



# ▶ Commvault Validated Reference Design Specification

COMMVault HYPERSCALE™ SOFTWARE ON DELL EMC® POWEREDGE® R740XD  
VERSION 1

## ▶ 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 EMC PowerEdge R740xd infrastructure 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.

## RELEASE CANDIDATE DESIGNATION

This configuration is classified as a release candidate, meaning it is not yet fully validated and could change; however, it is built to the design specification with the vendor and is expected to become the final reference design. Validated Reference Designs are designed to provide optimized costs and match performance requirements for every customer.

Further testing is required before this configuration is fully validated it is built to the design specification with the vendor and serves as the configuration that Commvault is currently testing against.

This configuration is currently orderable for customer deployment and supported through Commvault support channels.

- ▶ Bringing a scale-out infrastructure to the Commvault Data Platform, HyperScale™ Technology integrates with storage arrays, hypervisors, applications and the full range of cloud provider solutions to support the most diverse and dynamic environments.

## REFERENCE DESIGN WITH DELL EMC

The Dell EMC PowerEdge 14th generation servers improve upon their existing extensive portfolio of modern solutions to drive IT transformation in the data center. The PowerEdge R740xd represents a suited platform for Commvault HyperScale™ software to expand and transform capabilities for customers in today's evolving software-defined world. The highly optimized PowerEdge R740xd has a number of options to ensure that the acquisition, deployment, and upkeep are streamlined.

## HOW TO USE THIS DOCUMENT

This document covers the design components of the Commvault HyperScale™ architecture, providing options for purchasing the infrastructure for a Commvault HyperScale™ Software solution. Commvault Validated Reference Designs deliver tested 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 out the configuration and specific component options that can be selected depending on the storage density, metadata, and optional I/O components that are required. 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 the Dell EMC hardware requirements.

## ▶ DELL POWEREDGE R740XD SPECIFICATION SUMMARY

### CORE COMPONENTS

Core components represent features of the build that do not change. They include Chassis, CPU, Memory and other critical elements that need to be ordered.

Country-specific components such as power cables are not listed and can be changed as required.

CORE COMPONENTS	TECHNICAL SPECIFICATION
Form Factor	2U Rackmount
Motherboard Chipset	Intel® C620
Processors	Intel® Xeon® Silver 4110
Memory	256GB RAM (8x 32GB RDIMM)
Networking	Intel X710 – Quad Port 10Gbps SFP+
Storage Controller	Dell PERC H730P

## 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. Two storage options have been included as part of this build as there have been times that specific hardware components, surrounding flash storage, have elongated order cycles and are typically beyond Dell EMC's control.

Although these two configurations rely on slightly different components they meet the required specifications for customer deployment. When selecting a configuration for deployment choose one of the following options, not both.

While both configurations options meet the required performance requirements, at the time of this writing, there is an economic advantage with the first option and should be considered as the primary choice.

OPTION	BOOT/METADATA CONFIGURATIONS	TECHNICAL SPECIFICATION
OPTION 1	Combined Boot/Metadata Configuration	4x 960GB SATA SSD, 6Gbps – RAID5
OPTION 2	Separate Boot/Metadata Boot Storage Metadata Storage	2x 480GB SATA SD, 6Gbps – RAID1 1x Dell (Samsung), 6.4TB NVMe, PCIe HHHH

NOTE: The 3.2TB NVMe is no longer available from Dell. The 6.4TB can be used in place, however is more expensive. Option 1 is the more viable option cost wise.

## 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 in the solution is able to store.

When deploying nodes inside of the same block (e.g. 3 node initial configuration), choose identical 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 6TB block with a second 3 node 10TB 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™ sizing documentation to determine the drive size (and node quantity) required for the specific deployment.

DATA STORAGE CONFIGURATION	TECHNICAL SPECIFICATION
Storage Configuration – Data Storage Storage Type	4TB, NL-SAS or SATA, 12 Drives 6TB, NL-SAS or SATA, 12 Drives 8TB, NL-SAS or SATA, 12 Drives 10TB, NL-SAS or SATA, 12 Drives 12TB, NL-SAS or SATA, 12 Drives

NOTE: Drive sizes and interfaces can change. Not all drive sizes are available from Dell EMC. Please view Data Storage Options section below.

## OPTIONAL I/O ADD-ON CARDS

The design includes all core components to work with Commvault HyperScale™ Technology. There are specific instances where additional I/O connectivity is desired as part of the overall solution. Optional I/O cards for SAS and fibre channel connectivity are validated and included as part of the design. The quantity and type of I/O cards are customizable, and there are multiple valid configurations possible.

SAS connectivity is typically used for direct tape integration, while fibre channel cards are used for Commvault IntelliSnap® operations or tape libraries.

