

## Broadband USA Applications Database

**Applicant Name:** State Library of Ohio

**Project Title:** OPLIN Router Upgrades

**Project Type:** Middle Mile

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### Executive Summary

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The Ohio Public Library Information Network (OPLIN) is the agency within the State Library of Ohio that makes network access available to the 251 Ohio public library systems to ensure equity of access to the Internet and electronic information for all Ohio residents. OPLIN provides an Internet connection and Internet bandwidth to public library systems proportional to the library system's needs; connects them to a backbone of broadband telecommunications; maintains the health of the network, with a goal of no failures or bottlenecks, to support the activities of libraries and their users; and takes steps to prevent degradation of network service. OPLIN constructed this network in 1995-96 and has maintained and upgraded it ever since. Originally, the network was built from copper-wire "T1" circuits; in 2006, OPLIN began replacing the older T1 circuits with fiber-optic "Ethernet" circuits. In June 2008, the OPLIN routers which provide the gateway between the Internet and the libraries' local area networks reached industry end-of-life. OPLIN could no longer purchase agreements from vendors to maintain and upgrade these critical devices. When a router fails, the Internet connection to a public library entirely ceases to function; therefore, it was critical that OPLIN be able to maintain service agreements on all routers in the network. OPLIN successfully requested \$200,000 from the Ohio Capital Budget for Fiscal Years 2009-2010 to replace the routers at the network core in Columbus, Ohio as well as 71 site routers for placement at the gateway nodes to the network within library buildings. The Juniper J2320 router was chosen as the replacement router after an open bidding and assessment process conducted by the Ohio Department of Administrative Services; this router can support connectivity speeds up to 300 Mbps. The plan was to pay for the remainder of the site routers with existing OPLIN cash reserves; unfortunately, the nationwide economic downturn and the corresponding cuts in state resources forced OPLIN to re-appropriate these funds to support basic operations. This project will move our router replacement project one step closer to completion by funding the replacement of 56 site routers located within rural public libraries in underserved areas of Ohio. Opportunities the proposed system seeks to address: This project will allow OPLIN to upgrade older, end-of-life routers at the gateway nodes to our network within library buildings with newer routers that offer more capabilities for expanding bandwidth and network services such as VoIP. A general description of the proposed funded service areas: This project will upgrade the routers at 56 public library locations (55 rural and one urban) within the following 30 counties in Ohio, all of which are underserved because 40% or less of households subscribe to broadband service: Adams, Athens, Belmont, Brown, Carroll, Clinton, Coshocton, Crawford, Darke, Fayette, Gallia, Guernsey, Hardin, Harrison, Highland, Hocking, Holmes, Jackson, Jefferson, Lawrence, Meigs, Morgan, Noble, Perry, Pike, Scioto, Vinton, Washington, Williams, and Wyandot. Number of households and businesses passed: Not applicable; this is a middle mile project with no interconnection

points within the span from network core to library site. Number of community anchor institutions, public safety entities, and critical community organizations passed and/or involved with project: 56 public libraries in 30 underserved counties in Ohio. The underserved status of these counties -- 40% or fewer of residents subscribe to broadband -- was determined by consulting the 2008 Connect Ohio Statewide Residential Technology Assessment, Broadband Adoption data point. Proposed services and applications for the proposed funded service areas and users: The new Juniper J2320 routers will support up to 300 Mbps connection speeds, any combination of TDM (T1) and Ethernet (E1) interfaces, Multiprotocol Label Switching (MPLS) to create "virtual links" between nodes, next-generation Internet Protocol version 6 (IPv6), quality of service (QoS) traffic engineering to support VoIP and other sensitive services, and multicasting for streaming media. Approach to addressing the non-discrimination and interconnection obligations: Interconnections to the Ohio Public Library Information Network are controlled by the "Policy on Extending OPLIN to Other Public Institutions" (<http://oplin.org/content/policy-extending-oplin-other-public-institutions>) as amended by the OPLIN governance board on February 9, 2007. OPLIN recognizes the importance of cooperation between public libraries and other entities in their local communities including schools, local government, non-profit organizations and businesses, and allows sharing of OPLIN broadband connections so long as it does not damage or cause degradation to the network as a whole. Type of broadband system that will be deployed (network type and technology standard): The libraries involved in this replacement project currently use two different network technologies depending on their network needs. Smaller libraries are still sufficiently served by copper-based 1.5 Mbps T1 TDM circuits which run from the library sites to the OPLIN network core at the State of Ohio Computer Center (SOCC). Larger libraries use fiber-based Ethernet circuits (up to 10 Mbps in this project) which use the Broadband Ohio Network to carry traffic back to the SOCC. The J2320 routers can handle both network types. Qualifications of the applicant that demonstrate the ability to implement and operate a broadband infrastructure, and/or be a sustainable broadband services provider: OPLIN built the public library network in Ohio in 1995-96 and has maintained and upgraded it ever since. Our current depressed funding level is sufficient to cover monthly network operating costs, but not to cover significant upgrades. State budget projections currently predict that funding may begin to improve sometime after Fiscal Year 2011. Overall infrastructure cost of the broadband system: The routers purchased to upgrade the OPLIN infrastructure through this project would be acquired at a 36% discount by the Ohio Department of Administrative Services Office of Information Technology (OIT), upgraded by OIT using third-party memory modules, and deployed by OIT. OIT would charge all costs to the State Library of Ohio/OPLIN, totaling \$123,600. Overall expected subscriber projections for the project Not applicable; this is a middle mile project serving community anchor institutions (public libraries). Number of jobs estimated to be created or saved as a result of this project: We estimate that our purchase will allow the local Juniper distributor to retain one job.