

CASE STUDY

University of California, Irvine Does its Homework

VMstore



Founded in 1965, University of California, Irvine (UCI) is the youngest member of the prestigious Association of American Universities. The campus has produced three Nobel laureates and is known for its academic achievement, premier research, innovation and anteater mascot. Led by Chancellor Howard Gillman, UCI has more than 36,000 students and offers 222 degree programs. It's located in one of the world's safest and most economically vibrant communities and is Orange County's second-largest employer, contributing \$5 billion annually to the local economy.

The Challenges: Storage Complexity and Cost Make it Impossible to Manage at VM Levels

UCI had been relying on standard infrastructure from one of the traditional, legacy vendors. "We were having speed issues on our storage platform, because the technology was largely based on spinning disks with small amounts of high-speed caching," said John Ward, Enterprise Architect for UCI. "Since our storage infrastructure was out of date, we couldn't do just an incremental upgrade on that platform—it required a complete replacement."

The UCI IT team was also unable to obtain metrics on individual VM performance, making it impossible to diagnose system performance problems. "Even with the vendor's monitoring software that we paid good money for, our current platform was not able to tell us which VMs were causing the slowdowns," Ward said. "That became a big problem for meeting our service levels."

Another issue that Ward and his team were struggling with was storage complexity. "The legacy systems were very complicated," noted Ward. "We had to send our admins to the vendor's training classes to learn how to configure aggregates, volumes, and all of the other components. Essentially, there were far too many knobs to turn and a lot of pitfalls if we did it wrong. As a result, we had to have dedicated specialists for those systems."

The Solution: Tintri VMstore

Ward and his team conducted a very thorough evaluation of potential vendors for the infrastructure upgrade. "This was the biggest storage search we have ever done," Ward reported. "We looked closely at many storage vendors and narrowed it down to the final five—Pure's all-flash arrays, and systems from NetApp, Tegile, Nimble, and Tintri. We sent all five vendors a very long survey with ninety-two questions."

The difference that Intelligent Infrastructure delivers was apparent. "Tintri's VMstore was the clear winner after reviewing all of the responses," Ward said. "VMstore has the best built-in analytics. You can detect performance issues by getting data from the vCenter ESX hosts, and no guest access is required. It reports on every VM as well as at the VMDK level. VMstore also uses 'thin on thin' provisioning of VMDKs on NFS, which is a very worthwhile feature. And with VMstore, we can add encryption at any time. With some other solutions, you have to buy self-encrypting disks upfront; they are offered at purchase only. It is nice to be able to add encryption later if our business needs change."

The Results: Higher Availability and Easy Scalability

UCI is now using VMstore systems for all of the OIT's virtualized workloads. "VMstore is already tuned for what we need to do," Ward explained. "With VMstore, there are no 'extra knobs' to turn. I still need to manage our vSphere environment, but our junior admins can easily take care of the VMstore systems, freeing me for more strategic issues."

Challenges

- Storage complexity and associated cost
- Inadequate disk performance
- Challenge meeting service levels due to inability to manage at VM-level

Solution

- Tintri VMstore™

Results

- Simplified storage management
- Ability to troubleshoot performance issues with VM-level metrics
- Increased storage performance with better visibility
- Ability to upgrade systems without downtime
- VM-Level snapshots and auto alignment of VMDKs



Ward was also impressed with the high availability of VMstore. "With VMstore, we don't need to schedule downtime for software or firmware upgrades because it all happens non-disruptively," noted Ward. "The VMstore upgrades work so well, we can now perform upgrades in the middle of the day. With more general storage systems, expansion can be non-optimal."

"You are working with RAID groups that have to expand by specific multiples of disks that don't necessarily match well when adding whole shelves, and new disks can have new characteristics," Ward explained. "Easy misconfiguration can harm performance too. If you're going to expand with VMstore, you simply buy another system that's already optimized."

VMstore enables snapshots, cloning, and replication on a per-VM basis. "VM-level snapshots are a big advantage for us," Ward explained. "We used to have to create and manage extra volumes and datastores so we could group machines by similar recovery point objectives and performance requirements. The NetApp systems are particularly sensitive to alignment issues. And unfortunately, in our environment we have far too many unaligned Microsoft Windows Server 2003 servers that are not getting upgraded any time soon. Auto alignment of VMDKs is another VMstore feature that is very important to us."

Ward and his team have been very impressed with the metrics they can obtain from Tintri Global Center. "We came in one morning and noticed that one of our VMs had 'gone berserk' overnight," Ward recalled. "We have a 10Gb connection and this particular VM was driving 3Gb of the network bandwidth. With just three clicks, Tintri Global Center could tell us exactly which VM was generating all of the load. We were able to fix the issue quickly with that knowledge. But the impressive thing was despite all of the IOPS and bandwidth this VM was consuming, everything else on the VMstore system was still performing very well with under two milliseconds of latency."

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

"Four years after we purchased VMstore for our campus infrastructure, other storage vendors still have not caught up to what the VMstore systems could do when we first installed them. VMstore is storage for those who have better things to do than manage storage."

John Ward, Enterprise Architect, UC Irvine