TINTRÍ

Case Study

Northwestern University Deploys Private Cloud Infrastructure with Tintri

Industry:
Higher Education

Virtualization environment
- VMware® vSphere™ 4.x and 5.0
- VMware vCloud director 1.0.1, 1.5
- Veeam Backup & Replication
- Dell R620 servers for vSphere hosts
- Prior to Tintri: EMC Clariion CX4-480, VNX 5500, IBM DS4800; Fibre channel infrastructure

VM profile
- Windows servers running Active Directory, Web and application tiers, SQL Server, and file servers.
- Red Hat Linux servers running MySQL, internally developed applications, research survey servers, library systems, Oracle 11G, and file servers.

Key challenges
- Storage was not meeting performance requirements.
- Complexity of configuring and managing Fibre Channel storage in a shared cloud environment.
- Storage not adaptable to the scalable pod-based model the university required.

Tintri solution
Tintri VMstore™ T540 dual-controller 13.5TB storage appliance for each private cloud pod.

Primary use case
Private cloud deployment in self-contained units of compute and storage (primary and backup) managed by VMware vCloud Director.

Business benefits
- Cost-effective performance to successfully deploy a scalable private cloud.
- Single large IP-based datastore for simpler manageability.
- Performance and capacity metrics on a per-VM basis to enable granular service monitoring.

Overview

Northwestern University is an internationally recognized research institution with approximately 19,000 continuing studies, undergraduate, and graduate students. Northwestern has three campuses located in Evanston, IL, Chicago, IL, and Doha, Qatar.

NORTHWESTERN UNIVERSITY

Northwestern University Information Technology (NUIT) is a service arm of Northwestern University dedicated to advancing its competitiveness, influence, and reputation. NUIT deploys, supports, and administers the information technology and network infrastructure that facilitates the dynamic learning, teaching, and research activities at Northwestern University.

Northwestern University wanted to create a private cloud infrastructure to centralize computing and storage resources while enabling its schools and departments to provision VMs from a service catalog. NUIT selected VMware vCloud Director to help meet the performance requirements for a private cloud infrastructure and build a pod-based scalable computing model.

Key Customer Challenges

"Local IT departments manage the compute and storage resources, but also need to provision and manage VMs," said Tom Board, Associate VP of Cyberinfrastructure. "We wanted to offer a centralized shared infrastructure model where schools and departments across the university could self-provision computing environments."

Northwestern had used a mix of traditional Fibre Channel (FC) storage systems in their virtualization environment. "A major component of the existing storage did not meet our requirements for a shared infrastructure," said Board. "The form factor of the storage system was also an important consideration because we wanted to deploy compute and storage as a self-contained pod with fixed resources that can be added to cloud infrastructure incrementally at a predictable cost."

Management of the cloud infrastructure was another major consideration. "Management of cloud infrastructure based on existing solutions posed challenges," said Board. "First, we wanted the school and department VMware administrators to manage their own VMs. Our existing storage required sophisticated FC storage area network (SAN) expertise. Also, we wanted those VM

Customer Success

"The footprint of the Tintri appliance along with its software stack makes it a key component of a modular architecture for virtualization deployments."

–John Walsh
Manager, Processing and Information Services

administrators to manage at the familiar VM and vDisk level — which correlates directly to end user services. However, our existing storage would have forced them to manage LUNs and datastores."

Tintri Chosen as Basis for vCloud Infrastructure

NUIT was intrigued by the unique VM-aware functionality of the Tintri appliance and its performance in a small form-factor. "We wanted to do a POC using our most demanding application — the course management system — to prove Tintri's fit in our environment," said Board.

"We chose the Tintri T540 storage appliance as the basis for our private cloud infrastructure because of the performance it delivered in such a small form-factor while providing very simple-to-use VM granular management," said John Walsh, manager of processing and information platform services. Each of the vCloud pods consists of four Dell R620 compute servers, one Tintri T540 appliance, and one Dell R610 with PowerVault MD1200 DAS for backup.

Business Benefits

"A single Tintri T540 appliance performed better than the FC-based arrays so we don't have bottlenecks and are able to run our most demanding database workloads," said Walsh.

The private cloud model Northwestern deployed allows central IT staff to focus on core infrastructure management, while campus IT staff use a self-service mechanism to create VMs based on the infrastructure. "We streamlined the request and approval process from provisioning and usage of VM resources so everyone benefits," said Board.

The Tintri approach reduced storage complexity and helped enable Northwestern's private cloud infrastructure deployment. "The single datastore per pod model and an intuitive GUI dramatically simplified administration, allowing local IT staff to monitor performance and capacity metrics on a per-VM basis for troubleshooting," said Walsh.

Summary

Private cloud deployments increase both server and storage resource utilization efficiency and enable service-oriented provisioning of resources. Management simplicity, VM density, and performance scalability form the foundation of scalable storage in a private cloud infrastructure. Tintri VMstore's cost-effective performance using flash intelligently combined with simplified management helped Northwestern successfully deploy a private cloud infrastructure. "Tintri performs and acts like Tier-1 storage, but is comparable to Tier-3 in cost," said Board. "The footprint of the Tintri appliance along with its software stack makes it a key component of a modular architecture for virtualization deployments."

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