NIAGARA COLLEGE MODERNIZES IT FROM THE DATA CENTER TO THE DESKTOP, GIVING STUDENTS BETTER EXPERIENCES

nc Niagara College Canada
APPLIED DREAMS.

INDUSTRY
HIGHER EDUCATION

LOCATION
ONTARIO, CANADA

KEY CHALLENGES

- Increase student mobility and provide the best possible computing experiences
- Accommodate 50x or higher workload spikes during student registration periods
- Modernize data center to scale as technology requirements increase
- Keep data center and student computing costs manageable and predictable

SOLUTION

Niagara College modernized its data center using VMware vSphere® to increase server density, virtualized student computing labs with VMware Horizon®, and used VMware vSAN™ to deliver high performance for virtual desktops while lowering TCO. As a result, the college has improved student computing experiences while reducing costs, and gained the flexibility to redistribute workloads during peak demand times such as student registration.

Niagara College is a technology leader in its region, which is bordered by Lake Ontario to the north, Lake Erie to the south, and the vast, world-famous Niagara Falls to the east. In this beautiful yet underserved area, broadband availability and technology adoption haven't yet caught up with Canada's large cities—but Niagara College is giving students the same high-tech education they would expect to receive in the heart of Toronto.

The college was an early adopter of server virtualization, using VMware vSphere on Dell blade servers to shrink its hardware footprint and improve manageability. Today it runs more than 200 virtual machines and still has plenty of room to grow in its data center. Niagara College also virtualized most of its computing labs using VMware Horizon, giving more than 10,000 full-time students and 5,000 part-time students access to virtual desktops on any device. To provide the best possible performance for virtual desktops, Niagara College replaced its legacy storage with VMware vSAN, a software-defined storage solution with all-flash architecture.

Established in 1967, Niagara College is a public College of Applied Arts and Technology in the Niagara Region of Ontario, Canada, offering bachelor's degrees, diplomas, and graduate certificates. It serves more than 10,000 full-time students and more than 15,000 part-time studies registrants.

The Challenge

In order to keep pace with technology and provide students with a modern, relevant education, Niagara College needed to simplify operations and lifecycle management. The college also wanted to keep IT costs as low as possible so it could use those funds to enhance learning. As enrollment increased and demand for new technology grew, the college needed the ability to scale easily—preferably while remaining in the same data center space and without adding IT headcount. The scalability challenge was most noticeable during student registration periods, when traffic can spike to more than 50x the usual load.

"With thousands of student registrations packed into just three days, it would be a massive problem if our PeopleSoft Campus registration system went down or became unresponsive," says John Levay, Chief Technology Officer at Niagara College.

The college was also running out of space for on-campus computer labs, and needed a better way to provide students with high-quality computing experiences. Maintaining the labs was time-consuming for IT staff, and software was scattered across campuses at different labs, which was not always convenient for students. When students were pressed for time to

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JOHN LEVAY
CTO
NIAGARA COLLEGE

BUSINESS BENEFITS

- Provides students with digital workspaces accessible from any high-speed Internet connection
- Successfully handles registration spikes by redistributing workloads
- Enables scaling with the same team while remaining in the same data center
- Reduces CapEx and OpEx

finish their assignments—an everyday scenario at any college—finding an open space in the right lab was often a challenge. And although most students owned their own digital devices, many could not afford to buy the software that classes required.

"All our open-access computing labs were heavily utilized, and we faced internal pressure to free up a lot of that space for classroom education," says Levay. "We wanted a way to provide students with all the software they need from anywhere with a high-speed Internet connection."

The Solution

Over time, Niagara College virtualized approximately 85 percent of its server infrastructure, including PeopleSoft Campus, with VMware vSphere on Dell blade servers. More than 200 virtual machines now run on a two-node VMware vSphere Distributed Resource Scheduler™ (DRS) cluster to provide host failover with no downtime and enable engineers to perform proactive maintenance during the day, reducing overtime costs. Recently, the college upgraded to vSphere 6.5, gaining a robust HTML5 client and improved reporting via VMware vRealize® Operations™.

