

## VMWARE CASE STUDY



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### INDUSTRY

Education

### LOCATION

Australia

### KEY CHALLENGES

- Enhance students' academic experience
- Improve students' access to applications while reducing lab congestion
- Boost IT productivity by ensuring staff spend less time maintaining desktops

### SOLUTION

Replace traditional desktops in computer labs with 850 VMware Horizon View centrally-managed virtual machines

### BUSINESS BENEFITS

- Provided students with easy access to general purpose university applications
- Reduced waiting times in physical IT labs
- Lowered IT support costs via centralised management
- Delivered elastic scalability to support demand

# MACQUARIE UNIVERSITY



## Macquarie University Students Escape the Lab and Broaden Their Learning Horizons

VMware Horizon View shifts Macquarie University from being constrained by physical computer labs to offering students critical applications elastically anywhere on the planet. Macquarie University iLab lets students escape the lab using VMware virtual computing and Google Drive virtual storage.

Macquarie University is one of Australia's leading teaching and research universities. Founded in 1964, the institution serves about 38,500 students across four faculties.

These are the Faculty of Arts, the Faculty of Business and Economics, the Faculty of Human Sciences and the Faculty of Science.

The university operates from a 126 hectare park-like main campus in north-west Sydney and a satellite campus in the Sydney central business district.

Macquarie University is consistently ranked in the top 10 universities in Australia and among the top 300 universities in the world. This is due to its strong research performance, new teaching curriculum and outstanding new facilities.

The institution relies heavily on technology to fulfil its mission. Its 2009-2012 Technology in Teaching and Learning Plan acknowledges that "current and emerging technologies are powerful tools for advancing the goals of the university to be a modern, research-intensive institution recognised for high quality teaching and learning."

The university operates an innovative, large-scale online teaching and learning system called iLearn, which combines several technologies to create a more

dynamic educational environment for staff and students.

### The Challenge

Macquarie University is determined to ensure its students are always able to access the systems they need to study, conduct research or undertake administrative tasks.

"What we're trying to do is deliver the specific applications that people need to use, anywhere on the planet at any time—irrespective of their client device," said Natalia Salzberg, Product Manager, Informatics, Macquarie University.

"Our students lead busy lives, typically juggling their study with paid jobs and commitments to friends and family.

"They don't want to be constrained by having to compete with other students to use campus-based resources."

The applications traditionally offered in the university's three 150-seat on-campus general purpose computer labs ranged from standard productivity tools such as Microsoft Office to more than 30 specialised packages, including IBM SPSS predictive analytics software,

***“Our iLab applications are now platform-independent and can be accessed from anywhere in the world.”***

Natalia Salzberg,  
Product Manager, Informatics  
Macquarie University

IBM SPSS Modeler data mining workbench, Minitab statistical software for quality improvement and the Gretl econometrics package.

Many of these applications are expensive, making it unfeasible and impractical for students to purchase their own copies for potentially just one course unit.

“Having such a wide portfolio of applications installed on lab PCs also meant there was a considerable support burden for IT staff,” Salzberg said. “Staff had to ensure all applications were up to date and that any hardware malfunctions were quickly rectified.”

By 2009, the university was developing plans to expand student access to applications and resources beyond the three labs that operated on campus. These plans involved reducing congestion during peak times, cutting the support burden and lowering costs.

### The Solution

In 2009, the university decided to create a ‘virtual’ computing laboratory that would improve the availability of lab resources to students. “We took a step back and asked ‘why does the physical lab even have to exist?’” said Salzberg. “We decided the best way to increase availability was to allow students to use their own devices to access the software running in a virtual laboratory.”

Salzberg said the IT team developed and tested a preliminary design for the concept, dubbed iLab. This involved providing students with access to applications via disposable virtual desktops. After a number of preliminary tests, the university began a search for a technology that could support its iLab vision.

In 2010, the university decided to implement VMware Horizon View™ to create on-demand virtual machines that students could use to access the particular applications they required. The applications were served from a central datacentre rather than running on the devices themselves. “VMware Horizon View provided us with truly platform-independent technology,” said Salzberg. “It didn’t matter what devices students were using—they could simply connect to the resources they needed.”

### Business Results & Benefits

Once Macquarie University iLab was established in 2011, a range of benefits immediately became apparent. Most notably, students could access the applications they needed from anywhere on any device they chose.

“A university is really a slice of regular society,” said Salzberg. “You get people who are very tech savvy and others who are not at all. This means we can’t dictate what people use and so we had to make access as simple and open as possible. Our iLab applications are now platform-independent and can be accessed from anywhere in the world.”

Rather than being limited to the number of physical computers in the university’s computer labs, students now draw from a pool of 850 virtual machines on which they can access the applications they require. Machines are spun up to meet increases in demand and destroyed once students log off. Documents and data are typically stored in Google Drive and are also available outside iLab.

“Each time a student logs on, they are given a unique image from a collection of readily available instances,” said Salzberg. “That way they can be sure they are getting the most up-to-date version available on the desktops.”

By reducing the number of virtual machines running during off-peak times, the university is capable of reducing the power consumption of computer hardware and the air conditioning systems that support it.

The new system has also reduced the load on Macquarie University’s desktop administrators. “Our support staff can now perform maintenance and checks from their desks rather than spend up to two days each semester undertaking these tasks at the labs,” said Salzberg. “It’s removed the need to walk around with physical CDs to update individual computers.”

### Future Plans

Following the success of iLab, Macquarie University will continue to explore new ways of using virtualization technology to provide students with access to the software and resources they require to complete their studies.

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***“We are an organisation with a broad and diverse student population and we want to be able to serve them regardless of where they happen to be.”***

Natalia Salzberg,  
Product Manager, Informatics  
Macquarie University

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### VMWARE FOOTPRINT

- VMware vSphere ESXi
- VMware Horizon View

### APPLICATIONS VIRTUALIZED

More than 30 specialised packages, including:

- IBM SPSS predictive analytics software
- IBM SPSS Modeler data mining workbench
- Minitab statistical software for quality improvement
- Gretl econometrics package

### PLATFORM

- 850 Microsoft Windows virtual desktops
- 150 Apple Mac OS X virtual desktops
- Cisco Unified Computing System (UCS) blade servers
- Dell blade servers

The university is also looking at further integrating iLab more closely with Google Drive to enable students to store their documents more efficiently.

Salzberg said the university would continue to move away from the idea that users need to download and install applications on their computing devices. Eventually, the widespread takeup of standards-compliant web applications will mean that users will only need a web browser and log-in credentials.

The university is also looking at ways to make use of VMware Horizon View to provide virtualized access to a range of legacy applications for staff and eResearch applications for academia.

