

University of Toronto

Case Study

Handling Server Virtualization, Network Storage and Centralized Data Backup

University of Toronto, Ontario, Canada
www.utoronto.ca
Higher Education



Summary

Challenge: Build a mission-critical storage infrastructure that was fast, reliable, and cost effective.

Solution: NexentaStor High Availability (HA) Cluster

Platform: Cisco UCS, PogoLinux, VMware

Use Case: Server Virtualization / Service Provider

Benefits:

- Lower Total Cost of Ownership (TCO), plug-n-play implementation
- Massively scalable storage environments with end-to-end data integrity
- Efficiency, reliability, and resilience
- Integration with VMware to support virtualized environments and multiple storage protocols
- Multi-platform and workloads support

Business Overview

The University of Toronto was founded as King's College in 1827 and has evolved into a large and complex institution that now occupies three campuses: Scarborough, Mississauga, and the historic St. George campus in downtown Toronto. The school currently serves over 80,000 students, both graduate and undergraduate.

The Enterprise Infrastructure Solutions (EIS) team provides services to all three campuses. EIS designs, procures, implements and manages all of the enterprise-level hardware, systems and network infrastructure housed in the central administrative data center, upon which the entire university relies to deliver central IT solutions and services. EIS also operates the campus network backbone and wide area networks to which all departments, divisions and campuses connect.

In addition to providing university-wide IT infrastructure, EIS also provides extensive 'Infrastructure as a Service' solutions to departmental and divisional clients. These services include server virtualization, network storage and centralized data backup.

Because the university is physically and departmentally decentralized, EIS delivers 'backbone' services university-wide, and offers other IT services as needed for each department.

“Our decision to go with Nexenta will save the university around \$9 million over a five-year period. 'Tier 1' storage vendors would have charged 3 to 3.5 times more than the amount negotiated with Nexenta and yet the functionality was basically the same.”

Patrick J.A. Hopewell

Director, Enterprise Infrastructure Solutions
University of Toronto

Challenges

The university technology infrastructure is now as beautiful as the campus where it resides, but it hasn't always been this way, particularly with respect to storage.

EIS Director Patrick Hopewell and his team initiated an RFP process that sought out a standard SAN solution for all enterprise services within the CIO portfolio but which could also be leveraged by any department on the three campuses. Previously, there lacked a co-ordinated approach to storage acquisition in the central IT department. The university received responses from many of the major storage industry vendors, ultimately choosing Nexenta's software-defined storage solution featuring NexentaStor.

"There was some initial resistance to our selection of Nexenta, but this was largely based on the reputation of legacy storage companies," according to Hopewell. "It used to be said that no one ever got fired for going with IBM. With respect to storage, today that same expression could be applied to the major storage vendors. Their name recognition makes them feel like a safe bet, but there were so many benefits with Nexenta, particularly around cost, that we ultimately overcame that hesitancy."

System Configuration

- Cisco UCS C240 M3 - 264TB raw
- Cisco UCS C240 M3 - 219TB raw
- Cisco UCS C240 M3 - 280TB raw
- Cisco UCS C210 M2 - 315TB raw
- Cisco UCS C210 M2 - 364TB raw
- Cisco UCS C210 M2 - 174TB raw
- Cisco UCS C210 M2 - 135TB raw

Solution and Benefits

Solution

The university has standardized on VMware in the central data center, with vSphere 5.5 running on Cisco's Unified Computing System (UCS) hardware. Cisco's Virtualized Multitenant Data Center (VMDC), with the only deviation from their reference architecture being storage. For storage, the university has rolled out NexentaStor High Availability Cluster both for the data center and for the data center's disaster recovery solution.

There are now more than a thousand virtual machines running in the data center, with around 3 petabytes of raw storage provisioned in Nexenta. All of this is now running on commodity hardware, which has been optimized by joint efforts between Nexenta and the university.

"We spent some time getting familiar with Nexenta, but our relationship with their sales and engineering departments has been great," added Hopewell. "We view the relationship as a two-way street: we've had a lot of help from Nexenta's engineering team to help us push the envelope and deliver what we need. At the same time, we've done some innovative work with NexentaStor that has raised some eyebrows at Nexenta. We don't have this kind of relationship with all of our vendors, and that's a tribute to Nexenta's commitment."

Benefits

According to Hopewell: "The economic benefits of going with Nexenta jumped off the page following our initial calculations."

The university built an economic model based on price per gigabyte, factoring in hardware and software costs over a five-year period.



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