

On-the-Ground Lessons from OITP's Public Library Connectivity Study

By Timothy Vollmer

Demand Is Exploding

In 2007, nearly 58% of public libraries reported that their connectivity speed was insufficient some or all of the time.¹ The increased demand for public library Internet access and the increased bandwidth required to support today's Internet applications and services have created a perfect storm of library connectivity challenges. As one Georgia library staff member said, "we are finding that demand increases to fill available supply, whatever that is . . . [we're] always playing catch-up."² As demand increases and networks slow, lines for Internet access will only become longer, as it simply will take longer for users to access Web-based e-mail, view instructional videos, or download course materials.

The Connectivity Study showed that inadequate bandwidth adversely affects not only library patrons, but library staff as well. Since most staff networks run on the same broadband connection as the public access terminals, librarians reported they had to complete network-intensive work in the morning hours, when the public load on their broadband connection was the lightest. Library staff also said that sometimes the insufficiency of bandwidth affects traditional library activities, like checking out books. One library reported that 10 dedicated computers used to check out materials required over 95 percent of the available bandwidth. Clearly, network management techniques can be improved in this specific instance, but the larger issue of shared connectivity and its effects on librarians' abilities to provide quality services remains.

Insufficient bandwidth can restrict a library's ability to innovate. The Connectivity Study interviews revealed that a lack of bandwidth can put "intellectual limits" on librarians, meaning that they will not consider new uses

of technology because they know they cannot support it.³ This is especially troubling as libraries attempt to expand their services to better reflect the needs and desires of the 21st century library user. Other libraries rejected or delayed making some content available because so many libraries within the state did not have enough bandwidth to take advantage of the services associated with that content.⁴

Planning Is Crucial

How do libraries sustain the speeds and robust connectivity more and more users are demanding at the public library? Librarians may assume that bandwidth planning is tied to the number of Internet access computers, but bandwidth is also dependent on the activities conducted on each computer. For example, a user watching a mandatory government video to get a commercial driver's license (as reported by one of the Connectivity Study respondents) takes up more bandwidth than a patron engaged in filling out a job application online. The Connectivity Study reported that the practice of allocating computing funds based upon the number of public access and staff computers "should be seen as strictly a funding mechanism, not a bandwidth allocation formula."⁵ The Connectivity Study concluded that any configuration should be scalable because more bandwidth will be needed. Libraries need to look beyond the applications that patrons are using today and estimate the demands of tomorrow when planning for bandwidth needs. Libraries should also take into account that adding wireless routers without increasing total bandwidth will compound the connectivity problem.

The Connectivity Study recommended that the absolute floor for broadband deployment should be 1.5 Mbps

(T1). In fact, this speed is already insufficient for many libraries. The 2006 *Public Libraries and the Internet* study summed it up: “It is time to move beyond connectivity type and speed questions and consider issues of bandwidth sufficiency, quality, and range of networked services that should be available to the public from public libraries.”⁶ As necessary bandwidth is always a moving target, perhaps a more dynamic, flexible plan should be implemented that can assess basic quality of service standards that can more accurately define acceptable levels of telecommunication services for the library community.⁷ OITP continues to explore models for effective capacity planning that will aid libraries in the difficult task of developing a useful, affordable, and forward-looking broadband connectivity plan.

Libraries also face problems in determining exactly what broadband speeds and prices are available to them. The FCC recently changed their data collection metrics so that broadband information is collected at the census tract level, not at the zip code level. This important change will provide more granular data about broadband availability.

The Connectivity Study identified that more extensive broadband data need to be collected, especially information that more accurately can reflect the position of public libraries as a hub for Internet connectivity in the community. The Connectivity Study and subsequent OITP work continue to address problems in the way FCC collects information about broadband services. The current broadband data-gathering initiatives collect information about residential connections, which are not as beneficial in aiding library efforts to secure fast, affordable broadband connections. It would be useful to collect data from each individual library so that library administrators, municipal purchasers, or regional cooperative coordinators can get a clear picture of broadband speeds and pricing across similar geographic areas and markets.

When a family purchases a broadband connection to support a home computer network, that information can be reported to the FCC through the broadband provider. The household in question is “connected to broadband.” A library can also purchase a broadband connection to support the library computer network. Even though the typical library must support far more users (sometimes 10, 20, or more) on a single broadband connection, they are still lumped into the “connected to broadband” category. To address this discrepancy, ALA has submitted several comments to the FCC. ALA has urged the agency to collect information and build broadband maps that takes into account library connectivity data in addition to residential customer information.⁸

Barriers to Increasing Broadband

In addition to complexities in planning for increasing demand, the Connectivity Study observed that libraries face economic, industry, and political barriers to expanding broadband connectivity.

