

Virtual Radiologic Speeds Delivery of Life-Saving Reports

Nimble Storage, Cisco, and VMware enable leading teleradiology provider to improve performance, reduce SQL reporting time, and lower costs

A World Leader in Teleradiology

Virtual Radiologic (vRad) works in partnership with local radiologists and hospitals to optimize radiology's pivotal role in patient care. The company specializes in a service called 'teleradiology'—the transmission of radiological patient images, such as x-rays, CTs, and MRIs, from one location to another for the purpose of sharing studies and diagnoses with other radiologists and physicians. vRad improves patient care by enabling radiologists to provide services without actually having to be at the same location as the patient, and by providing remote access to trained specialists on a 24/7 basis.

With the nation's increased focus on healthcare reform, the need for remote services provided by vRad—expanding access, improving quality, and reducing costs—will continue to grow in importance. With technology becoming more vital than ever to deliver these types of services, vRad is very well positioned to serve a wide variety of radiologist and hospital needs. Based in Eden Prairie, Minnesota, vRad's 450+ radiologists now serve more than 2,000 medical facilities, reading over seven million radiology studies annually.

Aging Storage Platform Impacts Performance

vRad's teleradiology technology is offered in a software as a service (SaaS) model, hosted and managed via the Internet. Patrick Williamson is the IT manager at vRad. He is responsible for supporting all systems, networks, user desktops, and the company helpdesk, as well as all IT infrastructure for the company's engineering and software development teams.

vRad had been relying on three aging Compellent systems with 40 series controllers, consuming three full racks of space. "We had performance issues with SQL on our production array with 150x 15K drives," explained Jacob Wilde, vRad's lead systems engineer. "Compellent's only solution to the performance issues was to add SSDs, which was prohibitively pricey and wouldn't allow us to scale well. We realized it was time to look for a new storage infrastructure that could provide easier scalability and better performance."

"We have an 'inverted business model' at vRad, where most of our teleradiology processing jobs come in overnight," noted Patrick Williamson, IT group manager at vRad. "As a result, we have to perform all of our database tuning and configuration changes between 9:00 am and 5:00 pm. But whenever we started ramping up maintenance, it created a lot of performance issues for our SQL environment. It was starting to impact the amount of business that we could conduct during the day. As a result, we frequently had to throttle back maintenance so it didn't interfere with the quality and timeliness of our core teleradiology business services."

Customer Case Study Virtual Radiologic



Customer Challenges

- Current storage platform causing latencies in the SQL environment
- Daily SQL reports took more than 2 hours to run, impacting performance on production servers
- Storage costs were too high to provide a separate SAN for SQL production databases

Solution: Nimble Storage SmartStack™ for Business-Critical Applications

- Nimble Storage CS460 GX2 hybrid storage arrays
- Cisco UCS B-series blade servers
- VMware vSphere 5.1 and vCenter
- MS Exchange 2010, MS SQL 2005-2012, Windows 2000-2012, and SharePoint 2013

Business Benefits

- Reduced write latency by 5x and read latency by 25x on average
- Improved storage utilization with 1.5x+ compression
- Reduced time to run SQL maintenance reports by more than half
- Increased number of IOPS for daily stats rollup by 50 percent
- Enabled the purchase of a dedicated SAN exclusively for production SQL databases
- Shortened the time it takes to provide radiology results to clients, ultimately improving healthcare delivery

Storage Designed for Scalability and Performance

Williamson and his team evaluated storage offerings from several vendors, including Nimble Storage. “We chose Nimble because of its unique CASL architecture,” Williamson explained. “Scalability has always been a key concern for us. Other storage vendors try to provide scalability by just bolting expensive flash disks onto their existing arrays. Nimble has taken an entirely different approach. They designed their CASL architecture from the ground up to ensure easy scalability. The foundational architecture behind Nimble Storage was a big driving factor in our decision to switch platforms.”

After hearing how easy it was to upgrade the arrays, to add additional storage, and just how easy Nimble Storage is from a management perspective, Williamson and his team decided to run a proof of concept (POC). “The Nimble arrays performed so well in our POC, we didn’t even bother testing any of the other storage options,” Williamson said. “After comparing the stats we were getting with Nimble to our Compellent system, the decision to go with Nimble was a very easy one to make.”

The final factor in Williamson’s decision was the relatively low cost of the Nimble Storage arrays. “Nimble is far less expensive platform than either our current, archaic SAN, or the other storage vendors’ offerings.”

Sold on Nimble

vRad started running its development environment on the Nimble Storage SmartStack for Business Critical Applications with Cisco and VMware platform several months ago. Williamson and his team also seen significant improvements with the new storage platform. “Our SQL server creates a daily statistics roll-up report for us, showing us all of the performance metrics for our SQL databases,” Wilde explained. “It used to take over two hours to run the report. We had to run the analytics at 5:00 am so they wouldn’t impact performance on our production servers. But with Nimble, the reporting time dropped from 2 hours to well under an hour. We can now run the reports during the regular workday and finally get a good night’s sleep!”

“Nimble is a great storage solution,” Williamson reported. “With Nimble, we reduced write latency by 5x and read latency by 25x on average, and improved storage utilization with 1.5x+ compression. The Nimble arrays are working so well in our development environment, we are now migrating our production environment over to Nimble as well.”

A Winning Combination: Nimble, Cisco UCS, and VMware

In addition to the Nimble Storage arrays, vRad is also using Cisco Unified Computing System (UCS) systems for both of its datacenters. UCS servers unify computing, networking, management, virtualization, and storage access into a single integrated architecture. This unique architecture enables end-to-end server visibility, management, and control in both bare metal and virtual environments. vRad is also using VMware vSphere 5.1. Their environment is now over 60 percent virtualized.

Obtaining a Dedicated SAN for Production SQL Databases

Due to the low cost of the Nimble arrays, vRad has finally been able to fill a request from the company’s engineering team “Our engineering and development teams wanted to split off all of our SQL databases onto a completely separate SAN for production,” explained Williamson. “But we weren’t able to do that on the Compellent because it was far too expensive. Due to the economical price point of the Nimble arrays, we are now able to provide a SAN exclusively for our production SQL databases.”

“With the increased performance and throughput of the Nimble Storage SmartStack, Cisco UCS, and VMware solution, we can now provide radiology results to doctors and other healthcare providers much faster. And with medical lab results, saving time means saving lives. That is by far the most important metric of our success as a teleradiology provider!”

Patrick Williamson
IT Group Manager
Virtual Radiologic

Saving Time = Saving Lives

The performance of the Nimble arrays has far exceeded vRad's expectations, according to Williamson. "The Nimble arrays have increased the number of IOPS on our SQL databases by well over 50 percent. With the increased performance and throughput of the Nimble Storage SmartStack, Cisco UCS, and VMware solution, we can now provide radiology results to doctors and other healthcare providers much faster. And with medical lab results, saving time means saving lives. That is by far the most important metric of our success as a teleradiology provider."

About Nimble Storage

Nimble Storage believes enterprises should not have to compromise on performance, capacity, ease of use, or price. Nimble has developed the first hybrid storage architecture engineered from the ground up to seamlessly integrate flash and high-capacity drives.

Our customers enjoy as much as 10x faster application performance, enhanced backup and disaster recovery, and stress-free operations—all while lowering their TCO. Nimble Storage solutions are available through a global network of world-class channel partners. For more information, visit www.nimblestorage.com and follow us on Twitter: @nimblestorage.



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