



CHALLENGE

The Wharton School of the University of Pennsylvania needed to refresh its IT infrastructure with ultra-dense servers and storage to minimize its footprint and maximize its compute and storage capabilities in a new data center.

SOLUTION

Wharton consolidated its existing IBM® BladeCenter server and storage infrastructure onto Dell PowerEdge M1000e modular blade enclosures and Dell EqualLogic PS5000X Internet SCSI (iSCSI) storage area network (SAN) arrays.

BENEFITS

- Dell PowerEdge blade servers reduced the number of managed servers by half, with projected performance gains beyond expectations.
- Dell EqualLogic iSCSI SAN delivers high performance at one-quarter the cost of a Fibre Channel SAN.
- Infrastructure minimizes power and cooling needs while providing its user base with productivity-boosting computing opportunities.

Related Categories:

Blade servers, case study, Dell EqualLogic storage, Dell PowerEdge blade servers, Dell ProSupport Services, Internet SCSI (iSCSI), storage, storage area network (SAN), virtualization, Wharton School

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THE BUSINESS OF SUCCESS

Dell™ PowerEdge™ blade servers and Dell EqualLogic™ Internet SCSI (iSCSI) storage area network arrays help the Wharton School of the University of Pennsylvania quintuple computing power while simplifying management and reducing costs.

With its unmatched faculty and academic programs, the Wharton School of the University of Pennsylvania is one of the most comprehensive sources of business knowledge in the world. Founded in 1881 as the first collegiate school of business, Wharton continues its heritage of innovation today with leading-edge technology in a new data center based on Dell PowerEdge blade servers and Dell EqualLogic Internet SCSI (iSCSI) storage area network (SAN) arrays. The end result will be fast applications for students, faculty, and researchers and additional opportunities to increase learning productivity.

POWERFUL, EFFICIENT SERVERS

“We outgrew the power and cooling capacities of our old data center, and had to prepare for growing data volumes in the coming years,” says Dan Alig, senior IT director at Wharton. “So we are refreshing our server and storage infrastructure so that our new facilities will take advantage of all the tremendous compression of processing and storage technologies that Dell now offers with its blade server systems and storage. We’re creating a highly efficient data center model that is low in its power consumption and cooling needs and has plenty of room for growth.”

One PowerEdge M1000e modular blade enclosure containing 16 PowerEdge M600 blade servers with quad-core Intel® Xeon® processors will house Wharton’s EMC® Documentum® eRoom® collaboration software for students as well as VMware® ESX servers. A second PowerEdge M1000e enclosure with 16 similarly equipped blade servers will run a Linux® OS-based grid for performing complex financial algorithms.

Wharton uses PowerEdge 2950 servers as Microsoft® Exchange Server 2007 Hub Transport and Client Access servers and Veritas™ NetBackup™ servers, and PowerEdge 1950 servers as domain controllers. In addition, Wharton is consolidating eight IBM servers down to four PowerEdge R900 servers to run its Exchange environment. The Dell OpenManage™ suite provides a set of standards-based tools for proactive management. “We’ve essentially quintupled our compute power per

node in the Exchange environment,” says Joe Cruz, senior IT leader at Wharton. “In addition to the consolidation benefit, we’re now only managing four servers instead of eight and reducing power and cabling on those four. And we’re expecting performance to far exceed anything that we could possibly imagine.”

“It would have been prohibitively expensive to expand using our existing IBM technology, and ultimately it did come down to cost and service,” says Alig. “Dell wins on both cost and service. We want to stretch our dollar as far as it will go, and Dell’s letting us do more for less than we could do with other server providers.”

COST-EFFECTIVE, HIGH-PERFORMANCE STORAGE

For storage, Wharton upgraded from IBM DS4000 series Fibre Channel and Serial ATA (SATA) array enclosures to Dell EqualLogic PS5000X iSCSI SAN arrays. The main reason the school chose iSCSI SAN storage was the ease of deployment. “We’re a big fan of virtualization,” says Alig. “And it made sense to marry the server virtualization platform with storage virtualization. It would have been extremely expensive to do that with other vendors’ storage technology, but with Dell EqualLogic technology, it’s really easy and not that expensive.”

Scaling an iSCSI SAN is also easy. “In raw throughput, we’re getting—across the nine arrays that we have—easily 250 MB per second sequential and 17,000 to 20,000 I/Os per second,” says Cruz. “And that’s just with the out-of-the-box performance. It really far exceeded all my expectations in terms of performance.”

In addition, the EqualLogic arrays include features such as auto-replication, thin provisioning, writable snapshots, automatic load balancing, volume management, and many others at no additional cost. “Dell EqualLogic delivers Fibre Channel performance in an iSCSI

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—Dan Alig
Senior IT director at the Wharton School
of the University of Pennsylvania
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SAN at a quarter of the cost,” says Cruz. “If you factor in the software features, the cost advantage is awesome.” The replication feature utilizes Wharton’s existing Ethernet backbone, so the new data center will replicate to one of the existing data centers at no additional cost, with the savings adding up over time as the school takes advantage of all the EqualLogic software features to help reduce administration time and avoid data losses. “Over time we’re talking about hundreds of thousands of dollars worth of savings,” says Alig.


SIMPLIFIED DEPLOYMENT AND PROACTIVE SUPPORT

Deliveries of new servers and storage from other vendors came in about 60 boxes, requiring approximately 24 hours simply to unbox the equipment. The Dell shipment, in contrast, came fully loaded in 1 box, which took just 4 hours to unbox and assemble. In addition, Dell negotiated with its partner Delaware Valley Liebert for room-wide uninterruptible power supply units as well as racks and power distribution equipment, helping provide a total solution in a cost-effective way.

Wharton also plans to migrate to the VMware ESXi 3.5 embedded firmware hypervisor through Dell. “Right now, provisioning an ESX host is a two-to-three-hour process, partly because we have to provision Fibre Channel storage, and partly because we don’t have any imaging

capabilities for ESX,” says Cruz. “So moving to an embedded hypervisor is going to save us a lot of time.”

Wharton chose Dell ProSupport to fast-track dispatch parts and labor, bypassing basic troubleshooting and helping ensure 24/7 direct access to Dell Expert Centers. “We had a problem with another vendor’s SAN and Dell responded before they did,” says Alig. “It meant a lot to us that Dell offered us the use of loaner storage. It showed how responsive Dell could be as a partner.”

The total solution that Dell provides is finding a warm reception at Wharton. “We’re able to do a lot more for less using the Dell blade systems and Dell EqualLogic storage,” says Alig. “We’ve just been amazingly impressed with how responsive Dell has been, whether it’s sales support or helping us find technological resources and sharing their vision of the technologies that Dell is moving toward in the future.”

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