Company Behind TechNet Virtual Labs at Microsoft Ignite uses DataON Storage for Improved Data Center Growth

DataON CiB-9224 V12 provides hyper-converged platform purpose-built for Storage Spaces with high availability in an easy to manage reduced data center footprint.

The Challenge

Company's newly inherited second data center lacked more modern storage features.

The Solution

DataON Cluster-in-a-Box (CiB) hyper-converged platform delivering highly-available services and shared storage in an energy saving and condensed footprint.

The Results

- Running in production within two hours
- Multiple layers of redundancy
- Exceeds performance requirements
- 20:1 deduplication or up to 95% capacity savings

Windows Server 2012 R2 Certified

Learn on Demand Systems offers a wide range of online training solutions for enterprises, training providers, individual trainers, and software companies. Solutions include custom and packaged training labs, access to learning management system software, content testing, and event management services.

Learn on Demand Systems has worked with DataON to implement several Windows Server 2012 R2 solutions, which enabled them to run labs at Microsoft events like TechEd and Ignite. As Microsoft's chosen vendor to host these hands-on labs, it was critical they have responsive, high-performing storage that could keep up with the constant spinning up and tearing down of labs during and after events.

Learn on Demand Systems is the new company formed by holSystems and Terillian Technologies. The new formation resulted in a larger overall data center footprint, increasing their ability to provide on-demand learning services. The new data center had multiple "self-built" server and storage silos with self-direct hosted storage; it lacked some features that modern storage provided by Windows Server 2012 R2 and Storage Spaces. Learn on Demand Systems builds and hosts thousands of VMs everyday and desired a more modern, efficient Microsoft-defined Datacenter storage solution.

> "Everywhere we've needed to make a storage investment since first learning of the Cluster-in-a-Box solution, we've continued to partner with DataON and move towards a Microsoft-centric direction."
>
> – Ted Carter, Learn on Demand Systems, Director of Infrastructure Services

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

Learn on Demand Systems recognized that an additional data center meant more flexibility in managing its services. But to take full advantage of the increase in capacity, and to improve performance and manageability, they wanted to make further investments in the equipment. "While the second data center storage met performance requirements and had basic redundancy through multiple disks and local servers, we couldn't do anything clever with it," said Ted Carter, Director of Infrastructure Services. "It lacked redundancy through clustering and multiple layers in the chassis, and it didn't utilize tiering with SSD at all." Learn on Demand Systems has had a great experience with DataON Storage and wanted to continue with its 12Gb/s SAS technology in its second data center.

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The DataON CIB-9224 V12 reinvented clustered shared storage with the introduction of end-to-end 12Gb/s SAS device performance in a dual node appliance architecture. This Microsoft-tuned platform thrives in tiered SSD and HDD storage deployments with cluster-aware file systems. The turnkey CiB-9224 V12 appliance is certified for Windows Server 2012 R2 running Storage Spaces, a critical component for Learn on Demand Systems' data centers, which are primarily built on the Microsoft stack, including Microsoft Hyper-V. The storage converged appliances are also able to accommodate VMware virtual images, allowing the team to condense from two storage solutions into one Microsoft-defined data center.

In addition to performance and being purpose-built for Microsoft's Scale-Out File Serving (SOFS), Learn on Demand Systems chose the DataON Cluster-in-a-Box for its ease of use. "I had someone who'd never seen one of these appliances before stick it in the rack and turn it on for me, sight unseen." said Carter, "Using remote management, a couple of button clicks and 30-60 minutes with the DataON wizard, and the storage cluster was ready for internal testing. The CiB-9224 V12 was in production within two hours."

It's also easier to manage. All of the network traffic is contained within the unit. You don't have to isolate the storage traffic or deal with the external communication fabric. And if something goes wrong, it's all in the same unit. You don't have to troubleshoot through layers of servers, switches, fiber networking, firmware, or drivers. Everything is tied together and collapsed into a single box.

> "DataON makes things easy, and in our business, ease-of-use is just huge. With the CiB-9224 V12, you can be in production within two hours, and everything is simple to troubleshoot."

Greater Performance through Tiering

With Microsoft Storage Spaces, tiered storage (an SSD high speed storage layer and traditional HDDs) is presented as one share; Storage Spaces automatically decides where to put the workloads. About a third of Learn on Demand Systems' storage utilizes HGST Ultrastar® enterprise-class SAS SSDs, which allow active classes to run on the hot tier for maximum performance. In addition, the students' data copies are massive, measured in TBs, not GBs. Transferring to and from SSD provides lightening fast data moves.

VMs are constantly spun up and taken down, with custom requests being satisfied in 20-45 seconds. Any slower and customers notice. Build times must be fast no matter what, and you must have fast storage from end-to-end to do that. Learn-On Demand Systems has been exuberant with the performance from DataON storage and intends to continue investing in its Cluster-in-a-Box technology.

Extreme Storage Utilization with Deduplication

Learn on Demand Systems hosts tens of thousands of virtual machines for classes and labs, many of which are very similar to each other. Microsoft Storage Spaces includes deduplication, a technique that identifies identical data elements across VMs and stores a single instance for all VMs to leverage. Since implementing deduplication, the business has seen huge savings – anywhere from 85-95%. Learn on Demand Systems hosts thousands of labs and hundreds of thousands of VMs which are archived for customers for extended periods. This 20:1 deduplication from a Microsoft-tuned converged appliance is a big win for the business.

