

**LEGISLATIVE COUNCIL
IT Committee**

APPENDIX D

NORTHERN TIER NETWORK – NORTH DAKOTA

Update
June 29, 2010

Mr. Chairman and members of the Committee. For the record, I am Bonnie Neas, Vice President for Information Technology at North Dakota State University. On behalf of the Northern Tier Network-North Dakota (NTN-ND) members from ND ITD, UND and NDSU, I thank you for giving us this opportunity to update you on the Northern Tier Network as well as provide you with several brief demonstrations of network use and respond to any questions you may have.

A year ago, NDSU hosted an inaugural ceremony to celebrate the installation, completion and lighting of the North Dakota span of the Northern Tier Network, hereafter called "NTN".

In January, Montana completed and lit its span. Data is now capable of traveling across the East/West 10Gbps spans of the NTN between Chicago and Seattle. In addition, in North Dakota, we pass research traffic between UND and NDSU.

The network is working very well.

We continue to operate within the appropriation we received in the 2007 legislative session -- \$2,773,800. Those funds have provided the operating costs of the past year, and they will see us through the remainder of this biennium. Our original budget anticipated connecting the research and education networks in Canada and South Dakota, as you see on the map, however, to date that has not happened. We continue to wait on word from the National Science Foundation (NSF) on a grant proposal to connect South Dakota's network at Fargo. About a year ago, Canada discontinued talks of connecting their R&E network to the NTN at Grand Forks due to their economic challenges; however, we were recently contacted with their renewed interest in making a connection between UND and the University of Manitoba, Winnipeg. Without the two connections of Canada and South Dakota, and with an anticipated drop in our Network Operation Services costs, we anticipate having funds that will take us into the beginning months of the FY11-13 biennium.

There may be additional savings in future costs of the network. In March, the NTN Consortium - hereafter call "the consortium" - membership was invited by the leadership of Internet2 (I2) and National LambdaRail (NLR) to support their efforts in the development of a grant proposal to the Broadband Technology Opportunities Program (BTOP) administered by the National Telecommunications and Information Administration (NTIA) in the U.S. Department of Commerce. A copy of that grant proposal is provided in your materials. The intent of the grant is to link anchor institutions (such as research and education institutions) and regional networks such as the NTN) throughout the United States with high performance national networking.

Note that the consortium is listed as a partner in this effort but members were not involved in the initial development of the proposal. The consortium members were, however, invited to write letters of support - which all the members did who would gain from this proposal...including

North Dakota. It must be also noted that both UND and NDSU are members of Internet2, as are all other consortium members who wrote letters of support.

I2 and National LambdaRail CEOs submitted the proposal and are listed as the principal investigators.

The leadership of Internet2 and National LambdaRail were recently notified that their nearly \$97M request (see last page of proposal) will likely be funded, as they have successfully gone through the initial phases of due diligence. What does this mean for the NTN and especially North Dakota?

With the implementation of the Internet2/National LambdaRail proposal, 10 one-hundred (100) Gbps (3.2 terabits of data per second) of national and international broadband traffic will be capable of crossing the NTN (see middle page of proposal). **The significant achievement will be that the NTN will now be identified as an integral part of the national Research & Education broadband backbone**

There will be no additional costs to NTN for this enhancement. In fact, we were told our operational costs could be reduced by about 50% when fully deployed, and each consortium member along the span will be awarded a portion of the one-hundred (100) Gbps enhancement. The bottom line is that the grant will provide NTN with 10 times the transport capabilities of today's network installation and reduce NTN's total operating costs by half of what we currently pay.

At current operational levels, NTN-ND will spend about \$735,000 this year with a projected built-in 10% inflation figure for equipment and service costs for each year of the next biennium – a total request of \$1.7M. With the awarding of the grant to I2/NLR, we are estimating new costs after implementation sometime early in the next biennium to be reduced by about \$300,000 per year.

This is an exciting development for the members of the consortium. However, the NTN-ND membership must receive continued operational support to remain a partner and member of the consortium. If funding is not provided, ownership of the NTN-ND span will default to the University of Washington-Seattle. North Dakota will not be recognized as a partner in this strategic national research and education service and may also be eliminated from the many grant opportunities provided through this partnership.

Also, in the 2007 session, the Legislature also passed legislation (NDCC 15-10-45(4)) which states: "The North Dakota university system shall provide a comprehensive biennial report of the northern tier network activities for the 2007-2009 biennium and must submit to a biennial audit of the northern tier network activities beginning with the 2009-11 biennium." This past March, I contacted the SBHE Office inquiring about having the audit done. The State Auditor's office was contacted, and John A. Grettum, CPA, responded: "Since these funds are included in the

general ledger of the NDUS, specifically NDSU, we believe these funds are audited already and further work by our office is unnecessary. Further, since the audit is not required until after the end of fiscal year 2011, it would seem appropriate for the NDUS to seek a change in the law during the next session of the legislature to remove the requirement.”