The college also deployed a pool of 350 virtual desktops using VMware Horizon for virtual desktop infrastructure (VDI), giving all students remote access to software that was previously available only in physical labs. Students can access the virtual desktops on any device, from anywhere on campus or any location with a high-speed Internet connection. In the library and computer labs, students access virtual desktops via Dell Wyse thin client machines that have no hard drive or other moving parts to maintain.

The college provisions virtual desktops using VMware Instant Clones in Horizon Enterprise 7, which deploy faster and use less storage space than full virtual machines because they share the same base image. It also uses VMware App Volumes™, another feature of Horizon 7, to give users access to applications faster and reduce costs with one-to-many provisioning.

"Thanks to VMware Horizon, we spend a lot less time replacing and fixing computers, and we save between $500 and $700 per machine buying thin clients," says Tyler Collins, Hardware, AV, and Security Technologist at Niagara College. "We never touch the thin clients once they're in the labs, and we're getting twice the useful lifespan out of them compared to a traditional PC."

Recognizing that virtual desktops only perform as well as the storage behind them, Niagara College replaced its legacy storage with VMware vSAN, a vSphere-native, hyper-converged infrastructure (HCI) solution that uses commodity servers to deliver enterprise-class performance. With a four-node, all-flash vSAN cluster, the college can meet the I/O latency requirements of any application it needs to run on a virtual desktop.

"Provisioning a full virtual desktop image used to take hours with our old spinning-disk storage," says Levay. "Once we added all-flash vSAN to Horizon, desktop provisioning time came down to 15 seconds. It's like comparing a snail to a race car."

VMWARE FOOTPRINT

- VMware vSphere 6.5 Enterprise
- VMware Horizon 7.4 Enterprise
- VMware vSAN 6.6
- VMware vRealize Operations 6.7

APPLICATIONS VIRTUALIZED

- PeopleSoft Campus, Microsoft Exchange, Microsoft SharePoint, plus other academic, finance and HR applications

PLATFORM

- Dell/Windows

Business Results & Benefits

By dynamically allocating resources with vSphere, Niagara College simplified management and reduced costs while improving redundancy to mitigate the risk of downtime. It has been able to scale with the same IT team while remaining in the same data center, avoiding costly physical expansion. When the inevitable registration traffic spikes occur, the college can temporarily redistribute workloads to devote more capacity to PeopleSoft.

"There's no question that VMware has reduced our costs and our operational overhead," says Levay. "We're able to do more with less, provide 24/7 services with no interruption, and grow in a less reactive, more strategic way."

Using Horizon, Niagara College is providing students with quick and easy access to class resources and applications beyond campus walls and operating hours. Learning can take place whenever it is most convenient and fits best into students' lives. Students no longer need to search for open space in pharmacy and automotive labs to complete their assignments, and the college has reduced the number of open-access computer labs by half, freeing up needed space for other uses.

"Years ago, we believed that Horizon was going to be a better direction for us in the long run, and we took a leap of faith," says Levay. "It paid off for us in a big way—we can be much more agile."

Niagara College is heavily involved with local communities, and is championing a regional shared infrastructure effort as part of a public sector consortium consisting of K-12 school boards, higher education, police, public health, municipal government, and an entrepreneurial center for innovation. For server and desktop virtualization, the consortium selected VMware.

"VMware was the overwhelming consensus for this heterogeneous environment," says Levay. "The scalability, ease of management, and overall toolset were exactly what we needed."

Looking Ahead

In the near future, Niagara College plans to further improve performance and resiliency during student registration periods by using VMware NSX® to virtualize networking and security components and burst PeopleSoft workloads to the public cloud.

"VMware NSX will allow us to provide robust performance for all the college's applications, even during student registration periods, by using the cloud for additional capacity," says Levay. "We'll be able to maintain all our security policies and licensing, and pay only for the cloud resources we use during that three-day window."

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