

Solution highlights:

- An on-premises converged storage platform built on Microsoft Storage Spaces Direct Software-Defined Architecture
- Workload optimized turnkey solutions that can scale from 4-node to 16-nodes with multi-cluster support
- Peta-byte level storage with built-in Persistent Memory for cache and extension
- Easy-to-use, SAN-like visibility, monitoring, and management from a single pane of glass with Windows Admin Center and DataON MUST tools

Introduction

As video resolution increases, computer-generated imagery (CGI) and virtual reality technology evolve, film and television, live sports coverage and news, and video games are generating larger media file sizes than ever before. Many professional commercial videos and live broadcasts are now shot in 4K, and some production houses are even working in UHD, 6K and 8K. In numerous instances, production companies are using 4 or 8Gb Fibre Channel or 10Gb Ethernet (10GbE) networking, which bottlenecks ingestion time and makes it difficult for production teams to work on media directly from the server. For broadcasters, Serial Digital Interfaces (SDI) are expensive, can't keep pace with transitions and introduce more challenges when switching media projects and changing to file-based workflows.

All this has left media and production companies searching for network solutions to simplify operations and reduce costs, while keeping pace with higher resolutions. In addition, the time-sensitive nature of video can be particularly sensitive to network jitter, requiring higher performance and lower latency interconnects.

Media and production companies also face challenges with scalability. SAN infrastructure is limited in its ability to scale out. When faced with increased workloads, "maxed out" storage, and/or a decline in performance, IT administrators must buy another SAN. Not only is this costly, but in many cases the existing SAN is nearing the end of its life cycle and needs to be replaced, too. In some instances, proprietary, high-performance network attached storage (NAS) solutions can cost even more. At this point, new technologies such as a highly scalable, converged software-defined storage system becomes a more viable and affordable solution than a SAN or NAS. During a refresh, administrators may also want to consider the pros and cons of their existing hypervisor as many are Linux-based, making it difficult to manage networking protocols and file permissions among mixed environments.

Simplified scalability

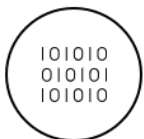
With DataON converged storage systems solutions for Azure Stack HCI, adding storage is simplified. If IT administrators need to add more storage, they can simply add more drives for capacity or for cache, depending on the need. The new storage media will automatically be detected and rebalanced in the storage pool. If IT administrators no longer have any storage bays available, they can also scale out by adding up to sixteen additional nodes per cluster with over 400 drives for compute and storage and additional JBOD storage enclosures each with up to 102 drive bays. Azure Stack HCI solutions support up to 4PB of raw storage per cluster to meet the storage demands of nearly any size media or entertainment organization.

User and permissions management made easy

With Windows Server-based storage, media and entertainment companies can bridge the gap between software environments and reliability. It can be especially hard to manage Active Directory in a Linux environment when deploying groups, users, and creating/managing domains. Active Directory can't manage those platforms in Linux the same way it does with Windows devices. In Windows, Group Policy Objects are powerful constructs that enable IT admins to execute tasks on Windows machines as well as set policies with improved security. This is extremely important for the entertainment industry because it makes it easier to manage and limit user access, reducing the likelihood of content leaking before its release date. There are no similar capabilities to manage Mac or Linux devices. Windows Server makes an administrator's life much easier.

Added resiliency with Azure hybrid cloud services

Built-in integration to Azure makes it easy for media and entertainment companies to start using Azure for infrastructure management and security, including offsite backup, site recovery, and cloud-based monitoring. With simplified management through Windows Admin Center and DataON MUST, IT administrators can easily integrate on-premises workloads with services such as Azure Site Recovery, Azure Backup, Cloud Witness, and Azure Monitor.



Software defined infrastructure



Hyper-V



Storage Spaces Direct



Azure network adapter



High availability

Solution features:

- High-performance all-flash and capacity optimized hybrid converged storage
- 2nd Generation Intel® Xeon® processors that enable greater efficiencies and lower TCO
- Validated solution with 25/40/100GbE RDMA SMB3 networking fabric, supporting RoCEv2 for high performance and low latency
- Scale your converged cluster from 2 to 16 nodes and leverage cluster sets for multi-cluster support
- Deploy software-defined converged storage and expand up to 4TB per cluster

DataON converged storage systems for Microsoft Azure Stack HCI with Mellanox IP based networking solutions

DataON converged storage systems for Microsoft Azure Stack HCI with Mellanox IP based networking can solve many of these pain points. They offer high performance, resilient, scalable, and simplified on-premises solutions at about half the cost of a SAN. They also provide end-to-end high-speed RDMA networking from server to workstation, and better video transport.

