



OREGON STATE UNIVERSITY ENRICHES EDUCATIONAL OPPORTUNITIES WITH VMWARE SOLUTIONS



INDUSTRY

HIGHER EDUCATION

LOCATION

CORVALLIS, OREGON

KEY CHALLENGES

- Provide stable, high-performance computer labs
- Scale desktop computing and distance learning on demand
- Overcome the limitations of traditional SAN

SOLUTION

Oregon State University (OSU) is committed to providing students with hands-on access to current technology. To enhance student experiences in the computer labs at its College of Business, OSU replaced older desktop computers with VMware Horizon virtual desktops delivered on cost-effective zero client machines. It also virtualized its storage with VMware vSAN, reducing costs and allowing faculty to use a wider range of technology tools in their curriculum.

BUSINESS BENEFITS

- Able to respond quickly to pedagogical changes
- Enhancing remote and hybrid learning
- Gives students better job prospects upon graduation

Pedagogy is changing fast, and universities need to support new classroom tools and educational methods such as distance learning on limited technology budgets. At OSU's College of Business, students use the same applications they're likely to encounter in the workplace, many of which require state-of-the-art hardware to perform well. To support demanding applications on short notice and empower increasingly mobile students and faculty, it decided to virtualize its computer labs.

The college chose VMware Horizon® with VMware vSAN™ software-defined shared storage, allowing it to scale computer labs quickly and maintain excellent performance without large capital expenditures. Students and faculty can now access virtual desktops from anywhere, helping them be more productive. By enabling innovative changes in curriculum and new courses involving data mining and Big Data analytics, the college is enriching educational experiences and helping students succeed post-graduation.

Organization Overview

Oregon State University is a public institution with more than 26,000 students from all 50 states and more than 90 nations. Its College of Business educates students for success in managing and developing sustainable, innovative enterprises in a dynamic economy. With strong graduate and undergraduate programs, internationally recognized scholarly research, and an emphasis on experiential learning, the college helps students and businesses succeed.

The Challenge

As teachers used more technology in their curriculum, including data analytics, demands on computer labs at the College of Business grew. Scaling the labs using traditional desktops became difficult with the college's limited IT budget.

"It was a perfect storm," recalls Alan Sprague, Senior System Administrator, College of Business, Oregon State University. "There was no way for us to continue adding resources in an incremental, fast, and cost-effective way."

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ALAN SPRAGUE
SENIOR SYSTEM ADMINISTRATOR
COLLEGE OF BUSINESS
OREGON STATE UNIVERSITY

To provide stable, high-performance computer labs and expand distance learning, the college wanted to use virtual desktop infrastructure (VDI) in a VMware vSphere® environment. However, it was concerned about its aging SAN storage becoming overburdened by VDI workloads. It attempted to run VDI on its existing SAN, but experienced latency issues and, at times, a loss in service during peak usage. Recomposing virtual desktop pools took more than 10 hours.

“We did not have budget for a new traditional SAN to overcome the performance and capacity bottlenecks we were facing,” says Sprague. “We had to find a better solution that would give us the agility we needed.”

The Solution

After evaluating competing solutions, the college chose VMware Horizon for desktop virtualization and VMware vSAN hyper-converged storage. A seven-node vSAN cluster now provides 18TB of storage capacity using industry standard x86 servers. To enhance the user experience, the college installed NVIDIA GRID vGPUs in the host servers. Using vSAN drastically improved virtual desktop performance, reducing user log-in times in labs from 20 minutes to 1 minute and saving the college two-thirds the cost of a new SAN.

“I’m a huge fan of VMware’s software-defined storage vision, and vSAN was the perfect solution for us,” says Sprague. “The flexibility is spectacular. It enabled us to leverage the server infrastructure we already had to increase the performance and stability of our VDI environment without having to spend \$100,000 on a new SAN.”

As the college’s application requirements increase, it will simply add host servers and replace spinning drives with solid-state drives. “Moving to an all-flash vSAN solution with deduplication and compression will give us up to six-fold greater density for VDI while improving performance by another order of magnitude,” says Sprague. “We don’t have to change out any hardware except the drives. It’s an incredibly cost-effective way to scale storage. And the fact that we can do an upgrade like that in a week’s time is just amazing.”

Business Results & Benefits

By providing sub-minute user logins and excellent application performance in its four computer labs—even during peak load periods of up to 190 concurrent users—the college is allowing students to get started faster and concentrate on solving complex problems. Students can access their virtual desktops off-site away from the labs, allowing for more flexible study. Faculty can use whatever technology they feel will enhance the students’ experiences and prepare them for real-world challenges, without fear of delays or interruptions.

“The students really appreciate the technology we’re providing, and it shows in their post-course reviews,” says Sprague. “The faculty loves it too—we get comments all the time from educators coming in from much larger institutions saying they’ve never had this level of responsiveness from IT. We can turn labs around quickly and make changes to images mid-term. It’s a great feeling to be able to say ‘yes’ most of the time.”

VMWARE FOOTPRINT

- VMware Horizon
- VMware vSAN
- VMware vSphere

APPLICATIONS VIRTUALIZED

- Adobe Creative Suite
- Autodesk AutoCAD and Inventor
- Microsoft Visual Studio
- Revit
- SketchUp Pro

PLATFORM

- Dell servers with NVIDIA GRID vGPUs
- Dell Wyse zero clients

WHY VMWARE VIRTUAL SAN?

Unlike traditional storage solutions, Virtual SAN automatically and dynamically matches requirements with underlying storage resources. Many manual storage tasks can be automated, with minimal need for time-consuming upkeep.

By responding quickly to changes and enhancements in curriculum, the IT department is helping faculty be more engaging and effective. In addition to providing distance learning to students as far away as Indonesia, instructors are using hybrid approaches, conducting certain portions of a class remotely and others on-site. The college can easily provide students with the latest technology, giving them better access to the most rewarding job prospects upon graduation.

“Not only can we give students hands-on experience with 3D design tools that they normally wouldn’t touch in a business school, we can give them direct experience with VMware and how a software-defined data center works,” says Sprague. “They walk out of here with a resume that’s very attractive to prospective employers, especially technology and healthcare businesses.”

With a predictable, lower cost per desktop, the college can easily scale VDI to meet future needs. “With VMware, we’ve lowered our overall hardware acquisition costs to support our computer labs by 75%,” says Sprague. “That’s important, because state college budgets are shrinking. VMware, and especially vSAN, allows us to do a lot more with a lot less.”

VMware Virtual SAN at Oregon State University
Solving Critical Pain Points with a Simple, Scalable Solution

	BEFORE Requirements outpacing bandwidth	AFTER Balanced workloads for more consistent performance
User Capacity	5-15 concurrent users on 12+ network pools	190+ concurrent users on 3 network pools deployed in just 20 minutes
Login Time	Could take up to 20 minutes for users to log in during peak usage	Under 1 minute even with 60 or more concurrent users
Recomposition	Resetting virtual desktop requires up to 10 hours	Recomposing takes less than 2 hours
Capex Requirements	Up to \$100,000 on new SAN hardware	\$25,000 to add a new server for additional capacity

Looking Ahead

In the near future, the college plans to upgrade to vSphere 6.5 to simplify management and take advantage of instant clones in Horizon 7.0 to provision new virtual desktops in seconds. It will also extend the benefits of vSAN to its enterprise vSphere environment and retire the last of its traditional SAN hardware.

“I already bet the farm on vSAN once, and it paid off hugely for VDI,” says Sprague. “I’m very comfortable doing it again, and expect even better results for our database-driven enterprise applications.”

