



*The Backbone of Research,  
Education and Innovation*

**BCNET Advanced Research Networks Survey**

September 20, 2007

<b>1.0 EXECUTIVE SUMMARY .....</b>	<b>2</b>
<b>2.0 PURPOSE .....</b>	<b>4</b>
<b>3.0 SURVEY DESIGN .....</b>	<b>4</b>
<b>4.0 SURVEY METHODOLOGY.....</b>	<b>5</b>
4.1 SAMPLE .....	5
4.2 MEASURES AND PROCEDURES .....	6
<b>5.0 SURVEY RESULTS.....</b>	<b>7</b>
<b>6.0 CONCLUSION .....</b>	<b>14</b>
<b>7.0 RECOMMENDATIONS FOR FUTURE SURVEYS.....</b>	<b>15</b>
<i>Appendix A .....</i>	<i>17</i>
<i>Appendix B .....</i>	<i>18</i>
<i>Appendix C .....</i>	<i>23</i>
<i>Appendix D .....</i>	<i>24</i>
<i>Appendix E.....</i>	<i>25</i>
<i>Appendix F.....</i>	<i>26</i>
TABLE 1: DATA NETWORKING REQUIREMENTS .....	7
TABLE 2: COLLABORATION REQUIREMENTS FOR CURRENT RESEARCH PROJECT.....	8
TABLE 3: NATURE OF COLLABORATIVE ACTIVITIES .....	9
TABLE 4: NUMBER OF CURRENT RESEARCH PROJECTS THAT RELY ON HIGH BANDWIDTH NETWORKS.....	9
TABLE 5: NUMBER OF STUDENT PROJECTS THAT RELY UPON HIGH BANDWIDTH NETWORKS..	10
TABLE 6: BCNET AWARENESS .....	10
TABLE 6A: BCNET AWARENESS .....	11
TABLE 7: THE PERCENTAGE OF PROJECTS REQUIRING DATA NETWORKS, BASED ON FUNDING. ....	12
TABLE 8: THE RELATIONSHIP BETWEEN NETWORK REQUIREMENT AND PROJECT SIZES, BASED ON FUNDING.....	13
TABLE 9: PERCENTAGE OF RESPONDENTS WHO BELIEVE IN THE VALUE OF DATA PRESERVATION .....	13
FIGURE 1. NUMBER OF RESPONDENTS WITH/WITHOUT DATA NETWORK REQUIREMENTS AND THEIR AREAS OF STUDY .....	14

## 1.0 Executive Summary

BCNET conducted a research survey to determine the types and number of research projects within the province of British Columbia (BC) that make use of BCNET's advanced data networks, as well as the types of collaborations that are prevalent. To gather data for the study, BCNET carried out a telephone and web survey targeting relevant research projects in BC in order to make generalizations, which could be applicable to the entire research community within the province.

The survey found that 49.1% of the total respondents have data network requirements for their research projects, and revealed that a majority of respondents (66%) required high bandwidth networks for their existing research projects. High bandwidth networks were identified as either dedicated lightpaths or networking requirements of 100 megabits or greater.

Information collected from the 53 qualified survey respondents' research projects shows that the aggregate dollar amount of research grants that make use of BCNET's network totals \$144,388,000. An additional \$3,000,000,000 in research grant funding is allocated for the ATLAS Project at TRIUMF, UBC. These figures are significant and worth noting as it further demonstrates the need for and utilization of super broadband networks for research within the province of British Columbia.

When asked about their distant collaboration requirements, approximately 42.9% of the respondents required collaborations with institutions outside of Canada. The nature of these collaborations has been identified primarily as sharing large data files, videoconferencing and high performance grid computing. Additionally, 51% of the survey respondents required collaborative technologies to access multimedia files and 39%

required videoconferencing to collaborate for teaching and educational programs. The results also showed that 55% of researchers have between one to four research proposals that rely upon high bandwidth networks.

The survey reveals that BCNET has a high level of awareness amongst researchers. Overall, 64.7% of respondents are aware that their institution is connected to the BCNET Optical Regional Advanced Network. However, regarding their most recent research project only 49% were aware they were using BCNET's infrastructure.

In conclusion, the survey findings indicate that BC's researchers are making extensive use of BCNET's infrastructure to facilitate a wide variety of research projects.

