

# Tech institute taught benefits of Microsoft-Defined Datacenter by DataON Storage



*DataON purpose-built Scale-Out File Server platform for Windows Server 2012 R2 Storage Spaces is designed to deliver highly available, flexible and cost effective storage solutions for Hyper-V virtual server farms.*

## The Challenge

The college's legacy iSCSI SAN solution was wrought with complexities, inefficiencies and inconsistent performance

## The Solution

Microsoft certified DataON SOFS Platform delivers higher storage resiliency, more robust shared storage scalability, and improved performance at an effective price point

## The Results

- More cost effective than traditional iSCSI SAN or Fibre Channel
- Increased resiliency against regional events and outages
- Certified support for Microsoft Stack including Storage Spaces and Hyper-V
- Poised for accelerated adoption of Microsoft Windows Server 2016

Rose-Hulman Institute of Technology is a four year college specializing in engineering, science and mathematics. Their emphasis on hands-on education leads to a 99% job placement success rate for graduates. The Enterprise Information Technology team is central to providing that critical experience for the students as well as supporting the instructors and staff with a reliable IT environment. As the college grew to add a third data center, they wanted to investigate less expensive and more reliable storage alternatives to iSCSI SAN.

Even with their existing SAN solution having a modicum of built-in redundancy, the team experienced inefficiencies and downtime – a recent incident taking the storage offline and 80 production virtual machines with it. Stephen Jones, CTO, discovered DataON at a Microsoft TechEd industry conference and was impressed. He decided to choose a DataON Cluster-in-a-Box Scale-Out File Server (SOFS) solution also including a SAS connected JBOD for additional storage capacity and resiliency in lieu of investing in pricey iSCSI or Fibre Channel for their third data center. Despite some initial skepticism in leaving their legacy solution, the team had been burned enough times by SAN to not champion it any longer and were enthusiastic to make a switch to DataON.

### The Solution: DataON Hardware Appliance for Shared Storage in a Condensed Footprint

Rose-Hulman spent significant testing cycles with the DataON platform before moving forward with a larger DataON deployment. The validation included testing two Hyper-V nodes connected via SMB 3.0 network protocol to a Microsoft certified DataON Cluster-in-a-Box for highly available failover protection with Storage Spaces. The initial benchmark tests to evaluate throughput using large file transfers proved to be “spectacular” compared to the traditional iSCSI SAN results. This led the Enterprise IT team to select as many as five purpose-built Storage Spaces DataON CiBs for multiple deployments—three such designs utilized additional DataON DNS JBODs for auxiliary storage capacity.

Rose-Hulman experienced first-hand how DataON's Microsoft-tuned SOFS solution is more cost effective, more reliable, and more resilient than their old iSCSI SAN—at a compelling cost savings. They have already decommissioned two of their four SANs and migrated a majority of their key enterprise applications to DataON Scale-Out File Server based CiBs, including SQL Cluster based on SQL 2014, Microsoft Exchange, and SharePoint, and over the next few years intend to decommission the remaining SANs at their other two data centers, moving everything to Storage Spaces.

“We bought our first five DataON CiBs almost two years ago, and they've performed without incident.”

- Stephen Jones, CTO of Enterprise Information Technology



## Improved Resiliency with Microsoft Windows DFS Replication and DataON CiBs

Rose-Hulman has always been a Microsoft shop, but now with Microsoft Windows Server 2012 R2 and Storage Spaces, they can grow into a 100% Microsoft-Defined Datacenter. Rose-Hulman has experience using Microsoft's Distributed File System (DFS) replication for resiliency in the face of failure or heavy loads, allowing shares to be in different datacenters. Migrating their DFS designed datacenters away from costly iSCSI SAN to certified DataON CiBs over 10Gb Ethernet and SMB 3.0 is allowing them to upgrade quickly where they can create redundant DFS clusters across the three data centers, improving their capacity for high availability and high resiliency in the event of a site outage or other regional event.

In tandem with DFS, the IT team is also utilizing Data Protection Manager (DPM) for enterprise backups, a feature of Microsoft System Center. Over the last year, the IT team has used the Microsoft Azure cloud computing platform as a backup target and it's working flawlessly.

