University Selects Director-Class Switches to Create a New Scalable SAN

East Carolina University deploys Cisco MDS Directors to provide a high-performance SAN fabric for reliable backup.

EXECUTIVE SUMMARY

East Carolina University

- **Industry:** Higher Education
- **Location:** Greenville, North Carolina
- **Number of Students:** 27,000
- **Number of Faculty and Staff:** 8500

CHALLENGE

- Establish a SAN with a high-performance, scalable director-class storage switching infrastructure to accommodate the technology demands of the university's data infrastructure
- Create a second SAN fabric to maintain high availability and maximize uptime

SOLUTION

- Create a SAN fabric to improve performance and scalability and provide a secondary fabric for critical applications and backups

RESULTS

- Enabled implementation of solutions leading savings of over US$2 million in equipment and power
- Saved approximately 900 megawatts per year through the technologies made available with the MDS directors
- Provided a reliable and high-performing storage switching infrastructure

Challenge

Established in 1907, East Carolina University is a dynamic institution connecting people and ideas, finding solutions to problems, and seeking the challenges of the future. The university is a constituent institution of the University of North Carolina and offers 104 bachelor's degree programs, 74 master's degree programs, 4 specialist degree programs, 1 first-professional doctor of medicine (MD) program, and 17 doctoral programs.

East Carolina University has a central IT site located on the main campus and a disaster recovery site located at the school of medicine, which is a few miles away from the main campus and which is also used as the university's high availability site. The disaster recovery site houses the SAN where East Carolina University's storage is replicated, a network attached storage architecture for all applications including Banner enterprise resource planning (ERP), and a complete suite of scalable enterprise-wide solution designed for higher education that includes student, financial aid, advancement, and enrollment management systems.

According to Colleen Rhodes, systems analyst of storage technology for East Carolina University, the decision to create a SAN came as a result of a VMware deployment, as well as a move to enterprise-wide backup, the growing use of the Banner ERP system, and a move to a blade boot-to-SAN infrastructure.

"When we originally starting planning for the SAN, it was mainly to accommodate our growing tape traffic and to better support and back up our Banner ERP," says Rhodes. "But around that same time, we began evaluating VMware and really liked the results and decided to deploy it into full production. We also started exploring ways of booting to the SAN on our IBM and Dell Blade infrastructure and started to rapidly expand. We also knew that we needed a highly available SAN environment to accommodate replications."

Rhodes says the university's distant education classes that rely heavily on Blackboard course management software were another driver to upgrade the SAN to a dual-fabric environment.

"We realized that we didn't want to take any chances with downtime in our distance learning program whether it was for maintenance or for an unplanned downtime, and decided that it was time to build out the SAN to include a secondary fabric for our critical applications and backups."

Solution

According to Rhodes, East Carolina University had not previously had a SAN and turned to third parties to help them evaluate a solution that would best fit the university's needs.

"We were new to the whole idea of a SAN environment and had been told about a handful of vendors that had storage switching solutions," says Rhodes. "We were already a Cisco shop on the networking side and were getting good results. Because we'd heard positive things from trusted third-party vendors about the MDS directors, we decided to go with Cisco."

Rhodes selected two Cisco® MDS 9509 Multilayer Directors, two Cisco MDS 9513 Multilayer Directors, one Cisco MDS 9506 Multilayer Director, as well as Cisco MDS 9140 40-Port Multilayer Fabric Switches and Cisco MDS 9120 20-Port Multilayer Fabric Switches.

"We added the MDS 9513 Multilayer Directors for our primary site on the main campus and for our disaster recovery site," says Rhodes. "We have a couple of the other Cisco switches in some of our separate rooms outside of the main data center that connect to the 9513's."

According to Rhodes, the VSAN features of the Cisco MDS directors and how they interacted with the university's critical Banner ERP applications were key benefits of the SAN upgrade.

