University of Connecticut delivers anywhere, any device computing with Dell Virtual Labs

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Customer profile

University of Connecticut

Company	University of Connecticut
Industry	Education
Country	United States
Faculty and Staff	9,540
Students	30,525
Web site	vpc.uconn.edu

Challenge

The University of Connecticut wanted to reduce its reliance on dedicated computer labs and office space while providing students, faculty and staff with a superior, more flexible computing experience.

Solution

The university deployed a Dell™ Virtual Lab based on Dell PowerEdge™ servers, Dell EqualLogic™ storage arrays, and software from VMware and Unidesk. Virtual computer labs enable anytime, anywhere learning while improving management efficiency.

Benefits

- Anytime, anywhere access to virtual desktops for students, faculty and staff
- Ability to deploy specialized software to multiple users in hours
- 30-40% reduction in PC replacement costs for general use computer labs
- $318,000 projected CAPEX reduction for School of Business computer labs over 5 years

Application areas

- End User Computing
- Green Efficiency
- Mobility
- Server Solutions
- Storage Solutions
- Virtual Desktop
- Virtualization

Desktop virtualization is revolutionizing the way educational institutions are providing access to technology for their students, faculty and staff. It offers the potential to reduce support and hardware costs while providing anytime, anywhere access to desktop computing resources from any device with an Internet connection. The technology is a game-changer for higher education, because learning no longer has any boundaries.

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The University of Connecticut (UConn) has been an early adopter of virtual computer labs as a means to provide ubiquitous access to the technology students need to learn and grow. "We saw an opportunity to enhance the overall educational experience by deploying a well-designed and executed virtual desktop infrastructure (VDI) solution to address a myriad of overlapping academic and instructional needs," explains Jeremy Pollack, director of IT, University of Connecticut School of Business.

The result is the UConn vPC initiative, a collaborative effort between the University of Connecticut Libraries and the Schools of Business and Engineering. Through desktop virtualization, the schools are able to provide stable, reliable instructional platforms for instructor and student use both in-class and out. "Users are no longer confined to a physical PC in a lab or office," explains Pollack. "And the virtual labs aren't limited to just the Schools of Business and Engineering. Any affiliate at UConn—students, faculty and staff—can access Windows 7-based virtual desktops and UConn-licensed applications from their PCs, Macs and mobile devices, from anywhere in the world with an Internet connection."

Reducing hardware replacement costs

UConn chose the technology infrastructure that would support its vPC initiative carefully. It needed servers and storage that could support 700 VMware View virtual desktop seats initially, and be able to scale well beyond that. The university decided to deploy a Dell Virtual Lab using high-density Dell blade servers and Dell EqualLogic iSCSI SANs. Based

Technology at work

Services

- Dell™ Support Services
  - Dell ProSupport™ with Mission Critical four hour onsite service

Hardware

- Dell EqualLogic™ PS6000XVS and PS5000E iSCSI SANs
- Dell PowerEdge™ M710HD blade servers with Intel® Xeon® processors
- Dell PowerEdge M1000e modular blade enclosure

Software

- Dell EqualLogic Auto-Snapshot Manager/VMware® Edition
- Dell EqualLogic Host Integration Tools for VMware
- Dell EqualLogic SAN HeadQuarters (SAN HQ)
- Unidesk® 1.5
- VMware View™ 5
- VMware vSphere™ 5
- Windows® 7
- Windows Server® 2008 R2

on an open architecture, the Dell Virtual Lab gives organizations the power to do more by providing IT the agility and flexibility needed to help support an efficient enterprise while enhancing the end-user experience.

"We chose a Dell Virtual Lab because we were thinking in terms of scaling for the future," says Pollack. "The half-height Dell PowerEdge M710HD blade servers have as much memory capacity as regular full-height blades, helping us make the best use of physical space in our data center. It is designed from the ground up to be a modular system. If we want to add more virtual desktops, we can simply add more blades and more EqualLogic units. We're running 700 VMware View VDI sessions right now—around 100 per blade—and our Dell PowerEdge M1000e modular blade enclosure is only half full."

In many cases, providing a user with a non-persistent, kiosk-style virtual desktop is sufficient. "That means a user logs in, they can access any of the applications that they need, and when they log off, the machine goes away," says Pollack. "VMware View has been very successful in our non-persistent lab and instructional environments. By allowing this type of access from any device, we don't have to tie up a lot of dedicated hardware resources in computer labs."

This flexibility can reduce desktop hardware replacement costs for non-persistent lab environments by 30 to 40 percent, Pollack estimates, resulting in a $318,000 projected CAPEX reduction for School of Business computer labs over five years. "We're beginning to also see a significant savings in OPEX, including desktop support and lab management time," says Pollack. "Time that IT staff used to spend managing software in labs, for example, can now be put to more strategic use."

