Western Oregon University: A Leap Forward in Digital Education

Redefining the educational experience

In today's 24/7, always-on world, people expect institutions of higher education to lead with technology. Constant connectivity, mobility, and access to rich media anytime, anywhere not only define the educational experience, but also help to attract and retain the best students, faculty, and staff.

At Western Oregon University (WOU), approximately 4,992 undergraduate and 1,066 graduate students enjoy a vibrant, close-knit intellectual community. Founded in 1856, WOU prides itself on providing effective, technology-powered learning opportunities that prepare students for success in a global society.

"When it comes to technology, leading universities must deliver unsurpassed learning capabilities, such as engaging video lectures and online courses that extend beyond the classroom," says Bill Kernan, CIO, Western Oregon University. "For IT, that means we constantly strive to raise the bar to meet technology requirements."

WOU was an early adopter of virtual desktop infrastructure (VDI) to give students access to Windows® desktops

and applications from multiple computing labs on campus. It also uses IBM Cognos Business Intelligence software for dimensional data modeling to help administrators make faster, more informed educational, operational, and financial decisions.

The Challenge
Rapid adoption of new learning tools slows performance for all users

At WOU, professors have readily adopted video solutions to enhance the learning experience and more vividly explain concepts. The university standardized on Moodle, an e-learning system the faculty uses to enhance classroom instruction and deliver courses completely online. Professors use Moodle to incorporate video, quizzes, and other content into their courses, while providing students with one convenient, centralized repository of course materials.

Moodle has taken off at the university, and as students have become more engaged in learning, Moodle files have grown very large, especially those containing streaming video. As a result, WOU IT was challenged to maintain high application performance as hundreds of students logged in to view educational

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Bill Kernan
CIO, Western Oregon University

video content. The available storage and network supported only 250 concurrent users, yet many more students wanted to log in and use the system.

A sense of urgency to enhance Moodle's performance developed across campus. Students were experiencing delays of up to one minute when logging into their virtual desktops and launching applications. During spring registration, the course system could be unresponsive. In addition, business reports driving profitability and decision-making regarding human resources, finance, and the student population took as long as six hours to generate.

Ironically, it was the university's forward-thinking technology adoption that spurred many of the performance challenges.

The Solution
More responsive learning environments, better decisions

Kernan and his team identified storage as a performance bottleneck. When Kernan explained the situation, NetApp suggested that the university move its high-input/output applications and databases to a NetApp EF550 flash array. The NetApp EF550 flash array delivers the extreme performance, reliability, and availability needed to drive greater speed and responsiveness.

WOU engaged Mountain States Networking, a NetApp partner, to deploy the EF-Series flash array. The

university migrated its IBM Cognos application and Oracle Database, Moodle and its associated MySQL database, and its VMware® vSphere® virtual machines that host VMware Horizon View™ virtual desktops to the EF550 flash array.

The array maximizes uptime with full redundancy and automated failover, complementing the resiliency of WOU's Cisco® Unified Computing System™ (UCS®) blade servers and Cisco Nexus® 5000 Series switches.

"NetApp, Cisco, VMware, and Mountain States Networking helped us deploy our technology update quickly after our spring session ended, so we were ready well before students came back in the fall," says Kernan. "They've also been instrumental in helping to ensure the availability of the entire solution."

Business Benefits
Performance translates to better teaching and learning

Immediately upon moving to the new array, the IT team saw three major differences:

- **Performance**
  Performance soared, both for on-demand videos as well as for access to course materials, such as syllabi, quizzes, and tests. "The EF-Series could handle 10 times the number of concurrent users in 95% less processing time, even while playing

large video files," says Kernan. "That gave us the headroom we needed to transform the learning experience."

- **Availability**
  Downtime quickly came to a halt, a crucial factor for students who want to study or complete assignments whenever and wherever it's convenient. "Since installing the system, we have not experienced any downtime," says Kernan.

- **Faster, more reliable backup**
  Faculty and students can rest easy knowing that their work creating lesson plans, conducting research, and completing assignments is safeguarded. Instructors and students have a private backup space and can rely on it to share files and collaborate—quickly, efficiently, and without worrying about data loss. Kernan notes, "Backup times went from a little over an hour to just nine minutes on the NetApp EF-Series."

Richer learning experiences, anywhere

With the high-performance NetApp flash array, professors can add more resources such as videos into the university's learning management system. Today, learning by WOU students goes far beyond what happens in classrooms, extending to a rich online experience that enhances learning any time.

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Staying competitive

For students, faculty, and staff to truly reap the benefits of cutting-edge technology, the university must sustain lightning-fast performance. Today, WOU can provide a superb user experience for streaming video and online learning. According to Kernan, "Virtual desktops now load at least twice as fast, even during significant IT upgrades or events."

Reporting for administrative staff also has been transformed, driving insights in finance, human resources, and student statistics based on near-real-time data that make the university more competitive. "Business intelligence reports that used to take six hours to run now complete in 20 seconds," Kernan states.

With NetApp, WOU can consistently meet high standards for application performance and availability. "NetApp has allowed us to reach a capacity of more than 1,200 concurrent users while providing exceptional system performance campus-wide," says Kernan. "That's five times our previous maximum. People think of storage as being totally behind the scenes, but at WOU, it's front and center in defining the user experience."

SOLUTION COMPONENTS

NetApp Products
NetApp EF550 flash array with Intel® Xeon® processors
NetApp SANtricity® Storage Manager

Environment
Applications: Moodle 2.7.1, IBM Cognos Business Intelligence

Databases: MySQL, Oracle

Operating System: Red Hat Linux®

Server Platform: Cisco Unified Computing System (UCS)

Network: Cisco Nexus 5000 Series switches

Virtualization: VMware vSphere, VMware Horizon View

Protocol
Fibre Channel

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