"The number-one feature of the MDS directors was definitely the VSAN," says Rhodes. "We wanted the ability to attach different servers and different applications to the same switch without having to worry about which switch belonged to which SAN, and we liked the fact that one MDS VSAN didn't interfere with another MDS VSAN's traffic. We also had been concerned with the Banner application that works off Solaris machines being on the same SAN as the Windows machines because in the past the variety of OS' has caused problems especially when the devices are accessing the same storage. We were impressed that the VSANs in the MDS directors did not cause any problems in this regard whatsoever."

Having a secondary site in the event of disaster has been another positive result of the new SAN that has already been successfully tested through unplanned events, according to Rhodes.

"Prior to deploying the secondary fabric, we had two fiber paths that connected to our disaster recovery site that had split up our ISLs in different paths, and luckily when one of those paths went down because of a fire, we were able to continuously run," says Rhodes. "We haven't had a full-blown disaster recovery type of situation since deploying out our second fabric, but a couple of weeks ago we were performing some renovations and had to power down the entire data center right when classes were back in session. We did have to fail over our course management system and several other key systems to our disaster recovery site where the Cisco SAN and the MDS directors reside. The MDS directors have definitely paid for themselves in that we were able to keep classes going without interruption and the webpages were kept up and running. The MDS' have definitely been valuable tools for us."

> "We estimate the SAN environment made available through our MDS directors is saving us over US$2 million. Had we purchased stand-alone boxes for that entire infrastructure and had to power up several devices, it would have cost us approximately $2 million more than what we spent for our current SAN environment."
>
> **— Colleen Rhodes, Systems Analyst of Storage Technology, East Carolina University**

Results

The ability to expand an already strong distance learning department without having to increase the university's brick-and-mortar infrastructure is a result of the new SAN, according to Rhodes.

"Distance learning has definitely been a key part of our growth at East Carolina University, and the many credit hours have brought significant funds to the university, and increased our overall growth," says Rhodes. "During these challenging economic times, it is hard to get funding for new building projects and things of that nature so having a distance education department that is strong because of the IT infrastructure and a reliable SAN enabling us to do more is essential for our growth strategy."

Rhodes says that the Cisco MDS directors are helping East Carolina University save money in terms of consolidation efforts.

"The MDS directors are allowing us to save with VMware consolidation and other functions," says Rhodes. "By having the MDS SAN infrastructure, we were able to virtualize roughly 175 machines and move 80 fileservers over to our NAS gateway environment that is also stored on the SAN. We estimate the SAN environment made available through our MDS directors are saving us over US$2 million. Had we purchased stand-alone boxes for that entire infrastructure and had to power up several devices, it would have cost us approximately $2 million more than what we spent for our current SAN environment."

Rhodes says that the MDS directors are helping the university to achieve power savings with the consolidation effort and supporting East Carolina University's green initiatives.

"We performed a calculation on the power savings by collapsing everything into the MDS directors and concluded that we're saving approximately 900 megawatts per year, which is like taking 90 cars off the road every year," says Rhodes. "The overall big picture is that we are saving a huge amount of money with our new SAN infrastructure and consolidation efforts. The MDS directors have definitely been a worthwhile project."

PRODUCT LIST

Cisco Application Networking Services

- Cisco MDS 9509 Multilayer Directors
- Cisco MDS 9513 Multilayer Directors
- Cisco MDS 9134 Multilayer Fabric Switches
- Cisco MDS 9124-24 Port Multilayer Fabric Switches.

Next Steps

Rhodes says the IT group at East Carolina University is evaluating a renovation of the university's data center and is considering Cisco Nexus for a high-performance, next-generation data center.

"We are in the process of evaluating our data center that we anticipate outgrowing in the near future, and are looking for anything that we can consolidate to bring the network and SAN together," says Rhodes. "We're looking at the Nexus 1000V as something that can help us ease the configuration of our virtual machines and make sure configurations are consistent across the board and protect all of our investments in the data center as a whole."

For More Information

To find out more about Cisco storage networking products at http://www.cisco.com/go/storage

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