DataON converged storage systems solutions replace aging server and storage infrastructure, consolidate virtualized workloads with software-defined compute, storage, and networking, like technologies that Microsoft uses to run its Azure data centers. It uses industry-standard servers with locally attached drives, its converged (or hyper-converged) architecture radically simplifies procurement and delivers unrivaled efficiency and performance with features such as caching, storage tiering, and erasure coding, ideal for media and entertainment companies.

End-to-end Mellanox Ethernet Video Fabric and SMB 3.0 networking

Mellanox has been working alongside major broadcasters to help define and deliver a next generation IP studio to future-proof networks for tomorrow's demands. It has introduced an end-to-end Ethernet Video Fabric (EVF) solution that supports the emerging video over IP standard (SMPTE 2110-21) at speeds of 10, 25, 50, and 100GbE in a Windows Server native SMB 3.0 RDMA networking environment with advanced offload, user-space Linux/Windows library and kernel bypass technologies that accelerate data communication for servers and storage in modern video data centers.

When transitioning to PC workstations, organizations can configure their PCs with Mellanox ConnectX Ethernet adapters and connect to DataON server nodes through Mellanox Spectrum Open Ethernet Switches. Mellanox Spectrum Open Switches support throughput required for all video requirements including 4K, 8K, HFR and HDR. With flexible switch buffers and zero-packet loss they provide predictable network performance. This end-to-end RDMA connectivity delivers sub-millisecond latency, high bandwidth and low jitter with QoS & DSCP features, unlocking maximum performance in storage, file access, and live streaming. This ensures an ultimate experience for broadcasters and enables production artists and editors to work directly from servers with the same efficiency as if they were working with local-residing files.

Mellanox Spectrum™ Ethernet Switches

When Mellanox Spectrum open switches deliver the industry's highest performance and lowest latency to support throughput required for all video requirements including 4K, 8K, HFR and HDR. With flexible switch buffers and zero-packet loss they provide predictable network performance. Consistent and very low port-to-port latency and jitter with QoS & DSCP features ensure an ultimate experience whether its live streaming or post production studios.

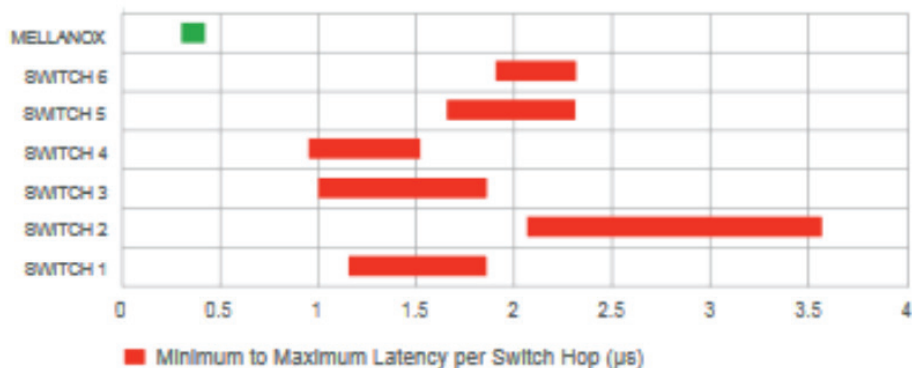


Figure 1: Port-to-Port Switch Latency

Create



“Using Windows Server Storage Spaces Direct, we can have multiple video editors working on a trailer at once, collaborating in real time, which produces more and better ideas—and gets trailers done sooner.”

Chris Slagel
Director of Technology
Create Advertising Group

Create



“The slightest technical problem can slow our video editors, graphic designers, and VR staff. Eliminating technical glitches and slowdowns frees our creative people to do their best work.”