The Connectivity Study reflected the concern that librarians and library administration felt about funding broadband, especially since those responsible for procuring broadband recognized that the total cost of connectivity includes not only buying broadband connections, but also managing the network; purchasing more computers, routers, and other equipment; and even altering physical library spaces to incorporate more Internet access workstations. Broadband sustainability is a key issue. Libraries reported that even when they were offered a grant to obtain a high-speed broadband connection, some decline it because they fear they will not be able to pay for ongoing costs or equipment upgrades.⁹

For many libraries, E-rate discounts were necessary to afford a broadband connection. Where there was a consortium applying for E-rate on behalf of smaller libraries, the value of E-rate rose dramatically.¹⁰ The formation of cooperatives was essential, especially since some smaller libraries that were not in a network did not apply for E-rate discounts because the paperwork and application complexity did not seem “worth the effort.” This is confirmed by the Public Library Funding & Technology Access Study, which found that more than one third (35.7 percent) of rural libraries that do not participate in the E-rate program reported the discount was fairly low and not worth the time needed to participate. Overall, 42.4 percent of rural libraries reported they do not apply for E-rate discounts.

In addition to meeting with librarians, the Connectivity Study group also met with representatives from the telecommunications industry. Industry representatives favored economic incentives that they claim would spur greater investment in broadband, such as tax breaks or loan programs to make it more economically feasible to build broadband in rural areas.¹¹ The Connectivity Study confirmed longstanding industry precepts—companies wanted easier access to government-owned rights-of-way, wanted to eliminate obligations to share their network with resellers or competitors, wanted to eliminate build-out requirements, and wanted to reduce or eliminate state taxation of the Internet.¹² Cable companies believed that any government programs to expand broadband should be very narrowly targeted to “unserved” areas, not “underserved” areas where a broadband provider may already

exist.¹³ On the ground, free market forces rarely align with the idea of “quality access to all.” Other companies oppose or view with suspicion statewide education or library networks that, in their view, offer state-subsidized competition to their own services.

The Connectivity Study reported that the main political barrier was the difficulty of convincing government authorities at both the local and state level that libraries needed high-speed bandwidth.¹⁴ Advocacy is critical. The library community needs to successfully communicate that broadband, and specifically quality access to the Internet, are absolutely central to the mission of the 21st century library. Decision makers need to know that libraries play a vital role in connecting community members to education, employment, and communication resources online.

Regional Library Cooperatives and Broadband Planning

By Nancy Bolt

Broadband planning and deployment is successful when there is leadership, vision, collaboration and efficiency. Specific examples of the benefits of RLC involvement in broadband planning and deployment include:

- Connectivity to the Internet
- Aggregation of demand for the best pricing
- Input from PLS members about new services and network growth
- Sharing equipment and staff for efficiency
- Leadership from PLS and a desire to move forward and experiment
- Mutual respect and a good relationship among member libraries and between libraries and PLS staff
- Staff participation and experimentation
- Local library leadership on the PLS Council
- The ability to work independent of local governments
- High-level IT support

Plans Put into Action

The Connectivity Study found that the libraries that belonged to a state, regional, or community network believed that aggregation of demand and the ability to negotiate a group price allowed for more scalable bandwidth.¹⁵ State networks such as MOREnet in Missouri,

Kan-Ed in Kansas, and OPLIN in Ohio provide efficiency because they are centralized—having experts in one place reduces costs needed to perform tasks, such as negotiating with ISPs and submitting E-rate applications.¹⁶ The Connectivity Study reported that these collaborative networks allowed for joint planning, building a business case for providers to deploy more broadband, negotiating pricing, sharing costs, support and maintenance delivery, sharing services, and supporting economies of scale.¹⁷ But, in order to be effective, each state’s plan must be developed taking into account its unique social and political contexts and history of telecommunications development, as well as differences in structure and organization of its library systems.¹⁸

The United States has no national broadband policy, but several interesting public interest broadband initiatives are gathering steam. Movements like InternetforEveryone.org, Speedmatters.org, and BroadbandCensus.com have advocated for action that would help spur affordable high-speed Internet access for all Americans. Research studies such as A Blueprint for Big Broadband promote collaboration between government and the private sector in making high-speed Internet services available across the country.¹⁹ The library community needs to participate in these activities in our role as advocates for the public interest. As public libraries provide oftentimes the only no-fee access to the Internet in a community, it’s crucial to reiterate the importance that libraries play in continuing and expanding access to those without Internet connections at home or work. In addition, in November 2008, the FCC will consider whether to re-allocate \$300 million from the high-cost portion of the Universal Service Fund to expanding broadband. This could signal an important step forward in U.S. investment in broadband infrastructure and research.

The public library has historically been a place of free, open access to information. At the same time, library patrons are using library services, especially Internet access, in new and exciting ways. Just as libraries have incorporated new media like graphic novels, audiobooks, software, and e-books and podcasts, as well as new services like reference chat, e-government services, and technology training, libraries need to continue to plan strategically to integrate and sustain fast, robust Internet connectivity. Libraries need to work diligently to support Internet access in ways that people increasingly need to use it. Also, libraries should keep an open mind in seeing the innovative potential that broadband can provide in keeping libraries the true creative centers for learning, communication, entertainment, and community. To do this, we need engaged librarians and a motivated, well-informed public that can communicate the needs and success stories to decision makers. We also need to be able to build and support library networks that can pool resources to negotiate faster and cheaper broadband. In

the end, libraries must engage in careful planning, form partnerships and coalitions to increase market power, place themselves in the general public debate over broadband deployment, and be sophisticated, informed consumers of telecommunications services.

Notes

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