## ► BILL OF MATERIALS

This bill of materials represents the configuration being validated as part of the Commvault Validated Reference Design Program. There are four main sections of this document: Core Components, Data Storage Options, Metadata Storage Options, and Optional Components.

## CORE COMPONENTS

QTY.	PART NUMBER	DESCRIPTION
1	[210-AKZR]	PowerEdge R740xd Server
1	[321-BCPW]	Chassis with up to 12x 3.5" Hard Drives and 4x 2.5" Flex Bay Hard Drives
1	[338-BLUQ]	Intel® Xeon® Silver 4110 2.1G, 8C/16T, 9.6GT/s 2UPI, 11M Cache, Turbo, HT (85W) DDR4-2400
1	[374-BBPN]	Intel® Xeon® Silver 4110 2.1G, 8C/16T, 9.6GT/s 2UPI, 11M Cache, Turbo, HT (85W) DDR4-2400
1	[370-ABWE] [412-AAIP] [412-AAIP]	2 Heatsinks for Midbay Configuration
1	[370-ADNU]	2666MT/s RDIMMs
1	[370-AAIP]	Performance Optimized
8	[370-ADNF]	32GB RDIMM, 2666MT/s, Dual Rank
1	[780-BCDS]	C7, Unconfigured RAID for HDDs or SSDs (Mixed Drive Types Allowed)
1	[405-AANT]	PERC H730P RAID Controller, 2GB NV Cache, Minicard
1	[385-BBKT]	iDRAC9, Enterprise

QTY.	PART NUMBER	DESCRIPTION
1	[330-BBHF]	Riser Config 1, 4 x8 slots
1	[407-BBVK] [407-BBVK] [407-BBVK] [407-BBVK] [555-BCKP]	Intel X710 Quad Port 10Gb DA/SFP+ Ethernet, Network Daughter Card, with SR Optics
1	[384-BBPZ]	6 Performance Fans forR740/740XD
1	[450-ADWM]	Dual, Hot-plug, Redundant Power Supply (1+1), 1100W

## BOOT & METADATA STORAGE OPTIONS

There are two configuration options for boot and metadata storage. Select only one option. All part numbers in the selected option are required.

OPTION	QTY.	PART NUMBER	DESCRIPTION
OPTION 1 Combined Boot & Metadata Storage	4	[400-AVTH]	960GB SSD SATA Read Intensive 6Gbps 512n 2.5in Flex Bay Drive, 1 DWPD, 1752 TBW
OPTION 2 Separate Boot & Metadata Storage	2	[400-AVTL]	480GB SSD SATA Read Intensive 6Gbps 512n 2.5in Flex Bay Drive, 1 DWPD, 876 TBW
	1	[403-BCCG]	Dell 6.4TB, NVMe, Mixed Use Express Flash, HHHH AIC, PM1725b, DIB

NOTE: At the time of this writing some NVMe PCIe cards can only be fulfilled through field installation. Dell did not offer factory installation for these PCIe cards and they will require field installation. Warranty/Support is not affected as per Dell.

## DATA STORAGE OPTIONS

For data storage, choose the appropriate part number and do not mix part numbers within a block. The drives listed for this configuration are 6Gbps SATA, but 12Gbps or NL-SAS variants of these drives are acceptable, and they may be deployed as part of this design. Currently all known variants of 6/12Gbps and NL-SAS/SATA drives are validated.

QTY.	PART NUMBER	DESCRIPTION
12	[400-ASIE]	4TB 7.2K RPM SATA 6Gbps 512n 3.5in Hot-plug Hard Drive
12	[400-ASIF]	8TB 7.2K RPM SATA 6Gbps 512e 3.5in Hot-plug Hard Drive
12	[400-AWIP]	12TB 7.2K RPM NLSAS 12Gbps 512e 3.5in Hot-Plug Hard Drive

NOTE: At the time of this writing, Dell does not offer any 6TB or 10TB drive variants through their ordering system. Should the drives become available, they are considered a validated configuration option.

## OPTIONAL I/O ADD-ON CARDS

QTY.	PART NUMBER	DESCRIPTION
1	[406-BBDY]	Emulex LPE 12002, Dual Port 8Gb Fibre Channel HBA
1	[403-BBMQ]	QLogic 2692 Dual Port 16Gb Fibre Channel HBA
1	[405-AAEB]	SAS 12Gbps HBA External Controller

### ▶ ADDITIONAL RESOURCES

Additional information regarding the Dell EMC PowerEdge R740xd can be found on the Dell website. A few useful links have been included:

- Dell PowerEdge R740xd Rack Server details and general configuration can be found at this [link](#) (US version).
- Dell PowerEdge R740xd Technical Specifications Guide can be found at this [link](#) (US version).

▶ Learn more about Commvault HyperScale Software. Visit [commvault.com/hyperscale](https://commvault.com/hyperscale).

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