



Dell Storage with Microsoft Storage Spaces

Dell is delivering a new way to deploy validated software-defined storage (SDS) using standard server, storage and networking components.

Scale your solution to meet your storage needs

Dell Storage with Microsoft® Storage Spaces (DSMS) extends the value proposition of Microsoft's SDS in numerous ways. In particular, Dell's end-to-end engagement throughout the lifecycle of the entire solution provides tangible benefits to the customer. Dell stays engaged starting from pre-sales assistance on capacity and performance sizing, as well as solution optimization for specific workload, and all the way through the factory fulfillment and deployment of the solution. A full range of solution support offerings ranging from 3-year NBD (next business day) to Mission Critical 4-hour support worldwide ensure your option to select support levels based on your business requirements.

DSMS lets you configure and tune your solution for levels of performance, capacity and availability as needed. Dell provides sizing guidance, a clear best practices guide and a detailed deployment guide. While maintaining maximum flexibility, you can rest assured that only validated and tested building blocks are used.

Easy to size and manage

DSMS is based on a disk pooling model. A storage pool can be composed of a mixture of solid-state drives (SSD — fast tier) and inexpensive, bulk hard-disk drives (HDD — standard tier). Frequently accessed data (hot) in a tiered storage space gets moved to the SSD in the fast tier, while infrequently accessed data (cold) is moved to the high-capacity hard disks in the standard tier. This enables you to balance capacity and performance.

You can enable powerful caching features in Storage Spaces with Dell SSD products to support I/O intensive workloads like virtual desktop infrastructure (VDI). Storage Spaces uses SSDs — which excel at random access — in the storage pool to create a durable write-back cache that buffers small random writes to SSDs before later writing them to HDDs. This reduces the latency of the random writes and significantly reduces any impact on data transfer performance.

Dell servers and storage help optimize the benefits of Storage Spaces

With Storage Spaces running on the highest performing, most innovative Dell™ PowerEdge™ servers and Dell Storage enclosure solutions ever, hosters and cloud providers can enable cost-effective, highly available and highly scalable workloads. Fully engineered for virtualization with large memory support and enhanced I/O throughput, PowerEdge servers enable organizations to maximize the comprehensive virtualization platform offered in Microsoft Windows Server® 2012 R2. The Dell Storage MD Series storage enclosures with its wide range of array form factors, connectivity options and storage enclosures offers unparalleled flexibility to extend performance or capacity as needs change. And with best-in-class integration between Dell network management technologies, systems management solutions, and Microsoft System Center 2012 R2, our mutual customers can be more efficient and agile.

Highly scalable
workloads
including Private
Cloud, VDI, SQL
and Hyper-V®

Validated configurations for simple deployment

DSMS uses Dell Storage MD1400, Dell Storage MD1420, and PowerVault MD3060e storage enclosures for the storage component. The scale-out file server (SOFS) design accommodates 2 to 4 storage enclosures in a cluster for a total of up to 240 hard drives (using the MD3060e). The storage enclosures are connected with 12Gb (MD14x0) or 6Gb (MD3060e) shared SAS (serial-attached SCSI). The storage nodes that run the Microsoft Windows Server operating system with Storage Spaces, Cluster Shared Volumes (CSV), and the SMB3 protocol stack use either the PowerEdge R630 server or PowerEdge R730 server. The solution supports 2 to 4 storage nodes per cluster. DSMS offers remote direct-memory access (RDMA) for workloads that require high-throughput and low-latency networking. RDMA over Converged Ethernet (RoCE) and iWARP are the supported implementations. Dell has also validated several Dell network switches, but third-party networking is supported as well. Since the Dell Storage with Microsoft Storage Spaces solution is a SOFS architecture, it supports a wide range of compute solutions, including PowerEdge servers, FX architecture and blades. DSMS is available in all-flash configurations, converged and SOFS using the MD1420.

