



Dominion Diagnostics Finds the Cure for Poor Storage Performance



Cost-Effective Tintri Systems Outperform Legacy Storage in a Smaller Footprint

www.dominiondiagnostics.com

Industry

- Healthcare

Geography

- North Kingstown, RI

Virtualization environment

- VMware vSphere

VM profile

- DB2, MS SQL, MySQL, and Oracle databases

Key challenges

- Running out of storage capacity
- Poor performance on existing storage systems

Tintri solution

- Tintri VMstore™ T650, T850

Primary use case

- Tintri is being used for the company's Laboratory Information System and numerous database applications

Business benefits

- Obtained higher performance storage at a much lower cost than upgrading existing environment
- Achieved 300% boost in application performance
- Reduced data center storage footprint by 2x
- Ensured business continuity with highly resilient systems

Company Background

Dominion Diagnostics is a leading national laboratory that offers drug detection and prescription drug monitoring, clinical blood testing services, and a full suite of provider support solutions. Since 1997, Dominion Diagnostics has provided services to clients representing a diversity of medical specialties across the United States, including addiction medicine, behavioral health, pain medicine, primary care, psychiatry, and hospital systems. Dominion Diagnostics is supported by a world-class team that shares a commitment to clinical excellence, compliance, and integrity. For more information, please visit www.dominiondiagnostics.com.

IT Challenges

Dominion Diagnostics had been using a traditional storage array for its Laboratory Information System and other critical databases. By the summer of 2014, it became clear that the amount of storage space on the legacy system would be exhausted before the end of the year. "We had three disk shelves on the array," reported Jamie Nolen, senior network administrator at Dominion Diagnostics. "But performance on that platform was sub-par. Then, early one Saturday morning, the lab came to a complete halt. The system wasn't completely full, but one of the aggregates got close enough that the performance completely died on it."

Nolen started to look for ways to quickly and cost-effectively fix the lab's capacity and performance issues. "Because of vMotion, adding a new storage device is faster, less risky, and has a smaller impact on production than adding a disk shelf to our existing SAN. Tintri was also able to move much more quickly than our existing storage vendor."

Trying Other Hybrid Arrays

Dominion Diagnostics put out an RFP for new storage systems, and received proposals from several hybrid and all-flash vendors. "Another vendor responded with a proposal that was almost too good to be true, so we decided to test their system in our data center," Nolen shared. "From the published specs, it appeared to have more storage than the Tintri. But it actually needed more storage to be useful."

“It’s nice to know that you can actually rip controllers out and replace hardware elements when the systems are live, and quickly slip them back in without any downtime. It’s surprising how resilient the Tintri systems are.”

Jamie Nolen, Senior Network Administrator, Dominion Diagnostics

Quality of Service was a key decision criterion in Nolen’s search for storage. “Tintri lets me run a test database off a snapshot of production, with the IOPS capped to avoid resource-contention. Other vendors don’t have this feature,” he explained. “To protect your important VMs from resource-intensive test VMs, you have to split the storage pools in to Test and Prod. You can’t run a test database off of a production snapshot because they live in different pools. You have to create a fully inflated copy of that same database, consuming all of that extra space in a different storage pool. Other systems need more storage than Tintri to accomplish the same goals. Additionally, they consume more rack space and require a lot more configuration- disk pools, RAID levels, block sizes, compression algorithms... It took more than two days to get VMs running on this other hybrid system, compared to only 4 hours with Tintri.”

Other issues haunted the competition. “vMotions were slow, two drives were mysteriously off-line, and the VAAI plugin caused instability with one of our hosts. I didn’t trust it with production workloads.”

Testing Tintri

After testing the other systems, Nolen decided to run a proof-of-concept on Tintri. “Tintri offered to get us a demo unit within three days,” he said. “The system was really easy to set up. The Tintri engineer showed up at 10 AM, and our VMs were running by lunch time.”

Nolen tested the Tintri system for several days. “We conducted a lot of ‘torture testing’, trying to make the system crash. We ripped out drives while it was running, we unplugged network cables, we unplugged power cables, and we took out power supplies. We tried controller failovers and everything else we could think of, short of taking out the whole controller. Even while the Tintri demo system was under heavy load, it never slowed down.”

