



Lindquist & Vennum Supercharges Their Virtual Desktop Infrastructure (VDI)

Quantum Leaps in Performance and Storage Efficiency with Nimble Storage and Cisco Power VMware View™ Expansion

Lindquist & Vennum's 200 attorneys provide a full array of corporate finance, transactional and litigation services for clients from offices in Minnesota, Colorado, and South Dakota. Serving corporate, governmental and individual clients around the world for nearly 40 years, the firm's finance attorneys help emerging businesses position themselves for success and help established companies maintain a competitive edge.

Lindquist & Vennum found itself at an IT infrastructure crossroads. The law firm with several large and satellite offices recognized the value of desktop virtualization with VMware View, but had to contend with the impact to their existing IT infrastructure, including storage. Facing both capacity and performance issues with its Dell storage and HP servers, the firm realized that it had few options for supporting new offices, scores of new virtual desktop and plans for virtualizing new corporate applications.

Fast-forward a few months, and Lindquist had consolidated its storage on a single Nimble CS240 array and consolidated its servers on a Cisco Unified Computing System (UCS). With the move, the firm reduced its VDI storage footprint by 260%—from 11.4 TB to 4.4 TB. And they improved performance so vastly that the difference to IT and end-users was “like night and day.”

The Challenge

Lindquist & Vennum's IT architecture, built around individual physical servers, was complex and costly, and its storage systems were experiencing both performance and capacity limitations, forcing a costly decision to invest in yet another storage array.

Their initial Dell EqualLogic PS6500 array was overwhelmed, and so a second array was brought in just to support virtual desktop infrastructure (VDI) based on VMware View. And the firm had new applications and hordes of new VDI users to support. “To add new capacity with Dell, we would have needed to add a third array, which would have been overkill, given that capacity was our prime concern at the time,” said Derek Schostag, Systems Engineer for Lindquist & Vennum.

The Solution

Citing the high capital and operating costs of new physical servers, Lindquist's Information Systems Department determined that the firm's “pizza box” footprint would have to give way to a blade architecture to support growing workloads and new applications as the firm grew. The firm moved to Cisco UCS B-Series Blade Servers and two Nexus 5000 Series Switches. Cisco UCS is part of the Cisco Unified Data Center, providing an optimized compute infrastructure for VMware View, and is the cornerstone of the Cisco Virtualization Experience Infrastructure (VXI).

Schostag then commenced with consolidating all applications in his virtualized environment onto blades. “It was just a lot easier. We could install a blade, including VMware, and it would be up and running in a cluster in less than a hour.”

Lindquist replaced its two Dell arrays with a single CS240 array from Nimble Storage. Immediately, the firm reduced storage complexity, space, and power and cooling require-

Profile: Lindquist & Vennum

Industry

Legal firm offering corporate finance, transactional, and litigation services

Challenges

- VDI and I/O-intensive workloads sapped storage and app performance
- Had to potentially add another storage system to overcome poor efficiency and capacity growth
- Unable to handle wide performance swings

Objectives

- Consolidate storage on a reliable, scalable platform
- Defer future purchases by increasing efficiency of existing storage
- Improve storage performance and capacity to support VMware View VDI rollouts

Solution

- Deploy a single Nimble Storage CS240 with Cisco UCS B-Series Blade servers and Cisco Nexus 5000 Series switches for VMware View

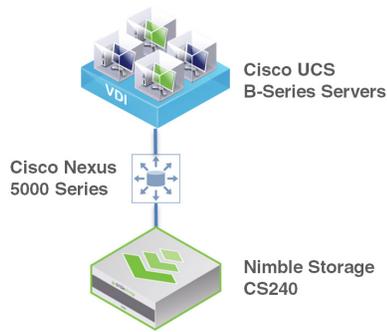
Benefits

- Delivered consistent end-user experience with VMware View
- Eliminated performance impact of “boot storms” and company-wide antivirus scans and upgrades
- Avoided a \$50,000 purchase that would have been needed just for VDI storage
- Reduced storage footprint from 11.4 TB to 4.4 TB — a 260% improvement

“Together Cisco, Nimble and VMware have made VDI easy to manage and very cost effective. We can now scale our VMware View environment at a moment's notice — adding a block of new users in a lot less time that it took us with the previous solution. This has given us the ability to better serve our ‘customers’ inside the organization and embark on new projects.”

