



Fusion ioMemory™ Solution Speeds Queensland University's Virtual Desktop Infrastructure

Leading Australian university speeds log-ons, saves costs, and delivers a fantastic user experience on their virtual desktop infrastructure.

Solution Focus

- Virtual Desktop Infrastructure with VMware View
- Education

Summary of Benefits

- **10x faster** desktop boot times
- **2x more HPC workstations** per ESX server
- **Secure desktops enabled** for executives from multiple devices
- **Eliminated** maintenance and delays from restarts
- **Reduced SAN workload** to extend SAN investment

The Challenge

With a student population around 40,000 plus 5,000 on staff, the IT department at Queensland University of Technology (QUT) is constantly on the lookout for new technology that can help them provide better service at reduced costs. Virtual desktop infrastructure offered significant cost saving benefits, so long as QUT could address the challenges of the following distinct virtual desktop infrastructure environments:

1. Student Computer Lab—Several hundred students access the physical machines in the lab throughout the day. Log-ons were taking as long as five minutes; restarts after patches and updates to virus definitions could take more than 15 minutes. This sometimes prevented students from making the most of their lab time.
2. High Performance Computing (HPC) Environment—Researchers at the university perform I/O intensive calculations on high-end workstations; each workstation was very costly to purchase and maintain. QUT's IT wanted to use virtual desktop infrastructure to cut these costs, while maintaining or improving performance.
3. Virtual Cloud—This environment serves high profile executive staff members who want to connect to the network from multiple types of devices, including iPads, laptops, and smart phones; however, provisioning corporate applications over the required secure, platform-agnostic instance used significant system resources.

QUT's first test of a virtual desktop infrastructure solution prior to SanDisk® resulted in worse performance than the straight physical systems. Seeking another alternative, QUT IT went to VMware's vForum Sydney.

The SanDisk® Solution

At vForum Sydney, Mohammad Hassan, of QUT's Information Technology Services, learned that HP and SanDisk had worked hand-in-hand to develop the VMware View5 VDI Reference Architecture. Since QUT is also an HP customer, the View5 VDI Reference Architecture was compelling.

After returning from vForum, QUT's IT requested Fusion ioMemory ioDrive® cards for use in a virtual desktop infrastructure pilot environment. "As soon as we put our first pilot ioDrive card in, my response was, 'these are so good, you're not getting them back!'" explained Mohammad. He immediately contacted QUT's HP representatives to purchase ioDrive cards for testing in their production virtual desktop infrastructure environment.

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**Mohammad Hassan,
Information Technology Services
Queensland University of Technology**

“The main reason we went with the SanDisk solution for this evaluation is that we wanted all groups to have a great first experience with virtual desktop infrastructure. Without that, it makes it very difficult to deploy new technology and provide the kind of service we, as an IT department, strive for,” said Mohammad. “After seeing the results, we have decided to expand our deployment.”



Quick Boot-ups Launch Student Productivity

The Student Lab desktops have to boot quickly so students can make the most of their lab time. Mohammad described how the ioDrive cards improved log-on times and desktop launches. “We saw our log-on times drop by a factor of 10, from up to 5 minutes to less than 30 seconds. Furthermore, these clones include the latest patches and virus definitions. Previously, just applying these patches and virus definitions to physical machines could take 15 minutes.”

Hyping Up High Performance Computing Workstations

The ioDrive cards enabled even the demanding workloads of QUT’s High Performance Computing workstations to be virtualized. And the ioDrive cards supported twice the number of HPC desktops than disk-based ESX servers could.

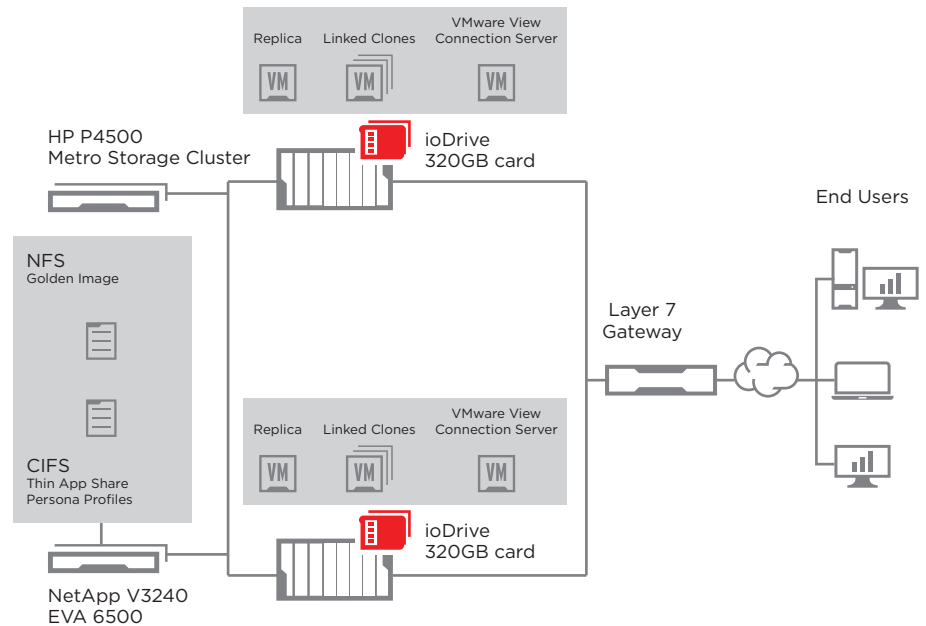
Mohammad said, “We estimate, based on server load and performance statistics from tools like vCOPS (vCenter Operations Manager), that we can support twice as many desktops per server. This saving, plus savings on the cost to purchase and maintain additional workstation hardware, means that if we deploy more fully, the ioDrive cards will make even an HPC desktop experience cost-effective.”

Empowering the Executive User Experience

Executives needed to access applications securely and from multiple types of devices, a situation that required much greater system performance for volatile workloads. The ioDrive cards gave the ESX servers ample performance headroom to handle the encryption, as well as the workload volatility of differing device types. Mohammad said, “Executive staff were able to log-in from home with a mobile device over VPN and they love it!”

System Overview

VMware View Virtual Desktop Infrastructure Deployment



4 x HP BL490 G7 blades, 24 dual-core Processors, 144 GB memory

- OS: VMware ESXi 5.0,
- Application: VMware View 5.1
- ioDrive cards: 4 x 320GB
- VMware vShield
- VMware Operations Manager
- 85 desktops per server (enforced by logical limit not workload capability): 25 HPC VMs, 30 undergraduate student VMs, and 30 executive staff VMs

SAN specifications

- HP LeftHand Networks P4500
- HP EVA 6500
- NFS NetApp 3240

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Summary

QUT implemented HP's VMware View5 VDI Reference Architecture with SanDisk's Fusion ioMemory to achieve the following benefits:

- **10x faster** desktop boot times
- **2x more HPC workstations** per ESX server
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- **Eliminated** maintenance and delays from restarts
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About the Customer

Queensland University of Technology (QUT) is a highly successful Australian university with an emphasis in courses and research. Based in Brisbane with a global outlook, it has 40,000 students, including 6000 from overseas (QUT Statistics), and an annual budget of more than AU\$750 million.

Courses are in high demand and QUTs graduate employment rate is well above the national average for Australian universities.

The performance results discussed herein are based on Queensland University testing and use of Fusion ioMemory products. Results and performance may vary according to configurations and systems, including drive capacity, system architecture and applications.

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