

Overview



The following figure shows the hardware used at the rack level in this reference architecture. In addition to servers and switches, the rack includes power distribution units (PDUs) and the cables that are required for network connectivity.

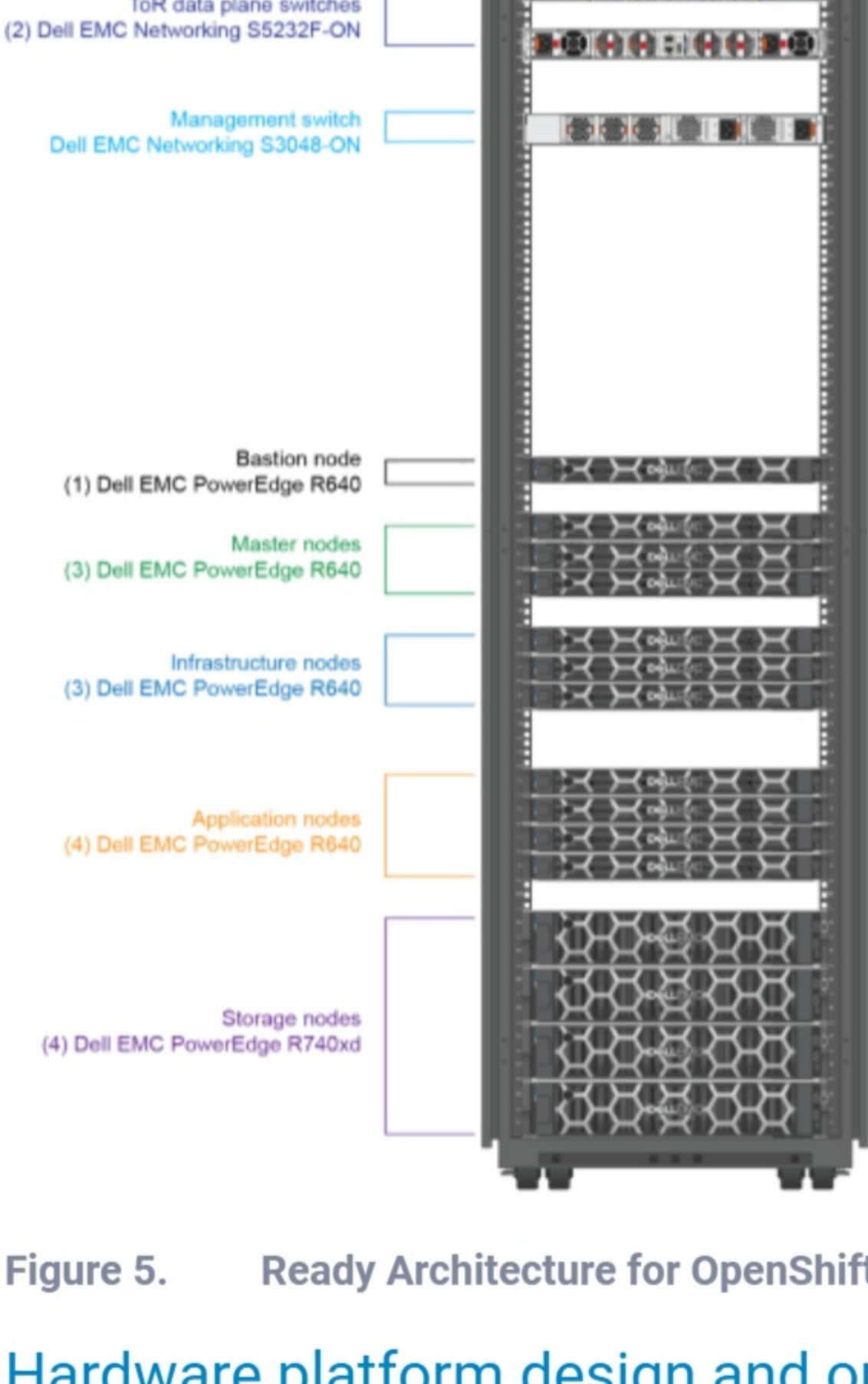
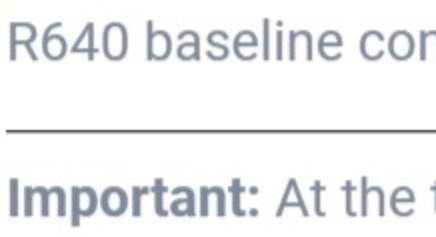


