Customer Story

Global Managed Service Provider Chooses DataON to Provide the Most Cost-Effective Backup Storage for its Customers

DataON Delivers Windows Server 2016 HCI Solution to Power Quest's Veeam Cloud Connect Backup Service

The Challenge

Quest's goals in their search for a storage partner:

- Cost-effective storage
- High availability
- High IOPS and throughput
- Support for Resilient File System (ReFS) file system
- Support for Veeam Cloud Connect

The Solution

- Windows Server 2016 Storage Spaces Direct
- DataON S2D-5208i Converged Cluster Appliances
  - Intel® Xeon® Scalable Processors with Intel C620 Series chipsets
  - Intel NVMe SSDs
  - HGST SAS HDDs
  - DataON MUST visibility and management tool
- DataON DNS-2760 JBOD
  - HGST Ultrastar 10TB SAS HDDs

The Result

- Customized solutions for Quest customers
- Enables Quest to offer a better price point to their customers
- Improved backup times
- Increased usable capacity from 60% to 80%
- Realized 50% to 80% cost-per-TB savings

Company Overview

Quest is a worldwide leader in technology management that operates a global network of Service Delivery Centers that provide hybrid cloud/managed services/on-site configuration focused on security, disaster recovery, business continuity, data backup and replication. Its twenty-five Service Delivery Centers are located in six nations on three continents.

IT Challenge: Find a hardware partner to power a Veeam Cloud Connect solution to provide the most cost-effective backup storage for Quest customers

Three years ago, Quest became one of the first managed service providers (MSPs) to offer a Veeam Cloud Connect backup service and today they are a Platinum-level Veeam Cloud and Service Provider.

Quest needed to find a hardware partner to power their Veeam Cloud Connect service for disaster recovery. It had previously deployed traditional SANs from the leading storage vendors but felt their solutions were too expensive for archival storage use. It had also tried white box solutions but couldn't provide the throughput and high-availability needed.

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The Solution: DataON S2D-5208i HCI with Microsoft Window Server 2016 Storage Spaces Direct

Quest had previously deployed DataON storage solutions, which led them to explore a DataON solution with Windows Server 2016. Windows Server 2016 with Storage Spaces Direct provides good IOPS performance and would allow Quest to put their backup infrastructure on a Storage Spaces Direct converged infrastructure.

Quest found Storage Spaces Direct and DataON to be a very flexible solution. Not only could it serve as a disaster recovery and backup repository but it could also serve as compute nodes for their main infrastructure or whatever backup infrastructure they use.

Flexibility and customization is at the core of Quest's values. It is a business that wants to help their customers, and works with its customers to identify their IT needs and build a solution that meets those needs.

"DataON worked closely with Quest to find the right solution – by talking with us, sharing information, building a solution, and doing the testing and validation," said Lewis Walker, Manager of Systems infrastructure Engineering, Quest.

DataON S2D-5208i

- **High Performance** – Utilizes the latest Intel Scalable Processors with Intel C620 chipsets and all-flash NVMe SSDs to achieve over 1.2M IOPS in a 4-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, monitoring and management

Quest TECHNOLOGY MANAGEMENT

"The DataON solution was about half the price of what the other vendors offered. This meant that we could offer a better price point to our customers. No other Veeam Cloud Connect Partner offers this service at our price point."

Lewis Walker,
Manager of Systems infrastructure Engineering, Quest

DataON proposed their S2D-5208i converged cluster appliance with the new Intel® Xeon® Scalable Processors with Intel C620 Series chipsets for optimized performance, density and capacity. The S2D-5208i is a hybrid solution that can achieve over 1.2M IOPS in a 4-node cluster. It combines high performance NVMe SSDs with SMB3 networking to maximize performance and capacity.

Paired with the S2D-5208i were DataON DNS-2760 JBODs, which include 3.5" HGST Ultrastar He10 SAS HDDs. These drives are housed in a 4U, 60-bay enclosure. Pre-configured with the S2D-5208i is DataON's exclusive MUST (Management Utility Software Tool) visibility and management software which provides SAN-like storage monitoring features for customers deploying Windows Server software-defined solutions.