## **2.0 Purpose**

The goal of this survey was to determine the types and numbers of research projects, conducted within the province of British Columbia (BC), that make use of BCNET's advanced data networks. The study surveyed a sample of all research projects in BC in order to make generalizations, which could be applicable to the entire research community in the province.

## **3.0 Survey Design**

The design of this survey focused primarily on the participant's need for advanced data networks and to understand how these networks were being utilized for research, teaching, learning and distant collaborations. This project yielded both quantitative and qualitative data that was analyzed and used to explain and support the final results. In addition, some concerns, which may be of interest, were at the foreground when this study was conducted. In response to these concerns, some preventative measures, where applicable, were undertaken accordingly.

One of the main concerns was that survey participants could mistake questions about BCNET's services with the research institutions' information technology (IT) services. In order to prevent this, it was agreed upon prior to the commencement of the study to eliminate questions asking participants to evaluate network services.

Furthermore, some of the questions involved in this study left the participants with room for interpretation and as such, there was a chance for skewed data. Therefore, the replies to the questionnaire, which were central to the project, were classified as being quantitative. However, it should be noted that subjective data was not problematic for this project, as the study was primarily interested in whether or not communication networks

were being used for specific research projects, as well as what technologies were being used in conjunction with these networks.

Overall, the simplicity of the survey and its design will easily allow for replication and/or continuation of the survey in the future, without the need for major adjustments in the questionnaire and/or data analysis. As such, the survey can also be conducted on a regular basis, if necessary.

#### **4.0 Survey Methodology**

The survey methodology for data collection was telephone interviews and web surveys. A total of 671 researchers were contacted in this study and from the 671 researchers contacted, 109 agreed to participate and 38 declined. Of the 109 participants, 53 were qualified to complete the survey based on their data networking requirements. A combination of qualitative and quantitative questions comprised a questionnaire that was administered to all participants (see Appendix B). It should be noted that some researchers on the sample list had two or three entries because they were simultaneously working on several different research projects that were selected for this study.

#### **4.1 Sample**

The sample participants were selected from Canadian research agencies that awarded grants to researchers within the province of British Columbia (BC). Databases of research funded projects were provided by the Canada Foundation for Innovation (CFI), the Canadian Institutes of Health Research (CIHR), the National Science and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council

(SSHRC). Contact information was obtained through online directory databases provided by the participants' research institutions.

From the acquired grants lists, research projects were identified based on the likelihood that they would make use of advanced data networks (based on the information provided in the project title/subject field). An effort was made to include projects from a variety of disciplines (social sciences, applied sciences, mathematics, health, etc.). Also, special attention was given to projects awarded more than \$100,000 in funding.

#### **4.2 Measures and Procedures**

The measures and procedures undertaken for this survey are outlined here. All of the participants were initially contacted by telephone. Contacting all of the researchers took 11 days to complete and an average of 69 calls were made per day. At the end of each day, a list of contacts that were unavailable and/or requested surveys to be e-mailed to them was compiled. An e-mail message, with a link to the web survey was then forwarded to these contacts (see Appendix D). To collect, analyze and publish the respondents' data, BCNET used an online web tool called Survey Monkey.

If a telephone number for a participant was unavailable, an e-mail message was generated through Survey Monkey and forwarded to the contact. The email contained a brief introduction to BCNET, the survey goals, and a link to the web survey (see Appendix B).

If a researcher agreed to participate in a telephone interview, the data was collected and input through the online Survey Monkey tool by the person conducting the telephone survey. The entry was then marked as "completed" on the master list using a predetermined colour code (see Appendix C).

If a researcher was contacted by telephone, but was unable to complete the survey over the telephone, they were offered the option of having the survey sent via email so that they could complete it online at a later time. If a researcher was unreachable by telephone, a voice-mail was left with a brief introduction of BCNET, the goal of the survey, and a notification that an e-mail, with a link to the survey, would be forwarded. Researchers who declined participation in the survey were highlighted, "denied" on the master list using a predetermined colour code. Researchers whose voice-messages and e-mail auto-reply messages indicated they were away until a specified date were marked as such using a colour code and the date was indicated in the comments section of the master list. All of these contacted received a follow-up email with a link to the web survey. In sum, a survey was administered, either over the telephone or via the Internet, allowing participants to have a direct response.