“The Tintri software is more polished than others I’ve seen. If I replace a failed drive, the rebuild happens automatically and immediately. Other storage systems require disk reassignment or other configuration.”

Purchasing Tintri

After the very successful demo, Dominion Diagnostic purchased its first Tintri system. “We are now running databases of every kind on the Tintri system,” Nolen said. “We are running all of our DB2, Oracle, MS SQL, and MySQL databases on the Tintri. Our DB2 database is the largest one at 3 TB. All of our database VMs require high performance and Tintri chugs away with more IOPS than we need.”

Although they originally tested a Tintri T620 system, Dominion Diagnostics made the decision to purchase the larger T650 to obtain more capacity and performance. “We asked our database team to run some of their actual workloads on the Tintri demo unit to see how much time it took to run the jobs,” Nolen shared. “They were really impressed with the speed of the Tintri VMstore. The team reported performance increases across the board, with a 300% improvement in reporting time for our largest DB2 systems.”

Reducing Data Center Footprint

“Our 17,000 IOPS legacy system occupied nineteen rack units,” Nolen reported. “We now have 60,000 IOPS of Tintri, and it only fills 4U. Granted, the other system is five years old and their newer systems are a bit more compact. But still, competing hybrid systems would have taken more space as well. We would have needed 9U of them to provide the same amount of usable capacity and performance as the 4U Tintri systems. Since there’s no add-on shelves, the cabling is simpler and easier to troubleshoot. Tintri uses less power than competing solutions, which saves the company money.”

Improving Business Continuity

Dominion Diagnostics purchased a second Tintri system in 2015. In addition to obtaining more capacity and performance, the second Tintri provides business continuity in the event of a hardware failure on either its two storage devices. "We did a test fail over on both the Tintri and a competing hybrid array," Nolen said. "When the competition does a failover, you lose connectivity. None of your VMs can read or write any data for up to 15 seconds in a planned, controlled failover. If you do an emergency failover, it's a bit faster, but there are still three to five seconds where the VMs can't read or write anything. That's not the case with Tintri. There's no loss of connectivity when you do a failover on the Tintri. That's actually quite important to us because we have some legacy applications that are very sensitive to I/O. We can't have a virtual drive unresponsive for several seconds without crashing everything. Storage systems that use an active/active controller configuration have reduced performance if one controller fails, but the Tintri's active/passive configuration guarantees the same high level of performance all the time. Tintri's reliability and non-disruptive failovers are a huge bonus for us in terms of laboratory uptime."

Faster Troubleshooting and Better Support

"We really haven't needed to troubleshoot much on the Tintri systems, since you just plug them in and they work," Nolen reported. "We have been very impressed with the level of Tintri Support. We have a 4-hour support contract with our existing storage vendor but that just means they will call you back within 4 hours. With the same level of Tintri support, the part we needed was actually on-site within four hours."

Winning an Award for Choosing Tintri

Nolen recently won Dominion Diagnostic's prestigious "Circle of Excellence Award", partly due to his choice to move to Tintri storage. "As a senior network administrator, Jamie focuses on technologies that the average Dominion employee does not recognize by name but relies on constantly," noted Scott Saunders, IT manager at Dominion Diagnostics. "Among his accomplishments for 2014, undoubtedly his largest was the Tintri storage upgrade project. Jamie's research led him to a relatively new technology that was perfectly applicable to the architecture at Dominion. In addition to conducting the research to choose the new solution, he led the negotiations with the vendor and also the implementation. Jamie's decision to move to Tintri was a brilliant move for our company, and it also enabled us to present an award to a very deserving employee."

About Tintri

Tintri builds smart storage that sees, learns, and adapts, enabling IT organizations to focus on virtualized applications and business services instead of managing storage infrastructure. Tintri VM-aware storage eliminates planning and complex troubleshooting by providing VM-level visibility, control, insight and agility. Tintri powers hundreds of thousands of virtual machines running business critical databases, enterprise apps, desktops and mobile apps, and private cloud deployments. Tintri helps global enterprises such as AMD, F5 Networks, GE, NEC, NTT, MillerCoors and Time Warner maximize their virtualization and cloud investments. For more information, visit www.tintri.com and follow us on Twitter: [@Tintri](https://twitter.com/Tintri).



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