New Levels of Resiliency

The acquired data center lacked important features that modern storage provides, including redundancy though clustering and redundancy through multiple layers in the chassis and controllers. If the business needed to update a storage node, all storage had to be taken offline. Now with a DataON CiB appliance utilizing Windows clustering in the same chassis, Learn on Demand Systems can take one node offline while the other node hosts the shared storage; it can also active/active load balance across the nodes for extra performance streams when traffic is heavy. Contrast the CiB-9224 V12 appliance to the older legacy solution with one server hosting the storage; if that server is overwhelmed you get an instant performance bottleneck.
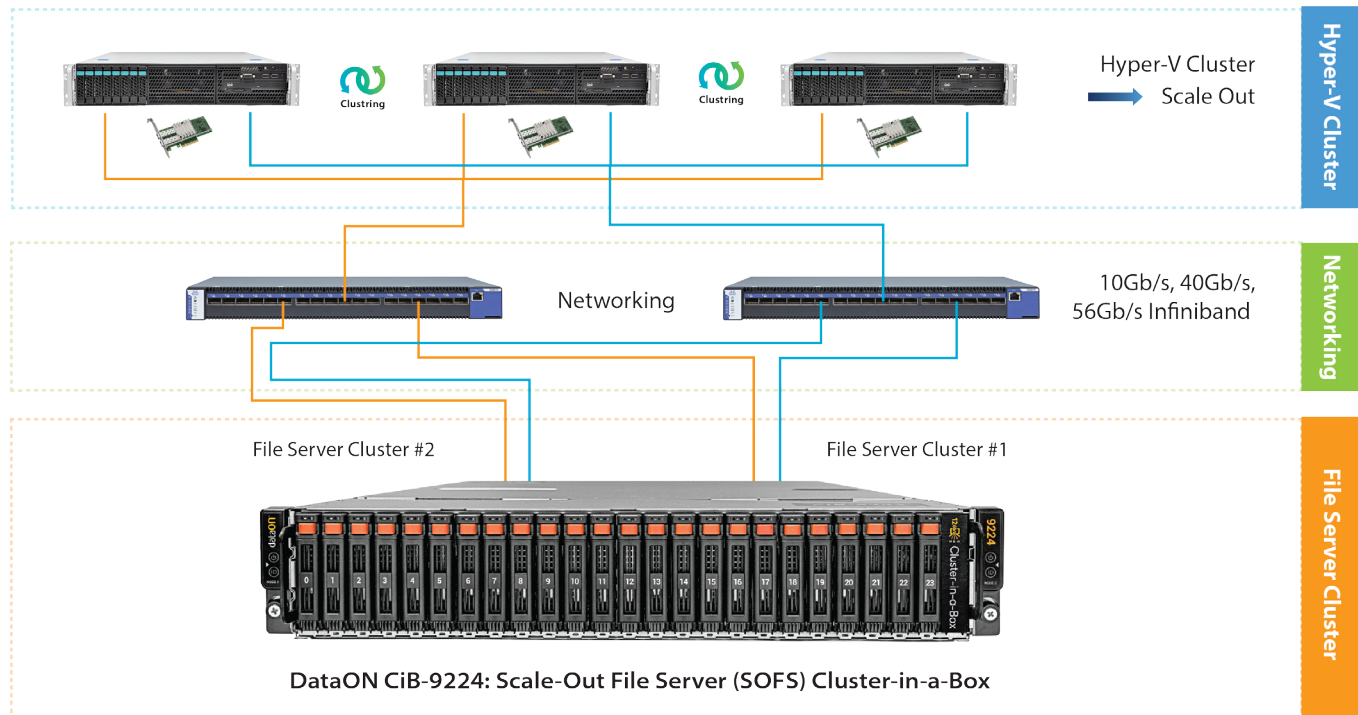
Why DataON Was Chosen

Thanks to an established trust based on consulting and hyper-converged solutions provided by DataON over the past two years, Learn on Demand Systems envisioned from the start that its acquired data center storage concerns would be resolved with DataON's proven technologies. The simplicity of the Cluster-in-a-Box was very appealing, as was the reduced number of layers to manage compared to more traditional solutions. Learn on Demand has come to appreciate the value and peace of mind from working with Microsoft certified solutions in its Microsoft-centric data centers.

Solution Components

DataON CIB-9224 V12	
Specifications	• Hyper-converged dual node Cluster-in-a-Box • Intel Xeon appliance, up to 144 virtual cores • Up to 1TB memory; sufficient for 100s of VMs • 48TB tiered HDD/SSD shared storage capacity • Zero points of failure: dual domain, dual path
Qualifications	• Swift and simplified deployment architecture • Enables resilient easy to manage storage topology • Pay-as-you-grow with predictable performance • Scale-out and scale-up with additional appliances • Increase Microsoft-defined data center efficiency

Solution Topology

Clustring

Clustring

Hyper-V Cluster
→ Scale Out

Hyper-V Cluster

Networking

10Gb/s, 40Gb/s, 56Gb/s Infiniband

Networking

File Server Cluster #2

File Server Cluster #1

File Server Cluster

DataON CiB-9224: Scale-Out File Server (SOFS) Cluster-in-a-Box

Next Steps

Learn On Demand Systems' roadmap fully involves DataON as a strategic partner to help the business grow and move the forward. One aspect that Learn on Demand Systems is especially excited about adopting in the future is coupling chassis together; it's a path that matches up well with some forward looking features Microsoft has. By stacking via 12Gb/s SAS cabling with additional CiB units to provide linear scale-out growth, if a node is taken offline for maintenance, another CiB can host the shared storage from the remaining node/chassis. It's a great additional method for creating redundancy that Learn on Demand Systems intends to take advantage of as the organization grows.

> "Our relationship with DataON is very strong. We favor Cluster-in-a-Box type of products, and I like having a concise converged appliance with my storage nodes in the same chassis as my storage. The DataON CiB creates a very clean data center."