The following specifications apply to all SOFS DSMS configurations which include 2x1, 2x2, 2x3, 2x4, 3x3, 3x4, 4x3, and 4x4:

SOFS DSMS configuration features	
Server and chassis	DSMS* 630 (x8, 2.5") DSMS* 730 (x8, 2.5")
Processors (min 2)	Intel® Xeon® processors: E5-2620 v4 - 2.1GHz, 20M, 8C/16T, 2133MT/s E5-2630 v4 - 2.2GHz, 25M, 8C/20T, 2133MT/s E5-2640 v4 - 2.4GHz, 25M, 10C/20T, 2133MT/s E5-2650 v4 - 2.2GHz, 30M, 12C/24T, 2400MT/s E5-2660 v4 - 2.0GHz, 35M, 14C/28T, 2400MT/s E5-2680 v4 - 2.4GHz, 35M, 14C/28T, 2400MT/s E5-2683 v4 - 2.1GHz, 40M, 16C/32T, 2400MT/s E5-2690 v4 - 2.6GHz, 30M, 14C/28T, 2400MT/s E5-2695 v4 - 2.1GHz, 45M, 18C/36T, 2400MT/s E5-2697 v4 - 2.3GHz, 45M, 18C/36T, 2400MT/s E5-2697A v4 - 2.6GHz, 40M, 16C/32T, 2400MT/s E5-2698 v4 - 2.2GHz, 50M, 20C/44T, 2400MT/s E5-2699 v4 - 2.2GHz, 55M, 22C/44T, 2400MT/s
Memory	32GB to 1.5TB; 8GB, 16GB, 32GB, 64GB RDIMM
Boot drives (min 2)	2.5" 7.2K SATA: 500GB 2.5" 7.2K NL-SAS: 500GB 2.5" 10K SAS: 300GB, 600GB, 1.2TB 2.5" 15K SAS: 300GB, 600GB 2.5" SATA SSD (MU): 200GB, 400GB
Internal controller	PERC H330, PERC H730, PERC H730P (RAID 1, RAID 5)
NDC	Intel X540 (10GbE BT and I350 1GbE), Intel X520 (10GbE SFP+ and I350 1GbE), Intel X520 (10GbE SR and I350 1GbE)
Additional NIC	Intel X540 (10GbE DP BT), Intel X520 (10GbE DP SFP+), Intel X520 (10GbE DP SR)
RDMA adapter (optional, max 1)	Chelsio® T520-CR (10GbE SFP+); Mellanox® ConnectX®-3 Pro (10GbE SFP+); Mellanox ConnectX-3 Pro (40GbE QSFP+)
Storage adapter (quantity varies by configuration)	Dell 12Gb SAS HBA LSI™ 9207-8e 6Gb SAS HBA
Systems management	iDRAC8
Power supply	Redundant 750W and 1100W
Storage enclosure	DSMS* 1400, DSMS* 1420, DSMS* 3060e
Storage enclosure HDD (min 4 per DSMS 1400, min 10 per DSMS 1420, min 24 per DSMS 3060e)	3.5" 7.2K NL-SAS: 2TB, 4TB, 6TB, 8TB 2.5" 10K SAS: 300GB, 600GB, 1.2TB, 1.8TB 2.5" 15K SAS: 300GB, 600GB
Storage enclosure SSD (min 2 per DSMS 1400, min 2 per DSMS 1420, min 6 per DSMS 3060e)	2.5" SAS SSD (MU): 200GB, 400GB, 800GB, 1.6TB
Operating system	Volume License Microsoft Windows Server 2012 R2 Standard Edition

*Using Dell Storage with Microsoft Storage Spaces specific SKUs

The following specifications apply to all Converged DSMS configurations which include 2x1, 2x2, 2x3, 2x4, 3x3, 3x4, 4x3, 4x4:

Converged DSMS configuration features	
Server and chassis	DSMS* 630 (x8, 2.5") DSMS* 730 (x8, 2.5")
Processors (min 2)	Intel Xeon processors: E5-2620 v4 - 2.1GHz, 20M, 8C/16T, 2133MT/s E5-2630 v4 - 2.2GHz, 25M, 8C/20T, 2133MT/s E5-2640 v4 - 2.4GHz, 25M, 10C/20T, 2133MT/s E5-2650 v4 - 2.2GHz, 30M, 12C/24T, 2400MT/s E5-2660 v4 - 2.0GHz, 35M, 14C/28T, 2400MT/s E5-2680 v4 - 2.4GHz, 35M, 14C/28T, 2400MT/s E5-2683 v4 - 2.1GHz, 40M, 16C/32T, 2400MT/s E5-2690 v4 - 2.6GHz, 30M, 14C/28T, 2400MT/s E5-2695 v4 - 2.1GHz, 45M, 18C/36T, 2400MT/s E5-2697 v4 - 2.3GHz, 45M, 18C/36T, 2400MT/s E5-2697A v4 - 2.6GHz, 40M, 16C/32T, 2400MT/s E5-2698 v4 - 2.2GHz, 50M, 20C/44T, 2400MT/s E5-2699 v4 - 2.2GHz, 55M, 22C/44T, 2400MT/s
Memory	32GB to 1.5TB; 8GB, 16GB, 32GB, 64GB RDIMM
Boot drives (min 2)	2.5" 7.2K SATA: 500GB 2.5" 7.2K NL-SAS: 500GB 2.5" 10K SAS: 300GB, 600GB, 1.2TB 2.5" 15K SAS: 300GB, 600GB 2.5" SATA SSD (MU): 200GB, 400GB
Internal controllers	PERC H330, PERC H730, PERC H730P (RAID 1, RAID 5)
NDC	Intel X540 (10GbE BT and i350 1GbE), Intel X520 (10GbE SFP+ and i350 1GbE), Intel X520 (10GbE SR and i350 1GbE)
Additional NIC	Intel X540 (10GbE DP BT), Intel X520 (10GbE DP SFP+), Intel X520 (10GbE DP SR)
RDMA adapter (optional, max 1)	Chelsio T520-CR (10GbE SFP+); Mellanox ConnectX-3 Pro (10GbE SFP+); Mellanox ConnectX-3 Pro (40GbE QSFP+)
Storage adapter	Dell 12Gb SAS HBA LSI 9207-8e 6GB SAS HBA
Systems management	iDRAC8
Power supply	Redundant 750W and 1100W
Storage enclosure	DSMS* 1400, DSMS* 1420, DSMS* 3060e
Storage enclosure HDD (min 4 per DSMS 1400, min 10 per DSMS 1420, min 24 per DSMS 3060e)	3.5" 7.2K NL-SAS: 2TB, 4TB, 6TB, 8TB 2.5" 10K SAS: 300GB, 600GB, 1.2TB, 1.8TB 2.5" 15K SAS: 300GB, 600GB
Storage enclosure SSD (min 2 per DSMS 1400, min 2 per DSMS 1420, min 6 per DSMS 3060e)	2.5" SAS SSD (MU): 200GB, 400GB, 800GB, 1.6TB
Operating system	Volume License Microsoft Windows Server 2012 R2 Standard Edition Microsoft Windows Server 2012 R2 Datacenter Edition

*Using Dell Storage with Microsoft Storage Spaces specific SKUs

End-to-end technology solutions

Reduce IT complexity, lower costs and eliminate inefficiencies by making IT and business solutions work harder for you. You can count on Dell for end-to-end solutions to maximize your performance and uptime. A proven leader in Servers, Storage and Networking, Dell Enterprise Solutions and Services deliver innovation at any scale. And if you're looking to preserve cash or increase operational efficiency, Dell Financial Services™ has a wide range of options to make technology acquisition easy and affordable. Contact your Dell Sales Representative for more information.

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