

Ohio Healthcare Organization Upgrades SAN Fabric

OhioHealth upgrades SAN to automate critical patient administration while reducing licensing, software and hardware costs.

EXECUTIVE SUMMARY
<p>OHIOHEALTH</p> <ul style="list-style-type: none"> • Industry: Healthcare • Location: Columbus, Ohio • Number of Employees: 16,000
<p>BUSINESS CHALLENGE</p> <ul style="list-style-type: none"> • Storage capabilities were at maximum • Needed a more manageable and efficient disaster recovery solution • Standardize IT infrastructure in a cost effective manner
<p>NETWORK SOLUTION</p> <ul style="list-style-type: none"> • Upgrade SAN to a fast, scalable solution while lower overall costs • Installed Optical metro-area network (MAN) for fastest data availability
<p>BUSINESS RESULTS</p> <ul style="list-style-type: none"> • Cost saving over \$500,000 a year with upgraded optical metro-area network in comparison with costs for a much slower network • Fast, up-to-the-second data availability • Secure and reliable storage; disaster recovery capabilities • Flexible and scalable solution that is more cost effective than Telco offerings evaluated

Business Challenge

OhioHealth is a not-for-profit, charitable, healthcare organization that serves and supports the Ohio community. Based in Columbus, OhioHealth has a family of 17 hospitals, 20 health and surgery centers, home-health providers, medical equipment and health service suppliers throughout a 46-county area.

OhioHealth has a central business office from where the organization’s scheduling, billing and collections are carried out. They also have several locations, including OhioHealth’s flagship hospital, Riverside Methodist Hospital, Grant Medical Center, Doctors Hospital and Dublin Methodist Hospital. As the overall healthcare industry has increasingly become electronic and automated, the growing amount of data passing through, especially in the areas of diagnostic imaging in radiology and cardiology, were on the rise at OhioHealth. The requirement for increased bandwidth and storage became a constant, as did the focus on business continuity and disaster recovery capabilities.

All of OhioHealth’s major central Ohio facilities are connected via a fiber-based network and historically the healthcare organization had used the Telco approach with a fiber-based SONET ring, as well as individual point-to-point connections. According to Jim Lowder, vice president of technology for OhioHealth, when the organization’s storage infrastructure was approaching end of life, he and his team began evaluating ways to reduce cost while increasing capacity and improving performance. Their existing storage infrastructure was comprised of a couple of competing vendor solutions that were straining under the capacity demands of additional imaging and diagnostic data that the IT department was charged with storing. As Lowder and his team conducted tests for IT capabilities, they discovered that their storage capabilities were at maximum capacity and the team’s ability to recover the OhioHealth systems in an acceptable amount of time was not sufficient.

“We had a very traditional tape backup agreement with a hot-site vendor in Philadelphia to send tapes, and if needed we would go to the vender site to recover should we have a disaster,” says Lowder. “But as we conducted semiannual tests to measure how quickly we could recover patient care data, we realized our off-site tape backup system was no longer able to meet our needs.”

“When challenged with transmitting multiple types of data across our fiber, I immediately thought about a Telco solution. But when we looked at what Cisco ONS had to offer via DWDM, it clearly gave us the most flexibility and was without question the best way to go.”

—Jim Lowder, Vice President of Technology, OhioHealth

Lowder says that he and his team considered replicating data asynchronously to the hot-site vendor in Philadelphia, but found that the off site solution was cost prohibitive and did not offer a complete solution.

“It was apparent that there would be bandwidth issues with getting data back to the hospitals in a timely manner if we chose the hot-site solution,” says Lowder. “The solution was also expensive and the increased functionality we were looking for in an upgrade just wasn’t there. Adding to that, our administration had become increasingly complex and our disaster recovery/business continuity capabilities had become limited.”

Network Solution

OhioHealth was already successfully utilizing Cisco Catalyst 3750 Series Switches at the edge and Cisco Catalyst 6500 Series Switches at the core, with Cisco wireless solutions deployed throughout the network of hospitals for visitors and staff to access. The IT staff also decided to upgrade the storage networking by deploying a Cisco SAN comprised of two Cisco MDS 9509 Multilayer Directors with 244 ports on each switch, one for use at the primary data center and another for the secondary data center. After evaluating storage switches on the market, the OhioHealth IT team selected the Cisco MDS solution for its scalability and manageability. The MDS Series also offered features such as virtual storage area networks (VSANs), which helped to integrate connections between the two data centers and better utilized SAN resources.

As well as upgrading the SAN, Lowder and his team decided to evaluate Cisco’s Optical solutions, as a solution to quickly accessing critical patient information data across the healthcare provider’s multiple facilities including four hospitals, a business office, a corporate office, a surgery center and the two data centers.

“We had pretty much standardized our overall networking equipment, including switches and routers, and appreciated the relationship and ongoing support we’d received from Cisco,” says Lowder. “Our technical team researched the Cisco solution in-depth and since we have received tremendous benefits in the past with Cisco, we decided to implement their optical solution.”

Lowder and his team selected Cisco ONS 15454 Multiservice Transport Platform (MSTP) with reconfigurable optical add/drop multiplexer (ROADM) technology, which enables OhioHealth’s IT department to perform wavelength provisioning across entire networks and eliminates the need for optical-to-electrical-to-optical (OEO) transponder conversions. According to Lowder, the new configuration gives him and his team the ability to create a single network across their two data centers.