## **5.0 Survey Results**

The following summarizes the survey results from the 53 respondents or 49.1% of participants who qualified to complete the study based on their identified needs for data networking technology. (\*\*Note: There are a variable number of respondents for each survey question.)

The results in Table 1 show that the majority of the survey respondents (66%) had high bandwidth networking requirements, which was defined as either dedicated lightpaths or networking speeds of 100 megabits or more.

**Table 1**  
**Data Networking Requirements**

Survey Question: "In reference in this specific research project, what are your data network requirements?"

	<i>Response (%)</i>	<i>Response Total</i>
Low bandwidth (10mbit)	34	17
Very high bandwidth (100mbit +)	34	17
Dedicated bandwidth/lightpath among collaborators for a defined period (less than 12 months)	10	5
Dedicated bandwidth/lightpath among collaborators for a long term period (more than 12 months)	22	11
Total Respondents		50

The results in Table 2 show that the 42.9% of researchers need to collaborate with colleagues outside of Canada, while 28.6% require collaborations within Canada.

Furthermore, the nature of these collaborations has been identified primarily as sharing large data files, videoconferencing and high performance grid computing (see Table 3).

When asked to identify the types of collaborations they require, Table 3 shows that 32.5% of survey respondents need to share large data files, while 12.5% require high performance computing. Additionally, the most common use of collaboration technologies for teaching and learning is to access multimedia materials, videoconferencing for presentations or lectures and access to distant libraries.

**Table 2**  
**Collaboration Requirements for Current Research Project**

Survey Question: "Does your research project involve collaborating with colleagues or resources at other institutions? If yes, please specify."

	<i>Response (%)</i>	<i>Response Total</i>
No	14.3	7
Within BC	14.3	7
Within Canada	28.6	14
Outside Canada	42.9	21
Total Respondents		49

**Table 3**

***Nature of Collaborative Activities***

*Survey Question: "In your collaborative work with colleagues in other institutions, which of the following best describes the nature of those activities?"*

	<i>Response (%)</i>	<i>Response Total</i>
Videoconferencing	12.5	5
Exchanging/sharing of large data files	32.5	13
Grid computing	5	2
Collaborative visualization	7.5	3
Joint monitoring/operation of remote devices	5	2
High performance computing	12.5	5
Remote observation instruments (e.g., telescopes)	7.5	3
Other (please specify)	17.5	7
<b>Total Respondents</b>		<b>40</b>

Table 4 shows that 59.1% of respondents have research proposals that rely on high bandwidth data networks. Of these respondents 22.4% have one research proposal and 10.2% have four research proposals. The majority of respondents (46.9%) identified that they have between one and five student projects that rely upon super broadband research networks (see Table 5).

**Table 4**

***The Number of Current Research Projects that Rely on High Bandwidth Networks***

*Survey Question: "In total, how many of your current research proposals rely on the use of high bandwidth data networks? (Requirements of 100 mbits or greater)"*

<i>Number of Research Projects</i>	<i>Response (%)</i>	<i>Response Total</i>
0	32.6	16
1	22.4	11
2	12.2	6
3	10.2	5
4	10.2	5
Greater than 4	4.1	2
Other	8.1	4
<b>Total Respondents</b>		<b>49</b>

**Table 5*****The Number of Student Projects that Rely Upon High Bandwidth Networks.****Survey Question: "How many of your current student projects rely upon the use of high bandwidth networks?"*

<i>Number of student projects</i>	<i>Response (%)</i>	<i>Response Total</i>
0	34.7	17
1-5	46.9	23
6-10	12.2	6
11+	6.1	3
Total Respondents		49

**BCNET Awareness**

Results in Table 6 show that 64.7% of survey respondents indicated a high level of awareness of the BCNET Optical Regional Advanced Network, while 51% (see Table 6a) were not aware that they were using BCNET's advanced network for their most recent research project.

