



## CUSTOMER PROFILE

# ONENET DEPLOYS 250-MILE RESEARCH CORRIDOR ON CISCO MULTISERVICE DWDM OPTICAL NETWORK

## EXECUTIVE SUMMARY

### CUSTOMER NAME

OneNet

### INDUSTRY

Government and higher education

### BUSINESS CHALLENGE

- Support rapidly increasing demand for Gigabit and 10 Gigabit Ethernet services
- Meet growing reliability expectations of customers
- Offer innovative, new services to enhance state's economic development and improve effectiveness of state agencies

### NETWORK SOLUTION

- Cisco DWDM optical network with Cisco ONS 15454 multiservice transport platforms (MSTPs)
- Network design scalable to 32 10-Gbps wavelengths
- SONET, Ethernet, and DWDM services converged on one platform

### BUSINESS VALUE

- Scalability to meet demands of research and collaboration
- Near-seamless delivery of cost-effective services including IP telephony, storage, e-mail, and Web hosting
- Enhanced reliability with average uptime of 99.9 percent

**Goal is to Facilitate Collaboration Among Universities and Industry; Help Attract 21st Century High-Tech, High Paying Jobs**

### BACKGROUND

OneNet is Oklahoma's statewide provider of telecommunications services to K-12, higher education, and state agencies. A division of the Oklahoma State Regents for Higher Education, OneNet is operated in cooperation with the Oklahoma Office of State Finance. OneNet is not a state-owned utility, but rather a state-led partnership among telecommunications companies, equipment manufacturers, and service providers.

### BUSINESS CHALLENGE

For some time, Oklahoma's leading universities have been aggressively pursuing the leading edge of research and development. Oklahoma State University (OSU) in Stillwater is home to the Oklahoma Statewide Shared Nuclear Magnetic Resonance (NMR) facility that houses the only NMR spectrometer of its kind in a 450-mile radius. This highly advanced machine allows researchers and students to explore the detailed structure of molecules, and has been invaluable in the development of new medicines, antibodies, vaccines, pesticides, and natural and synthetic materials.

The NMR facility is a symbol of Oklahoma's commitment to become a 21st century economic powerhouse. But a critical part of that capability is a world-class telecommunication infrastructure. Such an infrastructure would facilitate improved research and collaboration among colleges and universities in Oklahoma and with other universities and important industries here and around the world.

The natural vehicle for such a transformation is OneNet, which was founded initially in 1992 to provide video services across its statewide microwave network for distance learning. Since then, it has upgraded to an IP and SONET-based network based on OC-12 connections and has seen demand for IP and Internet services grow dramatically. By 2002, however, OneNet recognized that its network could not offer the capacity, the scalability, or the reliability its customers were demanding.

Colleges and universities throughout Oklahoma needed high-speed access not only to the commercialized Internet, but also to Internet2 and the newly created National LambdaRail (NLR). NLR is a major advanced initiative of U.S. research universities and private-sector technology companies to provide a nationwide infrastructure for research and experimentation in networking technologies and applications.

To enable collaboration of facilities such as these, Oklahoma envisioned the Oklahoma Research Corridor, a 250-mile, high-speed fiber optic backbone network that would connect the most important research universities in Oklahoma – University of Oklahoma (OU) in Norman, the OU Health Sciences Center in Oklahoma City, Oklahoma State University (OSU) in Stillwater, and the University of Tulsa (TU) in Tulsa.

“Oklahoma’s largest universities are involved in cutting-edge research, from three-dimensional modeling to grid computing,” says Kurt Snodgrass, vice chancellor for IT and Telecommunications at OneNet. “To continue high-level research, they need higher-speed access to Internet2 and the National LambdaRail, which we were having trouble providing. In addition, the universities and state agencies are looking for greater reliability in the network. Finally, to attract research dollars from the federal government and other agencies into Oklahoma, we needed a new network infrastructure that could deliver Gigabit Ethernet over dense wavelength-division multiplexing (DWDM).”

While competing platforms offered support for Gigabit Ethernet and 10 Gigabit Ethernet services, most offered Ethernet services separately from the SONET platforms. OneNet wanted to converge its SONET and Ethernet services on a single platform, which would lower management costs, require less real estate, and simplify operations. The service provider also wanted a platform that was flexible and adaptable and employed intelligent DWDM software to automate power management as well as simplify both network activation and the addition or removal of wavelengths at different points on the network. Finally, OneNet wanted a platform that would enable rapid multiservice provisioning of circuits and channels from OC-3 up to OC-192 or Fast Ethernet, Gigabit Ethernet, or 10 Gigabit Ethernet.