The team’s research led them to Cisco’s optical transport portfolio and the ONS 15454 Multiservice Transport Platform (MSTP), which Cisco uses as its transport layer in many of its IP NGN solutions. Central to the ONS 15454 DWDM technology is its industry leading reconfigurable optical add/drop

multiplexer (ROADM) technology, which enables OhioHealth's IT department to perform wavelength provisioning across entire networks and eliminates the need for optical-to-electrical-to-optical (OEO) transponder conversions.

"The ONS 15454 and its ROADM technology has helped us create efficient, reconfigurable and highly manageable fat pipes throughout the core of a network," says Lowder. "The ONS 15454 has helped us to move large amounts of data around the OhioHealth network and Cisco's ROADM technology has simplified the creation of new paths as we need them. This allows us to provide available services and applications at the edge, as well as dedicated wavelengths that are isolated for synchronous disk replication and remote tape copies."

Lowder and his team identified the top applications for the hospitals that most urgently needed to be recoverable that included McKesson's Star, Horizon Meds Manager, Horizon Order Management, Horizon Lab, Horizon Bloodbank, Horizon Expert Documentation, Horizon Expert Orders, Horizon Surgical Manager, Horizon Emergency Care, McKesson Anesthesia Care, GE's Centricity RIS and Fuji's Synapse Picture Archival and Control Systems (PACS) system. In addition to the top applications, OhioHealth's Physician Portal also needed to be recoverable, and all required fat, flexible and manageable pipes along with scalable capacity.

"OhioHealth has an automated medication administration where medication barcodes are scanned along with the patient's armband to ensure the right medication is being administered to the correct patient," says Lowder. "Adding our FujiFilm PACS system, radiation and other patient and administration management systems, we require high speed, significant capacity and the ability to scale that the Cisco ONS solution gives us. Having the ability to automate, properly store and quickly retrieve this clinical information was instrumental in our decision to go with Cisco."

Lowder attributes the flexibility to increase capacity that the Cisco ONS solution provides OhioHealth in a cost effective manner was instrumental in his team's decision to select Cisco.

"We had done quite a bit of research into the myriad storage solutions available including some of the more expensive alternatives on the Telco-provided side," says Lowder. "Many of the more expensive Telco solutions did not give us the flexibility that we have with Cisco to increase our capacity and to drive whatever technology the hospitals need over our fiber. "When challenged with transmitting multiple types of data across our fiber, I immediately thought about a Telco solution. But when we looked at what Cisco ONS had to offer via DWDM, it clearly gave us the most flexibility and was without question the best way to go."

Business Results

Lowder credits the dense wavelength division multiplexing (DWDM) capabilities of Cisco ONS as a key benefit that provides OhioHealth with fast and scaleable data availability.

"Using the Cisco DWDM solution allows us to divide transportation and use the fibre channel over a distance while performing synchronous data replication through our SAN at our main data center to the SAN at the secondary data center," says Bob Patterson, Director, Technology. "From a disaster recovery perspective, everything is available up-to-the-second."

Lowder says the fast LAN-like speed of the Cisco ONS is one of the biggest results of the upgrade.

"From a clustering software or server perspective, the ONS performs like a LAN-type connection, and is running at a 10Gpbs speed," says Lowder. "We were able to split clusters across the two data centers while it appears that the data centers are right next to each other. Another factor we looked at was the interoperability between our storage and our SAN fabric and making sure there

were no issues. We looked at a few different vendors to evaluate who provided the highest functionality and overall interoperability and Cisco was by far the best fit.”

In terms of dollars and cents savings, Lowder estimates OhioHealth is saving more than \$500,000 per year with the upgrade.

“With the cost side of things, I estimate we’re saving more than \$500,000 a year with what we’ve built with our fast metropolitan network in comparison with costs for a slower, Telco-based alternative,” says Lowder. “We’re also getting licensing, software and hardware cost savings as a result of working with fewer servers and streamlining our process for performing routine maintenance without having to create separate sets of scripts and separate sets of tests for disaster recovery, which can be costly. The upgrade has made it so much easier for us to manage our business continuity and disaster recovery infrastructure.”

Lowder says the improved performance for physicians and other clinicians who heavily rely on the systems running over the network has been one of the intangible results from the upgrade.

“Our performance has greatly improved the system reliability and availability for our staff, especially our radiologists who sit in front of their computers all day,” says Lowder. “We conduct roughly 750,000 radiology studies per year which requires our systems to always be performing optimally. Our overall clinical and PACS systems are absolutely critical to our staff, especially radiologists for whom every little glitch and delay can directly impact their workflow.”

Next Steps

As OhioHealth looks at further upgrades to their infrastructure, Lowder says they are considering voice over IP.

“We’ve implemented limited roll outs of voice over IP in the past, but if we fully roll out a solution, we’ll need optical carrier voice OC-3 or OC92 for transport on our SONET fiber network,” says Lowder. “Whatever we ultimately decide, I know we will be able to deploy the service over our Cisco DWDM solution.”

PRODUCT LIST

Cisco Application Networking Services:

- Cisco ONS 15454 MSTP Multiservice Transport Platform
- Cisco MDS 9509 Multilayer Directors
- Cisco Catalyst 3750 Series Switches
- Cisco Catalyst 6500 Series Switches
- Cisco Wireless solutions

For More Information

For more about Cisco optical and switching solutions, please visit <http://www.cisco.com>.



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