**Table 6*****BCNET Awareness****Survey Question: "Are you aware that your institution is connected to the BCNET Optical Regional Advanced Network?"*

<i>Response Choice (yes/no)</i>	<i>Response (%)</i>	<i>Response Total</i>
Yes	64.7	33
No	35.3	18
Total Respondents		51

**Table 6a**

**BCNET Awareness**

**Survey Question: "Thinking about your most recent project, were you aware that you were using BCNET's Advanced Network?"**

<i>Response Choice (Yes/No)</i>	<i>Response (%)</i>	<i>Response Total</i>
Yes	49	25
No	51	26
Total Respondents		51

**Additional Findings**

- Overall, 95.7% of researchers believe that there is value in making their research data available to a wider audience, such as graduate students and international researchers.
- 42.6% of researchers believe that their data has long-term value in the range of five to ten years.
- Moreover, 97.9% of researchers see the value in preserving their data for future re-analysis from academic or commercial entities.
- 16 respondents requested not to have their testimonials published by BCNET.
- 39 respondents denied response to the survey and requested not to be contacted in the future.

To review the answers to the open-ended questions which asked researchers about their knowledge of super broadband networks and their level of experience, please see Appendices E and F.

**Relationship between Funding and Network Requirements**

Table 7 shows the relationship between networking requirements and project funding sizes that utilize BCNET's Optical Regional Advanced Network. It is important to

note that two of the research projects were awarded more than \$50,000,000 in funding and also make use of very high bandwidth lightpath networking technology. By aggregating the dollar amounts of all of the 53 respondents' research grants, the results show that a large amount of federally funded research grant monies, \$3,144,388,000 billion rely upon advanced networks for research and collaboration. Of this total amount \$3,000,000,000 billion is for the ATLAS Project and \$78,400,000 million for Project NEPTUNE)

As indicated in Table 7, the majority of the BCNET survey respondents had research projects that received grants within the \$200,000 - \$500,000 range (21.6%). It is also significant to note that within this sample (51 respondents), 15.7% had research projects within the \$2M - \$50M range.

**Table 7**  
***The percentage of projects requiring advanced networks, based on funding.***

<i>Project Sized Based on Funding (\$)</i>	<i>Response (%)</i>	<i>Response Total</i>
< \$50,000	7.8	4
\$50,000 - \$199,000	13.7	7
\$200,000 - \$499,000	21.6	11
\$500,000 - \$999,000	15.7	8
\$1,000,000 - \$1,999,000	17.6	9
\$2,000,000 - \$49,000,000	15.7	8
> \$50,000,000	3.9	2
Not Sure	3.9	2
<b>Total Respondents</b>		<b>51</b>

Table 8 shows the relationship between high bandwidth network requirements and the amount of research grant funding for research projects. The table indicates that a total of 32.5% of respondents have dedicated lightpath requirements, while the 22.4% of high bandwidth users have research grants within the \$200,000 - \$500,000 range.

**Table 8**  
**The Relationship Between Network Requirement and Project Sizes, Based on Funding.**

<i>Project Size based on Funding</i>	<i>10mbit</i>	<i>100 mbit</i>	<i>Dedicated lightpath (&lt;12 mo.)</i>	<i>Dedicated lightpath (&gt;12mo.)</i>	<i>Total (%) of Funding</i>
< \$50,000	4.1%	4.1%	0%	0%	8.2%
\$50,000- \$199,000	8.2%	6.1%	2.0%	2.0%	18.3%
\$200,000-\$499,000	6.1%	10.2%	2.0%	4.1%	22.4%
\$500,000 - \$999,000	2.0%	6.1%	2.0%	4.1%	14.2%
\$1,000,000-\$1,999,000	4.1%	4.1%	4.1%	2.0%	14.3%
\$2,000,000 - \$49,000,000	4.1%	2.0%	0%	6.1%	12.2%
> \$50,000,000	0%	0%	0%	4.1%	4.1%
Unknown	6.1%	0%	0%	0%	6.1%
Total (%) of networking requirements	34.7%	32.6%	10.1%	22.4%	

