SUNY College at Old Westbury Delivers High-Performance Scalable Virtual Desktop Infrastructure with SanDisk®

College adds flash memory to ESXi servers to create a cost-effective, linearly scalable virtual desktop infrastructure system.

Solution Focus

- VMware Horizon View Premiere
- VMware ESXi 5.1
- Education

Summary of Benefits

- Up to 150 desktops per server
- Over 1.5x faster boot times
- Nearly 2x faster desktop startup times
- Linear scalability
- Easy deployment

The Challenge

Located on the historic North Shore of New York's Long Island, the State University of New York (SUNY) College at Old Westbury is a selective public liberal arts college. SUNY has over 4,400 students studying in more than 40 undergraduate programs and 15 graduate programs.

Marc Seybold, Old Westbury's CIO, had wanted to deploy virtual desktop infrastructure for years to reduce IT maintenance costs, but could not find a solution that met the college's performance and cost requirements.

Marc said, "I had tried several times before to deploy virtual desktop infrastructure, but the technology always bottlenecked at a certain level of scaling. We needed a system that could scale to support 650 View licenses. I experienced a number of problems with previous virtual desktop infrastructure attempts; spinning drives' I/O limitations were at the top of the list."

Marc's team needed a solution that delivered the following:
- Performance equal to physical desktops
- Cost-effectively scaling up to 650 concurrent desktops
- Reduced PC maintenance without replacing it with data center hardware maintenance

The Solution

Marc's team had tested storing desktops on local disks, but that "didn't go too far." At a trade show, he saw a SanDisk demo of over 100 desktops running dynamic content from a single server.
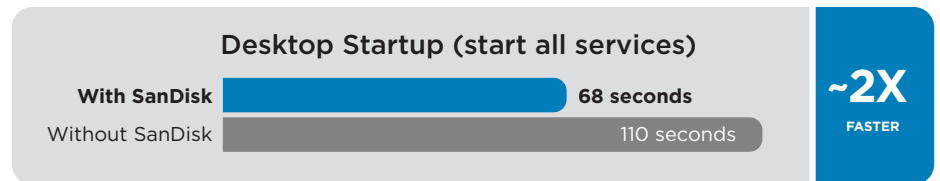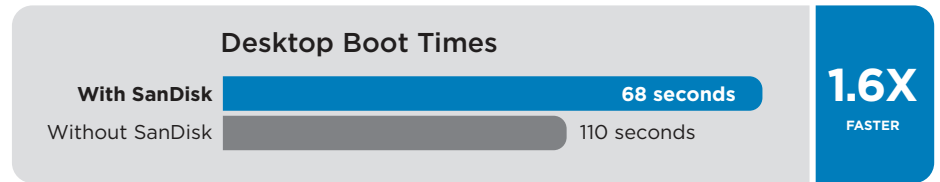
"At that point, we purchased a unit for testing," Marc said. "The tests were spectacularly successful and we progressed from there into a full production deployment."

A Faster, More Efficient Desktop

Marc described his team's objectives: "Our primary goal is a better user experience. We knew we'd have at least 40 people logging on at the same time at the start of labs, so we couldn't have boot storms – and we needed to ensure the same or better performance than PCs."

SanDisk's Fusion ioMemory solutions delivered. Marc said, "Students can double click the icons and immediately begin typing. This keeps students and faculty productive and focused on learning."

The charts below show some of the benefits:

Desktop Boot Times

With SanDisk	68 seconds	**1.6X** FASTER
Without SanDisk	110 seconds	

Desktop Startup (start all services)

With SanDisk	68 seconds	**~2X** FASTER
Without SanDisk	110 seconds	

Marc also noted a side benefit—better use of physical space in the lab: "With virtual desktop infrastructure, we were able to go with zero footprint clients, which frees up a lot of clutter and allows students to stretch out."

Scalability for the Long Haul

Marc said Old Westbury's immediate needs were to support around 200 concurrent users, but that scalability had to be built-in. "Our long-term needs required scaling to 650 concurrent users. We didn't want to have to re-architect down the road or invest in an extremely expensive SAN to backstop the disk I/O, knowing that sooner or later SAN performance would hit a wall."

Network Operation Staff member Chen Cao described how the Fusion ioMemory ioDrive solution solved the scalability problem: "By storing the desktops on Fusion ioMemory flash in the servers, we reduced latency to a minimum. This allows us to scale desktops linearly with additional servers. Each ESX server has the potential for up to 150 users, but we allocate 60-70 users per server to give end users the best possible experience. We currently have seven ESX servers, which gives us plenty of redundancy for availability and makes it easy to take servers offline for routine maintenance. We know when we need to scale to another 60-70 users, we can simply add another server and Fusion ioMemory."