Allen Knudson, Legislative Budget Analyst and Auditor, Legislative Council, responded to this memo with, “The section appears to require more than the audit of funds included in the financial audit of the University System which would occur even without this section. The section refers specifically to a biennial audit of Northern Tier Network activities. The section was added to the bill by a floor amendment in the Senate offered by Senator Christmann. The legislative history does not include any discussions regarding the definition of ‘Northern Tier Network activities.’ It would appear, however, that activities would include not only financial transactions, but also compliance with statutory provisions as well.”

The NDUS is developing a draft audit scope and intends to consult with the chair of the interim Information Technology Committee (Senator Larry Robinson) and chair of the interim Legislative Audit Review Committee (Senator Randy Christmann) on the proposed scope before proceeding with the audit, unless the committee directs us otherwise.

We understand that there is still some concern about competition from our North Dakota telecommunications carriers. We remain true to the legislation passed in the 2007 session and will continue to do so. The NTN is a regional network...and soon to be part of the national R&E broadband network that will allow large amounts of data to be available to our State’s research and educational programs. This has motivated our K-12 schools and our other colleges and universities to upgrade their connectivity within the past two years to take advantage of the new services and the large amounts of data the network provides to UND and NDSU. Those mid-level and last-mile connectivity upgrades are, and will continue to be, provided by the local telecommunication carriers creating new business opportunities to them. Another example is this building – Barry Hall. Its broadband connection to our core campus network is provided by IdeaOne — a local telecommunications carrier.

We continue to believe the NTN is a good investment for North Dakota. As I’ve worked with colleagues from leading research universities throughout the country during the devastating economic downturn of the past 2 to 4 years – experiencing 10%-20% cuts each year -- they all are consistent in stating that it is the income from their successful research programs that has allowed their institutions to survive, with some programs growing while others are eliminated. UND and NDSU both have research programs and the potential of new research programs that need the nurturing of infrastructure such as the NTN to attract talent and resources that will support North Dakota’s continued economic growth.

Thank you.

Questions?

NTN-ND Demonstrations
June 29, 2010

Over the next few minutes, six brief presentations will be shared, demonstrating some of the work our educational institutions are benefiting from with the Northern Tier Network.

1. **Scanning Electron Microscopy – connection to K12**. Presenters are: from the NDSU Electron Microscopy Center, Jayma Moore, Lab Manager, and Scott Payne, Assistant Director, and Roberta Rystedt, a Powers Lake High School Teacher.
2. **Theodore Roosevelt Center, Dickinson**. Live videoconference with Center Director, Sharon Kilzer.
3. **UND Writers Conference Digital Collection**. Presenters: Crystal Alberts, Asst. Professor of English and Co-Director of the UND Writers Conference, and Wilbur Stolt, Director of UND Libraries, using the commodity internet and the Northern Tier Network.
4. **Study of Neurotransmitter Transporters Structure and Function**. Presenter: Dr. Keith Henry, Department of Pharmacology, Physiology and Therapeutics, School of Medicine and Health Sciences, UND
5. **High Performance Computing and Student Research**. Presenter: Aaron Feickert, Department of Defense SMART Scholarship recipient and recent NDSU graduate. Overview of high performance computing and its impact on student research as demonstrated by Aaron's recent internship opportunity he had at the U of MN with the Large Hadron Collider project in CERN, Switzerland.
6. **Knife River Indian Villages National Historic Site**. Presenter: Craig Hansen, Education Coordinator, Knife River Indian Villages National Historic Site/National Park Service. This is a live videoconference demonstrating partnerships between state/regional R&E networks and local ISP's to connect local resources to education and research regardless of their location.

This concludes our demonstrations. These projects all illustrate the need for a network such as the NTN.

However, a few additional comments about the electron microscope connection. Specifically, it averages a 6.6 Mbps bandwidth requirement over a five-minute period. It alone nearly fills the 10 Mbps rate that our local carriers are upgrading our K-12 schools to. Just as university campuses need to continue their campus network upgrades due to the nearly 50% growth per year – with no end in sight – there will be a need to continue upgrading the networks of our K-12 schools, our Tribal institutions and our other higher education institutions, so that they may participate and/or access the data intensive resources the Northern Tier will provide. This demand will provide new economic opportunities for our telecommunications carriers for years to come.

Thank you to all of our participants today — a special thank you to staff at UND and NDSU for their work in putting this program together.