% for BCNET members.



With the building of the new Transit Exchange centers in Kelowna and Kamloops, BCNET has requested proposals from ISP's to provide Internet Service for these new locations as well as the Victoria, Vancouver and Prince George Transit Exchanges. At these Exchanges, or data traffic centers, BCNET provides opportunities for our members to connect to multiple commercial Internet service providers.



BCNET IS IPV6 READY: A COMPLETE NEXT GENERATION INFRASTRUCTURE

BCNET is now IPv6 ready. What does this mean? It means that BCNET will be ready with a next generation infrastructure for global collaboration.

A Unique Identification System

IPv6, known as Internet Protocol version 6, is the latest version of Internet Protocol, the method by which data is communicated across an Internet network.

Each computer has at least one IP address that uniquely identifies it from all other computers on the Internet. As the use of wireless and mobile technology becomes increasingly widespread, more and more devices are requiring unique IP addresses. Furthermore, as developing countries around the world gain access to the Internet there is an additional strain on the number of IP addresses currently available under IPv4, the version of protocol in use over the modern Internet. IPv6 was created primarily in response to this developing address exhaustion and will anticipate considerable future growth of the Internet.

Joining Research Networks Around the World

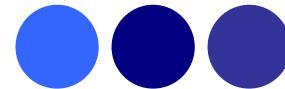
By implementing support for IPv6, BCNET joins research networks around the world in shifting toward a complete next-generation infrastructure.

Already supported at the Vancouver and Victoria Transit Exchanges, BCNET has implemented additional support for IPv6 at the Prince George Transit Exchange.

IPv6 is currently being used extensively by research networks in the Asia-Pacific region, the US and Australia; BCNET's ability to support IPv6 enables easy and direct cooperation and collaboration with these networks.

Enabling Advanced Applications

In addition to the ability for researchers using BCNET to effectively collaborate with colleagues in emerging nations, IPv6 will improve the network's ability to accommodate direct connection with distributed computing clusters and will ensure that as the number of devices in use on BCNET member campuses increases, BCNET's own allocation of IP addresses will not be depleted. IPv6 also offers improved design features such as enhanced support for multicast and quality of service, end-to-end security, with built in IP-layer encryption and authentication and server-less autoconfiguration, meaning that once a machine is connected to an IPv6 network, an address will be automatically generated and allocated.



BCNET's ability to support IPv6 enables easy and direct collaborations with research networks in the Asia-Pacific region and Australia.





Optical switches are faster and more effective as they make use of wavelengths to transfer data from one port to another (input to output). By using light-beams, which are able to cross each other, a simpler travel path is created between inputs and outputs, significantly increasing the speed of transfer.



OPTICAL NETWORKING: IMPROVING SPEED, PRODUCTIVITY AND PERFORMANCE

BCNET is in the process of evaluating options for expanding the optical infrastructure of the network. With the input of the Network Planning Advisory Committee (NPAC), a Request for Information has been issued with the purpose to engage vendors in collaborating with BCNET to find a creative and innovative solution. BCNET will endeavor to expand or upgrade the network switches at each of the five Transit Exchanges, contingent upon support from CANARIE.

Optical Switching – Faster, More Effective

As an approach to upgrading the network, BCNET will seek to become fully optically-switched. Optical switches, many still in the development phase, have long been proposed as a faster, less expensive and more efficient alternative to electronic switching. As an element of next-generation network architecture, these switches are designed to better accommodate the unique demands of data, while also supporting other services such as voice and video. Optical switches are capable of this facility because they make use of wavelengths to transfer data from one port to another (input to output). By using light-beams, which are able to cross each other, a simpler travel path is created between inputs and outputs, significantly increasing the speed of transfer.

Enhancing and Monitoring the Network

NPAC is also seeking to administer an approach to network performance measurement. A working group under NPAC has been formed on this topic including representatives from High Performance Computing, Network Research, and Westgrid as well as affiliated experts. This group will focus on developing an implementation strategy for enhancing monitoring and visibility into the network for network operational staff and identifying and enabling tools to be used by network researchers, BCNET members and affiliates.

The working group will examine what tools are available, who is using them, how well they work and other aspects of instrumentation and measurement for application in BCNET.

NPAC has created a functional requirements document, citing feedback from the security working group, IT support staff, high-performance computing and research communities, to be used as a guideline for the Network Performance Measurement working group. The expectation is for a plan to be in place for deployment in the next fiscal year.

