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Commvault® Validated Reference Design Specification

Commvault HyperScale X™ Software on Dell R650

Introduction to Commvault HyperScale X™ Software

Commvault Hyperscale X™ Software is an intuitive and easy to deploy integrated data protection solution with a distributed scale-out file system that provides unmatched scalability, security, and resiliency. Its flexible architecture allows you to get up and running quickly and grow as your needs demand. Commvault Validated Reference Designs accelerate hybrid cloud adoption and deliver:

- Simple, flexible data protection for all workloads including containers, virtual, and databases
- High performance backup and recovery with enhanced recovery capabilities
- Optimized scalability to easily grow capacity in single-node increments as needed, on-prem and to the cloud
- Enhanced resiliency with intelligent load balancing of data across disks and nodes and the ability to support concurrent hardware failures
- Built-in ransomware protection via intelligent monitoring to detect data anomalies and alert users

By shifting the secondary storage and data management infrastructure to a scale-out architecture, enterprises can help transform their data centers to be as operationally efficient, resilient, and scalable as public cloud infrastructure. Commvault HyperScale X allows organizations to replace limited and legacy backup tools with a modern hybrid cloud-enabled data management solution that eliminates expensive forklift upgrades. The purpose of this technical specification is to provide the complete Dell R650 Commvault Validated Reference Design for Commvault Hyperscale X™ Software.

General availability designation

This configuration is classified as a general availability design, meaning it has been tested and validated per the Commvault Validated Reference Design Program. This configuration is subject to change due to updated part numbers or replacement hardware as a result of hardware life cycles. Validated Reference Designs are developed to provide optimized costs, resiliency, and performance. 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 X™ Technology architecture, providing the key components required when purchasing and configuring the infrastructure for a Commvault HyperScale X™ Software solution. Commvault Reference Designs deliver validated configurations with leading hardware vendor technology complemented by best practices that will accelerate ROI, reduce complexity, and add customer value.

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

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Dell R650 specification summary

Server overview

Technical specifications	
Form factor	1U Rack Mount
Processors	Minimum Dual Intel Silver 12 Core CPU (Ex: Intel® Xeon® Silver 4310)
Memory	Minimum 256GB RAM
Total slots and form factor	(3) x16 Half Length, Low Profile Slots

Bill of materials

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

Core Components

Core components are the base parts of the required server and cannot be changed. There can be no modifications made to these components

Qty.	Part number	Description
1	210-AYJZ	PowerEdge R650 Server
1	379-BEIB	4 x 3.5 Front Storage
1	321-BGHL	3.5" Chassis with up to 4 Hard Drives (SAS/SATA), 3 PCIe Slots, 2 CPU
1	329-BFGW	R650 Motherboard
1	379-BDTE	No Rear Storage
1	412-AAVP	Heatsink for 2 CPU configuration (CPU less than or equal to 165 W)
1	370-AEVR	3200 MT/s RDIMMs
1	780-BCDS	C7, Unconfigured RAID for HDDs or SSDs
1	405-AAUZ	PERC H745 with front load bracket
1	385-BBQV	iDRAC9, Enterprise 15 G
1	330-BBRP	Riser Config 0, 2CPU, Half Length, Low Profile, 3 x 16 Slots, SW GPU Capable
1	750-ADII	4 Standard Fans for 2 CPU
1	450-AKLF	Dual, Hot-Plug, Fully Redundant Power Supply (1+1), 1100W, Mixed Mode
1	800-BBDM	UEFI BIOS Boot Mode with GPT Partition

Flexible components

It is required to select one component (unless otherwise specified) from each of the sections below to complete the BOM, if not the BOM will be invalid, and the design will not work.

