

CASE STUDY

Washington and Lee University Expands Storage Capacity and Boosts VDI Performance

IntelliFlash



WASHINGTON AND LEE
UNIVERSITY

Virginia-based Washington and Lee University (W&L) is a private four-year university specializing in liberal arts with a graduate program in law. Founded in 1749, the university has roughly 2,000 students and 600 staff and faculty members.

The Challenge: Inefficient Storage Silos

The university runs two data centers located on opposite ends of campus. They have a mixed environment of Microsoft Windows and Linux servers in both physical and virtual configurations. Today, over 75% of servers are virtual servers, which are preferred for their ease of deployment, management accessibility, and lower costs. The virtualization platform is VMware ESX® running on a cluster of five HP blades in multiple HP blade chassis.

W&L supports and uses Fibre Channel, iSCSI, and NFS storage across their data centers. A production Virtual Desktop Infrastructure (VDI) is also in use and is running in a hybrid configuration of VMware ESX and VMware vCenter® in the back end. Desktop images are supplied and managed by Citrix on the front end.

Meeting the storage capacity needs of university users while providing reliable network connectivity, adequate bandwidth, and secure remote access are daily challenges for W&L's IT department. Computational intensive applications are typical of several departments, including biology, mathematics, chemistry, and others; and students and faculty alike must have reliable storage solutions for critical research and documentation.

Local drives were being used to store and back up critical research and other data, and those drives were failing.

"Data resided in islands of storage all over the campus, which was costly and inefficient," said Jef McCreery, Director of Core Systems in IT. "The cost of data recovery was astronomical if a drive failed, because we had no automatic backup process in place. It was impossible to back up this data to tape across the campus network due to the sheer volume of data."

Additionally, the IT team and W&L had recently implemented a Citrix virtualization solution for its desktop environment to enable secure remote access via a variety of endpoint devices. Virtual desktops require storage with low latency and high IOPS for random read and write operations to ensure optimal performance. Unfortunately, W&L's existing legacy storage systems were showing performance problems when confronted with the I/O demands of the new Citrix VDI implementation.

"We were overrunning the controller's memory cache on the existing storage system," said McCreery. "There just wasn't enough disk I/O to handle the load, and we ran into performance issues just six months after implementing the VDI solution."

File share servers are useful in university settings because they provide single sign-on, as well as access and security privileges. W&L's IT team had been using a well-known appliance for backup, but the solution lacked critical features. Upgrading the current solution with new features was cost-prohibitive.

"We had been paying a premium for hardware and software with existing solution," said McCreery. "If you bought the basic system, adding features like snapshot, deduplication, and replication was very expensive. We knew that those features would be important over time, given the growth in data flowing through the university network, but with the legacy solution, we couldn't afford them."

Challenges

- Centralize islands of critical data and data stored in failing local drives
- Address performance issues resulting from significantly increased I/O demands of new VDI implementation
- Provide sufficient storage capacity, reliable network connectivity, bandwidth and secure remote access to staff and faculty

Solution

- Tintri IntelliFlash™ T-Series

Results

- Single sign-on and user access control increase data security
- Approximately 70% storage reduction for VDI and 22% reduction for File Share with deduplication and compression
- 7X increase in IOPS improved VDI performance
- Time to copy virtual desktop image reduced from days to hours
- Time to restore persistent images reduced from days to minutes
- Time to restore user data reduced from days to minutes
- Automatic replication provides reliable disaster recovery

"W&L has been able to reduce storage needs by 22% and provide faster restores for end users, saving IT staff time and resources."

*Jef McCreery, Director of Core Systems in IT,
Washington and Lee University*



Tintri
Intelligent Infrastructure

The Solution: Tintri IntelliFlash T-Series

To meet users' needs for highly reliable, high-performance data storage and backup, and to support a new virtualization platform that would improve remote access to the campus network, the university's IT organization turned to Tintri IntelliFlash.

The IntelliFlash system was deployed for two separate use cases. It was deployed in the VDI environment to provide high IOPS, and it was also deployed in a file-share environment for secure, high-performance storage and backup. As a result of deploying IntelliFlash, W&L's IT department benefits from a high-performance, highly reliable campus-wide storage solution with up to 90% cost reduction and significant time savings.

W&L installed two IntelliFlash systems in the file-share environment with replication to improve data backup and recovery. This provided a much more cost-effective solution than upgrading the legacy solution to meet W&L's storage needs.

"Upgrading even the controllers for our existing legacy gear would have been equal to if not double the cost of the entire IntelliFlash solution," said McCreery, who also looked at comparable solutions from other vendors. "IntelliFlash provided the best performance for the lowest overall cost."

Once this challenge was addressed, W&L deployed two additional IntelliFlash systems with bi-directional replication to meet the storage capacity and performance needs of its new virtual desktop infrastructure.

The Results: Storage Needs Reduced; Performance Increased

"We are reducing the separate islands of data stored on local drives across campus; now the data is becoming centralized in the datacenter, which provides more reliable, robust storage and data security, and eliminates the need for us to backup data to tapes or disks," said McCreery.

As primary storage for a virtual desktop environment, IntelliFlash provides high performance for random I/O operations. Extremely low-latency and high IOPS are made possible by the solution's Xeon processors, memory, and SSD-optimized reads and writes, as well as linespeed network throughput. These features led to a tremendous gain in performance over W&L's legacy solution, making remote access to virtual desktops seamless and much less frustrating for users.

"With IntelliFlash, we went from being able to process 6,000 IOPS to about 40,000 IOPS, even though the cost of the solution was significantly lower," said McCreery.

The IntelliFlash solution also makes provisioning virtual desktops fast and simple. One-click storage creation enables administrators to deploy hundreds of virtual machines and desktops in minutes. Additionally, the solution was easy to install and integrated with the existing infrastructure. IntelliFlash offers multi-protocol NAS and SAN capabilities, including support for iSCSI, Fibre Channel, NFS, and SMB3.

According to McCreery, W&L has realized significant gains in storage capacity since implementing the IntelliFlash system. "With IntelliFlash, storing 8TB of data requires only 3RU of rack space, as opposed to 6RU for just 3TB with the legacy solution," he said.

Additionally, the team has seen a 7x performance gain over the legacy systems, and snapshot functionality has led to much higher reliability and faster turnaround time for backup and data recovery. Where restoring data to a previous state used to take days to complete, IntelliFlash's snapshots simplify restores and reduce recovery time to just a few minutes.

"IntelliFlash enables us to restore an entire desktop for a user in less than an hour with zero data loss," said McCreery. "Copying and deploying virtual desktop images used to take us three days, but with IntelliFlash, it only takes a couple of hours. Plus, with its de-duplication capability, we're able to save a month's worth of data from the entire campus without running out of storage capacity. We couldn't do that with the old solution."

Experience Different! For more information on how Tintri IntelliFlash can turbo-charge your business success through a simple, Intelligent Infrastructure, visit tintri.com/intelliflash.