### Data Preservation Value

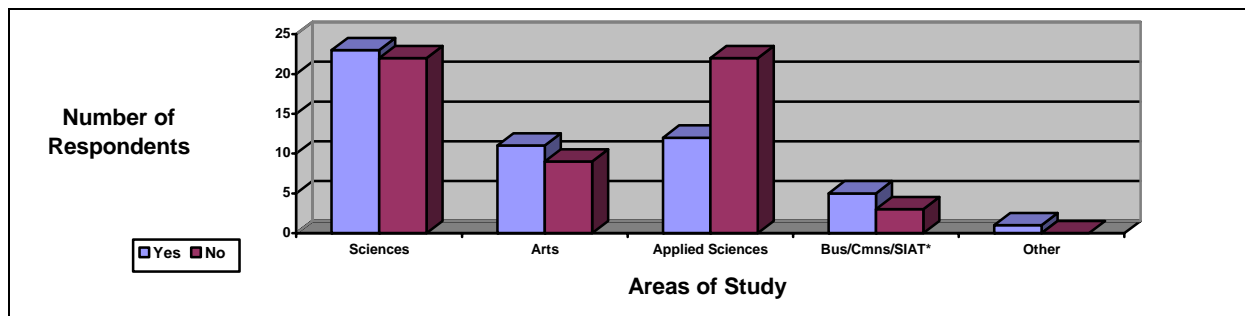
The survey respondents were asked whether the data they produce has long-term value. The results show that 70.2% of respondents believe the data collected from their research projects has a long-term value between 5 – 20+ years. Of the respondents, 42.6% believe that their data has value in the range of 5 - 10 years. Moreover, 97.9% of the researchers see the value in preserving their data for future re-analysis from academic or commercial entities.

**Table 9**  
**Percentage of Respondents Who Believe in the Value of Data Preservation**

<i>Value of Data Preservation</i>	<i>Response (%)</i>	<i>Response Total</i>
No long-term value	2.4	2
< 5 years	25.5	12
5-10 years	42.6	20
10-20 years	2.1	1
20+ years	25.5	12
Total Respondents		47

Figure 1 illustrates the number of respondents from each faculty that are using advanced networks. Based on a non-random sample of respondents, the data reveals that researchers within the sciences are more actively using advanced networks. However, it should be noted that this was a non-random sample and BCNET selected participants based on their research project descriptions that appeared to be more likely to use advanced networks.

**Figure 1. Number of Respondents with/without Data Network Requirements and Their Areas of Study**



## 6.0 Conclusion

In conclusion, the survey results indicate that BCNET's infrastructure is widely used within the province of BC for a diversity of research projects. Furthermore, these findings also demonstrate that researchers need to collaborate across the country and around the world and require collaboration and learning technologies to conduct teaching and learning.

The results also indicate that there is an opportunity for BCNET and its members to further educate the research and higher education community about the value of advanced networks for teaching, research and learning.

## 7.0 Recommendations for Future Surveys

From the findings of this survey, there are three recommendations for conducting future surveys. The first recommendation is to find opportunities to partner with the member institutions and their Office of Research Services to promote participation in the survey. One of the challenges, as with any survey, is to gain the time and acceptance of the contact. The surveyor noted that there was a strong reluctance and resentment on the part of the research community to complete the survey. This partnership would serve to both announce and endorse the survey; therefore, preparing the researchers to commit the time to participate. The announcement would also help to promote BCNET and its services to the research community at large.

The second recommendation is to improve the questionnaire by shortening the survey to approximately five minutes. Additionally, open-ended questions should be avoided, as this creates room for erroneous data. Several questions are not relevant to the goal of this study, and therefore should not be part of the questionnaire. For example, the questions addressing the respondents' credentials are unnecessary. Furthermore, the survey question that asked researchers' about their needs for data networks for future research projects was very difficult to quantify. It may be better to have them formulate a response to this question, as a percentage of all future projects/proposals, that they foresee requiring advanced networks. Future survey questions should not ask researchers to identify the amount of funding that is allocated to future research proposals as this was

It is also recommended to eliminate one of the survey questions which ask researchers to identify the amount of funding to be allocated to any future research

proposals. Again, many researchers could not quantify the anticipated research dollar amount.

Lastly, the third and strongest recommendation is to conduct regular research surveys, thus promoting BCNET's networks and services among all of the research and higher education institutions within the province of BC. The results could then be used to make service and infrastructure improvements in order to better meet its users' diverse research needs.

## ***Appendix A***

### **Brief Introduction and the Goal of the Survey**

BCNET is a non-profit organization that provides advanced data networks to researchers throughout British Columbia. The organization is conducting a survey in order to understand the use of these networks by researchers in the province.