Figure 5. Ready Architecture for OpenShift Platform rack diagram

Hardware platform design and ordering information

DevOps teams who manage large numbers of servers typically purchase servers of almost identical configuration to simplify the management of cluster nodes and the movement of servers from rack to rack, from cluster to cluster, or within a cluster. Dell EMC recognizes the benefits of uniformity in server node configuration.

This ready architecture uses a single base configuration for the PowerEdge R640 nodes that are used in the cluster role nodes: master, infrastructure, application/workload, and storage. Infrastructure nodes require the addition of two NVMe drives to this baseline configuration.



We applied the same concept to the configuration for the larger 2U PowerEdge R740xd storage node servers. The following table shows the PowerEdge Server R640 baseline configurations used in the reference architecture:

Important: At the time of ordering, new SKUs will be added and local current SKUs will replace those shown in the table.

Table 3. PowerEdge R640 baseline server configuration

Qty	SKU	Description
1	210-AKWU	PowerEdge R640 Server
1	329-BDKC	PowerEdge R640 motherboard
1	321-BCQQ	2.5 in. chassis with up to 10 hard drives, 8 NVMe drives, and 3 PCIe slots, 2 CPU only
1	338-BLMH	Intel Xeon Gold 6138 2.0 G, 20C/40T, 10.4 GT/s, 27 M Cache, Turbo, HT (125W) DDR4-2666
1	374-BBOC	Intel Xeon Gold 6138 2.0 G, 20C/40T, 10.4GT/s, 27 M Cache, Turbo, HT (125W) DDR4-2666
1	370-ABWE	DIMM blanks for system with 2 processors
2	412-AAIQ	Standard 1U Heatsink
1	370-ADNU	2,666 MT/s RDIMMs
1	370-AAIP	Performance-optimized
12	370-ADNF	32 GB RDIMM 2,666 MT/s dual rank
1	405-AAJU	HBA330 12 Gbps SAS HBA Controller (NON-RAID), minicard
1	403-BBPZ	BOSS controller card + with 2 M.2 Sticks 240 G (RAID 1), LP
1	385-BBKT	iDRAC9, Enterprise
1	379-BCQV	iDRAC Group Manager, enabled
1	379-BCSG	iDRAC, legacy password
1	385-BBLG	Static IP
1	330-BBGN	Riser Config 2, 3 x 16 LP
1	406-BBLG	Mellanox ConnectX-4 Lx Dual Port 25 GbE SFP 28 rNDC
1	406-BBLD	Mellanox ConnectX-4 Lx dual port 25 GbE SFP28 network adapter, low profile
1	429-AAIQ	No internal optical drive
1	384-BBQI	8 performance fans for the R640 server
1	450-ADWS	Dual, hot-plug, redundant power supply (1+1), 750W
2	492-BBDH	C13 to C14, PDU Style, 12 AMP, 2 ft. (.6m) power cord, North America
1	800-BBDM	UEFI BIOS boot mode with GPT partition
1	770-BBBC	ReadyRails sliding rails without cable management arm
1	366-0193	Std Bios setting power management* - maximum performance
2	400-AWLD	Dell 1.6TB, NVMe, Mixed Use Express Flash, 2.5 SFF Drive, U.2, P4610 with Carrier, CK

The following table shows the PowerEdge Server R740xd baseline configurations used in the reference architecture:

Important: At the time of ordering, new SKUs will be added and local current SKUs will replace those shown in the table.

