



INDUSTRY

Higher education

LOCATION

Ottawa, Canada

KEY CHALLENGES

- Existing workstations in student computer labs were becoming obsolete.
- Students and faculty had limited access to workstations with important, specific application packages.
- IT staff was having a hard time managing and maintaining 65 labs.

SOLUTION

To expand access to high-performance workstations and 3D graphics, La Cité virtualized its workstation environments on the VMware Horizon solution and a combined Dell and NVIDIA hardware platform.

BUSINESS BENEFITS

- Expanded student and faculty access to graphics-intensive engineering and design applications
- Reduced equipment footprint, noise, and heat in computer labs
- Reduced the amount of administrative support needed for computer labs



La Cité Virtualizes College Computer Labs Enabled with Advanced 3D Graphics

La Cité has implemented virtual desktops to deliver engineering and design applications with advanced 3D graphics to its student computer labs. Deployed with VMware, Dell, and NVIDIA technology, the solution provides workstation-level performance on a flexible and cost-effective mix of repurposed legacy desktops and new zero-client machines. It also expands student and faculty access to important applications and greatly reduces system management and administration workloads.

La Cité is the largest French-language college in the Canadian province of Ontario. Established in Ottawa in 1989, La Cité offers more than 95 post-secondary, apprenticeship, post-diploma, and continuing education training programs to 5,000 full- and part-time students. The school has ranked in the top five Ontario colleges for student satisfaction for 10 years running.

The Challenge

Among La Cité's state-of-the-art facilities are 65 computer labs where students receive instruction on how to use specialized software. The labs have more than 1,000 workstations configured to run multiple applications including compute-intensive applications with advanced 3D graphics. These include Autodesk Suite, AutoCAD Civil 3D, AutoCAD Mechanical, and Autodesk Revit, among many others.

In 2011, La Cité's IT department faced a decision on the future of its computer lab infrastructure. Many of its workstations were at the end of their useful lives. Replacement was expensive and didn't address important issues. The workstations took up valuable physical space and were noisy, hot, and power hungry. Their large software images took so long to load that a student might waste the first 10 minutes of a lab session simply logging in. In the event of a power failure, an entire classroom of students might lose all its work.

In addition, keeping 1,000 workstations up and running was a significant drain on the school's IT staff. There were many different images to maintain on different machines for different class requirements, and hardware or software issues often required onsite attention. But perhaps the most troubling issue was that student demand for workstation access consistently outpaced capacity, and there were outstanding requests to support 3D applications at remote campuses and in the main campus library.

La Cité needed an alternative to physical workstations that was more scalable, reliable, easily manageable, and cost effective, so it turned to a familiar source of virtualization expertise.

The Solution

Because La Cité already had several years' experience in server virtualization (in 2007, it deployed VMware vSphere® software on Dell hardware), one of the school's first

VMWARE CASE STUDY

“When I’m preparing my class work at home, I can quickly access a virtual workstation and see exactly the same image the students are using. When I walk into class, I just reconnect and I’m ready to teach.”

— Francois Barberie,
CAD Instructor,
La Cité

VMWARE FOOTPRINT

- VMware vSphere 5
- VMware Horizon 5
- VMware ThinApp®
- VMware vCloud Networking and Security

APPLICATIONS VIRTUALIZED

- Autodesk Suite 2013
- Autodesk AutoCAD Mechanical
- Autodesk AutoCAD Civil 3D
- Autodesk AutoCAD Architectural
- Autodesk Revit
- Autodesk SketchBook
- Autodesk 3ds Max
- PTC Creo 2
- Mastercam CAD software
- Bentley Systems software

PLATFORM

- Dell PowerEdge R720 servers
- NVIDIA Grid K1 and K2 graphics cards
- Dell Compellent storage

PARTNER

- Dell

calls was to Dell Services. Dell consultants proposed a solution that would reuse existing workstations and enable a migration over time to zero clients. Client images would move to the data center, where they would be virtualized using VMware Horizon® running on Dell servers equipped with NVIDIA graphics cards. A Dell Compellent SAN would provide storage. In September 2012, the school launched a 160-seat proof of concept that was highly successful.

One year later, La Cité inaugurated a 1,000-seat virtual desktop solution supporting 55 of its computer labs. Key solution components included the following:

- 1,000 virtual workstations (550 repurposed workstations and 450 Dell zero clients)
- 16 Dell PowerEdge R720 servers
 - Six equipped with dual NVIDIA GRID K2 graphics cards supporting up to 64 virtual machines per system (for the most demanding 3D applications)
 - 10 equipped with dual NVIDIA GRID K1 graphics cards supporting up to 144 virtual machines per system (for applications requiring slightly less graphics processing)
- Dell Compellent SAN featuring 20TB of Flash-optimized SSD storage, 30TB of hard disk drive storage, and Dell Compellent SC8000 dual controllers
- VMware Horizon solution for workstation virtualization, vSphere software for server virtualization, and the VMware vCloud® Networking and Security™ product for load balancing

Business Benefits

La Cité’s virtual workstations and desktops easily match the performance of the thick-client systems they replaced, and in many ways surpass them. Login times for new sessions have dropped from 10 minutes to 2. More importantly, the new virtual infrastructure has greatly expanded access to the most graphics-intensive 3D applications. Because all software now runs on virtual machines in the data center, there’s no need to find a workstation with a

particular software package installed on it. Students can access their personalized images in any open lab seat, in the college library, or even remotely on a device with the VMware client installed.

Teachers can now access workstation images on their PCs at home or in the office, eliminating the need to prepare class work on a lab workstation. Those who teach multiple classes with specialized applications can have multiple workstation images and can conveniently switch back and forth between images on their own systems.

“When I’m preparing my class work at home, I can quickly access a virtual workstation and see exactly the same image the students are using,” explains Francois Barberie, a computer aided design (CAD) instructor in the school’s architecture program. “When I walk into class, I just reconnect and I’m ready to teach.

“If we come to the end of a lab session and students still have work to finish, they can simply turn off the virtual workstation, move to another room, reconnect, and continue. It’s much easier to complete their assignments on time.”

The virtual solution is also much easier for the IT department to manage and maintain. New virtual machines are easy to provision for students, and software packages are easy to update. A user-caused crash can usually be resolved with a quick system reboot—no IT visit required.

Looking Ahead

La Cité’s IT group wants to extend the school’s virtual desktop environment to support a BYOD (bring your own device) initiative. “We want students and teachers to be able to work and communicate from home, or from anywhere in the world,” says IT Manager Sylvain Gagnon.

“Our vision is to provide a school-managed work space on the personal laptop, which we’ll install through virtualization. And with virtualization, we’re really not limited to PCs; we can run a full application suite on any device. So if you’re on a bus and late for class, you can take out your tablet, connect to the network, and do your stuff.”