Suzette Allaire, CIO
Lindquist & Vennum

350 VMware View virtual desktops consolidated to Cisco UCS and a Nimble Storage CS240



ments while gaining substantial new capacity. In doing so, the firm avoided spending \$50,000 toward the purchase of new storage for VDI alone, shrank the rack space required by 300%, all while creating an architecture for seamless growth. At the same time, the CS240 promised to improve VDI responsiveness, benefitting from a flash-plus-HDD architecture optimized for high performance.

Within the first week, Schostag switched over the VMware View VDI workload to Nimble Storage and Cisco UCS:

- Moved 350 virtual desktops from its two EqualLogic arrays to the Nimble CS240 array and reduced the capacity usage from 11.4 TB to 4.4 TB – a 260% reduction.
- Reduced time to provision a block of virtual desktops for power users from a day to less than two hours.
- Gained headroom to consolidate additional workloads, such as SQL Server, on the Nimble array.
- Eliminated the impact of boot storms, antivirus scans and Windows updates on end-users.

Unprecedented High Performance

In the move to Cisco UCS and Nimble Storage, the firm has also made substantial improvements in performance. With 350 VMware View users and a range of other applications, the performance requirements never pushed the CS240, even during peak loads. With Nimble's integrated performance monitor, Schostag says he has can closely track performance and can trace any latencies to network connections or unruly applications that are easy to detect and repair.

The high performance has also alleviated the firm's previous issues with latencies during boot storms and allowed Lindquist's team to schedule I/O-intensive operations such as antivirus scans or Windows updates during normal working hours and without complaints from end-users. As a further assurance, Nimble's "Proactive Wellness" program, alerts Lindquist of any potential network or storage issues and automatically remediates the condition.

The use of 10GbE provided by Cisco UCS and Nexus switches gave the team plenty of bandwidth for future growth and further consolidation. And, as for Schostag's experience with the Cisco gear, he says, "It's solid. And, when we learned about the Cisco UCS, we knew it would be solid too, and it has been."

Higher Efficiency and Easier Management

Lindquist's IS team gained significant capacity headroom thanks to the efficient compression. The data storage foot print was reduced by 260% – without any impact to performance or any added

latency. Schostag says, "I've shown my IT coworkers the stats on capacity usage, and they can't believe it. The additional capacity needed for a block of new VDI users is insignificant. With EqualLogic we got zero compression, but, with Nimble, compression is off the charts and the additional capacity usage is a minor blip."

Best of all, provisioning groups of VMware View users today is a routine process requiring less than two hours and can be accomplished during normal work hours, and with no perceptible effect on storage performance. "In the past adding even ten new VDI users would drive IOPS significantly higher. It would just hammer our storage. But with Nimble, there was no impact. I was shocked." Management of the Nimble Storage arrays and Cisco UCS infrastructure was positive. Schostag added "Nimble is as easy, and in some ways easier, to manage, than our Equallogics. We don't have a full-time storage engineer so the ability to quickly navigate the storage system is important. There are so many other things we have to work on, that deciphering a vendor's UI is not high on the list. That's not an issue with Nimble."

Since the VDI move, Schostag has moved the 22 virtual servers, including four I/O-intensive SQL servers, to the Nimble array and Cisco UCS. He serves VMware View and applications from separate VMware clusters. With 10TB of unused capacity, the firm has ample headroom for growth.

Looking Ahead

In the coming months, Schostag plans to transfer his remaining data to the Nimble CS240 and is considering investing in an additional system to house the firm's Microsoft Exchange data. Although performance needs are at an all-time high, he is confident that he can safely tap remaining capacity without performance degradation. With Nimble's recent announcement of individually scalable capacity and performance, he says "I may lean towards a minor upgrade by adding larger SSDs to see an even higher cache hit rate. It won't be critical, but it will be nice to have that growth option and the additional peace of mind."

"The performance differences are like night and day. I showed my team some of the stats, and they couldn't believe them."

Derek Schostag, Systems Engineer
Lindquist & Vennum



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