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Commvault® Validated Reference Design specification

Commvault HyperScale™ Software on DELL EMC® PowerEdge® R740XD2

Introduction to Commvault HyperScale™ Software

With Commvault HyperScale™ Technology, you can build a unified, modern data protection and management platform that delivers cloud-like services on-premises. The purpose of this technical specification is to detail the Dell R740XD2 server components for the Commvault Validated Reference Design. By building these services on a scale-out infrastructure and leveraging Commvault capabilities, you'll enable:

- Cloud-like agility, resiliency and availability to on-premises data and applications
- Greater end-user efficiency through automation and self-service capabilities
- Improved hardware utilization and optimized costs from general-purpose hardware
- Seamless storage scalability with predictable performance without requiring forklift upgrades
- Better, more secure data protection, utilization and movement by eliminating point product and data silos

By shifting the secondary storage and data management infrastructure to this architecture, enterprises can go a long way in transforming their data centers to be as operationally efficient, resilient and scalable as public cloud infrastructure. Lower hardware costs, operational efficiencies and simplified support allows the replacement of limited and legacy backup tools with a modern cloud enabled data management solution at the cost of replacing legacy purpose-built backup appliance (PBBA). More importantly, this architecture, which extends into public cloud, allows enterprises to offer consistent sets of services to all workloads running on premises or in public cloud, independent of the underlying infrastructure for true cloud-based data management.

General availability designation

This configuration is classified as general availability design, meaning it has been tested and validated as per the Commvault Validated Reference Design Program. This configuration is subject to change due to updated part numbers or replacement hardware due to hardware life cycle. Validated Reference Designs are developed to provide optimized costs and match performance requirements for every customer. Commvault collaborates with Dell to create fully supported design specifications. Substitutions or modifications to validated design specifications could result in unsupported configurations. Any substitutions or modifications to validated configurations must be approved by both Commvault and Dell. This configuration is currently orderable for customer deployment and supported through Commvault support channels.

How to use this document

This document details the necessary design components of the Commvault HyperScale™ Technology architecture, providing the key components required when purchasing and configuring the infrastructure for a Commvault HyperScale™ Software solution. Commvault Reference Designs deliver validated configurations with leading hardware vendor technology that provide validated designs complemented by best practices that will accelerate ROI, reduce complexity, and add customer value.

The document is broken into a high-level component section detailing the configuration and specific component options that can be selected to satisfy storage capacity and density requirements. Each subsection provides guidance for ordering configurations.

This document does not cover overall architecture and design of the Commvault HyperScale™ solution, and should be considered as a supplement specific to Dell.

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DELL PowerEdge R740XD2 specification summary

Server overview

	Technical specification
Form factor	2U
Motherboard chipset	Intel® C620 Series
Processors	Intel® Xeon® Silver 4210R
Memory	256 GB RAM (8x 32GB RDIMM)
Total slots and form factor	4 LP slots ((2) x4, (1) x16, (1) x8), 1 FH slot (x8)

Boot and metadata storage options

Boot storage houses the operating system and core Commvault HyperScale binaries, while the metadata storage provides caching areas for such operations as deduplication, indexing, and extents. Boot and metadata can be either configured together as a single unit or housed separately. There have been times that specific hardware components, surrounding flash storage, have elongated order cycle times and are typically beyond Dell's or partner's control.

Data storage options

Data storage houses the data footprint for the customer environment. Data storage configuration directly impacts the amount of data that each node can accommodate.

When deploying nodes inside of the same block (e.g. 3-node initial configuration), choose identical hard disk drives (HDDs). If the nodes in a block have different HDD sizes, the lowest size will be chosen for the data storage, which would lead to wasted resources on nodes with larger HDDs.

Separate node blocks in the same grid may use different HDDs (e.g. mixing a 3 node 6 TB block with a second 3 node 10 TB block in the same grid).

Overall sizing and retention varies per customer and therefore is beyond the scope of this document. Please refer to Commvault HyperScale Technology sizing documentation to determine the drive size (and node quantity) required for the specific deployment.

Commvault HyperScale nodes can optionally be initially deployed with partially filled HDD slots. As additional storage is required, nodes can be scaled vertically by filling empty HDD slots. Initial deployment and vertical scaling must be done in multiples of 6 drives per node. All nodes within a block must have the same number of HDD and must scale vertically at the same rate (e.g. start a block of 3 nodes with 6 of 24 drive slots filled in all nodes; expand all three nodes simultaneously by adding 6 drives to each node).

Networking options

A minimum of 2 10 GB ports are required for Commvault HyperScale™ installs, one for incoming data and one for storage communication between the nodes. It is recommended to have 4 ports, 2 for data and 2 for storage for failover and redundancy. These builds have been designed with this recommendation.

