Customer Story

Regional Library System Simplifies Their Data Center with a Windows Server 2016 Solution

King County (WA) Library System upgrades to a Storage Spaces Direct and DataON Solution

The Challenge

KCLS' goals in updating their IT infrastructure included:

- Consolidate Hyper-V and storage servers into a single hyper-converged system.
- Continue to take advantage of Microsoft's academic pricing for Hyper-V.
- Continue to use their current Cisco Nexus switch.
- Deploy a system management tool so they can see where bottlenecks are occurring.

The Solution

- Windows Server 2016 Storage Spaces Direct
- DataON S2D-3110 hyper-converged cluster solution
- DataON MUST visibility and management tool

The Result

- Simplified Windows SDS management compared to traditional SANs
- Increased performance by 30% and now delivering 2.1M IOPS
- Achieved steady and predictable performance
- Consolidated three Hyper-V clusters into one
- Reduced their data center by 15-20 servers

Company Overview

King County Library System (KCLS) is one of the top library systems in the United States, serving over 1.4M residents in the region surrounding Seattle in Washington State. Established in 1942, the library system has 49 locations throughout the region, neighboring Microsoft's headquarters. The library system has 1400 employees.

IT Challenge: Replace an end-of-life EqualLogic iSCSI SAN with a simpler software-defined solution

KCLS had an EqualLogic iSCSI SAN that was reaching its end of life. They wanted to replace it with a simpler hyper-converged solution, to bring everything into a single system.

KCLS had been a Microsoft customer for many years and was a current Windows Server 2012 R2 customer. Performance was "okay" with their Windows Server 2012 R2 and EqualLogic SAN solution but they were hesitant to move their main catalog database to it because of performance bottlenecks and the age of the EqualLogic SAN.

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The Solution: DataON S2D-3110 with Microsoft Window Server 2016 and Storage Spaces Direct

KCLS had heard about the upcoming Windows Server 2016 and were very interested in its Storage Spaces Direct feature. There was some internal debate on whether to continue with a traditional SAN infrastructure or move to Storage Spaces Direct. Since KCLS was very close to Microsoft's headquarters, they were able to meet with program managers for Storage Spaces Direct, who convinced them it was the right solution for them.

With a software solution selected, KCLS needed to find the right hardware partner. They went to Microsoft's Ignite 2016 conference with that mission in mind.

KCLS was aware of DataON's solid reputation in the industry and at Ignite, they saw that DataON was a main partner with Microsoft for Storage Spaces Direct.

"All of the big players… they only have a couple of people that have any experience with Storage Spaces Direct. After meeting with DataON, we could easily tell they were experienced at deploying Storage Spaces Direct and we should be partnering with them."
Eric Crew, Network and Systems Engineer, KCLS

In addition to a hyper-converged system, KCLS wanted a management tool so they could monitor performance in their data center. "With older systems, it was hard to see where the bottlenecks were", said Eric Crew, Network and Systems Engineer, KCLS. DataON was able to meet that requirement with their exclusive MUST management and visibility software tool for Windows Server 2016.

DataON S2D-3110

- **High Performance** – Hybrid SSDs achieving over 2.1M IOPS in a 5-node cluster
- **Supports more VMs** – Supports 40+ Hyper-V VMs per node, with up to 16 nodes per cluster
- **Highly Scalable** – Delivers compute, networking and storage resources with near-linear scalability
- **Easy to Deploy** – Simple out-of-the-box setup and installation
- **Easy to Manage** – DataON's exclusive MUST software is pre-installed for infrastructure visibility and management

King County Library System

"A key selling point for DataON was their MUST management tool. With older systems, it was hard to see where the bottlenecks were. With MUST, I can easily find those bottlenecks from a single pane of glass."

Eric Crew
Network and Systems Engineer
KCLS

KCLS chose a DataON S2D-3110 hyper-converged cluster solution. Optimized for performance and IOPS, this 5-node all-flash Intel NVMe SSD solution can provide maximum performance while only consuming 1 rack unit (1U) per server. DataON's exclusive MUST (Management Utility Software Tool) was included for management and visibility in the Windows Server 2016 environment.

