

FEATURE ARTICLE

INTERNET2 AND REGIONAL OPTICAL NETWORKING

Internet2

Until the early 1990s, only education, government, and research organizations used the Internet. Then came the boom of commercial Internet use. Immediately after the commercialization of the Internet, there was a perception that the Internet was too crowded and congested for many types of advanced research. Several organizations were founded to encourage new partnerships between the original Internet members, to continue advanced networking research and to provide high-speed connectivity outside of the commodity Internet. One of the most successful of these organizations is called Internet2.

Internet2 members form a large consortium of universities, colleges, state networks, and federal government organizations. **THIS PARTNERSHIP EXISTS TO PROMOTE NETWORKING RESEARCH AND PROVIDE HIGH-SPEED CONNECTIVITY SEPARATE FROM AND PARALLEL TO THE EXISTING INTERNET.** Most Internet2 members have connectivity into the network using at least 1Gbps connections.

The AREN connection to Internet2 consists of a 10Gbps connection from our network core in Birmingham to the Southern Crossroads Gigapop (SoX) which is managed by Georgia Tech. SoX's connection to Internet2 is currently 1Gbps.

ALL AREN EDUCATION CLIENTS (K-20, LIBRARIES, AND MUSEUMS) HAVE FULL ACCESS TO INTERNET2 BY DEFAULT. This is provided through agreements with the University of Alabama System, Internet2, and SoX. Common uses of the AREN Internet2 connection include advanced Video Conferencing, and high-speed file transfers. Clients are only limited in their use of Internet2 by the speed of their connection to AREN.



Current Internet2 National Connectivity Backbone



Regional Optical Networking

The Alabama Supercomputer Authority has partnered with the University of Alabama System in support of an optical network that connects Huntsville, Birmingham, Tuscaloosa, Nashville, and Atlanta. **THIS OPTICAL NETWORK IS CURRENTLY USED BY AREN TO PROVIDE 10GBPS FROM HUNTSVILLE TO BIRMINGHAM AND FROM ATLANTA TO BIRMINGHAM.** Dense wave division multiplexing (DWDM) is used to provide up to 40 simultaneous 10Gbps connections over a single pair of fiber (400Gbps aggregate bandwidth). Fiber has been leased from various carriers to provide this connectivity.

This exciting technology has allowed us to not only significantly upgrade our Huntsville to Birmingham backbone (from 155Mbps to 10Gbps), but also to provide extremely high-speed access to Internet2 and commodity Internet peers in Atlanta.