## SSD Cached Storage for Greater Performance

DataON teaches its partners and customers to use a combination of HGST Ultrastar® SSDs and HDDs in their Storage Spaces deployments to improve the performance and responsiveness of their applications. About 1.5% of Rose-Hulman's storage utilizes HGST's enterprise-class SAS SSDs, and they use a simple but effective approach of echoing the same SSD ratio when configuring hot tiers for a new file share. Over time, they expect to fine tune and increase the HGST SSD hot tier allocation based on utilization and performance trends.

## A Solid Foundation for their ERP

After the success they experienced with DataON for their DFS clusters, Stephen and his team turned to DataON yet again to support their instance of Banner by Ellucian, an ERP system tailored for the higher education sector. For this, they chose the DataON CiB-9224 V12 hyper-converged Cluster-in-a-Box platform supporting a concurrent deployment of dual-node Hyper-V clusters and Storage Spaces managed Scale-Out File Serving services. The administrators for the deployed databases are in the process of building VM templates for the computing environments so they can quickly deploy new modules. They expect to have six to ten hyper-converged VMs running in the appliance, with as many as 30-35 VMs running on the cluster when it's in full production in 18 months. Rose-Hulman is thoroughly pleased with performance, cost saving and ease of deployment in the DataON hyper-converged appliance rollout.

“The performance of our DataON Scale-Out File Server platform with Microsoft's Storage Spaces and Hyper-V is spectacularly amazing.”