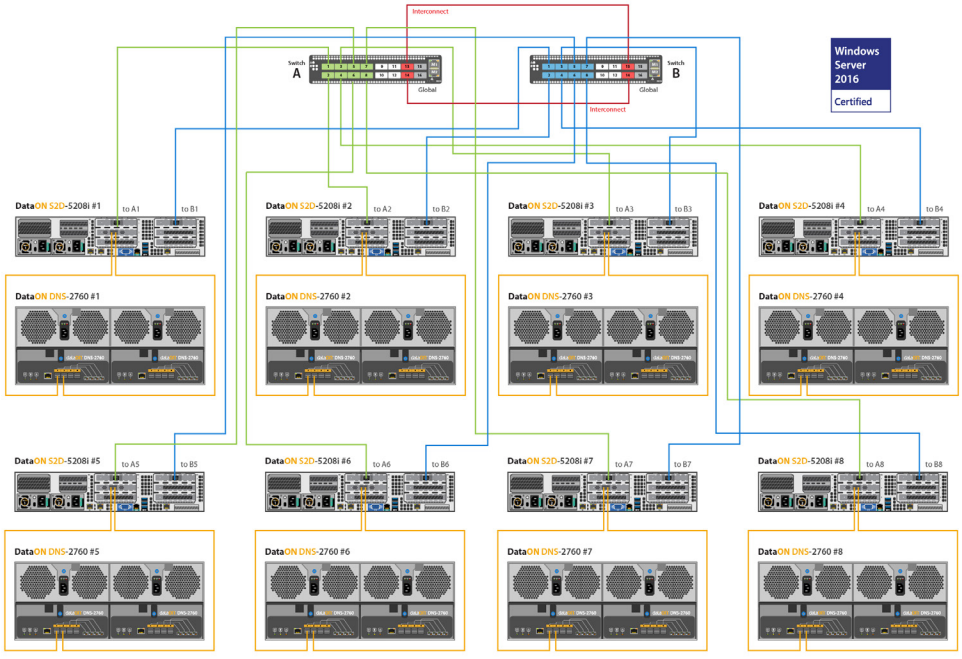
Veeam® Cloud Connect Backup for Service Providers

Veeam Cloud Connect provides cloud-based disaster recovery and offsite backup. It is designed for service providers, making it easy for them to offer hosted backup repositories or complete backup services. Businesses and organizations can now have physical and virtual backups offsite and replicate VMs without the cost and complexity of building and maintaining an offsite infrastructure.

Veeam Cloud Connect is built to integrate deeply with Windows Server 2016 data center technologies, such as Hyper-V, Storage Spaces Direct, Nano Server, advanced Resilient File System (ReFS) and Resilient Change Tracking. It provides full, advanced support for Windows Server 2016, as opposed to the simple ability to backup an instance of Windows Server 2016.

Veeam also provides advanced ReFS integration, which allows it to support ReFS volumes on internal, direct-attached storage (DAS), Storage Spaces and Storage Spaces Direct. This provides faster full backup creation and transformation performance, as well as reduces storage requirements and improves reliability. Additionally, it improves availability of backup storage by significantly reducing its load, which results in improved backup and restore performance.

Deployment Configuration



VM Fleet Benchmarks

4x S2D-5208i Node Cluster

	Technical Specifications (Per Node)	Windows Server Setup	
CPU	Intel Xeon Silver 4110 2.1GHz (8 Cores x2)	**Storage Pool**	1
Memory	Samsung 32GB x4 (128GB)	**Number of Virtual Disks**	8
RDMA	Mellanox ConnectX-4 Single Port 40/56GbE x2	**Interleave Size**	256KB (default)
NVMe	Intel P3520 2.0TB x3		
HDD	DNS-2760 JBOD x8 HGST He10TB 0F27402 per JBOD x24		

Random Read & Write

Random — 4K Block Size, 8 Threads, 8 Outstanding I/O (100% Read/0% Write)

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	1,821,252	1,820,961	291	7,458	7,451	7		
quest8-n2	234,640	234,592	48	963	960	3	0.296	0.730
quest8-n3	212,339	212,285	54	870	869	1	0.294	0.646
quest8-n4	242,771	242,733	38	994	994		0.296	0.562
quest8-n5	228,747	228,725	21	936	936		0.295	0.640
quest8-n6	226,860	226,808	52	930	928	1	0.296	0.709
quest8-n7	233,212	233,193	19	955	954		0.295	0.595
quest8-n8	232,912	232,887	25	953	953		0.293	0.648
questAB-n1	209,772	209,738	34	857	856		0.302	0.681

Random — 4K Block Size, 8 Threads, 8 Outstanding I/O (0% Read/100% Write)

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	681,173	360	680,813	2,792	1	2,791		
quest8-n2	87,394	5	87,389	358		358	1.019	1.970
quest8-n3	83,110	3	83,107	341		341	1.016	1.842
quest8-n4	89,247	13	89,234	366		366	0.697	2.003
quest8-n5	84,698	16	84,682	347		347	0.794	1.878
quest8-n6	84,651	9	84,642	347		347	1.212	1.873
quest8-n7	87,266	9	87,256	358		358	0.878	1.908
quest8-n8	85,688	5	85,682	352		351	0.958	2.022
questAB-n1	79,119	297	78,821	323		323	0.003	1.874