Anthony Hoyt
Systems Architect
Create Advertising Group

Create



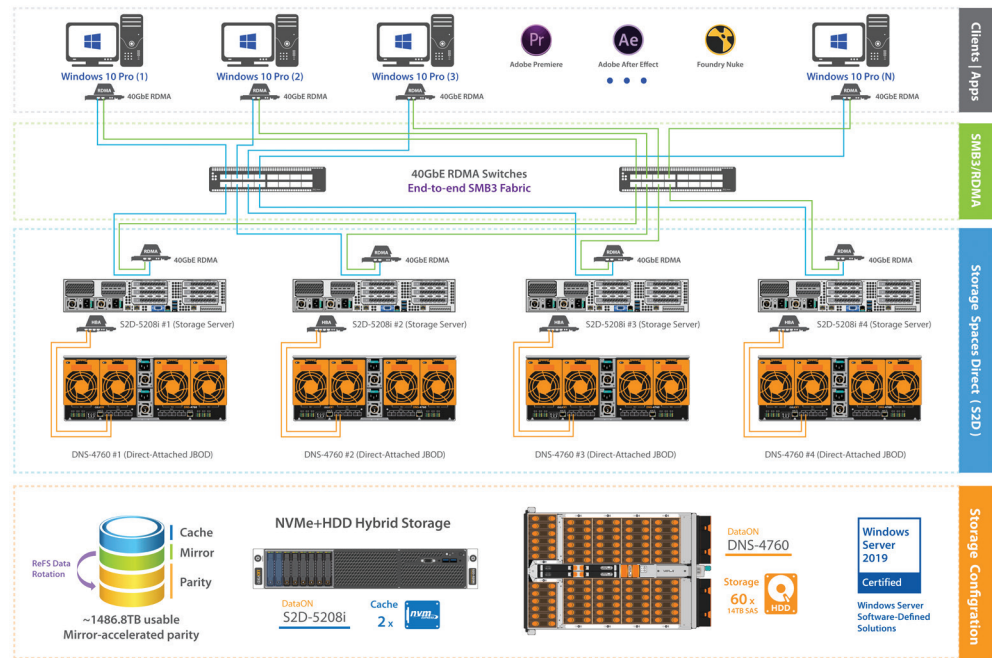
“The DataON/Windows Server storage solution costs about \$200 per usable terabyte compared to \$900 for our previous solution. By spending less on storage, we have more to spend on other things such as new broadcast displays and other technologies.”

Chris Slagel
Director of Technology
Create Advertising Group

DataON solutions at work with post-product house, Create Advertising Group

Create Advertising Group is a post-production house based in Los Angeles and London, that created the trailers for Hollywood blockbusters such as *James Bond: Spectre*, *Finding Dory*, *Avengers: Age of Ultron*, *Iron Man 3*, *Minions*, and many others. With a DataON and Windows Server 2016 Storage Spaces Direct solution, Create has tripled storage performance and cut costs by 60 percent. With blazingly faster storage, video editors are now able to get to work sooner, collaborate and generate more ideas, wow clients, and beat deadlines.

“Using Windows Server Storage Spaces Direct, we can have multiple video editors working on a trailer at once, collaborating in real time, which produces more and better ideas – and gets trailers done sooner,” said Chris Slagel, Director of Technology at Create. “We look at the cost per usable terabyte, and the DataON/Windows Server storage solution costs about \$200 per usable terabyte compared to \$900 for our previous SAN solution. By spending less on storage, we have more to spend on other things such as new broadcast displays and other technologies.”



Create uses four DataON S2D-3224i hybrid all-flash servers configured as a Storage Spaces Direct cluster. Each server has one direct-attached JBOD (DataON DNS-2608). Each server node and JBOD has (2x 800GB 2.5" Intel DC P3700 NVMe drives) for cache + (24x HGST Ultrastar Helium 10TB HDD drives) for capacity. Using NVMe for caching is new in Windows Server 2016 and is not possible with SAN and network-attached storage (NAS). Total storage capacity is therefore 4 x 24 x 10TB = 960TB raw, or about 450TB usable (after mirroring).

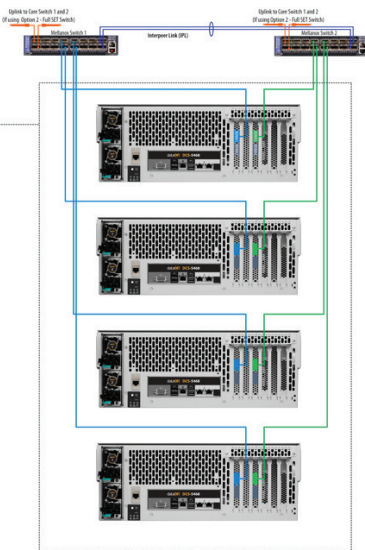
Create uses mirror-accelerated parity resiliency (new in Windows Server 2016), which mixes three-way mirroring (33.3 percent efficient) with dual parity (50.0 percent efficient) to provide better storage density for capacity-conscious customers, at the expense of performance. Even so, using the industry-standard AJA benchmark, they can reach 2,700 MB/s reads and 600 MB/s of throughput, or over 800,000 IOPS!