CPU		
The **minimum requirement** for the DUAL CPUs, must be an **Intel Silver level 12 Core CPU**, higher core Silver or Gold CPUs can be used if required. Lower spec'd CPUs are not supported		
Qty.	**Part number**	**Description**
2	338-CBWJ	Intel® Xeon® Silver 4310 2.1G, 12C/24T, 10.4GT/s, 18M Cache, Turbo, HT (120W) DDR4-2666

Memory		
The **minimum required RAM is 256 GB** for N4. If a customer desires more memory, they are free to do so. The minimum required RAM is listed below. It is recommended to use 16 DIMMS for better memory performance.		
Qty.	**Part number**	**Description**
16	370-AEVQ	16 GB RDIMM, 3200 MT/s, Dual Rank

Boot Drives		
For Dell, the BOSS-S2 controller is required for boot		
Qty.	**Part number**	**Description**
1	403-BCMB	BOSS-S2 controller card + with 2 M.2 480 GB (RAID 1)
1	403-BCNP	BOSS Cables and Bracket for R650

CDS/Commvault Combined Cache		
The CDS/Commvault cache requires a **minimum of a 3.2 TB SSD or NVMe** drive. **MUST** be of type **Mix Use**, Read Intensive drives are NOT supported. Please select only one of the options below. (Note Dell does not sell 3.2 TB NVMe drives)		
Qty.	**Part number**	**Description**
1	403-BCLK	6.4 TB Enterprise NVMe Mixed Use AG Drive, AIC, PCIe 4.0, DIB

Networking		
It is recommended to have a total of 4 NIC ports for network redundancy, however 2 ports are a valid configuration. Port speeds must be 10 or 25 Gpbs. Some vendors use Network Daughter or OCP cards which do not use up a PCIe slot, it is recommended to use one of those cards if available.		
Recommended configuration		
Qty.	**Part number**	**Description**
1	540-BCRX	Broadcom 57504 Quad Port 10/25 GbE,SFP28, OCP NIC 3.0
Alternative supported cards – (only listed cards are supported)		
Qty.	**Description**	
1	Broadcom 57414 Dual Port 10/25 GbE SFP28, OCP NIC 3.0	
1	Broadcom 57416 Dual Port 10 GbE BASE-T Adapter, OCP NIC 3.0	
1	Broadcom 57414 Dual Port 10/25 GbE, SFP28, PCIe card	
1	Broadcom 57416 Dual Port 10 Gb, Base-T, PCIe card,	
1	Intel XXV710 Dual Port 10/25 Gb SFP28 PCIe card	
1	Intel X710 Quad Port 10 Gb SFP+ PCIe card	
1	Mellanox MCX512A-ACAT ConnectX-5 EN 10/25 GbE PCIe Card	

Data Disks	
Data disks can be of type SAS, NLSAS or SATA. SAS is the recommended option. 20 TB drives are the largest supported drives, do not use larger than 20 TB. Smaller drive sizes than the ones listed below can be used if desired. Work with your partner/vendor for the part numbers of the drives required.	
Qty.	**Description**
4	4 TB Hard Drive
4	8 TB Hard Drive
4	12 TB Hard Drive
4	16 TB Hard Drives
4	20 TB Hard Drive

Additional add-on cards

Free slots available

The slots below are the remaining free slots available for use in the server after all the above components have been installed. Please ensure any additional cards added will physically fit in the server. Work with your partner/vendor for the part numbers of the cards required.

Qty.	Form Factor
2	x16 Half Length, Low Profile Slots

Optional I/O Cards	
Qty.	**Description**
1	QLogic 2692 Dual Port 16 Gb Fiber Channel HBA
1	QLogic 2672 16 GB Dual Port FC HBA
1	QLogic 2742 Dual port 32 Gb Fiber HBA
1	Emulex LPE 31002 Dual Port 16 Gb Fiber Channel HBA
1	Emulex LPE32002 Dual port 32 Gb Fiber HBA

Additional considerations

Please note that due to the differences in each customer environment, some components are not included in the design but must be ordered separately to ensure full functionality and connectivity. These parts include the FC and Ethernet transceivers, as well as the Ethernet, FC, and power cables

Additional resources

Additional information regarding the Dell R650 can be found on the Dell website. A couple of useful links have been included:

Dell R650 Technical Guide

Dell R650 spec sheet

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 >**