BCNET SIGNS NEW CORPORATE PARTNERS

This fall, BCNET launched a new and improved Corporate Partner Program packed with opportunities for collaboration within the research and higher education community. The goal is to build winning relationships with corporations that are interested in helping shape the future of advanced internetworking technology and its applications.

The Partner Program will help BCNET to build a new revenue stream to support outreach events such as BCNET’s Annual Advanced Networks Conference, Advanced Networks Days events as well as the annual Coolest Applications Contest.

BCNET is targeting select high-tech industry leaders for partnering opportunities. At the highest level, the Platinum Partnership Program will be offered to a select few industry leaders. With four levels of partnering opportunities, there are a wide range of options for collaboration.

Shortly after the launch, BCNET signed 3 new corporate partners; SGI has recently signed-up as a Gold Corporate Partner; CISCO as a Silver Corporate Partner and The Nimble Company, a Bronze Partner. BCNET is continuing to approach select partners over the next 6 months to explore mutually beneficial opportunities.



High Tech Leaders join BCNET

SGI – Gold

CISCO - Silver

The Nimble Company -Bronze



PARTNER PROFILE: THE NIMBLE COMPANY

McLean Mashingaidze-Greaves, described by the *Toronto Star* as a “something of a CBC wunderkind” and as a “techno whiz kid” by *FFWD* magazine, recently approached BCNET. McLean is interested in exploring advanced networking technology for delivering Advanced Media Technology for the enhancement of original television content. The Nimble Company plans to develop independent new media content and in the past has produced 300+ episodes of music, variety & interactive programming for CBC Television.

Providing niche, multi-platform programming, the Nimble Company is looking to target university students for original independent content for TV as well as online interactive programming.

Collectively, they have produced over 300 National TV programs including the acclaimed late night series *ZeD*, seen nationally in Canada since 2002.

Their expertise also includes short-form media with over 7,000 short films screened (700+ licensed) and producing over 400 performers from music, to comedy, to dance in the past three years. Their multi-platform track record includes Emmy, Webby & Gemini nominations in addition to critical acclaim from the likes of *The New Yorker*, *Globe & Mail*, and *The New York Times*.



“We immediately recognized the potential of having the fSONA and videoconferencing option available to help us in our communications. On the first day that the fSONA equipment was operational in our office, we linked up with Simon Fraser University for a meeting. With just a couple of hours notice for the meeting, we were very pleased with how easy the equipment was to use and how well it performed.”

Don Avison, President, The University President’s



FSONA AND BCNET PARTNER TO PROVIDE THE UNIVERSITY PRESIDENT’S COUNCIL OF BRITISH COLUMBIA WITH INNOVATIVE COMMUNICATIONS TECHNOLOGIES

The University President’s Council of British Columbia (TUPC) has been connected to BCNET using fSONA’s (free Space Optical Networking Architecture) optical wireless telecommunication devices – essentially technology that transmits laser beams point-to-point through the air. The wireless interface links TUPC to BCNET’s advanced research network. Access to these high-bandwidth networks provides TUPC with continuous and free global videoconferencing connections for improved productivity and cost-savings.

As the collective voice of universities in BC, TUPC staff members are in constant touch with universities around the province, frequently bringing university officials together in a variety of regular committee and ad-hoc meetings.

“The fSONA equipment is a natural fit with the work of TUPC,” said Don Avison, President, The University President’s Council of British Columbia. “We immediately recognized the potential of having the fSONA and videoconferencing option available to help us in our communications. On the first day that the fSONA equipment was operational in our office, we linked up with Simon Fraser University for a meeting. With just a couple of hours notice for the meeting, we were very pleased with how easy the equipment was to use and how well it performed.”

Accessing BC’s advanced research network will provide TUPC with a connection that is 10,000 times faster than the commercial Internet, equipping TUPC with always-on and free connections to university members throughout the province and contacts both nationally and internationally.

Unlike a traditional wired connection, the wireless connection provided by fSONA’s SONAbeam™ technology does not require fiber installation, making it simple and easy-to-integrate into the urban business environment. Most importantly, the wireless link is not subject to licensing and regulation associated with a wired connection; therefore, the cost of deployment is low.



BCNET'S BROADENS ITS MEMBERSHIP AND GOVERNANCE MODEL

With expansion plans underway, BCNET's network is growing to meet the needs of new universities across British Columbia. In the past, BCNET has served its 5 core members including: UBC, SFU, UVic, BCIT and UNBC. Today, this membership model must evolve to encompass a larger number of participants and still remain true to its five core members.

