

# Intelligent Data Management Infrastructure to Power the Academic Research and Discoveries Bettering the World



**JOHNS HOPKINS**  
UNIVERSITY

Established in 1876, Johns Hopkins University is the nation's first research university. The Krieger School of Arts & Sciences, one of nine academic divisions at the university, supports research opportunities in all disciplines. From arts and humanities to social and natural sciences as well as several programs and institutes, the School of Arts & Sciences has 22 academic departments. The school is devoted to the discoveries that create new knowledge and solutions to better the world.



**VMstore**

## The Challenge

### Horizontal Storage Management for Existing Technologies

Fred Thomsen, IT Director for the School of Arts & Sciences, and his team are responsible for providing services to all of the academic departments within the school. Along with Clayton Haywood, senior systems engineer, and Jason Oliver, systems engineer, they need to efficiently manage over a decade of research data. However, with technology that was implemented over 10 years ago, it was no longer sufficient for their needs today.

“In 2010, we were managing a few virtual machines (VMs) and we were required to deploy a Storage Area Network (SAN),” said Thomsen. “As our organizational scope and complexity expanded over the years, we integrated more VMs. We were spending a lot of time trying to keep our systems up and realized we needed a server-level storage solution for that environment.”

To manage around 100 VMs, with some of them hosting as much as 1-2 TB of data, the School of Arts & Sciences IT team needed a solution that offered the performance and compatibility to work with their systems. Using Microsoft Hyper-V and Veeam Software, they chose Tintri’s VMstore™ for any virtualized environment.

## The Solution

### Feature-Rich and Highly Adaptive Tintri VMstore

The VMstore Series, the industry’s first AI-driven NVMe storage system, is Tintri’s most powerful and flexible auto-adaptive platform. Purpose-built for intelligent data management, VMstore systems simply deploy in minutes, self-optimize and dynamically adapt to accommodate the most demanding workloads in the data center for each VM. VMstore systems offer per-application data management with snapshots, clones, replication, and QoS policies on a per-app, per-VM or per-database basis. Equipped with concurrent multi-hypervisor support, it enables the operation of Hyper-V and other solutions simultaneously on a single system without partitioning. It can also support up to hundreds of thousands of VMs and provides easy configuration which enables users to go from box to production workloads in under an hour in most cases.

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## Challenges

The Johns Hopkins University Krieger School of Arts & Sciences needed a storage management system that could easily integrate with their existing hardware and software technologies and offer faster performance.

## Solution

Tintri VMstore offers a range of features such as snapshots for data protection and restoration, SMB 3.0 and Hyper-V compatibility for easy maintenance, and visibility into individual VMs for precise troubleshooting.

## Results

Better performance and easy integration with existing hardware and software technologies

Consistent and faster performance, eliminating downtime and degraded service time

Easy-to-manage solution that provides simple and fast restoration features

## Essential Snapshots

Snapshots are point-in-time images of data on disk and are essential to efficiently protect VMs. Tintri VMstore is integrated with Microsoft VSS snapshots leveraging ODX. Its snapshot technology is granular, high-performing, space-efficient, flexible, and easily automated. While originally intended for recovery, snapshots can be used for patching, cloning and more.

“Generally, we would just use Veeam as our backup system for data protection and to restore a VM if someone had a lost or corrupt file,” said Haywood. “We use it if we need to retrieve data from more than a month ago, but it takes up a lot of time.”

“To restore a whole server, it could take a whole day,” added Oliver. “We have used VMstore snapshots about five times now and it has allowed us to go back in time almost instantly. It’s critically timesaving, which has been very helpful.”

“Currently, we snapshot daily and we keep them for about two to three weeks. We had some pretty bad crashes and power outages where we lost all the VMs,” shared Haywood. “But with snapshots, we were able to recover everything almost instantly.”

## SMB 3.0 Support and Hyper-V Compatibility

Tintri natively supports Microsoft’s Server Message Block (SMB) 3.0 protocol and integrates with Microsoft Hyper-V Manager and System Center Virtual Machine Manager (SCVMM). Tintri is also certified for the latest Microsoft Windows environments and Microsoft applications.

“Previously, we used iSCSI connections which had the disks inside of the box separate and with no visibility to other disks. So to execute the maintenance, we had to move all the storage from one VM to a second host, update the first host and then move the storage back to the iSCSI storage. This would take at least 24 hours,” explained Haywood.

“Tintri VMstore saves us a massive amount of time when we need to do maintenance on our hosts. It supports SMB 3.0 storage, which is a game changer for Hyper-V, and allows all those VMs to be stored in the same place,” continued Haywood. “So, when we migrate one VM from one host to another, the storage does not have to be moved or copied. Now, we can migrate a VM from one host to another in about five seconds. Managing about 100 VMs, VMstore is an unbelievable time-saver.”

“We have tried other solutions, but they did not have the plugin to work with Veeam for backup, so we could not move

to SMB 3.0," shared Haywood. "The only solution we ever found that was able to execute what we needed was with Tintri. VMstore has all the plugins and it was the first time something has ever worked with Veeam."

## Precise Troubleshooting with Visibility into Individual VMs

With Tintri Analytics, VMstore users have visibility into the performance of each individual VM and can quickly pinpoint bottlenecks in a couple of clicks. For those managing multiple VMstore systems, Tintri Global Center™ supports up to hundreds of thousands of VMs, databases or containers – all from a single console.

"We have run into some scary times, some down times and had to deal with a bunch of service support calls," said Haywood. "Before integrating VMstore, when we found a system running slow, we would have to go through each host to try to find the problem. It was impossible to find which VM was causing it – it was a nightmare."

Oliver explained, "It was a guess as to what the problem could be. Now, with VMstore, there is a lot more information we can gather for troubleshooting. If we notice some latency, it is nice to be able to go in and see more detail on why things could be running slow."

"I like how we can break down the networking, disk usage and reads and writes. That is very helpful to see the overall picture of performance," Oliver elaborated. "We have noticed a decrease in support tickets as far as people complaining about the slowness of their server, which is great."

## The Results

### Unquestionable and Reliable Performance

"When testing Tintri VMstore before we bought it, we quickly learned that we loved it, especially the features it provided," Oliver shared. "And, the speed is great."

"It was easy to implement with our existing hardware and software setup. It helps us save time and provides simple manageability with maintenance and troubleshooting," added Haywood. "With our previous solution, it felt like all we were doing was managing the performance on our systems. Tintri's performance is ridiculous. Now, we don't have to think about performance anymore – we don't even question it."

"The previous storage box was so degraded that it was running down and people literally could not open files. We would receive calls asking if the servers were running slow and we would need to figure out which server was causing the problem. We don't have to do that anymore," shared Thomsen. "For the Krieger School of Arts & Sciences, our systems are now updated more frequently, and we have more consistent uptime with no degraded service time at all."

Experience Carefree Virtual Data Management. Experience Tintri. For more information on how Tintri VMstore can turbo-charge your business success, visit [tintri.com/vmstore](https://tintri.com/vmstore).



# Tintri