



## UMass Lowell Transforms Labs & Learning with Virtual Infrastructure and Zero Clients

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DIRECTOR OF PLATFORMS & SYSTEMS ENGINEERING  
UNIVERSITY OF MASSACHUSETTS LOWELL



UMass Lowell prepares students for work in the real world – solving real problems and helping real people. Highly accredited programs, a focus on experiential hands-on learning, and personal attention from an accomplished faculty and staff have earned UMass Lowell numerous distinctions as a premier university.

### AT A GLANCE

#### Situation

- Higher education, research
- Lowell, Massachusetts (one of five UMass campuses)
- 1,904 faculty and staff; 16,969 students

#### Challenges

- Rapid growth: goal of 20,000 students by 2017/2018 school year
- Geography: one campus with two geographically separated clusters
- Flexibility: rapid switch-over from lab to test-taking configurations
- Productivity: offloading faculty from lab support tasks

#### Solution

- VMware View Virtual desktop infrastructure
- Teradici® PCoIP® Zero Clients

#### Results

- **Flexible learning:** Instant labs in classrooms; homework labs easily switched for testing; more convenient access for department applications
- **Faculty focus:** Lab support shifted to IT; former lab administrators and faculty able to focus on core competencies (teaching, research)
- **Scalability:** Infrastructure now positioned for University's growth targets
- **IT efficiency:** Less time spent on system support; reallocated resources to other projects and improved support of faculty



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**UMass Lowell prepares students “for work in the real world—solving real problems and helping real people.”** The campus consists of two separate sites and provides experiential learning opportunities to almost 17,000 students, which is almost twice the size of the student body several years ago. By 2018, UMass Lowell aims to attract and serve 20,000 full and part-time students. Last year, the newly appointed CIO challenged IT to launch a virtual desktop infrastructure (VDI) that could more flexibly address the growing student body, faculty, and staff. They faced some major challenges:

- **An aggressive schedule.** The CIO gave IT the green light in January 2013, and challenged IT to have it ready to deploy for the fall semester in August. Similar projects had taken upwards of 12 months previously.
- **BYOD and client diversity.** To give students flexible access to department, lab, and class resources, the VDI deployment had to support an average of three devices per student (phone, tablet, and laptop). For faculty and staff, IT had to choose between replacing or repurposing the existing PCs in various campus computer labs, the library learning commons, and other locations.
- **Software licensing.** IT wanted to help departments minimize licensing costs while simultaneously making the software more conveniently accessible for students.

**Taking into consideration their positive experience with VMware with previous virtualization projects, the project team quickly decided on VMware Horizon View.** Opinions about the VDI clients varied, however. “It was suggested that we just repurpose our old PCs,” said Steve Athanas, director of platforms & systems engineering at UMass Lowell. “This made no sense to us. We were modernizing our computing environment, and putting a lot of effort into VDI. We definitely did not want to support all of the old computers in addition to the new infrastructure. Plus, PCs use a lot of electricity; zero clients do not. We are very committed to ‘green’ computing.”

After looking at the options, and even briefly trying out repurposed PCs, IT selected Teradici PCoIP Zero Clients. A proof of concept exercise in March led to approval for purchasing the equipment, which was then deployed over the summer. The project, dubbed “vLabs,” including the VDI host servers and the first 200 zero clients went live on August 15, 2013, several days before the start of classes.

The initial vLabs deployment created a new “Learning Commons” area in the main campus library. Students can use the zero clients for general-purpose homework tasks, and can also initiate virtual sessions for a growing range of department-specific software. Some zero clients have also been deployed in the student labs for various departments (e.g., nursing, biology, and business management).

“Our campus is split into two halves, a mile apart,” explained Athanas. “Instead of taking a bus to the biology computing lab, a student can now walk to the library and log in from a PCoIP Zero Client. They get the same software they used to get, but without the commute. And the library is open much later than the biology building – students now have access until 2 a.m.”



The zero clients and VDI make it possible to restrict access appropriately, and leave the licensed software solutions on the servers. Students can also take advantage of PCoIP software clients to access VDI sessions from residence halls or off-campus homes, and the UMass Lowell deployment also supports access from smart devices through a simple web browser and VDI portal.

The vLabs VDI deployment and zero clients are spreading throughout UMass Lowell. Another 200 zero clients were ordered and deployed over Winter break in 2013, and 100 more are being installed before the end of Summer 2014 to bring the total to 500 for the first year.

**Zero clients and VDI are transforming learning experiences across campus.** “It is really exciting,” said Athanas. “For lab deployments, what used to take weeks now takes minutes. And faculty members can now open the boxes and plug in the zero clients for us. With the Management Console, the clients configure themselves. The Management Console makes it possible to do what we are doing. If we had to manage each device individually, I’m not sure what we would gain from VDI.”

The flexibility of the new centrally managed infrastructure really stands out during testing and exam periods. “In the School of Nursing, we used to shut down the homework lab for three days at test times,” said Athanas. “On day one, we would re-image the PCs to become test stations. On day two, students would be tested within the secure system environment. On day three, we would re-image the PCs to turn them back into homework stations. Now, with Teradici PCoIP Zero Clients and the Teradici Management Console, we can flip the lab in 90 seconds. It takes a grand total of three minutes for start-up and shut-down of testing. The labs are now available more often for students than they used to be.”

The new infrastructure and zero clients continue to inspire faculty and staff, with new uses still being discovered. Some faculty have put zero clients on the teaching podiums, and others switch from lecture to lab in the middle of class by having students access a virtual lab from their smart devices.

Some faculty have also enjoyed turning over the support of lab clients to IT. “Zero clients are a really positive change for all of us, including our faculty members that used to manage their own labs,” said Athanas. “Without increasing our staff, we can remotely manage their clients and let them focus on their core competencies that make UMass Lowell so great. That is what we want to see: less faculty time spent on lab support, and more time on our University’s mission.

“UMass Lowell has been growing at an amazing pace, which you can see in the form of our new buildings, residence halls, and teaching centers. Our goals include attracting 20,000 students by 2018, and to be the top public institution in New England or even the entire country. VDI isn’t going to make this all happen – it will be our faculty and talented instructors and researchers. But VDI and zero clients let us scale out rapidly. The vLabs deployment is making a big difference for us, and I expect even bigger changes in the next few years. It has us rethinking our labs – do we really need as many? Could we go with fewer, nicer labs? We have an opportunity to re-educate all of our departments about collaborative learning spaces.”

#### Products used

500 PCoIP Zero Clients

PCoIP Management Console

#### Virtualization platform

VMware® Horizon View™

