

# THE LEARNING NETWORK OF MINNESOTA BLUEPRINT FOR K-12 EDUCATION AND PUBLIC LIBRARIES

April 2009

## BACKGROUND

The Learning Network of Minnesota (LNM) was established in 1993 by the Minnesota Legislature to provide a statewide high-speed telecommunications highway for distance learning in higher education. In 1995, the higher education LNM was expanded to establish links to K-12 public education and public libraries. Using high-speed telecommunications technology in various forms, the LNM provides access and delivery of information resources to students and library patrons, distance learning opportunities through interactive television (ITV) and on-line learning, a transport system for the state to send and receive data electronically from K-12 schools and libraries, and access to MnLINK, the Minnesota Library Information Network.

For interconnectivity, the higher education regions all operate via a statewide backbone network that interconnects the campuses within both the University of Minnesota and the Minnesota State Colleges and Universities systems. The two systems operate separate networks that are brought together via strategically placed common connections and Internet 2. In the K-12 and public library arena, K-12 schools and public libraries connect through a series of independent regional networks, and subsequently connect the regional networks to the higher education networks to receive higher education programming and access to Internet 2.

One might raise the question as to why the K-12, public libraries, and higher education networks do not all interconnect via a single state provided infrastructure. The main reasons for this are:

1. The funding streams for K-12 and public library systems for telecommunications access are separated both programmatically and legislatively from the higher education funding streams. This makes cohesive planning challenging as multiple agencies and legislative committees are involved in the policy and decision-making.
2. The K-12 and public library portion of the Learning Network of Minnesota involves over 350 school districts and 12 regional public library systems. The logistics of connecting such a diverse multitude of entities with varying needs is not easily conformed to a common backbone infrastructure.
3. The regionally based infrastructure for K-12, higher education, and public libraries works most effectively because it allows each region to procure services based on local needs and priorities.
4. K-12 and public libraries rely on the federal E-rate telecommunications discount program to fund Internet access and telecommunications services. This means that K-12 and public libraries must conform to E-rate program rules for procurement, services, and eligibility. E-rate discounts are available only for K-12 and public library telecommunications services, therefore, this complicates the ability of the K-12 and public library systems to connect to a statewide backbone that involves higher education, local government, and other community entities not eligible for the E-rate program.

Also critical to the operation of the LNM are the K-12 /library telecommunications access regions and the higher education telecommunications regions. For K-12 education and libraries the telecommunications access regions serve a crucial role in the coordination and operation of the network. Services provided by the K-12/library telecommunications access regions and their coordinators include:

- Aggregation and coordination of service demands and needs
- Cooperative purchasing and procurement practices based on aggregated needs and cost effectiveness
- Coordinated application for federal E-rate telecommunications services discounts
- Wide area network operational support and maintenance
- Coordination and scheduling of distance learning activities via ITV throughout the state
- Advocating for telecommunications access needs of member school districts and libraries to the Legislature and other policy-making bodies
- Coordination with telecommunications service providers on service issues
- Linking schools and public libraries to content resources for education and life-long learning
- Facilitating the effective integration of technology with learning for schools

Due to the existence of telecommunications access regions, the technical and logistical burdens associated with delivery of telecommunications access and service for school districts are greatly reduced. For most districts and libraries the delivery of telecommunications access is a “given” and the complex technological logistics are completely transparent. Not only do the clusters provide a wide range of technical expertise to their members which does not exist at the independent school district or library level, but the organization of regions and clusters throughout the state directly results in an aggregation of need, network efficiencies, technical support and reduction in overall resources needed that would not exist if school districts and libraries were to seek an equivalent level of telecommunications service and support independently. For more information on Minnesota telecommunications access regions and clusters, visit <http://www.mitnmn.ning.com>. A map of the current telecommunications access clusters is also included with this document.

## **CONCERNS AND ISSUES**

While the diverse infrastructure serving K-12 public education, public libraries and higher education facilities is providing workable service, there are concerns relating to future growth and needs. As school districts and libraries experience continuing demands for the availability of expanded educational opportunities and online content, the appetite for high speed bandwidth also grows. Some of the current barriers to network growth include:

1. Limited funding for K-12 education and public libraries to sustain high speed network connections. K-12 education currently receives \$3.75 million from the state to help support telecommunications access after E-rate discounts are taken into account. This amount falls far short of actual after E-rate costs, which are closer to \$9 million annually. It also needs to be noted that the current funding between E-rate and the state telecommunications/Internet access equity aid provides limited support to only existing infrastructure and does not support any network growth or response to increased needs. Public libraries currently receive \$2,300,000 each year to assist with after E-rate costs, but again this sustains only the current level of bandwidth and does not provide room for network growth. Both school districts and public libraries also invest heavily in local infrastructure that allows them to use the telecommunications services provided through their regions.
2. K-12 school districts and public libraries, particularly those in rural areas, are limited to the existing telecommunications infrastructure provided by service providers and carriers. This means that some areas of the state have seen the benefits of high speed fiber connectivity that is not available in many of the more rural areas of the state. Telecommunications providers need to

have a return on investment to bury fiber, which is an expensive enterprise, and rural communities often are not able to provide that level of return.