**Appendix B**

**Questionnaire**

Respondent's Name:

Title:

Designation (Degrees):

E-mail:

Phone:

Institution:

Faculty/Dept

Project Title:

Project Website:

Your Role in This Project (e.g., Project Lead, Investigator):

**Part I**

**1. Does your research project have data network requirements?**

- Yes
- No (terminate the survey)

**2. In reference to this specific research project, what are your communication network requirements?**

- Low-bandwidth (10mbit)
- Very high bandwidth(100mbit+)
- Dedicated bandwidth/"Lightpath" among collaborators for a defined project period (less than 12 months)
- Dedicated bandwidth/"Lightpath" among collaborators for a long-term period (more than 12 months)

**3. Project description: briefly describe the research project and how it utilizes data networks.**

**4. What is the total dollar amount of research grant funding allocated to this project?**

**5. Please list the number of publications that have resulted from this research project:**

- a. Journals \_\_\_\_
- b. Conference proceedings \_\_\_\_
- c. Technical reports \_\_\_\_
- d. Patents \_\_\_\_

**Part II: Collaboration****6. Does your research project involve collaborating with colleagues or resources at other institutions? If yes, please specify.**

- No (skip to question #8)
- Within BC
- Within Canada
- Outside Canada

**7. In your collaborative work with colleagues in other institutions, which of the following best describes the nature of those activities?**

- Video conferencing
- Exchanging/sharing large data files
- Grid computing
- Collaborative visualization
- Joint monitoring/operation of remote devices
- High performance computing
- Remote observation instruments (e.g., telescopes)
- Other \_\_\_\_\_

**8. Do you use any of the following collaborative technologies for delivering teaching and education programs?**

- No (skip to question #10)
- Video conferencing of lectures/presentations
- Electronic classroom involving distant learners
- Videostreaming of lectures/presentations
- Access to video streamed lectures/presentations
- Access to distant libraries
- Access to multimedia materials
- Access to learning object repositories

**9. How many of your teaching courses rely upon collaboration technologies for delivering education?**

### **Part III: Future/Other Research Projects**

Here we want to understand other research projects both current and future that researchers plan to undertake.

**10. In total, how many of your current research proposals rely on the use of high bandwidth data networks? (requirements of 100 mbits or greater)**

\_\_\_\_\_ (if 0 skip to question #11)

**10a. What is the dollar amount of research funding of these projects combined?**

**11. How many of your future research projects will rely on the use of high bandwidth networks? (requirements of 100 mbits or greater)**

\_\_\_\_\_ (if 0 skip to question #12)

**11a. What is the dollar amount of research funding of these projects combined?**

**12. How many of your current student projects (e.g., Masters, PhD theses) rely on the use of the high bandwidth networks?**

- 0
- 1-5
- 6-10
- 11+

#### **Part IV: BCNET Awareness**

**13. Are you aware that your institution is connected to the BCNET Optical Regional Advanced?**

- Yes
- No

**14. Thinking about your most recent project and network connections, were you aware that you were using BCNET's Advanced Research Network?**

- Yes
- No (skip to question #16)

**15. Please tell us about your experience with high performance networks.**

**16. How did you learn about advanced research network services?**

**17. BCNET often publishes testimonials and case studies based on its members' experience using its network. Can we contact you in the future for additional information about your research project?**

- Yes
- No

#### **Part VI – Data Preservation**

**18. What is the amount of data you plan to produce within one year? (please specify the value in Megabytes)**

**19. Do you believe there is value in making your research data available to a wider audience, such as graduate students, international researchers?**

Yes  
No

**20. Does the data you produce(d) have long-term value? If so, how long?**

No  
<5 years  
5-10 years  
10-20 years  
20+ years



*The Backbone of Research,  
Education and Innovation*

**21. Are there any confidentiality/security issues related to the reuse of this data?**

Yes

No

**22. Do you see value in preserving data for reanalysis by academic or commercial entities?**




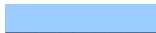



Yes

No

This concludes the survey. BCNET would like to thank you for your time. If you would like more information about BCNET, please visit our website at [www.bc.net](http://www.bc.net)

**Appendix C**

**Colour Code**

	Completed
	Denied
	Away
	Wrong person/phone #/e-mail
	Call back
	Do not contact
	No longer in BC
	Completed with erroneous data
	Incomplete survey

**Appendix D**

**E-mail Message**

BCNET Research Networks Survey

BCNET, a not-for-profit organization, is conducting a web survey to identify research projects that are using advanced networks across BC and to understand your current and future network requirements.

