Prominent Colorado Hospital Increases Storage Performance and Reliability while Cutting Costs

A leading hospital in Colorado is pioneering efforts into the latest methods for diagnosis and treatment and the hospital relies heavily on having modern, reliable IT services and infrastructure.

Though performance was adequate, IT was experiencing driver interoperability issues between their SAN fibre channel storage solution and Microsoft Hyper-V virtualization server nodes, causing problems during maintenance when they had to fail the active connects back and forth between fabrics.

“"We knew we needed a better solution”"
- Microsoft Systems Engineer at the hospital

The Challenge
Move to a unified storage Scale-Out File Server (SOFS) solution for their 100TBs of data.

The Solution
Four separate Storage Space clusters running on DataON Microsoft certified JBODs for production services and full disaster recovery.

The Results
- **10x** application performance increase
- Reduced storage utilization by **60-70%**
- **1/3** of the cost
- **Full** disaster recovery

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The Solution: DataON Certified JBODs for Storage Spaces
Being a Microsoft shop and heavy users of Hyper-V, the IT team chose to implement Microsoft Storage Spaces with DataON certified JBOD enclosures. By moving to a high-performing Microsoft platform, they achieved cohesion and reliability with one storage solution. As a result, they eliminated the driver interoperability issues and simplified support by standardizing on a Microsoft platform.

Moving to Storage Spaces also afforded the hospital many other benefits:

- **All Microsoft solution** – They gained simplicity and cohesion by moving to a full Microsoft implementation and easier troubleshooting in the event of any outages – no more finger pointing with multiple vendors in place.
- **Simpler configuration and management** – Management of storage is now centralized and much simpler. Before, each cluster had to maintain its own storage; now if you need a Hyper-V to communicate with a share, you just set up the path.
- **Improved performance** – SharePoint services, one of the first to migrate, is experiencing better than 10x performance increase.
- **Storage efficiency** – Utilized storage tiering with 2.5% of the mix as high performing HGST enterprise-class Ultrastar SSD for a “hot” tier, and the rest as cost-effective HDD for a “cold” storage tier. They have plans to grow to DataON’s suggested mix of 8% hot tier for even better performance.
- **Cost savings** – Running Storage Spaces on DataON hardware is about a third of the cost of their original solution when you factor in licensing and everything that comes with the fibre channel-based solution.
Disaster Recovery

With the money saved, IT was able to double their hardware investment for full disaster recovery – and still have funds leftover. They bought better than 1 petabyte of storage capacity split across two clusters: one for production, one for disaster recovery. Storage is configured with a three-way mirror whenever possible: two additional copies of the original data are kept, thus making the storage space resilient to two disk failures. This design yields about 150TBs of continuously available capacity. Storage Spaces three-way mirroring can be utilized with “enclosure awareness” – a feature that mirrors data across multiple JBOD enclosures. If an enclosures fails or goes offline, the data remains available in the alternate enclosure(s). In the (unlikely) event they lose an entire chassis, users will not even notice the failure.

Efficient Storage Utilization

IT took advantage of another great feature of Storage Spaces for their shared directories: data deduplication. Data deduplication is a method that breaks down files into small chunks, identifies duplicate chunks across all of the data, and maintains a single copy of each chunk. Redundant copies are replaced with a reference to the single copy without compromise to fidelity or integrity. Through deduplication, the hospital was able to reduce their storage utilization by 60-70% for home directories, and even more on the file shares where it’s common for the same file to be saved in three or four different places.

Why DataON Was Chosen

DataON recommended four separate Storage Space clusters to meet requirements for disaster recovery and production. The hospital chose DataON because they understand the technology better than other vendors. “I learned something coming out of the meeting with them. It was refreshing that they knew more than just their own hardware; they also understood the software technology their hardware was running on. That was a huge relief, especially dealing with something that’s pretty new”, shared their Microsoft Systems Engineer.

The Solution Components

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<thead>
<tr>
<th>DataON DNS-1640 JBOD enclosures</th>
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<tbody>
<tr>
<td>• 2U 24-bay 2.5” 6G SAS JBOD</td>
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<tr>
<td>• Dual 6G SAS I/O supports multi-path</td>
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<td>• 550W Delta® Redundant Power &amp; Cooling</td>
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<tr>
<th>DataON DNS-1660 JBOD enclosures</th>
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<tr>
<td>• 4U 60-bay 3.5” 6G SAS JBOD</td>
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<tr>
<td>• Dual 6G SAS I/O supports multi-path</td>
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Next Steps

The hospital will continue to partner with DataON to look at ways to continue to improve their stability and keep costs low. For example, they are evaluating their use of HGST Ultrastar® enterprise-class SAS SSDs. While they get solid response from their HDDs, they run about 2.5% of their workload on SSD and would like to expand their hot-tier to around 8% for even greater performance. Running a Microsoft solution means they can easily integrate or augment with the Azure cloud in the future—a direction they’re considering.

“Thanks to DataON, our organization is absolutely getting more bang for our buck in terms of storage and utilization.”

DataON Storage is the leading provider of OS-agnostic storage platforms, scale-out JBOD enclosures and hyper-converged storage cluster-in-a-box appliances. DataON offers ultra-resilient petabyte scalable and high IOPS performance solutions tailored to snap into cluster-aware software-defined storage data centers, VM and desktop virtualization (VDI) and private cloud deployments. DataON is the storage division of Area Data Systems. More at www.DataONstorage.com or call +1 (888)726-8588 or comment via @DataON.