Persistence pays off

For certain use cases, UConn required persistent, managed virtual desktops that maintain all customizations, desktop and application settings, user data, user-installed applications and plug-ins. "For faculty and staff, as well as lab and classroom settings that require statistical and data mining applications that must be heavily customized by the user, we use persistent virtual desktops managed by Unidesk software," says Pollack. "This capability is critical in classes such as our predictive modeling course for master's degree candidates."

Unidesk, a Dell technology partner, offers a desktop management platform that integrates with VMware View and other brokers to provide 100 percent persistent personalization while minimizing back-end storage requirements. At the same time, Unidesk gives IT greater control over the persistent desktops by enabling them to be provisioned and patched from the same set of non-persistent operating system and application layers.

"It's a myth that VDI is only appropriate for locked down users or limited applications," says Pollack. "By adding Unidesk as our desktop management platform, we're able to satisfy users who need full persistence and reduce operational costs as well. UConn is a university with tremendous application and use case diversity, so the ability to extend our VDI environment to more users, while making it easy for our administrators to provision, patch and repair even highly customized desktops, is critical."

UConn IT can now offer centralized, managed delivery of even expensive, complicated or specialized software packages, and deploy the software in hours instead of weeks.

No more waiting in line

Before the vPC initiative, during busy times, students often had to wait for an available computer. "We would get comments from students saying we needed more computers, but it just didn't make fiscal sense to buy more because in the summer, a lot

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> *Director of IT, University of Connecticut Libraries*

of computers are not being used at all," says Tony Molloy, director of IT, University of Connecticut Libraries. "That was one of the biggest use cases at the libraries, and desktop virtualization met that need tremendously. Now students can access the same software and enjoy the same desktop experience from anywhere."

Appreciation from end users

Ed Swindelles, Director of IT at the University of Connecticut School of Engineering, points out another benefit: "A number of engineering students were spending a lot of money to buy licenses for the software that is used in their classes, and we're now able to deliver that software to them on their personal machines using the vPC," he says. "One user said that the technology behind our virtual desktop initiative represents the greatest leap forward since card catalogs went digital. We were proud of that. I was happy to hear that."

Adds Pollack: "We got a nice thank-you note from a faculty member who has always been a die-hard Mac user. He has traditionally kept an old PC under his desk to use when he needs to access Windows resources. We replaced that PC with a persistent virtual desktop that he can get to from anywhere, and his response was hugely positive."

Reclaiming power and space

Less reliance on physical labs and traditional thick-client PCs means reduced power and cooling costs. "Desktop virtualization is a green technology," says Pollack. "Initial measurements show that we are dropping from about 1.5kWh/day to 1kWh/day for every regular desktop that we migrate to a thin or zero client."

The university can also be more flexible with its limited space. "Space is always at a premium, and the ability to have multi-functional instead of dedicated office and lab space is a huge benefit that the administration really appreciates," says Pollack. "The College of Liberal Arts & Sciences is in the midst of building a new building, and they are very excited about the potential to gain multiple classrooms for teaching by converting space that was going to be dedicated, specialty computer labs."

Robust performance, enhanced security

Performance-hungry modeling and statistical applications run without a hiccup in the VDI environment. "The performance we get from the Dell EqualLogic PS6000XVS hybrid arrays is just mind blowing," says Pollack. "They do a great job of self-load balancing between solid-state disk and SAS disk to mitigate boot storms and provide the storage I/O we need to run demanding applications in a VDI environment. Across the board, users are seeing great performance."

UConn is also seeing benefits from the latest version of Dell EqualLogic Host Integration Tools for VMware. "Configuring a new volume previously took around 30 minutes," says Swindelles. "With the Dell EqualLogic Host Integration Tools for VMware v3, that task is now automated and can be completed in just a few minutes and with just a few clicks."

Security exposure is also reduced, because user profiles and data remain in the data center. "We're talking with our Chief Information Security Officer about conducting a pilot to test using virtual desktops as a VPN replacement or augmentation," says Pollack. "That way, users can log into their virtual desktop and have all their data within the university's firewall, rather than poking a hole through that firewall to get the data to their home machine. We're also very interested in exploring how vPC might be able to help us with PCI compliance."

Prestige points for cutting-edge technology

The vPC project has been a hit with students, and the IT team hopes it will lead to increased enrollment and retention. "There's a prestige factor involved in what we're doing, and it's helping education because we can offer anytime, anywhere learning," says Tony Molloy. "UConn has a huge focus on distance learning and online education, and desktop virtualization is already a cornerstone of that."

The university was able to get the project up and running in time for fall semester in large part due to its relationship with Dell. "I can't say enough about what great support we got from Dell for our virtual desktop initiative," says Pollack. "Dell worked very closely with our purchasing department to make things as efficient as possible. The architecture we have in place very closely matches the reference architecture that Dell suggests for a successful VDI deployment, and it's been performing very well."

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