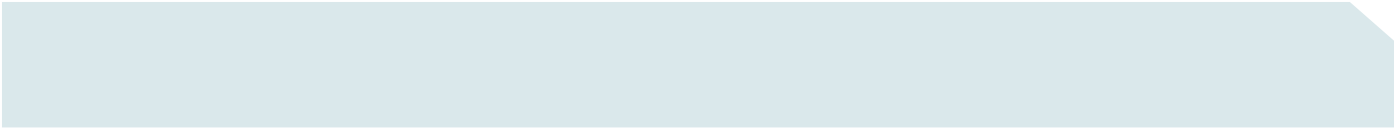
## **NETWORK SOLUTION**

### **OneNet Selects Cisco ONS Multiservice Transport Platform**

To meet these new demands, the OneNet team selected the Cisco® ONS 15454 Multiservice Transport Platform (MSTP), which combines previously disparate services, including DWDM wavelength transport, SONET, and both Gigabit Ethernet and 10 Gigabit Ethernet on one platform.

“We chose to deploy the Cisco ONS 15454 MSTP because we needed to converge our existing OC-12 SONET network and our new Gigabit and 10 Gigabit Ethernet services into a single network while increasing the network’s reliability,” says Snodgrass. “The Cisco ONS 15454 was really the only option we considered. It provided the most economical and efficient means to consolidate our existing SONET infrastructure with our new high-speed Ethernet services to provide DS-1 to 10 Gigabit Ethernet services in one platform.” With the Cisco ONS MSTP, to add new services or increase bandwidth, OneNet can simply insert new cards. This flexibility is essential as OneNet must accommodate a range of customer needs. Some universities need access to the NLR, for example, and this requires that OneNet launch wavelengths from its main points of presence to carry 10 Gigabit Ethernet services. But OneNet is also servicing smaller vocational schools and K-12 schools and they may only need DS-3 or OC-3 services. With the addition of the interface cards, the same Cisco ONS 15454 MSTP can accept these interfaces from customers and route them across the OneNet network.

Another unique advantage of the Cisco ONS 15454 MSTP is that, through a common management platform, Cisco Transport Controller, OneNet can provision both SONET services and wavelengths using A-to-Z provisioning. Unlike competing platforms that require separate management systems for provisioning varied services, Cisco Transport Controller can manage and provision both SONET services and DWDM wavelengths. IT managers can provision new wavelengths or circuits by pointing and clicking on icons for fast turn up.



In addition to high-speed access for research-demanding applications, OneNet can now offer other revenue-generating services, including IP telephony, storage, e-mail, and Web hosting and centralized data services.

OneNet has also extended the Cisco optical deployment out to the network edge through the deployment of Cisco ONS 15327 SONET multiservice platforms. Circuits are no longer fixed and inflexible. Using Cisco Transport Controller software, OneNet can provision OC-3 or OC-12 services to a vocational school on one platform for e-mail and Web hosting services, and can provision a Gigabit Ethernet service for a company that desires storage services. Or it can provision a 10 Gigabit Ethernet connection over a wavelength to allow a leading university with highest-speed access to the National LambdaRail.

### **Business Value**

The new Cisco ONS 15454 MSTP-based optical network is providing the mix of functions and capabilities that OneNet needs to meet its business challenges. With the capacity to deliver 32 wavelengths of 10 Gbps, OneNet is meeting the escalating demands of universities and research institutions. The convergence of SONET and DWDM on the same platform has reduced management and provisioning costs. OneNet can now use a single management platform – the Cisco Transport Controller – to provision all of these services across the Cisco optical network, from the Cisco ONS 15454 MSTPs in the core network to the Cisco ONS 15327 multiservice platforms at the network's edge.

In addition, the new transport network provides OneNet with the reliability and control of bandwidth at a much more granular level. Using the newest Cisco ONS 15454 ML-Series line cards, OneNet will be able to fine-tune how bandwidth is used, delivering quality of service (QoS) support to newer applications such as voice over IP (VoIP) across the optical network. VoIP represents not only a new growth area for OneNet but also a critical competitive service to help OneNet counter bundling strategies being offered by competitors.

“We saw a lot of nice synergies between our Cisco routed network and the optical transport, as well as a lot of value in having a single vendor, and these advantages have come to pass,” says Snodgrass.

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