Table 4. PowerEdge R740xd baseline server configuration

Qty	SKU	Description
1	210-AKZR	PowerEdge R740XD Server
1	329-BDKH	PowerEdge R740/R740XD motherboard
1	321-BCRC	Chassis up to 24 x 2.5 in. hard drives including 12 NVMe drives, 2 CPU configuration
1	338-BLMH	Intel Xeon Gold 6138 2.0G, 20C/40T, 10.4GT/s, 27 M Cache, Turbo, HT (125W) DDR4-2666
1	374-BBOC	Intel Xeon Gold 6138 2.0G, 20C/40T, 10.4GT/s, 27 M Cache, Turbo, HT (125W) DDR4-2666
1	412-AAIQ	Standard 1U Heatsink
1	370-ADNU	2,666 MT/s RDIMMs
12	370-ADNF	32GB RDIMM 2,666 MT/s dual rank
1	780-BCDI	No RAID
1	405-AANK	HBA330 controller adapter, low profile
1	365-0354	CFI, standard option not selected
1	403-BBPT	BOSS controller card + with 2 M.2 Sticks 240G (RAID 1), FH
1	385-BBKT	iDRAC9, Enterprise
1	379-BCQV	iDRAC Group Manager, enabled
1	379-BCSG	iDRAC, legacy password
1	385-BBLG	Static IP
1	330-BBHD	Riser Config 6, 5 x 8, 3 x1 6 slots
1	406-BBLG	Mellanox ConnectX-4 Lx Dual Port 25 GbE SFP28 rNDC
1	406-BBLE	Mellanox ConnectX-4 Lx Dual Port 25 GbE SFP28 network adapter
1	384-BBPZ	6 performance fans for R740/740XD
1	450-ADWM	Dual, hot-plug, redundant power supply (1+1), 1100W
1	492-BBDH	C13 to C14, PDU Style, 12 AMP, 2 ft (.6m) power cord, North America
1	325-BCHU	PowerEdge 2U standard bezel
1	800-BBDM	UEFI BIOS Boot Mode with GPT partition
1	770-BBBQ	ReadyRails sliding rails without cable management arm
1	366-0193	Std Bios setting power management - maximum performance
Select ONE of the rows below		
24	Check part at order time	800 GB, 1.92 TB, or 3.84 TB SSD SAS Mix Use 12 Gbps 512e 2.5 in. hot-plug AG drive, 3 DWPD, 4380 TBW, CK
12	Check part at order time	Dell 1.6 TB, 3.2 TB or 6.4 TB, NVMe, mixed use express flash, 2.5 SFF drive, U.2, P4610 with Carrier, CK

The following table describes the hardware configuration that is required to build the cluster design that we used for our validation work:

Table 5. Cluster configuration

Node name	Qty.	Configuration
Bastion	1	Dell EMC PowerEdge R640 baseline server configuration
Master	3	Dell EMC PowerEdge R640 baseline server configuration
Infrastructure	3	Dell EMC PowerEdge R640 baseline server configuration Add to each node: 2 x Dell 1.6 TB, NVMe, mixed use express flash, 2.5 in. SFF drive, U.2, P4610 with Carrier, CK (SKU 400-AWLD)
Application	4 or more	Dell EMC PowerEdge R640 baseline server configuration
Storage	4 or more	Dell EMC PowerEdge R740xd baseline server configuration

The following table provides additional cluster configuration information:

Table 6. Additional cluster configuration reference information

Quantity	Description	Dell EMC reference
1*	Rack enclosure: APC AR3300 NetShelter SZ 42U	APC AR3300 NetShelter SZ 42U
1**	Management switch: Dell EMC Networking S3048-ON	Dell Networking S-Series 1GbE switches
2	Data switch: Dell EMC Networking S5248F-ON	Dell Networking S-Series 25/40/50/100GbE switches
11	Bastion, infrastructure, master, application nodes: Dell EMC PowerEdge R640	PowerEdge R640 Rack Server
4	Storage nodes: Dell EMC PowerEdge R740xd	PowerEdge R740xd Rack Server
	Dell EMC PowerEdge R640**	PowerEdge R640 Rack Server
2-4*	Power distribution unit APC metered rack PDU 17.2 kW	APC metered rack PDU 17.2 kW

*Rack enclosures and power distribution units are site-specific. The physical dimensions and power requirements must be reviewed during a site survey.

**The configuration of the Dell EMC PowerEdge Server R640 equipped with 10 x NVMe SSD drives serving as storage nodes has been validated.