

WASHINGTON & LEE SUCCESS STORY

Washington and Lee University Expands Storage Capacity, Boosts VDI Performance with Tegile Zebi Arrays

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

- Deployed two Tegile Zebi storage arrays with bidirectional replication for the VDI environment.
- Deployed two Tegile Zebi storage arrays for file shares with 500 users along with snapshot-based backups and replication.

Results

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

Virginia-based Washington and Lee University (W&L) is a private 4-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 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. They are preferred for their ease of deployment, management accessibility, and lower costs. The virtualization platform is VMware ESX 4.1 running on a cluster of five HP BL460 blades in multiple HP c7000 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 vCenter in the back end. Desktop images are supplied and managed by Citrix on the front end.

In an effort 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 Tegile.

The Tegile Zebi storage array was deployed for two separate use cases. It was deployed in the VDI environment to provide high IOPS. It was also deployed in a file share environment for secure, high-performance storage and backup.

As a result of deploying the Zebi storage solution, 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.

Challenges

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 backup 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 HP storage arrays were showing performance problems when confronted with the IO demands of the new Citrix VDI implementation.

“We were overrunning the controller’s memory cache on the existing HP 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.”

Tegile Zebi Storage Array Solves W&L’s Challenges
W&L installed two Tegile Zebi arrays in the file share environment with replication to improve data backup and recovery. Tegile provided a much more cost-effective solution than upgrading the HP solution to meet W&L’s storage needs.

“Upgrading even the controllers for our existing HP gear would have been equal to if not double the cost of the entire Tegile solution,” said McCreery, who also looked at comparable solutions from Dell EqualLogic and EMC/ Data Domain. “Tegile provided the best performance for the lowest overall cost.”

Once this challenge was addressed, W&L deployed two additional Zebi arrays with bidirectional replication to meet the storage capacity and performance needs of its new virtual desktop infrastructure.

“Tegile’s Zebi gives us all the features we need at a much lower price-point and makes it possible for us to meet users’ needs while staying within our budget!”



Jef McCreery,
Director of Core Systems,
Washington & Lee University



About The Zebi Array

Built with enterprise-class 2 TB SAS/SATA hard disks and SSDs, Tegile Zebi provides optimal \$/TB and \$/IOPS. By combining storage server and disk array (JBOD) arrays, Zebi enables pre-defined configurations from 10 to 90 TB of usable capacity per node, for a simplified, feature-rich storage platform that saves organizations up to 90% over competing storage offerings.

Key features include in-line block de-duplication and compression to maximize storage capacity. Additionally, thin provisioning allows applications to over-provision storage while only using space that is required. Efficient snapshots and cloning capabilities enable rapid backup, restores and virtual desk-

top provisioning. Zebi’s quad-core Xeon processors offer high IOPs and throughput, while data corruption detection and correction, RAID options and dual hot swappable power supplies provide unmatched reliability.

Use Case 1: File Share Replication with Zebi Reduces Storage Needs by 22%

Files 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 Data Domain 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 Data Domain,” said McCreery. “If you bought the basic system, adding features like snapshot, de-duplication 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.”

The Zebi array is a desirable alternative to cumbersome backup tape and expensive, complex disk-based solutions. Time-efficient snapshots enable fast, cost-effective backups and data 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.

"Zebi gives us unlimited space and time-efficient snapshots, so we can recover data rapidly, if needed," said McCreery. "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."



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. Whereas restoring data to a previous state used to take days to complete, Zebi's snapshots simplify restores and reduce recovery time to just a few minutes.

Use Case 2: Bidirectional Replication Provides 10X the Performance for VDI

As primary storage for a virtual desktop environment, Zebi 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 line-speed 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 Zebi, 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 Zebi solution also makes provisioning 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. Zebi offers multi-protocol NAS and SAN capabilities, including support for iSCSI, fiber channel, NFS and CIFS.

"Deploying the array and configuring the desktops took about three hours, if that," said McCreery. "A few clicks and I was done."

Results

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

"Zebi enables us to restore an entire desktop for a user in less than an hour with zero data loss," said McCreery.

Zebi also simplifies tasks the team performs on a monthly basis, such as copying VDI images and backing up data across the entire campus.

"Copying and deploying virtual desktop images used to take us three days, but with Zebi, it only takes a couple of hours," said McCreery. "Plus, with Zebi's 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 HP solution."

Solution Components

Product: Two Zebi SS2000 arrays for file shares and two Zebi SS2100EP arrays for Virtual Desktops, which includes all services such as inline de-duplication, compression, unlimited snapshots, cloning, rollback and replication.

About Tegile Systems, Inc.

Tegile is pioneering a new generation of affordable feature-rich storage arrays that are up to 5X faster and require 75% less capacity than standard arrays. IT departments use these Zebi arrays to reduce the cost and increase the performance of demanding virtualization, file share and database applications.



tegile.com | Toll free 1(855) 483-4453