Why the change?

There are significant benefits to the new membership model. The new governance structure will be scalable and flexible, allowing new members to join BCNET without changes to by-laws. Furthermore, the new structure will demonstrate to stakeholders and the wider community that BCNET truly represents the entire publicly-funded research and education sector within the province, and not just a select few.

Non-profit Incorporation

As a result, BCNET has transitioned from a one-institution, one-vote provincial society with no membership distinctions to an organization that allows for weighted voting and/or classes of membership. How will BCNET do this? BCNET will create a federal non-profit corporation to implement membership classes, as this is not possible under the provincial societies act.

The Member Community

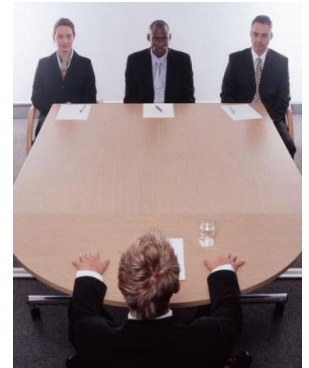
Membership is strictly limited to the research and education community. Publicly-funded universities are automatically granted membership. Under the proposed new model, other post secondary institutions and research organizations may be granted membership if approved by 2/3 of the voting delegates.

There will be four classes of members and various types of members.

- Founding: UVIC, UBC, SFU
- Core: UNBC, BCIT, TRU
- Higher Education: ECI, RRU
- Research Organizations: TRIUMF, NRC, Cancer Research Centre

Voting Rights

The existing model allows one vote per member, a very simple process. With the new governance, each class of member will have different voting privileges or "delegates". Founding and Core members have voting delegates while the research and higher education members can choose a delegate to represent their institute. These voting delegates then will name the BCNET Board at the Annual General Meeting.





UNIVERSITY OF VICTORIA, BCNET AND CANARIE PARTNER TO BRING ADVANCED NETWORKS DAYS TO UVIC RESEARCHERS

"The Advanced Research Network Day demonstrated the extraordinary importance of BCNET and CANARIE in providing a technology that has enabled faculty members at the University of Victoria to do internationally recognized research in Science, Humanities, Social Science, Fine Arts and Engineering."

On November 28, 2005 over 80 researchers converged at the University of Victoria to take part in The Advanced Research Networks Days event. Hosted by Dr. Richard Keeler, Vice President of Research at UVic, the event brought together UVic researchers to explore how high-performance networks are enabling innovation at the university.

A line-up of nine researchers, from the arts, humanities, physics, astronomy, medicine and oceanography came to present their projects and how advanced networks are enabling research.

Dr Keeler stated, "The Advanced Research Network Day demonstrated the extraordinary importance of BCNET and CANARIE in providing a technology that has enabled faculty members at the University of Victoria to do internationally recognized research in Science, Humanities, Social Science, Fine Arts and Engineering."

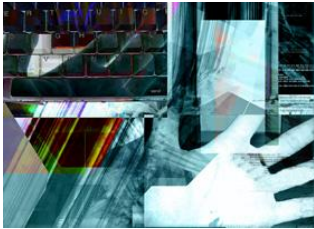
NEW NETWORK AFFILIATES

BCNET is on the verge of signing two new network affiliates for the Kelowna Transit Exchange. DARGAL Interline Worldwide, a global travel agency and ITIRA.

These affiliates are interested in connecting to the Kelowna Transit Exchange for the benefits of multi-homing and community peering.



SFU'S COMPUTING STAFF JOINS BCNET SUPPORT GROUP



BCNET has obtained the services of Simon Fraser University's computing staff to form an IT support group. Lead by Keir Novik, BCNET Advanced Applications Project Leader and SFU Network Administrator, the team of highly-experienced SFU staff includes people such as Steve Hillman, Senior Systems Administrator and Peter Van Epp, Operations and Technical Support. Their unique set of expertise will supplement BCNET's exemplary Network Engineering group, based out of UBC. The IT group will focus primarily on the management of BCNET servers, providing core services such as DNS (the Domain Name Service), an Internet service that translates domain names into IP addresses.

The IT support group will also run the web servers which provide the BCNET websites, both public and private (Intranet), and the mail server which provides BCNET mailing lists. Initial projects for the IT group involve implementing the next-generation Intranet and consolidation of back-end databases.