Random — 4K Block Size, 8 Threads, 8 Outstanding I/O (70% Read/30% Write)

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	1,130,739	792,078	338,661	4,635	3,239	1,396		
quest8-n2	143,217	100,354	42,863	587	410	177	0.470	0.959
quest8-n3	133,887	93,928	39,959	549	384	165	0.458	0.959
quest8-n4	148,417	103,665	44,752	608	424	184	0.478	0.976
quest8-n5	143,177	100,299	42,877	587	410	177	0.463	0.931
quest8-n6	140,454	98,329	42,125	575	402	173	0.467	0.945
quest8-n7	144,457	101,275	43,182	592	414	178	0.473	0.936
quest8-n8	143,287	100,408	42,879	587	411	176	0.463	0.966
questAB-n1	133,843	93,819	40,024	549	384	166	0.468	0.953

Sequential Read & Write

Sequential — 512K Block Size, 1 Thread, 1 Outstanding I/O (100% Read/0% Write)

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	75,993	75,940	53	38,375	38,374	1		
quest8-n2	9,707	9,698	9	4,786	4,785		1.736	0.860
quest8-n3	9,321	9,316	5	4,767	4,767		1.836	0.928
quest8-n4	9,792	9,788	3	4,807	4,807		1.721	4.981
quest8-n5	9,289	9,280	9	4,749	4,748		1.824	1.530
quest8-n6	8,714	8,712	2	4,451	4,451		1.964	2.977
quest8-n7	9,240	9,235	5	4,725	4,725		1.825	3.744
quest8-n8	9,364	9,350	14	4,786	4,785		1.809	2.124
questAB-n1	10,567	10,562	5	5,304	5,304		1.731	3.918

Sequential — 512K Block Size, 1 Thread, 1 Outstanding I/O (0% Read/100% Write)

CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read	Write	Read Lat (ms)	Write Lat
Total	18,348	1,982	16,366	8,552	2	8,550		
quest8-n2	2,471	397	2,075	1,084		1,083	0.004	9.210
quest8-n3	2,376	298	2,078	1,086		1,086	0.004	9.198
quest8-n4	2,484	394	2,090	1,094		1,094	0.005	9.145
quest8-n5	2,253	295	1,958	1,022		1,022	0.004	9.797
quest8-n6	2,281	300	1,981	1,032		1,032	0.004	9.692
quest8-n7	2,393	298	2,095	1,096		1,095	0.004	9.127
quest8-n8	2,016		2,016	1,054		1,054	0.000	9.494
questAB-n1	2,073		2,073	1,083		1,083	0.000	9.449

"A fully-integrated Windows Server 2016 and Veeam Cloud Connect solution is an outstanding backup storage-as-a-service solution for MSPs, providing high performance, reliability and reduced storage requirements for customers."

Howard Lo
Vice President, Sales & Marketing
DataON

Results

Quest now has eight S2D-5208i converged appliances paired with DNS-2760 JBODs in production today. They all run Veeam Cloud Connect and SQL Server – all on a Storage Spaces Direct converged infrastructure.

The new solution not only improved backup times with high IOPS performance but also provided flexibility that they couldn't get with traditional storage. If Quest is close to reaching their maximum storage capacity, it's easy to expand by adding more drives to their JBODs. Also, the DataON solution can be expanded up to 16 nodes. By adding nodes, this increases the usable capacity from 60% to 80%. This flexibility adds a cost savings that can't be calculated. As far as the cost savings that can be calculated, Quest estimates that they were able to get a 50-80% cost-per-TB savings by moving to Windows Server 2016 Storage Spaces Direct from a traditional SAN.

About Quest

Quest is a worldwide leader in technology management offering a portfolio of professional, Cloud, and Managed Services. Either on-site or from one of over 25 secure global Service Delivery Centers, Quest offers Security, Disaster Recovery, Business Continuity, Data Backup and Replication, Desktops as a Service, and Infrastructure as a Service. Quest is listed on the most current Solution Provider 500 list. Quest® and copyrights by Quest® are registered trademarks of Quest Media & Supplies, Inc. All rights reserved.

About Veeam

Veeam® has pioneered a new market of Availability for the Always-On Enterprise™ by helping organizations meet recovery time and point objectives (RTPO™) of less than 15 minutes for any application, any data, on any cloud. Veeam's goal is to deliver a fundamentally new kind of solution that delivers non-stop business continuity, digital transformation agility with multi-cloud management and migration, and analytics and visibility with actionable insights for data management, operational performance and compliance.

About HGST

HGST is a wholly owned and independently operated subsidiary of Western Digital Corporation, marketing and selling its leading storage portfolio around the world. HGST strategically invests in high-growth and emerging technology segments, with expanding research and innovative product development.

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 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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