There were some initial challenges with deploying the Storage Spaces Direct solution, which KCLS attributed to a "blessing and curse of being an early adopter and figuring out how all the pieces fit together."

One of the questions KCLS needed to resolve was whether to use RDMA over Converged Ethernet (RoCE) or iWARP RDMA, as both RDMA networking protocols are supported by Windows Server 2016. KCLS chose to use Chelsio iWARP RDMA configuration because it does not require a lossless Ethernet network, and they were able to connect to their Cisco Nexus switch with no issues.

Result

After setup and migration, KCLS saw a significant performance improvement in their new virtualized environment.

Results included:

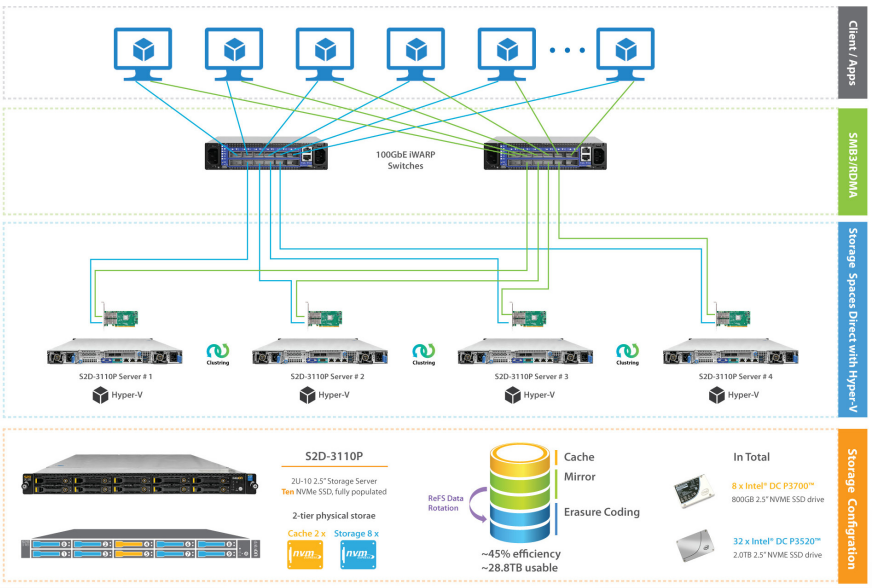
- 30% increase in performance and now delivering 2.1M IOPS
- Steady and predictable performance

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	2,147,762	2,147,670	92	8,794	8,793	1		
hyperv17-1	383,953	383,937	16	1,570	1,570		0.206	0.647
hyperv17-2	369,471	369,468	2	1,513	1,513		0.233	0.916
hyperv17-3	412,819	412,789	30	1,691	1,691		0.240	0.715
hyperv17-4	536,600	536,582	18	2,198	2,198		0.486	1.296
hyperv17-5	444,918	444,894	24	1,822	1,822		0.410	0.825

In addition, KCLS was able to consolidate three Hyper-V clusters into one, reduce hardware by 10-15 servers, and continue to enjoy the academic pricing from Microsoft on their software.

"Our new DataON and Storage Spaces Direct solution is a lot faster and more responsive," said Eric Crew from KCLS. "And with MUST, I can easily find those bottlenecks from a single pane of glass."

KCLS is now test piloting their main catalog system onto a Storage Spaces Direct system, and has added 1 S2D node to their existing 5-node cluster.



About DataON

DataON is the industry-leading provider of hyper-converged cluster appliances (HCCA) and storage systems optimized for Microsoft Windows Server environments. Our solutions are built with the single purpose of rapidly and seamlessly deploying Microsoft applications, virtualization, data protection, and hybrid cloud services. Our company is exclusively focused on customers who have made the "Microsoft choice" and we provide the ultimate platform for the Microsoft software-defined data center (SDDC). DataON is a division of Area Electronics Systems, Inc.

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