## Next Generation Solution Components

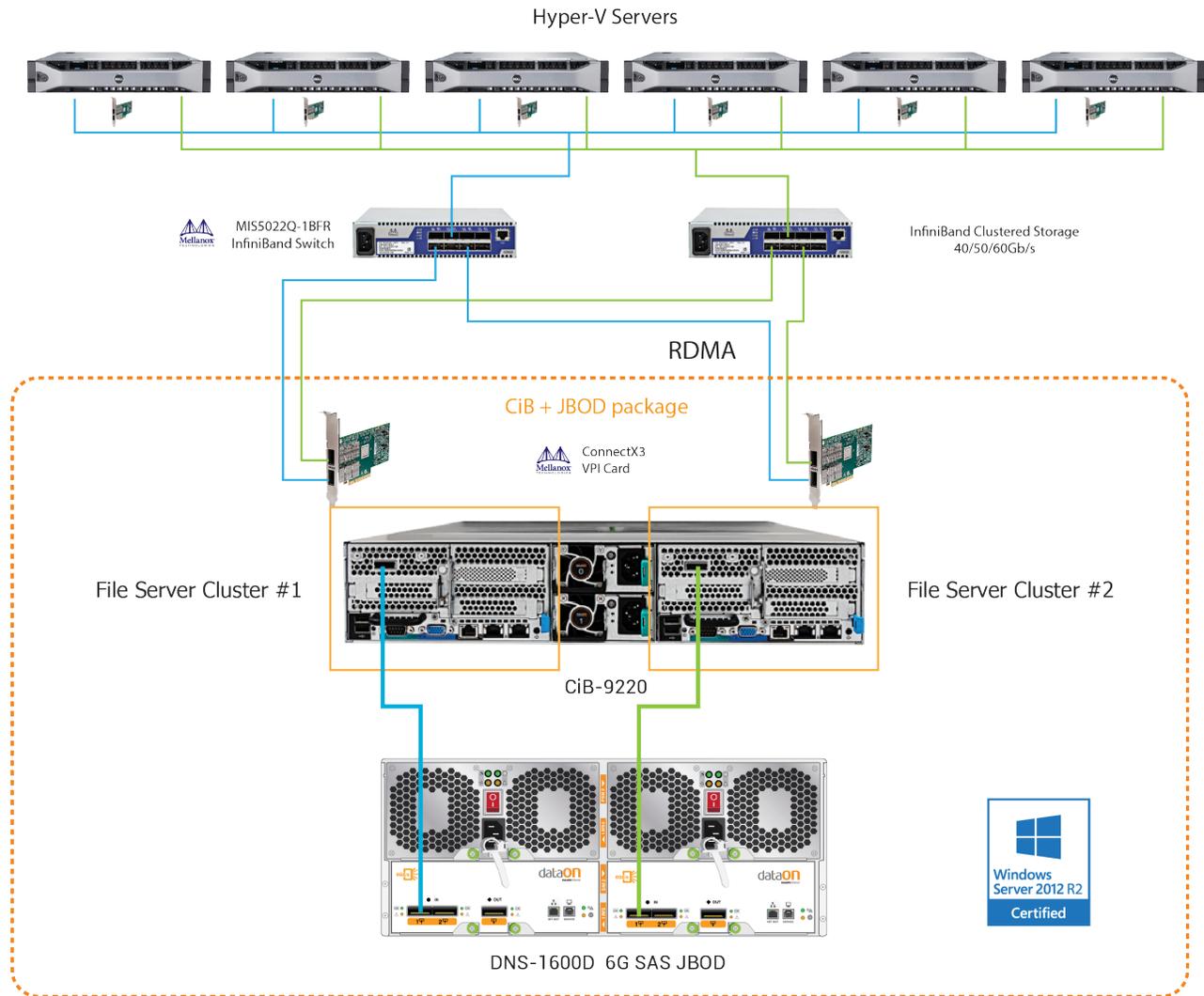


DataON CIB-9224	V12 Scale-Out File Server
Specifications	<ul style="list-style-type: none"> <li>• Dual node Cluster-in-a-Box for SOFS and hyperconvergence</li> <li>• Intel Xeon appliance, up to 144 virtual cores</li> <li>• 48TB tiered HDD/SSD shared storage capacity</li> <li>• Zero points of failure: dual domain, dual path</li> </ul>
Qualifications	<ul style="list-style-type: none"> <li>• Swift and simplified deployment architecture</li> <li>• Pay-as-you-grow with predictable performance</li> <li>• Scale-out and scale-up with additional appliances</li> <li>• Certified Microsoft-Defined Datacenter efficiency</li> </ul>



DataON DNS-2640	JBOD enclosures
Specifications	<ul style="list-style-type: none"> <li>• 2U 12Gb SAS JBOD with Dual SAS I/O Controllers</li> <li>• (24) 2.5" hot-swap drive bays (SSD and/or HDD)</li> <li>• (12) SAS ports for scale-out and scale-up expansion</li> <li>• SES optimized for enclosure awareness resiliency</li> </ul>
Qualifications	<ul style="list-style-type: none"> <li>• Tiered storage-tuned for low latency performance</li> <li>• Modular and simplified deployment architecture</li> <li>• Pay-as-you-grow with predictable performance</li> <li>• Windows Server 2012 R2 Storage Spaces certified</li> </ul>

## Deployed Solution Topology



## Next Steps

The plan for Rose-Hulman is to continue to move their Hyper-V based VM libraries off their outdated iSCSI SAN storage and onto DataON Storage Spaces tuned SOFS clustered appliances utilizing SAS connected JBODs, similar to what they've already architected. They are also looking forward to upgrading to Microsoft Windows Server 2016 and working with DataON to take advantage of Storage Replica as well as Stretch Clusters, which is an upgrade to their currently deployed DFS architecture. This will allow for extremely efficient, high performing synchronous replication over long distances. As part of their overall Microsoft strategy, they intend to move into a hybrid cloud scenario with the help of DataON Storage to extend their use of Azure beyond backups. While some systems like Microsoft Exchange and SharePoint will always remain on-premises, they see a lot of value in geographically distributed computing resources for things like Active Directory to make the infrastructure that much more resilient for their community.

“The DataON Scale-Out File Server platform helped us overcome our limitations with iSCSI SAN and provide a truly scalable, reliable and cost-effective foundation for our IT services.”



DataON Storage is the trusted provider of agile OS-agnostic storage and hyper-converged platforms for Microsoft-Defined Data Centers and Small to Medium Businesses. As the leading Microsoft Gold Partner of certified storage solutions, DataON offers ultra-resilient petabyte scalable and high IOPS performance solutions built to simplify storage strategies for software-defined storage data centers, desktop virtualization (VDI) and private cloud. More at [www.DataONstorage.com](http://www.DataONstorage.com) or call +1 (888)726-8588 or comment via @DataON.