Ohio’s 100 Gigabit Network
OARnet OVERVIEW

The Ohio Academic Research Network (OARnet), a multidisciplinary research center under Ohio State’s Office of Research, provides networking and technology needs to Ohio colleges and universities, K–12, public broadcasting, state and local government and hospitals. With more than 1,850 miles of fiber-optic backbone, OARnet provides more fiber per-capita than any other state in the nation. OARnet was created by the Ohio Board of Regents in 1987 and is part of the Regent’s Ohio Technology Consortium.

BUSINESS SITUATION

OARnet projected that its 10 Gigabits per second (Gbps) network would face increasing demands from academic and industry researchers because, in part, of the growing importance of “Big Data.”

SOLUTION

State leadership, from the governor to the legislature, as well as Ohio higher education communities and public and private stakeholders understood the importance of the upgraded network and supported the initiative. Initial discussions regarding the implementation began in October 2011. With Ohio Governor John Kasich’s support, $13.1 million was awarded on Jan. 30, 2012, to increase the network capacity—in eight short months—to 100 Gbps, connecting ten major cities and linking to Internet2’s international 100 Gbps network.

OARnet launched its fiber-optic backbone with scalable architecture in 2004. This design allowed network engineers to easily upgrade the new, ultra-fast network by the promised delivery date of December 2012. For the 100 Gbps upgrade, OARnet used equipment from Cisco and Juniper, who were challenged to quickly ramp-up to build the bleeding-edge technology.

The project was completed over two phases. Phase I of the development increased speeds at connection points between Cleveland, Columbus, Cincinnati, Dayton and Toledo and was completed in September 2012. Phase II installations targeted the connection points at Akron, Athens and Youngstown, Wooster and Portsmouth and were completed before December 2012.
On Dec. 11, 2012, less than 12 months since the first announcement of OARnet’s enhancement, Governor Kasich did a ceremonial lighting of the 100 Gbps network. Following the debut of a new promotional OARnet video (see https://vimeo.com/54974130), a live streaming videoconference connected Governor Kasich to university research facilities in 10 Ohio cities including: Cincinnati, Cleveland, Dayton, Toledo, Akron, Athens, Youngstown Portsmouth and Wooster.

**BENEFITS**

Ohio’s economic future depends on creating high-tech environments that support next-generation business applications. While a few research and education networks have limited deployment of 100 Gbps networks, Ohio is the first to invest in this gold standard on a statewide scale.

The 100 Gbps network will serve as a statewide incubator for public-private partnerships aimed at commercializing next-generation Internet applications and hardware, attracting new employers with access to the research network and serving as a platform for developing new applications in large-scale scientific research. A Cleveland Plain Dealer editorial wrote, “Ohio is wired for business. Goodbye Rust Belt, Hello Nerd-vana.” The Columbus Dispatch similarly wrote, “For those inventing the future, Ohio is the hot spot.”

As one metric of the project’s success, leaders will tally the number of applications vetted through the test-bed being developed as part of the effort. OARnet staff also will gauge the number of upgraded connections to the backbone being requested by member institutions and their partners as they participate in the development of these big-data apps.

Leaders from the private sector, medical research, higher education, agribusiness and more have praised the OARnet upgrade and see limitless opportunities.

*When you’re talking about modern health care research industry—medical imaging, genomics, DNA sequencing—you’re talking about enormous data sets. Up until today, the bandwidth didn’t exist to effectively transmit this volume of information from one point to another. One reason we located our new company, BioLinQ, in Ohio, rather than California, is because Ohio demonstrated the most forward-thinking approach to technology and high-speed innovation.*

— Ken Murray, Founder and CEO of Transformatix

*OARnet’s 100 Gig network upgrade really helps Ohio support its great research institutions and the cutting-edge industrial innovation that’s happening…. It’s going to be a great advantage for recruiting companies to locate in Ohio. Our business focuses on modeling and simulation for the automotive industry, and we chose Ohio over the North Carolina Research Triangle because of the advanced technology infrastructure available here.*

— Ray Leto, President, Total Sim
Ohio’s enhanced 100 Gbps broadband capability will help Ohio be at the cutting edge of medical innovation and information sharing which will greatly facilitate our patient care, clinical research and training programs. We can remotely evaluate and monitor our patients’ clinical status, and further optimize their treatment and management remotely.

—Ali Rezai, M.D., Director of Center for Neuromodulation, Wexner Medical Center at The Ohio State University

Recently, Columbus, Ohio, was named as a 2013 Top7 Intelligent Community of the Year; the 100Gig project factors into Columbus’ success. Additionally, IDG’s Computerworld Honors Program named the Ohio Academic Resources Network (OARnet) as a 2013 Laureate in the “Emerging Technology” category for its 100 Gig network upgrade.

ADDITIONAL RESOURCES

OARnet is a prime example of how Ohio is transforming from the “Rust Belt” to the “Innovation Belt.” A BusinessWeek article notes that Cleveland is the fastest growing market for technology jobs in America, and Cincinnati is third: http://images.businessweek.com/slideshows/20110801/cities-with-the-biggest-growth-in-tech-jobs#slide11.

A full 100 Gbps OARnet media kit available at: https://oar.net/press/media/100gbps

A video on the benefits of the 100 Gig network is at: https://vimeo.com/54974130