Optional I/O add-on cards

The design includes all core components to work with Commvault HyperScale™ Technology. There are specific times where additional parts may be required depending on the environment and uses case. For example, optional I/O cards for SAS and Fiber Channel connectivity. The I/O cards below are validated and included as part of the design, the quantity and type of these I/O cards are customizable, and there are multiple valid configurations possible.

SAS Connectivity is typically used for direct tape integration, while Fiber Channel cards are used for Commvault IntelliSnap® operations or tape libraries.

Bill of Materials

The Bill of Materials lists all components required to configure Commvault HyperScale nodes. Each component has been tested and validated. Substitutions cannot be supported. Country-specific components such as power cables are not listed and can be changed as required.

Qty.	Part number	Description
1	210-ARCU	PowerEdge R740XD2 Server
1	321-BDXY	Chassis Config 0, 24 x 3.5" HDD, Single PERC, for Riser Config 1 or 4
1	338-BVKD	Intel® Xeon® Silver 4210R 2.4 G, 10 C/20 T, 9.6 GT/s, 13.75 M Cache, Turbo, HT (100 W) DDR4-2400
1	338-BVKD	Intel® Xeon® Silver 4210R 2.4 G, 10 C/20 T, 9.6 GT/s, 13.75 M Cache, Turbo, HT (100 W) DDR4-2400
1	370-ADNU	2666 MT/s RDIMMs
1	370-AAIP	Performance optimized
8	370-ADNF	32 GB RDIMM 2666 MT/s Dual Rank
1	780-BCDS	C7, Unconfigured RAID for HDDs or SSDs
1	405-AAND	Dell PERC H730P RAID mezzanine, mini mono
1	385-BBKT	iDRAC9,Enterprise
1	330-BBMT	Riser Config 4, Butterfly - 1 x FH + 4 x LP, Dual CPU, R740XD2
1	542-BBBP	On-Board Broadcom 5720 Dual Port 1 Gb LOM
1	450-ADWM	Dual, Hot-plug, Redundant Power Supply (1 + 1), 1100 W
Qty.	**Part number**	**Boot and metadata storage**
1	403-BCHJ	BOSS controller card + with 2 M.2 Sticks 480 GB (RAID 1),FH
1	403-BCCG	Dell 6.4 TB, NVMe, Mixed Use Express Flash, HHHL AIC, PM1725b, DIB
Qty.	**Part number**	**Networking**
1	540-BCKU	Broadcom 57414 Dual Port 25 GbE OCP SFP28 LOM Mezz Card
1	540-BBVK	Broadcom 57414 Dual Port 10/25 GbE SFP28 Adapter, PCIe Low Profile
Qty.	**Part number**	**Data storage options**

24	400-ASIF	8 TB 7.2K RPM SATA 6 Gbps 512e 3.5 in Hot-plug Hard Drive
24	400-ASIG	10 TB 7.2K RPM SATA 6 Gbps 512e 3.5 in Hot-plug Hard Drive
24	400-AWMU	12 TB 7.2K RPM SATA 6 Gbps 512e 3.5 in Hot-plug Hard Drive
24	400-BEHY	14 TB 7.2K RPM SATA 6 Gbps 512e 3.5 in Hot-plug Hard Drive
24	400-BHFJ	16 TB 7.2K RPM SATA 6 Gbps 512e 3.5 in Hot-Plug Hard Drive

Note: NLSAS and SAS drives also supported.

Additional add-on cards

Note: Smaller form factor cards can fit in larger form factor slots, however larger form factor cards cannot fit into smaller form factor slots. For example, an x4 size card can fit in an x8 size slot, however an x8 size card cannot fit in an x4 size slot.

Free slots available

The slots below are the remaining free slots available for use in the server after the core components have been installed. Please ensure any additional cards added will physically fit in the server.

Qty.	Form Factor
2	x4 slots (1 open, 1 closed)

Optional I/O add-on cards

Qty.	Part number	Description
1	403-BBLR	Emulex LPe31002-M6-D Dual Port 16 Gb Fiber Channel HBA, LP
1	403-BBMT	QLogic 2692 Dual Port 16 Gb Fiber Channel HBA, LP

Additional resources

Additional information regarding the Dell R740XD2 can be found on the Dell website. A couple of useful links have been included:

- Dell PowerEdge R740xd2 datasheet
- Dell PowerEdge R740xd2 technical specifications guide

Commvault HyperScale™ Technology integrates with storage arrays, hypervisors, applications and the full range of cloud provider solutions to support the most diverse and dynamic environments.

To learn more, visit **commvault.com/hyperscale >**

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