In addition to replacing its expensive SAN storage with a Windows Server 2016 Storage Spaces Direct solution, Create replaced its Apple Mac workstations with Windows 10 workstations and put iWARP RDMA-enabled network cards (from Chelsio Communications) in both those workstations and its Windows Server 2016 servers. By fully leveraging the SMB3 over RDMA network fabric, the Create converged Storage Space Direct solution delivers end-to-end RDMA connectivity with high performance, ease of use, and seamless deployment.

DataON Converged Storage Solution for Azure Stack HCI

- DataON DCS-5468 for Azure Stack HCI
- Second generation Intel® Xeon® 8-core Silver processors
- 256Gb Memory per node
- Dual boot drives
- Mellanox 40GbE RDMA ConnectX Ethernet adapters and Spectrum Open Ethernet Switch networking
- Western Digital 12TB HDDs per node (3TB raw capacity)

DataON DCS-5468

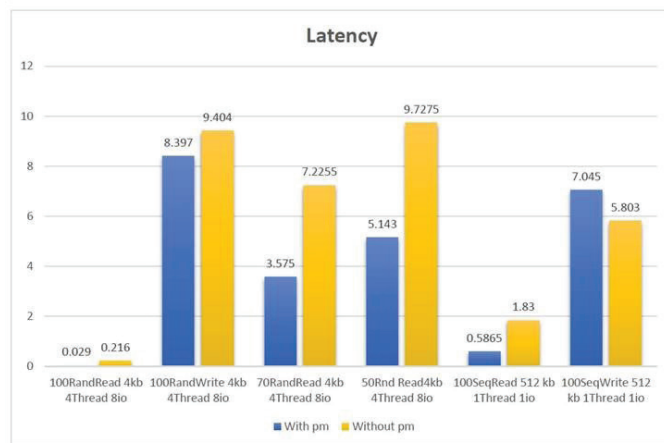
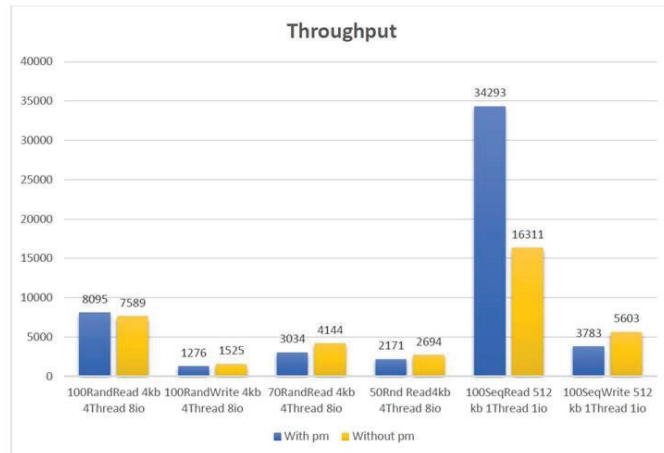


The right DataON solution for media & entertainment

With DataON offers fully customizable and tailor-made solutions for each customer. A DataON DCS-5468 solution for Azure Stack HCI with converged storage delivers the high performance, high-speed networking and capacity that are essential for media and entertainment.

The DSC-5468 is a four-node solution that can be configured with up to 3PB of raw storage. With three-way mirroring, Storage Spaces Direct enables IT administrators to increase fault tolerance and storage efficiency, providing the capacity and peace of mind media and entertainment industries demand. If storage runs out, additional nodes or JBODs can be added at any time.

Each solution is configured with Mellanox 40GbE RDMA ConnectX Ethernet adapters and Spectrum Open Ethernet switches for sub-millisecond high speed networking with end-to-end capability from server to workstation.



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About DataON

DataON is the industry-leading provider of solutions for Microsoft Azure Stack HCI, and hyper-converged infrastructure and storage systems optimized for Microsoft Windows Server environments. It has been named to CIO Review's '20 Most Promising Microsoft Solution Providers 2018.' Our company is focused on customers who have made the "Microsoft choice" to deploy Microsoft applications, virtualization, data protection, and hybrid cloud services. Our enterprise-level solutions, delivered as a complete, turnkey experience, are designed to provide the highest level of performance, manageability, and security offered.