3. K-12 schools and public libraries are often located many miles away from the local telecommunications provider hub, therefore experiencing high transport costs resulting from having to traverse multiple exchanges.
4. Bandwidth needs are continually growing in the K-12 and public library community. According to the Public Library Funding and Technology Access Study released by the American Library Association in 2008, 73% of libraries nationwide report that they are the only source of free Internet access in their community. In times of recession, reliance on Internet access at the public library is critical for many citizens as they use library access to employment opportunity information and government services. The State Education Technology Directors Association (SETDA), in their June 2008 report, High-Speed Broadband Access for All Kids: Breaking Through the Barriers, also acknowledges the growing bandwidth needs of teachers and students as online applications for learning grow increasingly interactive and media-rich.
5. There is no advocate at the state level for K-12 and public library broadband access. Higher education has these advocates in their system presidents and chief information officers.

## GOALS

1. K-12 and public libraries continue to need a sustained, adequate funding source that is adequate to current needs and allows room for growth. For K-12, the current \$3.75 million in the state's base budget is not sufficient to support reasonable Internet access and distance learning connectivity. School districts are often working with substandard levels of access to support their core business function – to deliver education opportunities and manage the school. Telecommunications access is now the foundation for delivery of education and library resources. An increased investment in telecommunications access for schools and libraries from the state would provide a huge return on investment in terms of the additional programming and resources that could be provided to students and library customers.
2. K-12 public education needs to move beyond current bandwidth limitations supported by the state telecommunications/Internet access equity aid program, which support only a T1 level of service (1.544 Kbps) per school. The SETDA High Speed Broadband Access for All Kids: Breaking Through the Barriers national report recommends the following levels of access for 21<sup>st</sup> century learning and Minnesota needs to start working in this direction for the next 2-3 years:
  - An external Internet connection to the Internet service provider of at least 10 Mbps per 1,000 students and staff
  - Internal wide area network connections from the district to each school and between schools of at least 100 Mbps per 1,000 students/staff

SETDA also recommends that a technology rich learning environment in the next 5-7 years should have:

- An external Internet connection to the Internet service provider of at least 100 Mbps per 1,000 students and staff

- Internal wide area network connections from the district to each school and between schools of at least 1 Gpbs per 1,000 students and staff
3. In the absence of stable, equitable funding, it has been difficult to establish standards for videoconferencing. For example, while most of the telecommunications access clusters are working towards the H.323 videoconferencing standard with quality of service (QOS), it is difficult for us to reach an efficient level of interconnectivity when local funding availability and eligibility for grants varies so widely.
  4. Telecommunications providers must be provided with incentives to invest in rural communities and to work together in order to provide consistent pricing in broadband services to all areas of the state. This access is critical not only to education and public libraries, but is needed to sustain economic growth and global competitiveness for our state.
  5. The K-12 education community needs an open network infrastructure that continues to allow interconnectivity, connections with higher education, and access to Internet 2.
  6. The network structure needs to recognize organizational autonomy and provide flexibility to meet local needs.
  7. Many students in Minnesota receive courses via interactive television. The Learning Network of Minnesota needs to provide quality of service for video conferencing to ensure these learning experiences are engaging and effective for students.
  8. There is a need for understanding and advocacy at the state level for high speed bandwidth that meets the needs of schools and public libraries.

## **CONCLUSION**

With the current emphasis on broadband expansion under the America Recovery and Reinvestment Act of 2009 and the development of recommendations to Governor Pawlenty by the Minnesota Ultra-High Speed Broadband Task Force, our state is positioned to provide our K-12 schools and public libraries with expanded capacity for telecommunications and Internet access. It is our hope that the needs and goals of the K-12 and public library community will not be overlooked as the current administration participates in state and federal discussions relating to broadband. Access to the Internet and video conferencing capacity for distance learning are now integral components to education and public library systems. This access is no longer optional. It is essential to our efforts to provide 21<sup>st</sup> century learning opportunities and information services that support economic growth and global competitiveness for Minnesota.

April 2009

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