The information from the survey will be used to make improvements to BCNET's advanced research network and provide metrics about advanced networks usage for the province of British Columbia.

The web survey will take approximately ten minutes of your time.

Please follow the link to access the survey:  
[SurveyLink]

Thank you for your participation

BCNET  
Suite 7300 SFU Harbour Centre  
515 West Hastings Street  
Vancouver, BC, V6B 5K3  
www.bc.net  
info@bc.net

If you do not wish to be contacted in the future, please click on the following link:  
[RemoveLink]

## Appendix E

### How did you learn about Advanced Research Network Services?

How did you learn about Advanced Research Network Services?	
<u>1.</u>	We started working with BC high bandwidth networking in 1992.
<u>2.</u>	General Knowledge
<u>3.</u>	You are next door to my office
<u>4.</u>	We used to use HEPNET that was integrated into BCNET and CANARIE network, then we switched because of higher bandwidth demands.
<u>5.</u>	Colleagues
<u>6.</u>	Through my CANARIE ANAST project (2001-2002).
<u>7.</u>	N/A
<u>8.</u>	College
<u>9.</u>	Through The Faculty of Engineering staff
<u>10.</u>	Through my role for the past 5 years as Project Director for NEPTUNE Canada
<u>11.</u>	Through The BC Technology Users Group
<u>12.</u>	By our needs for it
<u>13.</u>	I only learn when I need to
<u>14.</u>	Community/colleagues at my university
<u>15.</u>	Through e-mail.
<u>16.</u>	Been affiliated with BCNET for a long time
<u>17.</u>	I work with advanced technology-- everyone needs bandwidth and low latency
<u>18.</u>	By e-mail through the faculty mailing list.
<u>19.</u>	BCNET
<u>20.</u>	Attended a symposium at SFU, BCNET had representation

## Appendix F

### Tell us about your Experience with High-Performance Networks

Please tell us about your Experience with High Performance Networks.	
<u>1.</u>	The challenge is to move the federal government towards using high-performance networks.
<u>2.</u>	Minimal
<u>3.</u>	Don't need them
<u>4.</u>	We use the networks on a regular basis. We have had strong support from BCNET and CANARIE. Sometimes there is a time lag in negotiations of very high-speed connections, and it is more difficult when negotiating international agreements but CANARIE has been very helpful.
<u>5.</u>	Good - we use the network for video and file exchange
<u>6.</u>	THIS SURVEY IS FAR TOO LONG!
<u>7.</u>	Generally positive. Latency is a huge issue for me as I am doing real-time interaction with multimedia environments. I have found that as long as I stick to the research network in Canada and the US, performance is pretty solid.
<u>8.</u>	N/A
<u>9.</u>	Very good connectivity to some locations. Horrid 'last mile' problems getting the data from my machine to the collaborator's machine. Would be very good if internal campus networks were enhanced.
<u>10.</u>	I haven't used it very much, so my experience has been quite positive.
<u>11.</u>	Only through my role for the past 5 years as Project Director for NEPTUNE Canada
<u>12.</u>	Positive, in general, service has been seamless
<u>13.</u>	We always need more bandwidth
<u>14.</u>	Only with our local area network. Experience has been excellent.
<u>15.</u>	For me the network works well.
<u>16.</u>	I am a biologist who uses these but I do not really understand them.
<u>17.</u>	We need more than high-speed connections!!
<u>18.</u>	Setting up a lightpath was very hard work
<u>19.</u>	Good
<u>20.</u>	Very good. We typically have adequate bandwidth between UBC, UVic, and NASA

<u>21.</u>	"It just works"
<u>22.</u>	Used lightpath with Montreal and Ottawa on CANARIE project, Access Grid, and VNC as well as commercial applications. Some bugs initially, but eventually it worked quite well
<u>23.</u>	The networks were fine. Problems resulted from the network configuration when labs were moved at SFU Surrey.
<u>24.</u>	Have used them in the past for videoconferencing between participating institutions; have not encountered any problems