Marc noted how a SAN-based system differed from the flashy memory-based one: "There's a big difference in the labor required to create, install, configure, and maintain the Fusion ioMemory-based ESX servers versus ESX servers and a SAN. There is a really nice blend of value that comes from reducing complexity, increasing performance, and reducing costs.

A Virtual Desktop Infrastructure Enabler

Marc explained how the Fusion ioMemory solution enabled virtual desktop infrastructure for SUNY College of Old Westbury: "Virtual desktop infrastructure would not have been viable if we had to implement it with a SAN. The Fusion ioMemory ioDrive solution gave us all the performance and scalability we needed, without complexity."

By making a scalable, cost-effective, and high performance virtual desktop infrastructure system possible, Marc's team was able to realize the benefits of virtual desktop infrastructure, including:
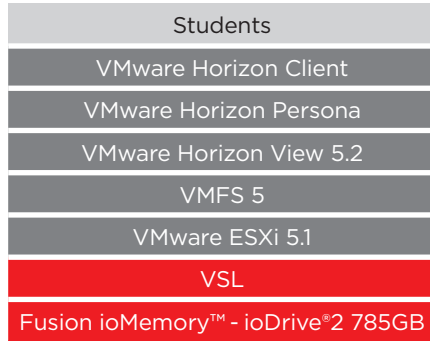
- Reduced maintenance. Marc said, "The need to roll wheels for support has essentially gone away. We have just three golden images: for faculty, students, and staff. There really isn't much that can go wrong with the hardware anymore."

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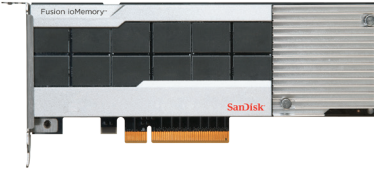
Fusion ioMemory™ - ioDrive®2

- Faster IT response. Marc explained, "Because we can fix most problems remotely, we rarely have to dispatch anyone physically—and that's a very, very significant cost savings. Additionally, we can fix most problems in a fraction of the time."
- Increased security. Chen said, "Virtual desktop infrastructure allows us to manage assets much more effectively. Our golden images include VMware Endpoint, Symantec Endpoint, and our Active Directory settings. We recently performed penetration testing, and tests that usually sail through a PC's security systems bounced off the new environment."

Virtual Desktop Infrastructure System Overview

SanDisk Powered Software Stack

Students
VMware Horizon Client
VMware Horizon Persona
VMware Horizon View 5.2
VMFS 5
VMware ESXi 5.1
VSL
Fusion ioMemory™ - ioDrive®2 785GB

Old Westbury System

VMware ESXi Servers   VMware Horizon View Connection Servers   Clients
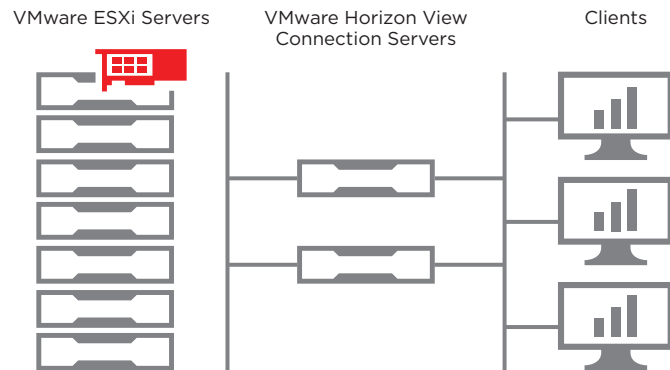
Servers
ESXi Servers
- 7 x 4U Dell R910 servers, four hex-core processors, 512-1TB RAM
- Hypervisor: VMware ESXi 5.1
- Fusion ioMemory - ioDrive2 785GB

VMware Horizon View
Connection Servers
- 2 x 4U Dell R910 servers, four hex-core processors, 512-1TB RAM

About Old Westbury

Located on the historic North Shore of New York's Long Island, the State University of New York College at Old Westbury is a selective public liberal arts college with more than 4,400 students studying in more than 40 undergraduate degree opportunities in its liberal arts and professional programs and 15 graduate programs in business, education and mental health counseling. On the College's 604-acre campus, students and faculty participate in an environment that demands academic excellence, fosters intercultural understanding, and endeavors to stimulate a passion for learning and a commitment to building a more just and sustainable world.

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At SanDisk, we're expanding the possibilities of data storage. For more than 25 years, SanDisk's ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe.