DELLTechnologies

Dell PowerEdge XE8640

Technical Guide

DELLTechnologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

System overview

The Dell PowerEdge XE8640 is Dell's latest 2-socket, 4U accelerated rack server designed to run complex, compute intensive workloads using the latest industry acceleration technology, as well as highly scalable memory, I/O, and network options.

The system features:

- Two 4th Generation Intel Xeon Scalable processors with up to 56 cores
- Sixteen or thirty two DDR5 DIMM slots
- Four redundant AC or DC power supply units
- Up to eight U.2 SAS/SATA/NVMe SSD drives
- Up to eight E3.S NVMe SSD drives

Topics:

Key workloads

The purpose built XE8640 is designed for HPC and AI use cases:
- HPC Modeling and Simulation
- Artificial Intelligence and Machine Learning

New technologies

Table 1. New technologies

Technology	Detailed Description
4th Generation Intel Xeon Scalable processors	Core count: Up to 56 core processor
4800 MT/s DDR5 Memory	Max 16 DIMM per processor and 32 DIMMs per system
	Supports DDR5 ECC RDIMM
Flex I/O	Optional LOM board, 2x1Gb with BCM5720 LAN controller
	Rear I/O with: - 1 x USB 3.0 - 1 x USB 2.0 - 1 x VGA port
	Optional Serial Port
	Optional OCP Mezz 3.0
	Front I/O with: - 1 x USB 2.0 - 1x iDRAC Direct (Micro-AB USB) port - 1 x VGA port
CPLD 1-wire	Support payload data of Front PERC, Riser, BP and Rear IO to BOSS-N1 and iDRAC
Dedicated PERC	Front Storage module PERC with Front PERC H965i
Software RAID	OS RAID / S160

Table 1. New technologies (continued)

Technology	Detailed Description
Power Supplies	Four Titanium 2800 W AC with 3+1 PSU redundancy and 2+2 FTR redundancy

System features and generational comparison

The following table shows the comparison between the PowerEdge XE8640 with the PowerEdge XE8545

Table 2. Features comparison

Features	PowerEdge XE8545	PowerEdge XE8640
Processor	2x AMD Milan Processor (SP3) processor - Interchip global memory interconnect (xGMI2).	2x 4th Generation Intel Xeon Scalable processors with up to 56 cores
Accelerators/GPUs	4x NVIDIA GPUs w/ NVLINK HGX A100 4-GPU 40GB/400W or HGX A100 4-GPU 80GB/500W	4x NVIDIA GPUs w/ NVLINK - HGX H100 4-GPU 80 GB/700 W
Memory	32x RDIMM, DDR4 with ECC, bandwidth up to 3200 MT/S	32x RDIMM, DDR5 with ECC, bandwidth up to 4800 MT/S
Disk Drives	10x 2.5 inches 12 Gb SAS SSD or 12 Gb SATA SSD - or mixed, with up to 8x NVMe SSD	8x 2.5 inches U.2 NVMe SSD 8x 2.5 inches U.2 SAS/ SATA,SSD 8x E3.S NVMe SSD
Storage Controllers	BOSS S1.5, H745,H755	BOSS N1, H965i
NVMe PCIe SSD	Up to 8x NVMe SSD	Up to 8x NVMe SSD
PCIe Slots	Up to 4x PCIe Gen4 slots (3x 16 or 2 x16 + 2 x8)	Up to 4x 16 PCIe Gen5 slots
LOM	2x 1 GbE	2x 1 GbE
OCP 3.0	Max 1 x OCP 3.0	Max 1 x OCP 3.0 (PCIe x8)
USB Ports	- Front: 1 port (USB 2.0), dedicated for iDRAC - Rear: 1 port (USB 3.0) + 1 port (USB 2.0 + Bison)	- Front: 1 port (USB 2.0), dedicated for iDRAC - Rear: 1 port (USB 3.0) + 1 port (USB 2.0)
Rack Height	4U	4U
Power Supplies	- Platinum: 2400 W (Mixed Mode: AC 100 V~240 V input) - Titanium: 2800 W (Mixed Mode: AC 200 V~240 V input) 2800 W (Mixed Mode: DC 240 V input)	Titanium: 2800 W (Mixed Mode: 200-240 VAC or 240 HVDC input)
System Management	- iDRAC9 with Lifecycle Controller with feature additions. - Front: 1 dedicated Micro USB for iDRAC - Rear: 1 dedicated RJ45 for iDRAC	- iDRAC9 with Lifecycle Controller with feature additions. - Front: 1 dedicated Micro USB for iDRAC
Availability	- Hot-plug drives - Hot-plug redundant cooling. - Hot-plug redundant power supplies. - BOSS-S1V5	- Hot-plug drives - Hot-plug redundant cooling. - Hot-plug redundant power supplies. - BOSS-N1
Security	TPM 2.0	TPM 2.0

Chassis views and features

Topics:

- Chassis views
- Quick Resource Locator

Chassis views

Front view of the system

Figure 1. Front view 8 x u.2 drive system

Table 3. Features available on the front of the system

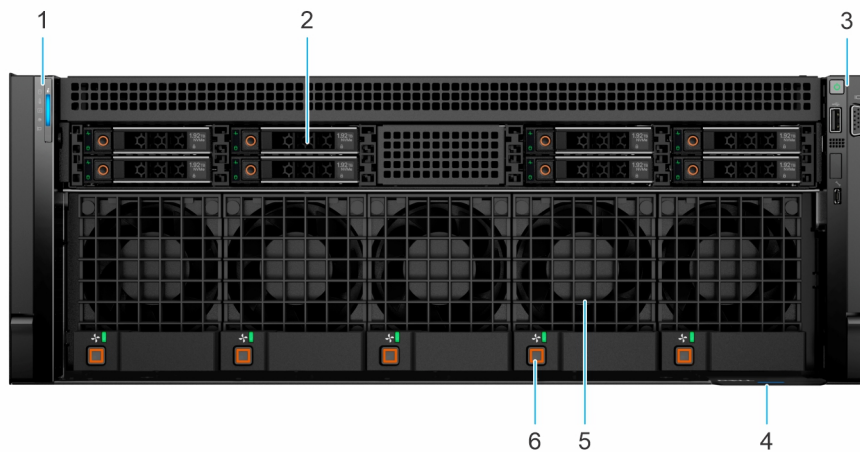| Item	Ports, panels, and slots	Description
1	Left control panel	Contains the system health, system ID, and the status LED indicator.
2	Drives	Enables you to install drives that are supported on your system.
3	Right control panel	Contains the power button, USB port, iDRAC Direct (Micro-AB USB) port.
4	Express Service Tag	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.
5	GPU fan	Enables you to install GPU fans for thermal regulation.
6	GPU fan release button	Press the release button to slide the GPU fan out of the system.
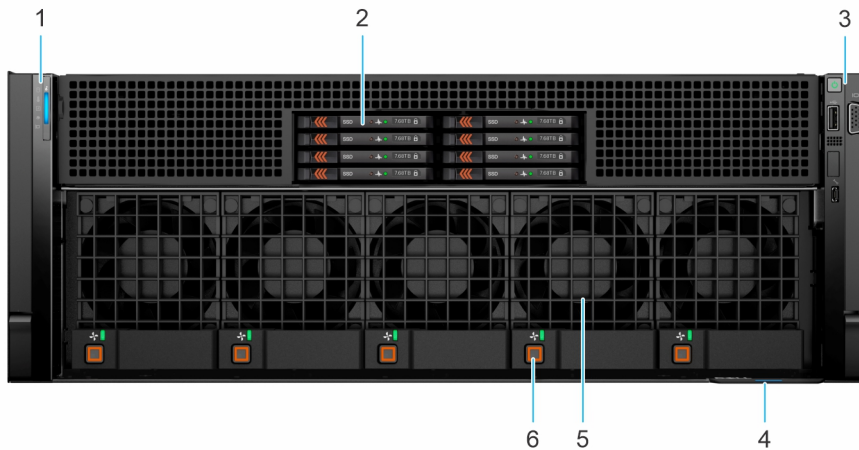
Figure 2. Front view 8 x E3.S drive system

Table 4. Features available on the front of the system

Item	Ports, panels, and slots	Description
1	Left control panel	Contains the system health, system ID, and the status LED indicator.
2	Drives	Enables you to install drives that are supported on your system.
3	Right control panel	Contains the power button, USB port, iDRAC Direct (Micro-AB USB) port.
4	Express Service Tag	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, the Express Service Tag will also contain the iDRAC secure default password.
5	GPU fan	Enables you to install GPU fans for thermal regulation.
6	GPU fan release button	Press the release button to slide the GPU fan out of the system.

Rear view of the system
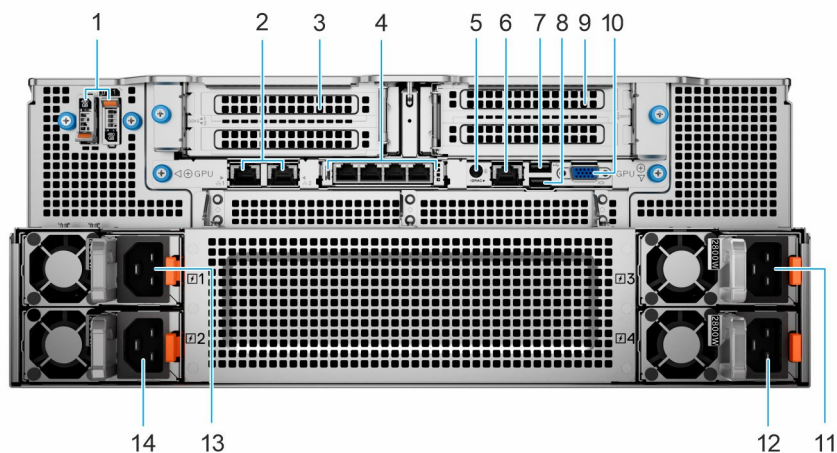
Figure 3. Rear view of XE8640 system

Table 5. Rear view of the system

Item	Ports, panels, or slots	Icon	Description
1	BOSS-N1	N/A	There are two M.2 connectors populated on the board and support two NVMe drives for boot.

Table 5. Rear view of the system (continued)

Item	Ports, panels, or slots	Icon	Description
2	NIC Ports	⠿	The NIC ports that are integrated on the LOM card provide network connectivity which is connected to the system board.
3	PCIe expansion card riser	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	OCP NIC port (optional)	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board.
5	System Identification (ID) button	ⓘ	The System Identification (ID) button is available on the front and back of the system. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the step through mode. When pressed, the system ID LED in the back panel blinks until either the front or rear button is pressed again. Press the button to toggle between on or off mode. ⓘ **NOTE:** If the server stops responding during POST, press and hold the System ID button for more than five seconds to enter the BIOS progress mode ⓘ **NOTE:** To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the System ID button for more than 15 seconds.
6	iDRAC dedicated port	🔧	Enables you to remotely access iDRAC.
7	USB 2.0 port	⤻	The USB port is 4-pin, 2.0-compliant. This port enables you to connect USB devices to the system.
8	USB 3.0 port	ss⤻	The USB port is 9-pin and 3.0-compliant. This port enables you to connect USB devices to the system.
9	VGA port	▭	Enables you to connect a display device to the system.
10	Power supply unit (PSU3)	⚡3	Indicates the PSU3.
11	Power supply unit (PSU4)	⚡4	Indicates the PSU4.
12	Power supply unit (PSU2)	⚡1	Indicates the PSU1.
13	Power supply unit (PSU1)	⚡2	Indicates the PSU2.

Inside the system

Figure 4. Inside the XE8640 system

Quick Resource Locator

The QRL on everything (SILs, GSG, Owner's Manual except on the EST) is a generic QRL for XE8640 that leads to a webpage for that product. That webpage has links for things like setup and service videos, iDRAC manual, and other things that apply to the platform. The QRL on the EST is unique and specific to that service tag and will contain the Service Tag number and the iDRAC password. The label and the QRL code within it are printed on demand at the L10 factories. This QRL links to a webpage that shows the exact configuration as built for that customer, and the specific warranty purchased. It is one click away from the same content of generic information that applies to XE8640 that is available in the other QRLs.
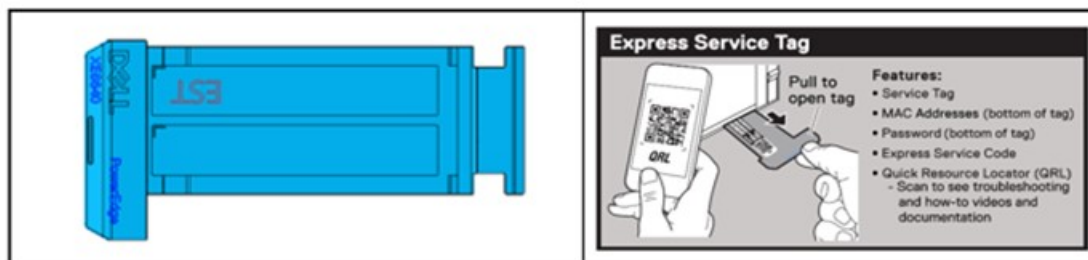
Figure 5. Luggage tag EST QRL label

Figure 6. Quick Resource Locator for PowerEdge XE8640 system

Processor

Topics:

- Processor features
- Chipset

Processor features

The Intel 4th Generation Xeon® Scalable Processors stack is the next generation data center processor offering with significant performance increases, integrated acceleration, and next generation memory and I/O. Sapphire Rapids accelerate customer usages with unique workload optimizations.

The following lists the features and functions that are in the upcoming 4th Generation Intel® Xeon Scalable Processor offering:

- Faster UPI with up to four Intel Ultra Path Interconnect (Intel UPI) at up to 16 GT/s, increasing multi-socket bandwidth
- More, faster I/O with PCI Express 5 and up to 80 lanes (per socket)
- Enhanced Memory Performance with DDR5 support and memory speed up to 4800 MT/s in one DIMM per channel (1DPC) and 4400 MT/s in two DIMM per channel (2DPC)
- New built-in accelerators for data analytics, networking, storage, crypto, and data compression

Supported processors

Table 6. Supported Processors for XE8640

Processor	Clock Speed (GHz)	Cache (M)	UPI (GT/s)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	CPS Enabled	TDP	Release
8480+	2	105	16	56	112	Turbo	4800	6 TB	Y	350 W	RTS
8468	2.1	90	16	48	96	Turbo	4800	6 TB	Y	350 W	RTS
8462Y+	2.8	60	16	32	64	Turbo	4800	6 TB	Y	300 W	RTS
8452Y	2	67.5	16	36	72	Turbo	4800	6 TB	Y	300 W	RTS
8470	2	98	16	52	104	Turbo	4800	6 TB	Y	350 W	RTS
8460Y+	2	75	16	40	80	Turbo	4800	6 TB	Y	300 W	RTS
6448Y	2.2	60	16	32	64	Turbo	4800	6 TB	Y	225 W	RTS
6442Y	2.6	45	16	24	48	Turbo	4800	6 TB	Y	225 W	RTS
5418Y	2.0	45	16	24	48	Turbo	4400	4TB	Y	185 W	RTS

Chipset

The system supports Intel® C741 series chipset.

DMI - 3.0 speed (port width x8, x4)

USB ports - up to 10 superspeed (USB 3.1), 14 highspeed (USB 2.0)

SATA ports - up to 20 SATA port

PCIe Express - Up to 20 lanes, PCIe 3.0

Chipset features

- PCI-E interfaces
  - Integrated PCI Express Gen5 for improved bandwidth and connectivity
  - Up to 80 lanes per processor
  - Connect PCIe x1 to iDRAC- integrated VGA chip
- Integrated USB - maximum of 10 SuperSpeed (USB 3.1), 14 highspeed (USB 2.0)
  - One front port (USB 2.0 / Right front I/O)
  - Two rear ports (USB 2.0/3.0)

Memory subsystem

Topics:

- System memory guidelines
- General memory module installation guidelines

System memory guidelines

The PowerEdge XE8640 system supports DDR5 registered DIMMs (RDIMMs). System memory holds the instructions that are started by the processor.

Your system memory is organized into eight channels per processor (two memory sockets per channel),16 memory sockets per processor and 32 memory sockets per system.
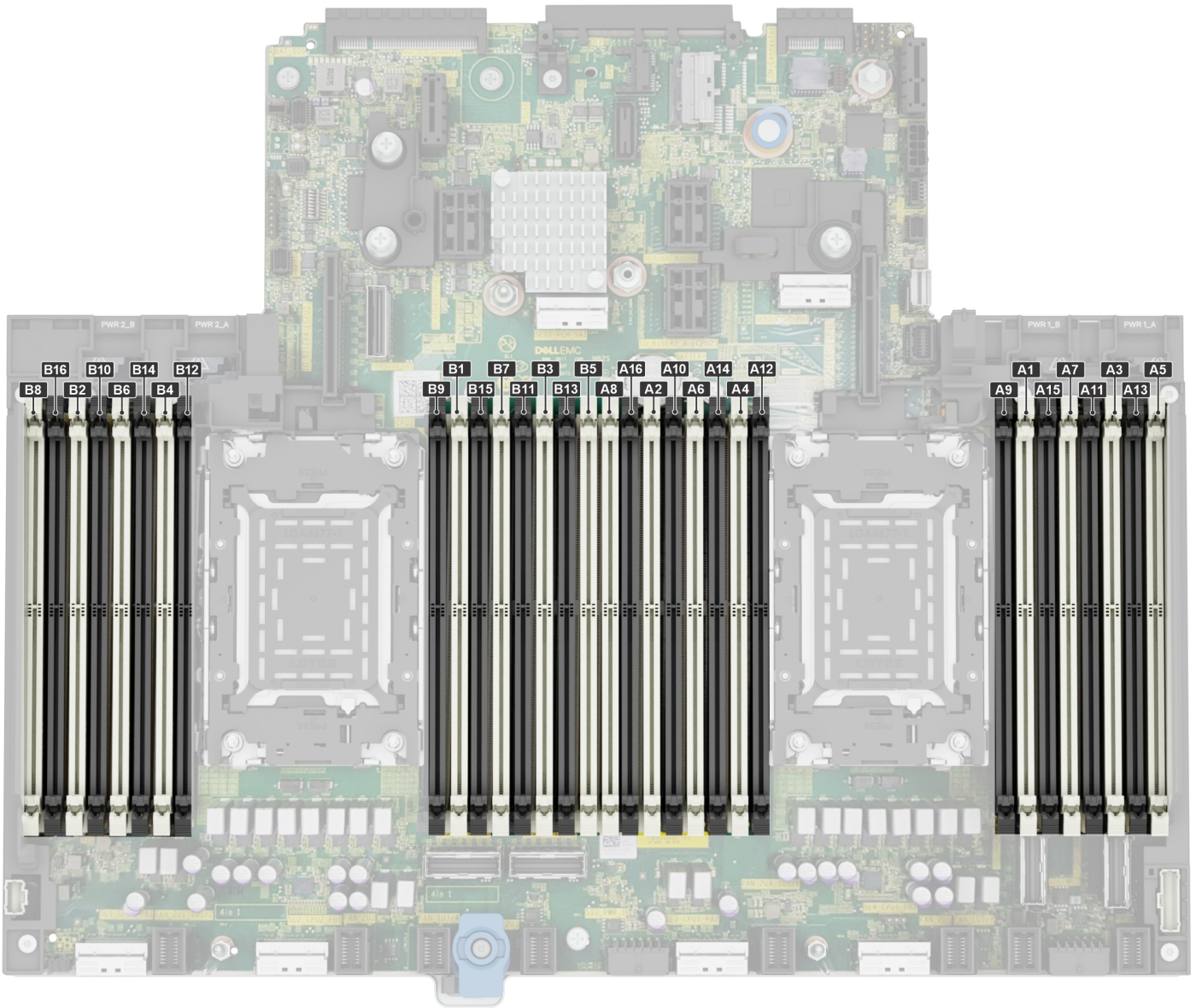
Figure 7. Memory channels

Memory channels are organized as follows:

Table 7. Memory channels

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F	Channel G	Channel H
Processor 1	Slots A1 and A9	Slots A7 and A15	Slots A3 and A11	Slots A5 and A13	Slots A4 and A12	Slots A6 and A14	Slots A2 and A10	Slots A8 and A16
Processor 2	Slots B1 and B9	Slots B7 and B15	Slots B3 and B11	Slots B5 and B13	Slots B4 and B12	Slots B6 and B14	Slots B2 and B10	Slots B8 and B16

Table 8. Supported memory matrix

DIMM type	Rank per DIMM and Data Width	DIMM capacity (GB)	Speed (MT/s); Voltage (V); DIMM per channel (DPC)	
			1 DIMM per channel (DPC)	2 DIMMs per channel (DPC)
RDIMM	DR X 8	32 GB	4800 MT/s	4400 MT/s

Table 8. Supported memory matrix (continued)

DIMM type	Rank per DIMM and Data Width	DIMM capacity (GB)	Speed (MT/s); Voltage (V); DIMM per channel (DPC)	
			1 DIMM per channel (DPC)	**2 DIMMs per channel (DPC)**
	DR X 4	64 GB	4800 MT/s	4400 MT/s
RDIMM 3DS	4R X 4	128 GB	4800 MT/s	4400 MT/s

General memory module installation guidelines

To ensure optimal performance of your system, observe the following general guidelines when configuring your system memory. If your system's memory configuration fails to observe these guidelines, your system might not boot, stop responding during memory configuration, or operate with reduced memory.

The memory bus may operate at speeds of 4800 MT/s depending on the following factors:

- System profile selected (for example, Performance, Performance Per Watt Optimized (OS), or Custom [can be run at high speed or lower])
- Maximum supported DIMM speed of the processors
- Maximum supported speed of the DIMMs

(i) **NOTE:** MT/s indicates DIMM speed in MegaTransfers per second.

The system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for installing memory modules:

- All DIMMs must be DDR5
- If memory modules with different speeds are installed, they operate at the speed of the slowest installed memory module(s).
- Populate memory module sockets only if a processor is installed.
- For dual-processor systems, sockets A1 to A16 and sockets B1 to B16 are available.
- In **Optimizer Mode**, the DRAM controllers operate independently in the 64-bit mode and provide optimized memory performance.

Table 9. Memory population rules

Processor	Configuration	Memory population	Memory population information
Dual processor (Start with processor1. Processor 1 and processor 2 population should match)	Optimizer (Independent channel) population order	A{1}, B{1}, A{2}, B{2}, A{3},B{3}, A{4}, B{4}, A{5}, B{5},A{6}, B{6}, A{7}, B{7} A{8},B{8}	Odd amount or DIMMS per processor is allowed. DIMMs must be populated identically per processor

Storage

Topics:

- Storage controller specifications
- Drives

Storage controller specifications

. The PowerEdge XE8640 system supports the following controller cards:

Table 10. Storage controller cards

Supported storage controller card
Internal Boot ● Boot Optimized Storage Subsystem (NVMe BOSS-N1): HWRAID 1, 2 x M.2 SSDs
Software RAID ● S160
Hardware RAID ● H965i

Drives

The PowerEdge XE8640 system supports:

- 8 x 2.5 inch hot-swappable NVMe SSD drives.
- 8 x E3.S hot-swappable NVMe SSD drives.

ⓘ **NOTE:** For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at https://www.dell.com/support >**Browse all Products** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Documentation** > **Manuals and Documents**.

Networking

Topics:

Overview

PowerEdge offers a wide variety of options to get information moving to and from our servers. Industry best technologies are chosen, and systems management features are added by our partners to firmware to tie in with iDRAC. These adapters are rigorously validated for worry-free, fully supported use in Dell servers.

OCP 3.0 support

Table 11. OCP 3.0 feature list

Feature	OCP 3.0
Form factor	SFF
PCIe Gen	Gen4
Max PCIe width	x8
Max no. of ports	4
Port type	BT/SFP/SFP+/SFP28/SFP56
Max port speed	100 GbE
NC-SI	Yes
SNAPI	Yes
WoL	Yes
Power consumption	15 W−35 W

Supported OCP cards

Table 12. Supported OCP cards

Form factor	DPN	Vendor	Port type	Port speed	Port count
OCP 3.0	61X09	Intel	SFP28	25GbE	2
	3Y64D	Broadcom	SFP28	25GbE	4
	50RV4	Intel	BT	10GbE	4
	W5HC8	Broadcom	BT	10GbE	4
	24FG6	Broadcom	SFP28	25GbE	2
	R1KTR	Intel	SFP28	25GbE	4

Table 12. Supported OCP cards (continued)

Form factor	DPN	Vendor	Port type	Port speed	Port count
	Y4VV5	Intel	SFP28	25GbE	4
	3Y64D	Broadcom	SFP28	25GbE	4
	R1KTR	Intel	SFP28	25GbE	4

ⓘ **NOTE:** RHEL9.2 does not support 3Y64D

OCP NIC 3.0 vs. rack Network Daughter Card comparisons

Table 13. OCP 3.0, 2.0, and rNDC NIC comparison

Form Factor	Dell rNDC	OCP 2.0 (LOM Mezz)	OCP 3.0	Notes
PCIe Gen	Gen 3	Gen 3	Gen 4	Supported OCP3 are SFF (small form factor)
Max PCIe Lanes	x8	Up to x16	• Up to x 8 • Up to x16 (required additional cable to support)	See server slot priority matrix
Shared LOM	Yes	Yes	Yes	This is iDRAC port redirect
Aux Power	Yes	Yes	Yes	Used for Shared LOM

Supported PCIe NIC

Table 14. Supported PCIe NIC

Form factor	DPN	Vendor	Port type	Port speed	Port count
PCIe	85F8F	Intel	SFP28	100GbE	2P
	CD16M	Intel	SFP28	25GbE	2P
	FPM6F	Broadcom	QSFP	100GbE	2P
	K84XJ	Mellanox	OSFP	200GbE	1P
	8P2T2	Mellanox	Q56	100GbE	2P
	H3T3V	Broadcom	SFP	25GbE	2P
	J3D14	Broadcom	SFP28	25GbE	4P
	VK88G	Intel	SFP28	25GbE	4P
	Y1T43	Mellanox	QSFP56	100GbE	1P
	1GK7G	Mellanox	QSFP56	200GbE	1P

ⓘ **NOTE:** RHEL9.2 does not support Y1T43 and H3T3V

PCIe subsystem

Topics:

- PCIe slot mechanical compatibility matrix
- Slot priority matrix

PCIe slot mechanical compatibility matrix

Table 15. PCIe Riser Configurations

Config No.	Riser configuration	No. of Processors	PERC type supported	Rear storage possible
1	R1A+R4A	2	With or Without fPERC	No

Table 16. Expansion card slots

Location	Height	Length	CPU1	CPU2
			Riser R1A	Riser R4A
PCIe Slot -1	FH	HL	PCIe Gen5 X16	N/A
PCIe Slot -2	FH	HL	PCIe Gen5 X16	N/A
PCIe Slot -3	FH	HL	N/A	PCIe Gen5 X16
PCIe Slot -4	FH	HL	N/A	PCIe Gen5 X16

Slot priority matrix

Table 17. Configuration 1: R1A+R4A

Supplier	Card type	Slot priority	Maximum number of cards	Slot generation
Intel	OCP:25Gb	INT	1	Gen4
Broadcom	OCP:25Gb	INT	1	Gen4
Intel	OCP:10Gb	INT	1	Gen3
Broadcom	OCP:10Gb	INT	1	Gen3
Broadcom	OCP:25Gb	INT	1	Gen3
Intel	OCP:25Gb	INT	1	Gen4
Intel	NIC:100Gb	1, 3, 2, 4	4	Gen4
Mellanox	NIC:100Gb	1, 3, 2, 4	4	Gen4
Mellanox	NIC:25Gb	1, 3, 2, 4	4	Gen4
Intel	NIC:25Gb	1, 3, 2, 4	4	Gen4
Broadcom	NIC:100Gb	1, 3, 2, 4	4	Gen4
Broadcom	NIC:25Gb	1, 3, 2, 4	4	Gen3

Table 17. Configuration 1: R1A+R4A (continued)

Supplier	Card type	Slot priority	Maximum number of cards	Slot generation
Broadcom	NIC:25Gb	1, 3, 2, 4	4	Gen4
Intel	NIC:25Gb	1, 3, 2, 4	4	Gen4
Mellanox	InfiniBand	1, 3, 2, 4	4	Gen5
Mellanox	InfiniBand	1, 3, 2, 4	4	Gen5
Mellanox	InfiniBand	1, 3, 2, 4	4	Gen4
Nvidia	H100 4-GPU SXM4 GPU Baseboard	21	1	Gen5
Nvidia	H100 4-GPU SXM4 GPU Baseboard	22	1	Gen5
Nvidia	H100 4-GPU SXM4 GPU Baseboard	23	1	Gen5
Nvidia	H100 4-GPU SXM4 GPU Baseboard	24	1	Gen5
FOXCONN	Front PERC	INT	1	Gen4
FOXCONN	BOSS	INT	1	Gen3
INVENTEC	LOM Card	INT	1	Gen2

For add-in cards that can be mapped to the XE8640 and guidelines for installing expansion cards, see the XE8640 slot priority matrix file on Sales Portal.

Link:https://www.delltechnologies.com/resources/en-us/auth/products/servers/category.htm

Power, thermal, and acoustics

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps to regulate temperature by reducing server noise and power consumption. The table below lists the tools and technologies Dell offers to lower power consumption and increase energy efficiency.

Topics:

- Power
- Thermal
- PowerEdge XE8640 acoustics

Power

Table 18. Power tools and technologies

Feature	Description
Power Supply Units(PSU) portfolio	Dell's PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. Find additional information in the Power supply units section.
PSU redundancy options	- Not Redundant - PSU Redundant (3+1) FR (Full Redundant) - PSU Redundant (2+2) FTR (Fault Tolerance Redundant) - A/B Grid Redundant (Not supported)
Tools for right sizing	Enterprise Infrastructure Planning Tool (EIPT) is a tool that can help you determine the most efficient configuration possible. With Dell's EIPT, you can calculate the power consumption of your hardware, power infrastructure, and storage at a given workload. Learn more at www.dell.com/calc.
Industry Compliance	Dell's servers are compliant with all relevant industry certifications and guide lines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: - Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% - More accurate reporting of power - Better performance under a power cap
Power capping	Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems Management	iDRAC Enterprise and Datacenter provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level. Dell OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies.
Active power management	Intel Node Manager is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC9 Datacenter and OpenManage Power Center that allows policy-based management of power and thermal at the individual server, rack, and data center level. Hot spare reduces power consumption of redundant power

Table 18. Power tools and technologies (continued)

Feature	Description
	supplies. Thermal control off a speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption. Idle power enables Dell servers to run as efficiently when idle as when at full workload.
Rack infrastructure	Dell offers some of the industry's highest-efficiency power infrastructure solutions, including: ● Power distribution units (PDUs) ● Uninterruptible power supplies (UPSs) ● Energy Smart containment rack enclosures Find additional information at: https://www.delltechnologies.com/en-us/servers/power-and-cooling.htm.

Power Supply Units

Energy Smart power supplies have intelligent features, such as the ability to dynamically optimize efficiency while maintaining availability and redundancy. Also featured are enhanced power-consumption reduction technologies, such as high-efficiency power conversion and advanced thermal-management techniques, and embedded power-management features, including high-accuracy power monitoring. The table below shows the power supply unit options that are available for the XE8640.

Table 19. PSU specifications for the PowerEdge XE8640 system

PSU	Class	Frequency	Voltage	Current
2800 W Mixed Mode AC/DC	Titanium	50/60 Hz	200 - 240 V AC	15.6-12.7A
	N/A	N/A	240 V DC	13.6A

Thermal

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption.

Thermal design

Thermal management of the platform helps deliver high performance with the right amount of cooling to components, while maintaining the lowest fan speeds possible. This is done across a wide range of ambient temperatures from 10°C to 35°C (50°F to 95°F) and to extended ambient temperature ranges.
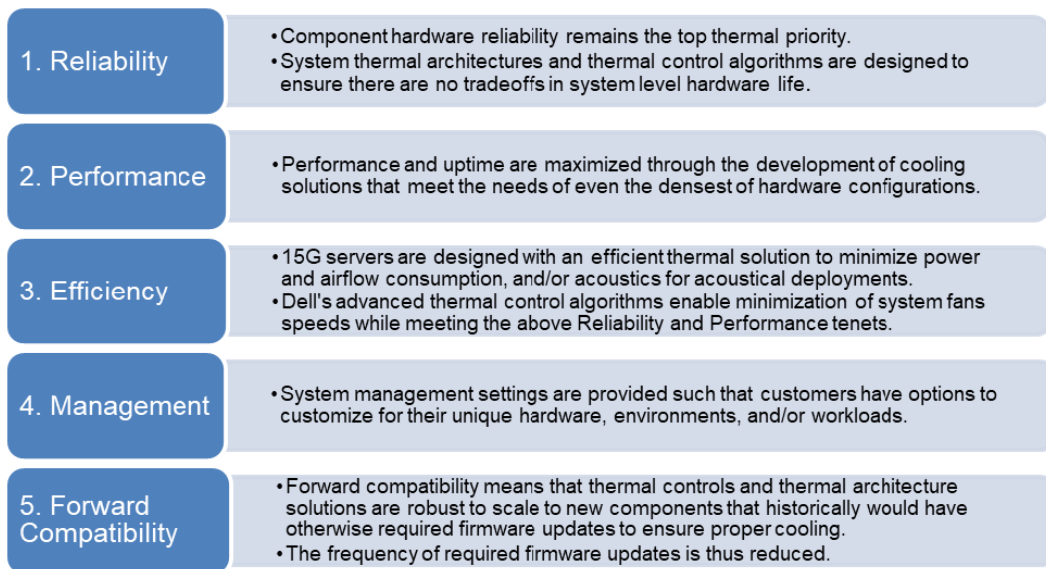
Figure 8. Thermal design characteristics

The thermal design of the PowerEdge XE8640 reflects the following:

- Optimized thermal design: The system layout is architected for optimum thermal design.
- System component placement and layout are designed to provide maximum airflow coverage to critical components with minimum expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the fan speed based on several different responses from all system-component temperature sensors, as well as inventory for system configurations. Temperature monitoring includes components such as processors, DIMMs, chipset, the inlet air ambient, hard disk drives, and OCP.
- Open and closed loop thermal fan speed control: Open loop thermal control uses system configuration to determine fan speed based on inlet air ambient temperature. Closed loop thermal control method uses feedback temperatures to dynamically determine proper fan speeds.
- User-configurable settings: With the understanding and realization that every customer has unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user- configurable settings residing in the iDRAC BIOS setup screen. For more information, see the Dell PowerEdge XE8640 Installation and Service Manual at www.dell.com/poweredgemanuals and "Advanced Thermal Control: Optimizing across Environments and Power Goals" on Dell.com.
- Cooling redundancy: The PowerEdge XE8640 allows N+1 fan redundancy, allowing continuous operation with one fan or pump failure in the system .
- Environmental Specifications: The optimized thermal management makes the PowerEdge XE8640 reliable under a wide range of operating environments.

PowerEdge XE8640 acoustics

Dell PowerEdge XE8640 is a rack-mount server appropriate for unattended data center environment, it is designed to meet However, lower acoustical output is attainable with proper hardware or software configurations. Configuration details are provided in the below table:

Acoustical performance data associated with each configuration of XE8640 is provided in the below table:

Table 20. Acoustical configurations of XE8640

Configuration	Configuration1
Acoustical Target	Category 5
CPU	2x 350W Sapphire Rapids SP XCC Intel 8480+ 56c 2.0GHz
Memory	32x 128 GB DDR5 RDIMM
SSD	8x 15.36TB U.2 NVMe
	2x 480G M.2 NVMe

Table 20. Acoustical configurations of XE8640 (continued)

Configuration	Configuration1
PSU	4x 2800W 54V PSU Liteon
PERC	None
PCI Card	2x100GBE 2P Intel PC 水 FH Mellanox
OCP	1x 25GbE SFP28 2P OCP 3.0 Intel
GPU	1x HGX H100 4-GPU Nvidia
Cooling	Fan + LAAC(Close liquid cooling)

Category 1: Table-top in Office Environment

When Dell determines that a specific Enterprise product is to be used on a Table-top in Office Environment, e.g., on a desk around a seated user's head height, then the acoustical specification of the below table applies. Small, light-weight towers are examples of these types of products.

Table 21. Dell Enterprise Category 1, "Table-top in Office Environment" acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	**Idle in 23±2° C Ambient**	**Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required**	**Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient**
Sound Power	LWA,m, B	≤ 4.2	≤ 4.7	≤ 5.0	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 35	≤ 35	≤ 35	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	Transients	● Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB" ○ Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15dB. ● Startup behavior ○ Report Startup behavior re. AC0159 ○ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ● Transient inputs: Report time-history sound pressure levels re AC0159 "Train of Step Functions on Processor"			N/A
Any	Other	No rattles, squeaks, or unexpected noises Sound should be "even" around the EUT (one side should not be dramatically louder than another)			

Table 21. Dell Enterprise Category 1, "Table-top in Office Environment" acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
		Unless otherwise specified, the "default" thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions will be defined in "Configurations & Configuration Dependencies" for each platform.			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 2: Floor-standing in Office Environment

When Dell determines that a specific Enterprise product is to be used primarily when it is sitting on the floor, i.e., next to a user's feet, then the acoustical specification of the below table applies. Noise from the product should not annoy or otherwise interfere with the user's thoughts or speech, e.g., on the telephone.

Table 22. Dell Enterprise Category 2, "Floor-standing in Office Environment" acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
Sound Power	LWA,m, B	≤ 4.9	≤ 5.1	≤ 5.4	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 35	≤ 35	≤ 35	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report

Front Binaural HEAD	Transients	• Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria:
		  ○ Max. {ΔLpA} < 3.0 dB
		  ○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB"
					N/A

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
		○ Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15dB. ● Startup behavior ○ Report Startup behavior re. AC0159 ○ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ∞ Transient inputs: Report time-history sound pressure levels re AC0159 "Train of Step Functions on Processor"			
Any	Other	No rattles, squeaks, or unexpected noises Sound should be "even" around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the "default" thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions will be defined in "Configurations & Configuration Dependencies" for each platform.			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 3: General Use Space

When Dell determines that a specific Enterprise product is to be predominantly used in a general use space, then the acoustical specification of the below table applies. These products could be found in laboratories, schools, restaurants, open office space layouts, small ventilated closets, etc., though not in close proximity to any particular person nor in quantities greater than a few in any location. People within proximity of a few of these products should not experience any impact to speech intelligibility or annoyance from the noise of the product. A rack product sitting on a table in a common area is an example.

Table 23. Dell Enterprise Category 3, "General Use" acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	**Idle in 23±2° C Ambient**	**Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required**	**Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient**
Sound Power	LWA,m, B	≤ 5.2	≤ 5.5	≤ 5.8	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 35	≤ 35	≤ 35	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report

Front Binaural HEAD	Transients	• Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria:
		  ○ Max. {ΔLpA} < 3.0 dB
		  ○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB"
		  ○ Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15dB.
		• Startup behavior
		  ○ Report Startup behavior re. AC0159
		  ○ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum
		
		∞ Transient inputs: Report time-history sound pressure levels re AC0159 "Train of Step Functions on Processor"
					N/A

Any	Other	No rattles, squeaks, or unexpected noises Sound should be "even" around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the "default" thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions will be defined in "Configurations & Configuration Dependencies" for each platform.			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 4: Attended Data Center

When Dell determines that a specific Enterprise product is to be predominantly used in an attended data center, then the acoustical specification of the below table applies. The phrase "attended data center" is used to mean a space in which many (from tens to 1000s) of Enterprise products are deployed in proximity (i.e., in the same room) to personnel whose speech (perhaps with raised voices) is expected to be intelligible over the data center noise. Hearing protection or hearing monitoring

programs are not expected in these areas. Examples in this category include monolithic rack products. When Dell determines that a specific Enterprise product is to be predominantly used in a general use space, then the acoustical specification of Table 37 applies. These products could be found in laboratories, schools, restaurants, open office space layouts, small ventilated closets, etc., though not in close proximity to any particular person nor in quantities greater than a few in any location. People within proximity of a few of these products should not experience any impact to speech intelligibility or annoyance from the noise of the product. A rack product sitting on a table in a common area is an example.

Table 24. Dell Enterprise Category 4, "Attended Data Center" acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (i.e., set fan speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient	
Sound Power	LWA,m, B	Report	≤ 6.9	≤ 7.1	Report	≤ 8.5
Front Binaural HEAD	Tones, Hz, dB	Report	< 15 dB	< 15 dB	Report	< 20 dB
	Tonality, tu	Report	Report	Report	Report	Report
	Dell Modulation, %	Report	Report	Report	Report	Report
	Loudness, sones	Report	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report	Report
	Transients	● Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB" ○ Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15dB. ○ Startup behavior ■ Report Startup behavior re. AC0159 ■ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ∞ Transient inputs: Report time-history sound pressure levels re AC0159 "Train of Step Functions on Processor"			N/A	
Any	Other	No rattles, squeaks, or unexpected noises Sound should be "even" around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the "default" thermal-related settings shall be selected for BIOS and iDRAC.				

Table 24. Dell Enterprise Category 4, "Attended Data Center" acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (i.e., set fan speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient	
		Specific operating conditions will be defined in "Configurations & Configuration Dependencies" for each platform.				
Sound Pressure	LpA-reported, dBA	Report for all mics	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 5: Unattended Data Center

When Dell determines that a specific Enterprise product is to be predominantly used in an unattended data center (and not blades or blade enclosures; these have their own category), then the acoustical specification of the below table applies. The phrase "unattended data center" is used to mean a space in which many (from tens to 1000s) of Enterprise products are deployed together, its own heating and cooling systems condition the space, and operators or servicers of equipment enter generally only to deploy, service, or decommission equipment. Hearing protection or hearing monitoring programs may be expected (per government or company guidelines) in these areas. Examples in this category include monolithic rack products.

Table 25. Dell Enterprise Category 5, "Unattended Data Center" acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
Sound Power	LWA,m, B	Report	≤ 7.5	≤ 7.7	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	Report	< 15 dB	< 15 dB	Report
	Tonality, tu	Report	Report	Report	Report
	Dell Modulation, %	Report	Report	Report	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	Transients	● Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for "1.5 dB < ΔLpA < 3.0 dB"			N/A

Table 25. Dell Enterprise Category 5, "Unattended Data Center" acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program's configuration document, then processor and hard drive operating modes are required	Simulate (i.e., set fan speeds representative) for Idle at 28 & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
		○ Acoustical Jump (see AC0159) ΔLpA during fan speed transitions between operating states . ○ Startup behavior ▪ Report Startup behavior re. AC0159 ▪ Startup must proceed smoothly, i.e., no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ∞ Transient inputs: Report time-history sound pressure levels re AC0159 "Train of Step Functions on Processor"			
Any	Other	No rattles, squeaks, or unexpected noises Sound should be "even" around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the "default" thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions will be defined in "Configurations & Configuration Dependencies" for each platform.			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Rack, rails, and cable management

Topics:

Rails and cable management information

The rail offerings for the PowerEdge XE8640 consist of only one type which is sliding. The cable management offerings consist of an optional cable management arm (CMA).

See the *Dell Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at rail-rack-matrix for information regarding:

*   Specific details about rail types.
*   Rail adjustability ranges for various rack mounting flange types
*   Rail depth with and without cable management accessories
*   Rack types that are supported for various rack mounting flange types

Key factors governing proper rail selection include the following:

*   Identifying the type of rack in which they will be installed.
*   The spacing between the front and rear mounting flanges of the rack.
*   The type and location of any equipment mounted in the back of the rack such as power distribution units (PDUs), and the overall depth of the rack
*   Overall depth of the rack

Stab-in, Sliding features summary

The stab-in, sliding rail allow the system to be fully extended out of the rack for service. The stab-in, sliding rail are available with or without the optional cable management arm (CMA).

B27 Stab-in sliding rails for 4-post racks

*   Supports stab-in installation of the chassis to the rails.
*   Support for tool-less installation in 19" EIA-310-E compliant square, un-threaded round hole racks including all generations of the Dell racks. Also supports tool-less installation in threaded round hole 4-post racks.
*   Support for tool-less installation in Dell Titan or Titan-D racks
*   Support full extension of the system out of the rack to allow serviceability of key internal components.
*   Support for optional cable management arm (CMA).
*   The optional cable management arm (CMA) can be mounted on either the left side of the sliding rails without the use of tools for fast and easy deployment.
*   (i) **NOTE:** For situations where CMA support is not required, the outer CMA mounting brackets can be uninstalled from the sliding rails. This reduces the overall length of the rails and eliminates the potential interferences with rear mounted PDUs or the rear rack door.
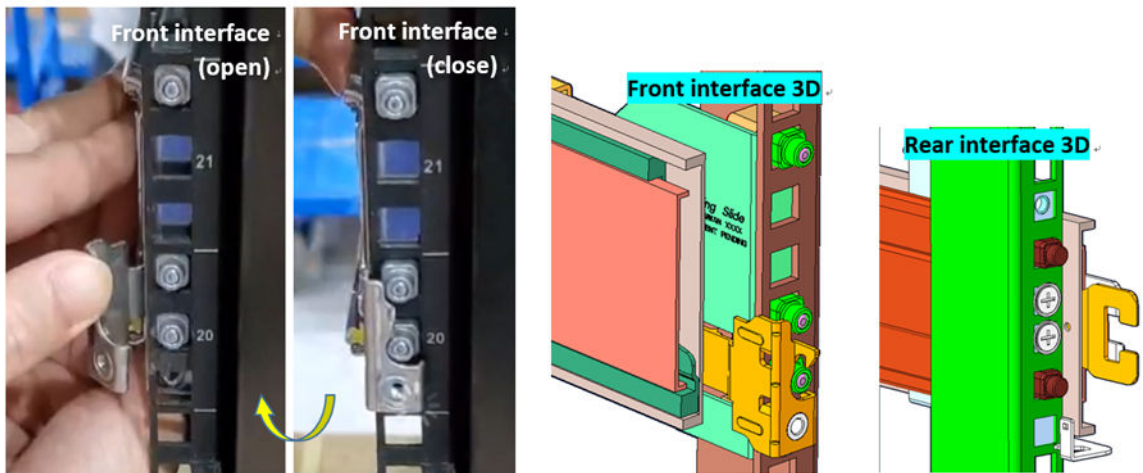
Figure 9. Stab-in Sliding Rail Mounting Interface

Scan the QRL code for the documentation and trouble-shooting information regarding the installation procedures for Drop-in/ Stab-in rail types.

Quick Resource Locator
Dell.com/QRL/Servers/comborails

Figure 10. Quick resource locator for combo rails

Cable management arm (CMA)

The optional cable management arm (CMA) organizes and secures the cords and cables exiting the back of the systems. It unfolds to allow the systems to extend out of the rack without having to detach the cables. Some key features of the CMA include:

- Large U-shaped baskets to support dense cable loads.
- Open vent pattern for optimal airflow.
- Ability to mount on either side by swinging the spring-loaded brackets from one side to the other.
- Utilizes hook-and-loop straps rather than plastic tie wraps to eliminate the risk of cable damage during cycling.
- Includes a low-profile fixed tray to both support and retain the CMA in its fully closed position.
- Both the CMA and the tray mount without the use of tools by simple and intuitive snap-in designs.

The CMA can be mounted to either side of the sliding rails without the use of tools or the need for conversion. For systems with one power supply unit (PSU), it is recommended to mount on the side opposite to that of the power supply to allow easier access to it and the rear drives (if applicable) for service or replacement.
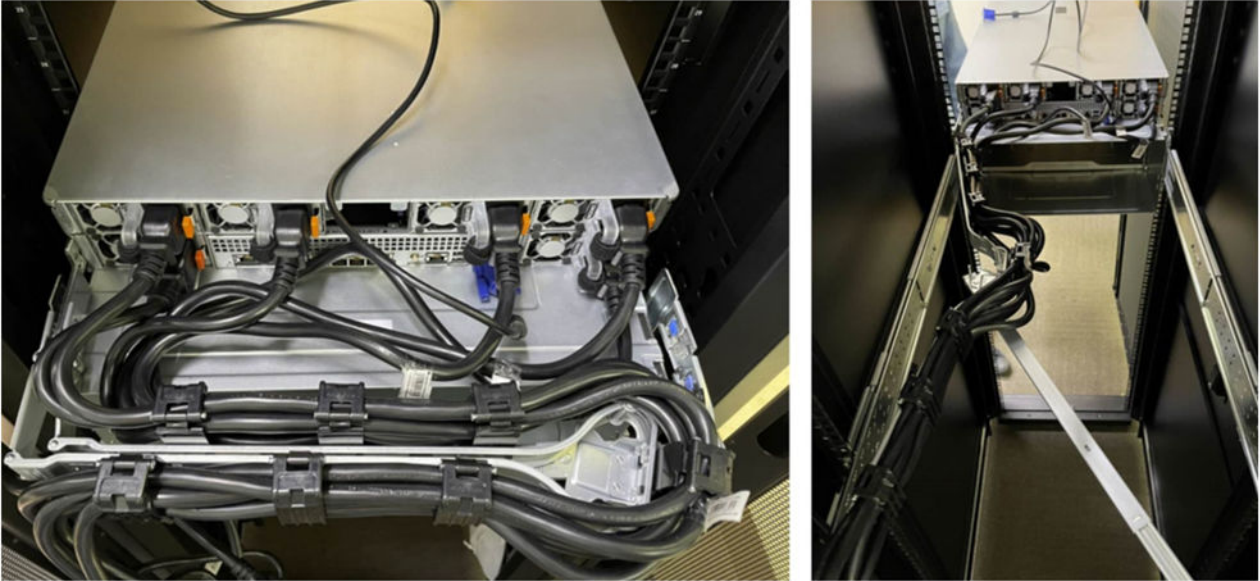
Figure 11. Stab-in Sliding rails with CMA cabling

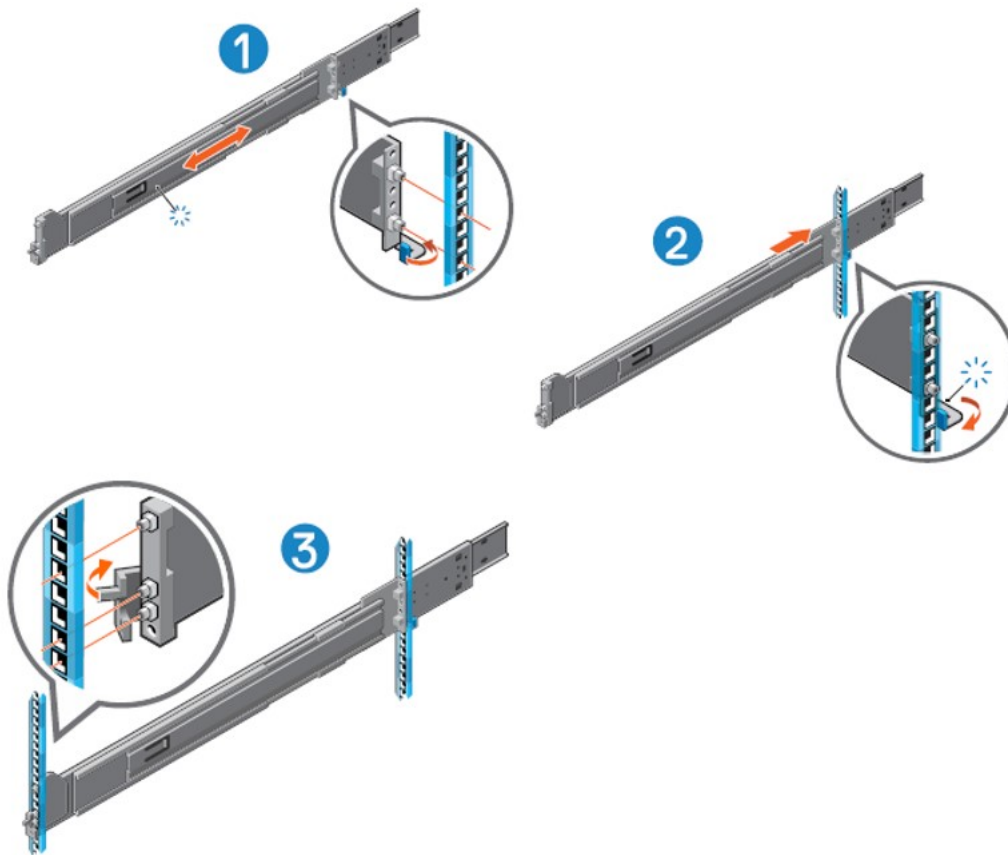# Rack Installation

Installing Stab-in Rails to the system
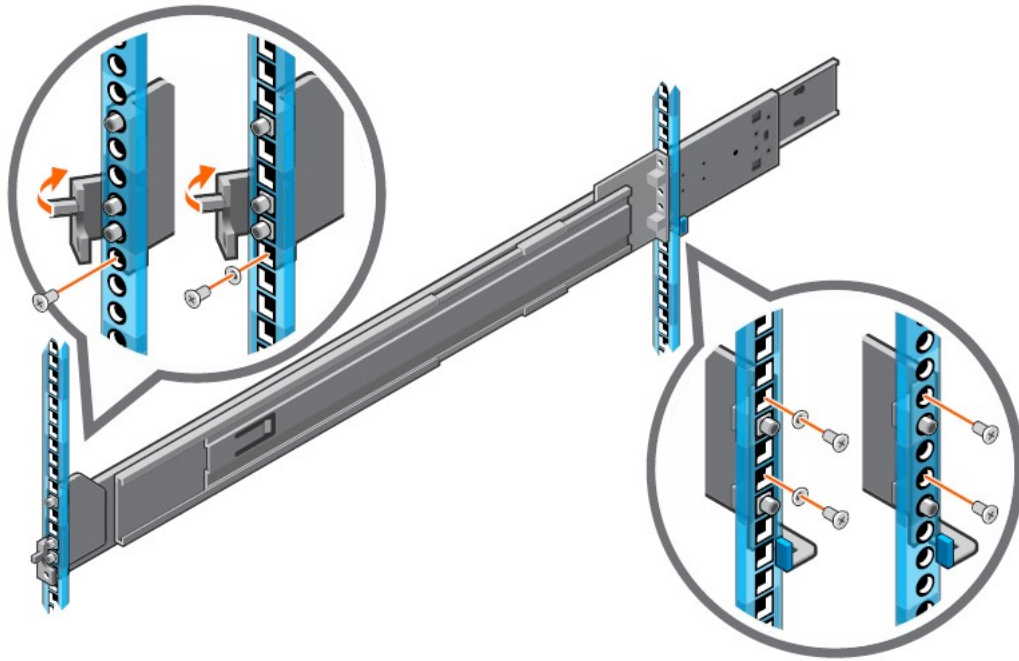

Figure 12. Installing the rail 4-POST racks

Figure 13. Optional: Install the supplied hardware to secure rails for the rack level shipping
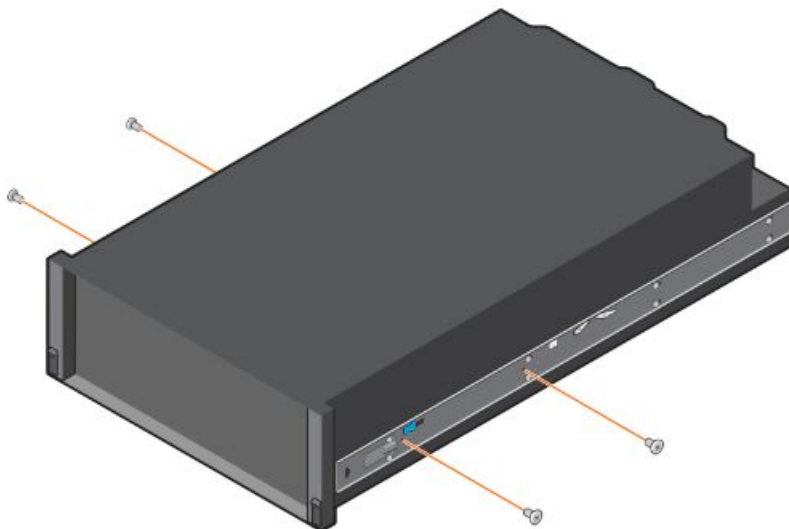

Figure 14. Shipping screws on the inner rails

ⓘ **NOTE:** For rack level shipping, the shipping screws must be installed on the inner rails.
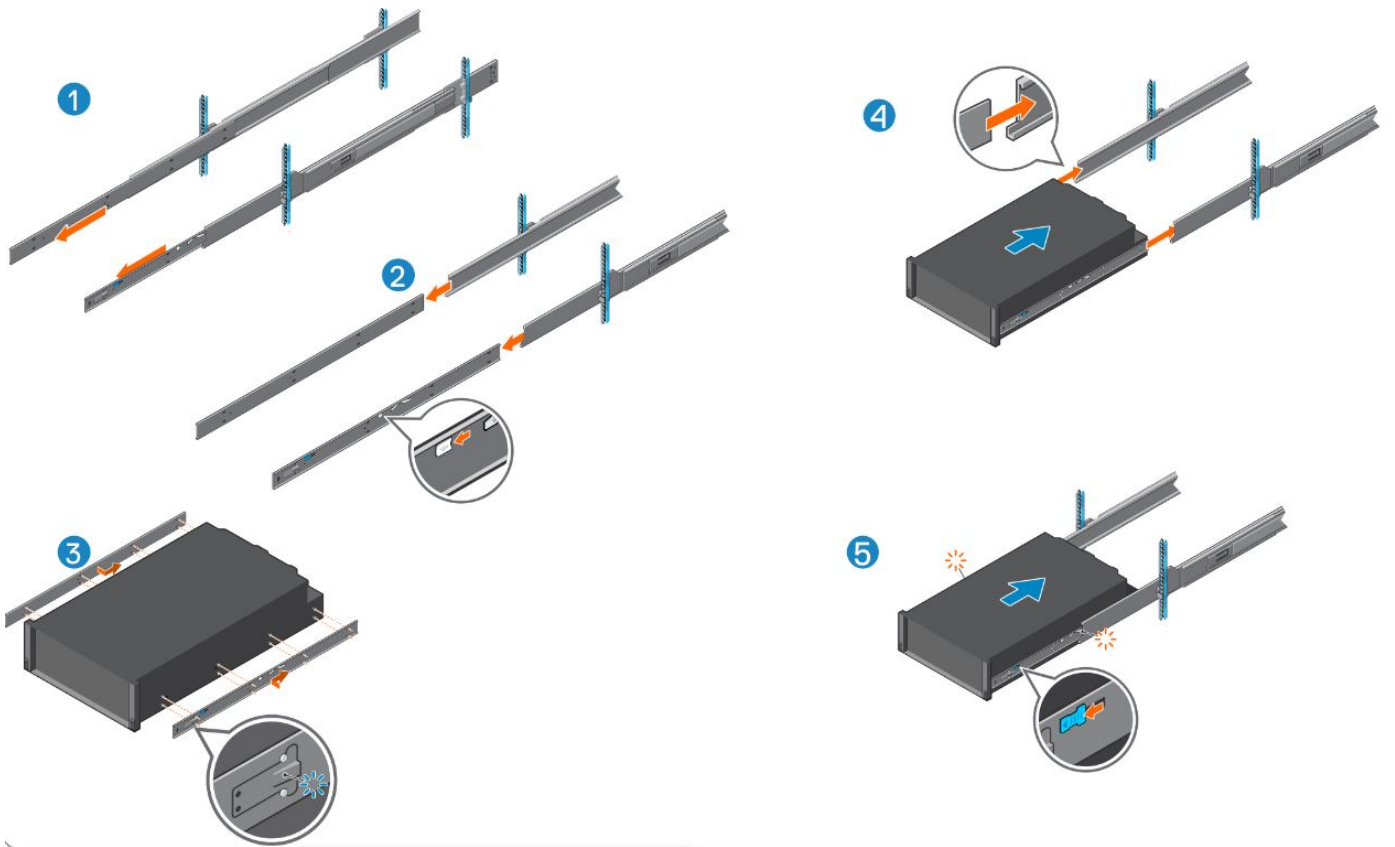
Figure 15. Installing Stab-in Rails to the system
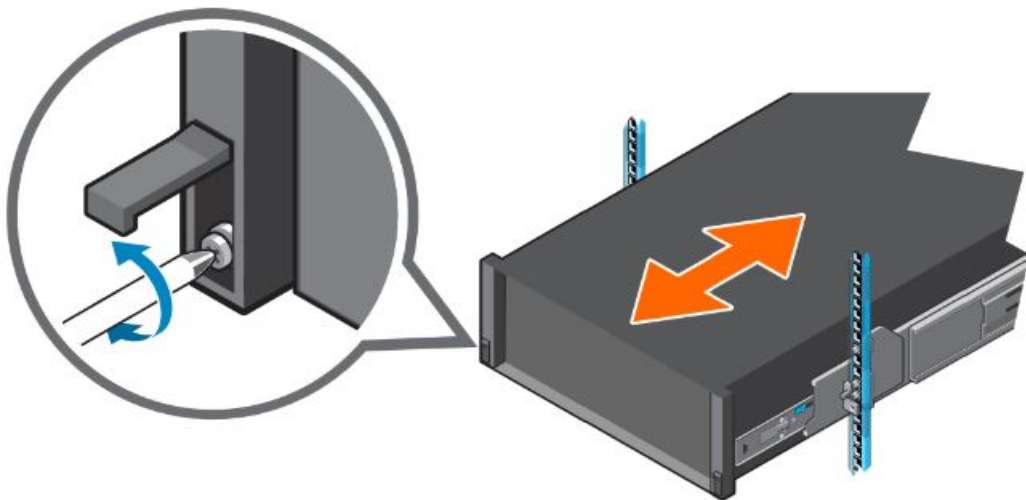
Cable Management Arm Installation
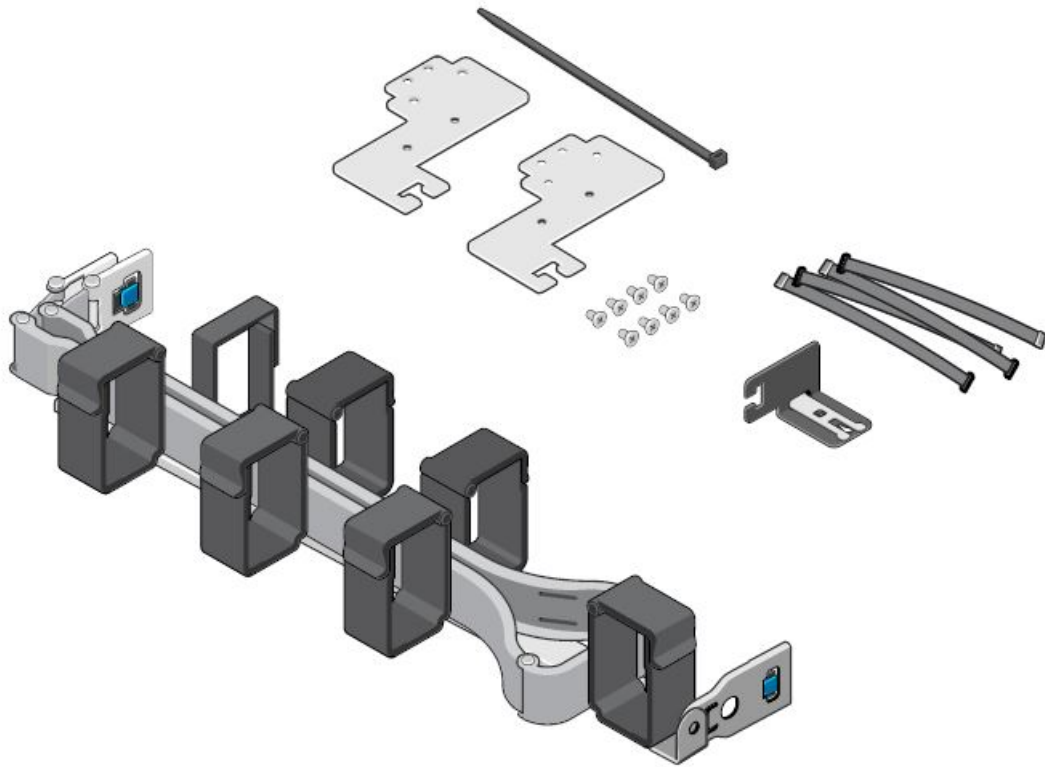

Figure 16. Securing the system to the rails

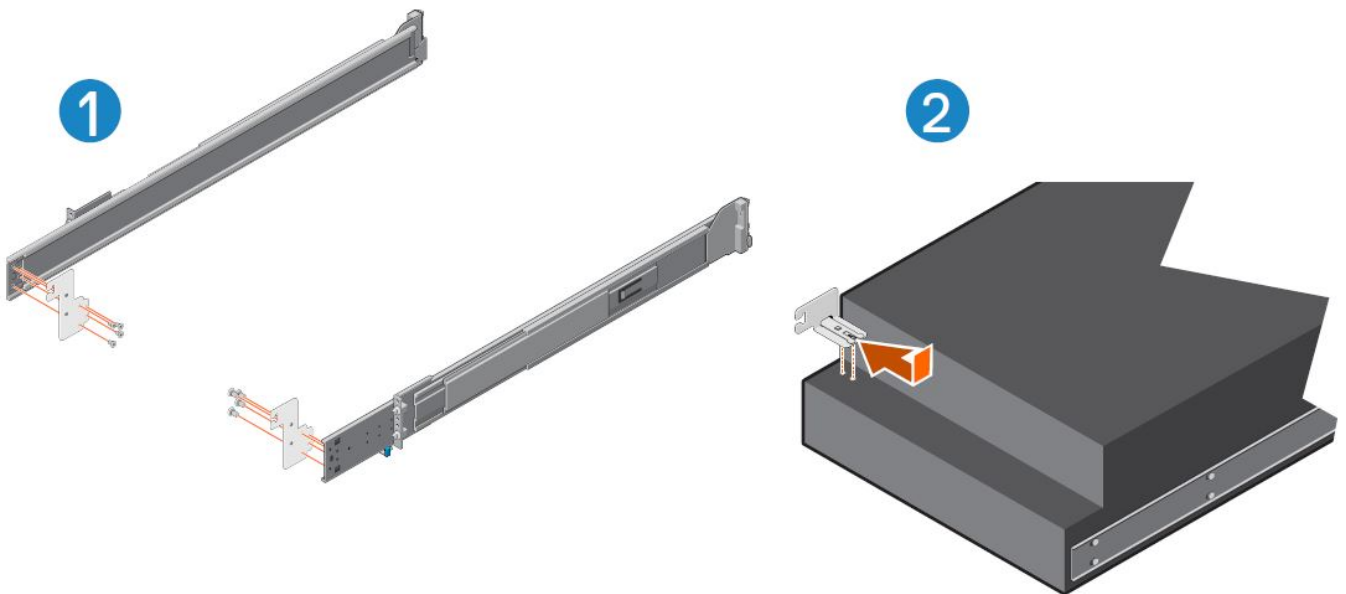**Figure 17. Identify the CMA kit contents**

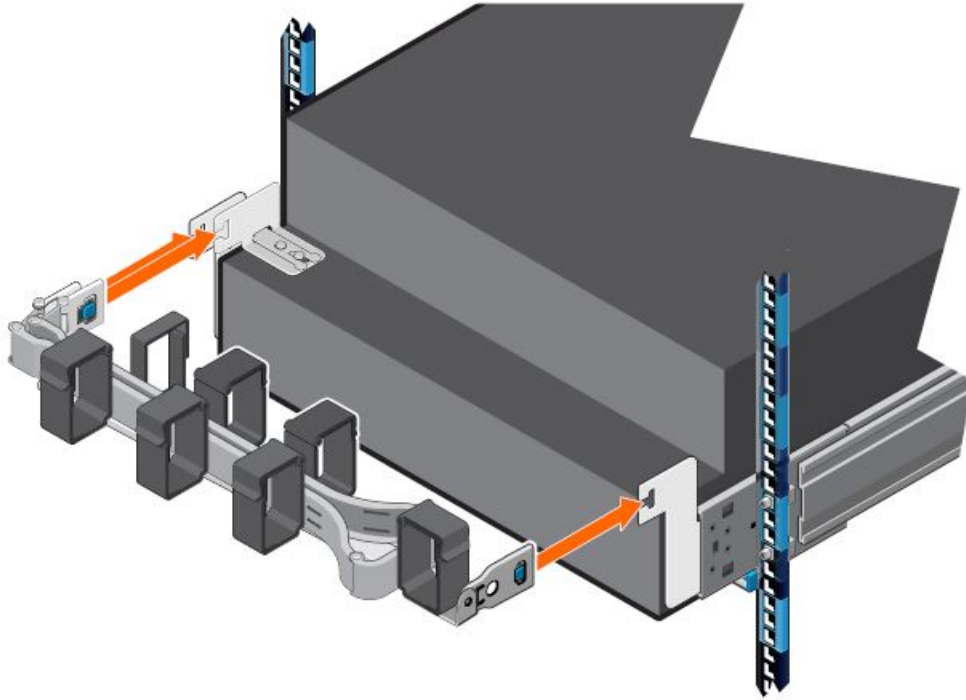**Figure 18. Install the CMA brackets before installing system into the rack**

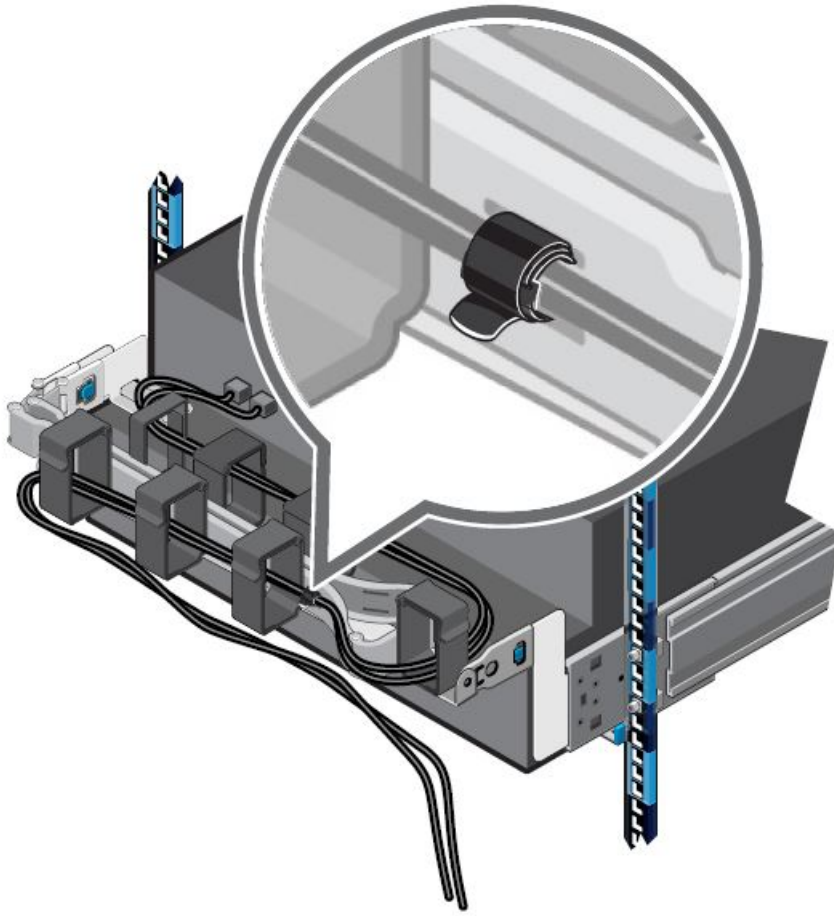**Figure 19. Install the CMA after installing system into the rack**

Figure 20. Route and tie the cable

ⓘ **NOTE:** CMA attachment brackets are installed after installing system into the rack.

11

Operating Systems and Virtualization

Topics:

• Supported Operating Systems

Supported Operating Systems

The PowerEdge system supports the following operating systems:

● Canonical® Ubuntu® Server LTS
● Red Hat® Enterprise Linux
● SUSE® Linux Enterprise server

Links to specific OS versions and editions, certification matrices, Hardware Compatibility Lists (HCL) portal, and Hypervisor support are available at Dell Enterprise Operating Systems.

Dell OpenManage Systems Management

Dell delivers management solutions that help IT administrators effectively deploy, update, monitor, and manage IT assets. OpenManage solutions and tools enable you to quickly respond to problems by helping them to manage Dell servers efficiently; in physical, virtual, local, and remote environments; all without the need to install an agent in the operating system.

The OpenManage portfolio includes:

● Innovative embedded management tools - integrated Dell Remote Access Controller (iDRAC)
● Consoles - OpenManage Enterprise
● Extensible with plug-ins - OpenManage Power Manager
● Update tools - Repository Manager

Dell has developed comprehensive systems management solutions that are based on open standards and has integrated with management consoles from partners such as Microsoft and VMware, allowing advanced management of Dell servers. Dell management capabilities extend to offerings from the industry's top systems management vendors and frameworks such as Ansible, Splunk, and ServiceNow. OpenManage tools automate the full span of server life cycle management activities along with powerful RESTful APIs to script or integrate with your choice of frameworks.

For more information about the entire OpenManage portfolio, see:

● The latest Dell Systems Management Overview Guide.

Topics:

Integrated Dell Remote Access Controller (iDRAC)

iDRAC9 delivers advanced, agent-free, local and remote server administration. Embedded in every PowerEdge server, iDRAC9 provides a secure means to automate a multitude of common management tasks. Because iDRAC is embedded within every PowerEdge server, there is no additional software to install; just plug in power and network cables, and iDRAC is ready to go. Even before installing an operating system (operating system) or hypervisor, IT administrators have a complete set of server management features at their fingertips.

With iDRAC9 in-place across the Dell PowerEdge portfolio, the same IT administration techniques and tools can be applied throughout. This consistent management platform allows easy scaling of PowerEdge servers as an organization's infrastructure grows. Customers can use the iDRAC RESTful API for the latest in scalable administration methods of PowerEdge servers. With this API, iDRAC enables support for the Redfish standard and enhances it with Dell extensions to optimize at-scale management of PowerEdge servers. By having iDRAC at the core, the entire OpenManage portfolio of Systems Management tools allows every customer to tailor an effective, affordable solution for any size environment.

Zero Touch Provisioning (ZTP) is embedded in iDRAC. ZTP - Zero Touch Provisioning is Intelligent Automation Dell's agent-free management puts IT administrators in control. Once a PowerEdge server is connected to power and networking, that system can be monitored and fully managed, whether you're standing in front of the server or remotely over a network. In fact, with no need for software agents, an IT administrator can: · Monitor · Manage · Update · Troubleshoot and remediate Dell servers With features like zero-touch deployment and provisioning, iDRAC Group Manager, and System Lockdown, iDRAC9 is purpose-built to make server administration quick and easy. For those customers whose existing management platform utilizes in-band management, Dell does provide iDRAC Service Module, a lightweight service that can interact with both iDRAC9 and the host operating system to support legacy management platforms.

When ordered with DHCP enabled from the factory, PowerEdge servers can be automatically configured when they are initially powered up and connected to your network. This process uses profile-based configurations that ensure each server is configured per your specifications. This feature requires an iDRAC Enterprise license.

iDRAC9 offers following license tiers:

Table 26. iDRAC9 license tiers

License	Description
iDRAC9 Basic	- Available only on 100-500 series rack/tower - Basic instrumentation with iDRAC web UI - For cost conscious customers that see limited value in management
iDRAC9 Express	- Default on 600+ series rack/tower, modular, and XR series - Includes all features of Basic - Expanded remote management and server life-cycle features
iDRAC9 Enterprise	- Available as an upsell on all servers - Includes all features of Basic and Express. Includes key features such as virtual console, AD/LDAP support, and more - Remote presence features with advanced, Enterprise-class, management capabilities
iDRAC9 Datacenter	- Available as an upsell on all servers - Includes all features of Basic, Express, and Enterprise. Includes key features such as telemetry streaming, Thermal Manage, automated certificate management, and more - Extended remote insight into server details, focused on high end server options, granular power, and thermal management

For a full list of iDRAC features by license tier, see Integrated Dell Remote Access Controller 9 User's Guide at Dell.com.

For more details on iDRAC9 including white papers and videos, see:

- Support for Integrated Dell Remote Access Controller 9 (iDRAC9) on the Knowledge Base page at Dell.com

Systems Management software support matrix

Table 27. Systems Management software support matrix

Categories	Features	PE mainstream
Embedded Management and In-band Services	iDRAC9 (Express, Enterprise, and Datacenter licenses)	Supported
	OpenManage Mobile	Supported
	OM Server Administrator (OMSA)	Supported
	iDRAC Service Module (iSM)	Supported
	Driver Pack	Supported
Change Management	Update Tools (Repository Manager, DSU, Catalogs)	Supported
	Server Update Utility	Supported
	Lifecycle Controller Driver Pack	Supported
	Bootable ISO	Supported
Console and Plug-ins	OpenManage Enterprise	Supported
	Power Manager Plug-in	Supported
	Update Manager Plug-in	Supported
	SupportAssist Plug-in	Supported
	CloudIQ	Supported
Integrations and connections	OM Integration with VMware Vcenter/vROps	Supported
	OM Integration with Microsoft System Center (OMIMSC)	Supported
	Integrations with Microsoft System Center and Windows Admin Center (WAC)	Supported

Table 27. Systems Management software support matrix (continued)

Categories	Features	PE mainstream
	ServiceNow	Supported
	Ansible	Supported
	Third-party Connectors (Nagios, Tivoli, Microfocus)	Supported
Security	Secure Enterprise Key Management	Supported
	Secure Component Verification	Supported
Standard operating system	Red Hat Enterprise Linux, SUSE, Windows Server 2021 Ubuntu, CentOS	Supported (Tier-1)

Appendix A. Additional specifications

Topics:

Chassis dimensions

Figure 21. Chassis dimensions

Table 28. PowerEdge XE8640 chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
8 x 2.5-inch	481.91 mm (18.97 inches)	447 mm (17.6 inches)	174.3 mm (6.86 inches)	35.5 mm (1.39 inches)With bezel	830.7 mm (32.7 inches)Ear to rear wall	865.54 mm (34.07 inches)Ear to PSU handle

> (i) **NOTE:** Zb is the nominal rear wall external surface where the system board I/O connectors reside.

System weight

Table 29. PowerEdge XE8640 system weight

System configuration	Maximum weight (with all drives/SSDs)
8 x 2.5 inch	61.4 kg (135.36 lb)

Table 30. PowerEdge system weight handling recommendations

Chassis weight	Description
40 pounds - 70 pounds	Recommend two person to lift
70 pounds- 120 pounds	Recommend three person to lift
≥ 121 pounds	Recommend to use a server-lift

NIC port specifications

The PowerEdge XE8640 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports embedded on the LAN on Motherboard (LOM) and integrated on the optional Open Compute Project (OCP) cards.

Table 31. NIC port specification for the system

Feature	Specifications
LOM card	1 GbE x 2
OCP card (OCP 3.0)	10 GbE x 4, 25 GbE x 2, 25 GbE x 4

Video specifications

The PowerEdge XE8640 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 32. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32

Table 32. Supported video resolution options (continued)

Resolution	Refresh rate (Hz)	Color depth (bits)
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

USB ports specifications

Table 33. PowerEdge XE8640 USB specifications

Front		Rear	
USB port type	**No. of ports**	**USB port type**	**No. of ports**
USB 2.0-compliant port	One	USB 2.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0-compliant port)	One	USB 3.0-compliant ports	One

(i) **NOTE:** The micro USB 2.0 compliant port can only be used as an iDRAC Direct or a management port.

PSU rating

Below table lists the power capacity the PSUs in high/low line operation mode.

Table 34. PSUs highline and lowline ratings

—	2800 W Titanium
Peak Power (Highline/-72 VDC)	4760 W
Highline/-72 VDC	2800 W
Peak Power (Lowline/-40 VDC)	N/A
Lowline/-40 VDC	N/A
Highline 240 VDC	2800 W
DC-48-60 V	N/A

The PowerEdge XE8640 system supports up to 4 AC or DC power supply units (PSUs) with 3+1 redundancy, autosensing, and auto-switching capability.

(i) **NOTE:**
1. The wattage capacities of any two PSUs that are present during POST are compared. The larger of the two PSUs is activated if the PSU wattages don't match. A PSU mismatch alert is also visible in the BIOS, iDRAC, or on the system LCD.
2. If a second PSU is installed during runtime, its wattage capacity must match that of the first PSU in order for it to be enabled. If not, the second PSU won't be activated and the PSU will be marked as mismatched in iDRAC.

Dell PSUs have achieved Platinum efficiency levels as shown in the table below.

Table 35. PSU Efficiency Levels

Efficiency Targets by Load PSU Efficiency Levels						
Form Factor	Output	Class	10%	20%	50%	100%

Table 35. PSU Efficiency Levels (continued)

Efficiency Targets by Load PSU Efficiency Levels						
Redundant 86 mm	2800 W (Input 240 AC)	Titanium	90.00%	94.00%	96.00%	94.00%

Environmental specifications

ⓘ **NOTE:** For additional information about environmental certifications, refer to the **Product Environmental Datasheet** located with the **Documentation** on www.dell.com/support/home.

Table 36. Continuous Operation Specifications for ASHRAE A2

Operational climatic	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment
Humidity percent range (non-condensing at all times)	8% RH with -12°C minimum dew point to 80% RH with 21°C (69.8°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/300 m (1.8°F/984 Ft) above 900 m (2953 Ft)

Table 37. Common Environmental Specifications for ASHRAE A2, A3, A4 and Rugged

Shared requirements	Allowable continuous operations
Maximum temperature gradient (applies to both operation and non-operation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (41°F in an hour) for tape ⓘ **NOTE:** * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change.
Non-operational temperature limits	-40 to 65°C (-104 to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,048 meters (10,000 feet)

Table 38. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 G_{rms} at 5 Hz to 350 Hz (all operation orientations)
Storage	1.88 G_{rms} at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 39. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	Six consecutively executed shock pulses in the positive and negative x, y, and z axis of 6 G for up to 11 ms.
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axis (one pulse on each side of the system) of 71 G for up to 2 ms.

Thermal restriction matrix

Table 40. Thermal restriction matrix

XE8640					
Front configuration					**8x 2.5" U.2 / NVMe**
Additional attributes					**4 x Nvidia H100 700W**
Rear configuration					**4xFH**
Fan type					**HPR Gold fan**
Heatsink type					**Standard heatsink for CPU and LAAC for GPU**
CPU TDP	Processor	TDP	Die	Core count	35°C
	5418Y	185W	MCC	24	35°C
	6448Y/6442Y	225W	MCC	32/24	35°C
	8462Y+	300W	MCC	32	35°C
	8460Y+	300W	XCC	40	35°C
	8452Y	300W	XCC	36	35°C
	8480+/8470/8468	350W	XCC	56/52/48	35°C

Table 41. Memory Thermal restriction matrix

XE8640		1 DPC	2DPC	temperature
DIMM	128GB RDIMM 4800	13.8W	10.7W	35°C
	64GB RDIMM 4800	12.0W	8.5W	35°C
	32GB RDIMM 4800	NA	NA	35°C

Table 42. GPU Thermal restriction matrix

XE8640			
GPU	Nvidia	H100(4x GPU SKU)	35°C

> ⓘ **NOTE:** All configurations support 35°C environment w/o performance degradation.

Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 43. Industry standard documents

Standard	URL for information and specifications
ACPIAdvance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDGHardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR5 Memory DDR5 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	http://pmbus.org/Assets/PDFS/Public/PMBus_Specification_Part_I_Rev_1-1_20070205.pdf
SAS Serial Attached SCSI, v1.1	http://www.t10.org/
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.7	usb.org/developers/docs

Appendix C Additional resources

Table 44. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: ● Chassis features ● System Setup program ● System indicator codes ● System BIOS ● Remove and replace procedures ● Diagnostics ● Jumpers and connectors	Dell.com/Support/Manuals
Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: ● Initial setup steps	Dell.com/Support/Manuals
Rack Installation Guide	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell contact information.	Inside the system chassis cover
Enterprise Infrastructure Planning Tool (EIPT)	The Dell online EIPT enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use EIPT to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc

Appendix D: Service and support

Topics:

Default deployment levels

This system is defaulted to the ProDeploy Dell Server which includes onsite hardware installation and remote software configuration. Optionally, the customer may choose to any of the factory or field deployment offers listed below.

Default support levels

This system offers 3 years Dell ProSupport Next Business Day (NBD), including 24x7 phone support and NBD parts and labor support.

Other services and support information

Dell Technologies Services include a wide, customizable range of service options to simplify the assessment, design, implementation, management and maintenance of IT environments and to help transition from platform to platform.

Depending on the current business requirements and correct level of service for customers, we provide factory, onsite, remote, modular, and specialized services that fit the customer requirements and budget. We will help with a little or a lot, based on the customers choice, and provide access to our global resources.

Dell deployment services

Dell ProDeploy Infrastructure Suite

ProDeploy Infrastructure Suite provides a variety of deployment offerings that satisfy a customer's unique needs. It is made up of 5 offers: ProDeploy Configuration Services, ProDeploy Rack Integration Services, Basic Deployment, ProDeploy, and ProDeploy Plus.

Figure 22. ProDeploy Infrastructure Suite for servers

The new Factory Services consist of two tiers of deployment that happen prior to shipping to the customer's site.

Factory Based Services:

● ProDeploy Factory Configuration - Ideal for customers buying servers in volume and seeking pre-configuration prior to shipping such as: custom image, system settings, and asset tagging so it arrives ready to use out of the box. Furthermore, servers can be packaged and bundled to meet specific shipping and distribution requirements for each customer location to facilitate the rollout process. Upsell one of the field based services (below) if a customer needs assistance with the final server installation.

● ProDeploy Rack Integration - Ideal for customers seeking to build out fully integrated racks prior to shipping. These rack builds include hardware install, cabling, and full system configuration. You can also add-on a factory stress test and optional on-site final rack configuration to complete the rack installation.
  ○ STANDARD SKUs for Rack Integration is available in US only and requires:
    ▪ 20 or more devices (R and C series servers and all Dell or non-Dell switches). Use Informational SKUs for Dell switches or 3rd party products
    ▪ Shipping to contiguous US
  ○ USE CUSTOM QUOTE for Rack Integration for:
    ▪ All countries except USA
    ▪ Racks containing less than 20 servers
    ▪ Any rack that includes VxRail or Storage
    ▪ Shipping outside contiguous US
    ▪ Shipping to multiple locations

Field Based Services:

● Basic Deployment consists of the hardware installation, cabling and firmware update during normal standard business hours. Basic Deployment is traditionally sold to Competency Enabled Partners. Competency enabled partners often have Dell do the hardware installation while they complete the software configuration.

● ProDeploy consists of your hardware installation and configuration of the software using offshore resources. ProDeploy is great for customers who are price sensitive or who are remote from their data centers and don't require an onsite presence.

● ProDeploy Plus will give you in-region or onsite resources to complete the engagement for the customer. It also comes with additional features such as Post Deployment Configuration Assistance and Training Credits.

Figure 23. ProDeploy Infrastructure Suite - Factory services

Figure 24. ProDeploy Infrastructure Suite - Field services

Dell ProDeploy Plus for Infrastructure

From beginning to end, ProDeploy Plus provides the skill and scale that is must successfully perform demanding deployments in today's complex IT environments. Certified Dell experts start with extensive environmental assessments and detailed migration

planning and recommendations. Software installation includes set up of our enterprise connectivity solution (secure connect gateway) and OpenManage system management utilities.

Postdeployment configuration assistance, testing, and product orientation services are also available.

Dell ProDeploy for Infrastructure

ProDeploy provides full-service installation and configuration of both server hardware and system software by certified deployment engineers including set up of leading operating systems and hypervisors as well our enterprise connectivity solution (secure connect gateway) and OpenManage system management utilities. To prepare for the deployment, we conduct a site readiness review and implementation planning exercise. System testing, validation, and full project documentation with knowledge transfer complete the process.

Dell Basic Deployment

Basic Deployment delivers worry-free professional installation by experienced technicians who know Dell servers inside and out.

Additional Deployment Services

You can tailor the ProDeploy Infrastructure Suite offer to meet your customer's unique needs by leveraging "Additional Deployment Time." ADT will cover additional tasks above the normal scope of the standard offers. ADT can be sold for Project Management or Technical Resources and is sold as blocks of four hours remote or eight hours on-site.

Dell ProDeploy for HPC (available in US/Canada only. All other regions use custom)

HPC deployments require specialists that understand that cutting edge is yesterday's news. Dell deploys the world 's fastest systems and understands the nuances that make them perform. ProDeploy for HPC provides:

● Global team of dedicated HPC specialists
● Proven track record, thousands of successful HPC deployments
● Design validation, benchmarking, and product orientation

Learn more at Dell.com/HPC-Services.

ProDeploy Expansion for HPC

*Available as standard SKUs in US & Canada and as custom quote in APJC, EMEA, LATAM
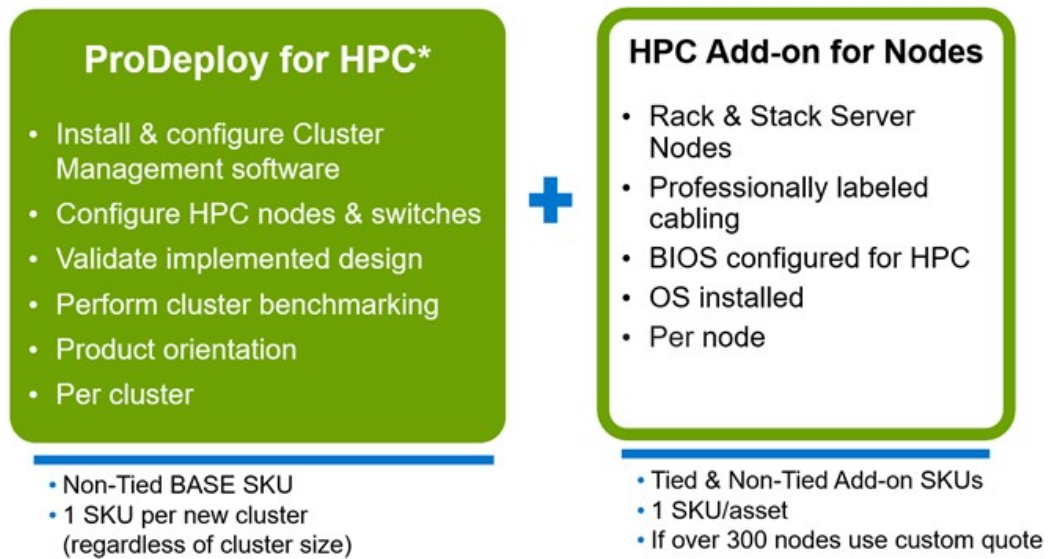
ProDeploy for HPC*

- Install & configure Cluster Management software
- Configure HPC nodes & switches
- Validate implemented design
- Perform cluster benchmarking
- Product orientation
- Per cluster

- Non-Tied BASE SKU
- 1 SKU per new cluster (regardless of cluster size)

+

HPC Add-on for Nodes

- Rack & Stack Server Nodes
- Professionally labeled cabling
- BIOS configured for HPC
- OS installed
- Per node

- Tied & Non-Tied Add-on SKUs
- 1 SKU/asset
- If over 300 nodes use custom quote

Figure 25. ProDeploy Expansion for HPC

Dell custom deployment Services

Dell custom rack integration and other Dell configuration services help customers save time by providing systems that are racked, cabled, tested, and ready to be integrated into the data center. Dell support preconfigure RAID, BIOS and iDRAC settings, install system images, and even install third-party hardware and software.

For more information, see Server Configuration Services.

Dell Residency Services

Residency Services help customers transition to new capabilities quickly with the assistance of onsite or remote Dell experts whose priorities and time they control.

Residency experts can provide post implementation management and knowledge transfer that is related to a new technology acquisition or day-to-day operational management of the IT infrastructure.

Dell Data Migration Services

Protect business and data of the customer with our single point of contact to manage data migration projects.

A customer project manager works with our experienced team of experts to create a plan using industry-leading tools and proven processes that are based on global best practices to migrate existing files and data, so business systems are up and running quickly and smoothly.

Dell Enterprise Support Services

Dell ProSupport Enterprise Suite

With the ProSupport Enterprise Suite, we help keep IT systems running smoothly, so customers can focus on running their business. We help maintain peak performance and availability of the most essential workloads. ProSupport Enterprise Suite is a suite of support services that enable customers to build the solution that is right for their organization. They choose support models that are based on how they use technology and where they want to allocate resources. From the desktop to the data center, address everyday IT challenges, such as unplanned downtime, mission-critical needs, data and asset protection, support planning, resource allocation, software application management and more. Optimize customer IT resources by choosing the right support model.

Table 45. ProSupport Enterprise Suite

Service	Support model	Description
ProSupport Enterprise Suite	ProSupport Plus for Enterprise	Proactive, predictive, and reactive support for systems that look after your business-critical applications and workloads
	ProSupport for Enterprise	Comprehensive 24 x 7 predictive and reactive support for hardware and software
	Basic hardware support	Reactive hardware support during normal business hours

Dell ProSupport Plus for Enterprise

When customers purchase PowerEdge server, we recommend ProSupport Plus, our proactive and preventative support service for business-critical systems. ProSupport Plus provides all the benefits of ProSupport, plus the following:

- An assigned Services Account Manager who knows their business and environment
- Immediate advanced troubleshooting from an engineer
- Personalized, preventive recommendations that are based on analysis of support trends and best practices from across the Dell Technologies infrastructure solutions customer base to reduce support issues and improve performance
- Predictive analysis for issue prevention and optimization that is enabled by secure connect gateway technology
- Proactive monitoring, issue detection, notification, and automated case creation for accelerated issue resolution enabled by secure connect gateway
- On-demand reporting and analytics-based recommendations that are enabled by secure connect gateway and TechDirect

Dell ProSupport for Enterprise

ProSupport service offers highly trained experts around the clock and around the globe to address IT needs. We help minimize disruptions and maximize availability of PowerEdge server workloads with:

- 24x7 support through phone, chat and online
- Predictive, automated tools and innovative technology
- A central point of accountability for all hardware and software issues
- Collaborative third-party support
- Hypervisor, operating system and application support
- Consistent experience regardless of where customers are located or what language they speak
  - ⓘ **NOTE:** Subject to service offer country or region availability.
- Optional onsite parts and labor response options including next business day or four-hour mission critical

ProSupport Enterprise Suite
Feature Comparison

	Basic	ProSupport	ProSupport Plus
Remote technical support	9x5	24x7	24x7
Covered products	Hardware	Hardware Software	Hardware Software
Onsite hardware support	Next business day	Next business day or 4hr mission critical	Next business day or 4 hr mission critical
3rd party collaborative assistance		●	●
Self-service case initiation and management		●	●
Access to software updates		●	●
Proactive storage health monitoring, predictive analytics and anomaly detection with CloudIQ and the CloudIQ mobile app		●	●
Priority access to specialized support experts			●
Predictive detection of hardware failures			●
3rd party software support			●
An assigned Service Account Manager			●
Proactive, personalized assessments and recommendations			●
Proactive systems maintenance			●

Availability and terms of Dell Technologies Services vary by region and by product. For more information, please view our service descriptions.

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Figure 26. ProSupport Enterprise Suite

Dell ProSupport One for Data Center

ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets. This offering is built on standard ProSupport components that leverage our global scale but are tailored to a customer's needs. While not for everyone, this service option offers a truly unique solution for Dell Technologies largest customers with the most complex environments.

● Team of assigned Services Account Managers with remote, on-site options
● Assigned ProSupport One technical and field engineers who are trained on the customer's environment and configurations
● On-demand reporting and analytics-based recommendations that are enabled by secure connect gateway and TechDirect
● Flexible on-site support and parts options that fit their operational model
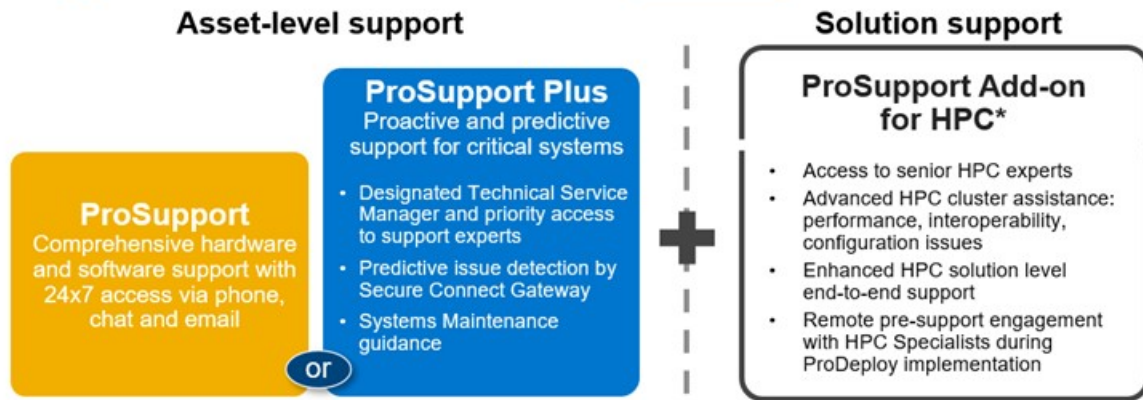● A tailored support plan and training for their operations staff

Dell ProSupport Add-on for HPC

The ProSupport Add-on for HPC provides solution-aware support including:

● Access to senior HPC experts
● Advanced HPC cluster assistance: performance, interoperability, and configuration
● Enhanced HPC solution level end-to-end support
● Remote presupport engagement with HPC Specialists during ProDeploy implementation

Learn more at Dell.com/HPC-Services.

Figure 27. ProSupport Add-on for HPC is an add-on to PS or PSP

Support Technologies

Powering the support experience with predictive, data-driven technologies.

ⓘ **NOTE:** SupportAssist Enterprise capabilities are now part of the secure connect gateway technology.

Enterprise connectivity

The best time to solve a problem is before it happens. The automated proactive and predictive support features enabled by the secure connect gateway technology helps reduce steps and time to resolution, often detecting issues before they become a crisis. The gateway technology is available in virtual and application editions. It is also implemented as a direct connect version for select Dell hardware and a Services plugin within OpenManage Enterprise for PowerEdge servers. The legacy SupportAssist Enterprise solution has been retired and is now replaced by the secure connect gateway solutions.

Benefits include:

● Value: Our connectivity solutions are available to all customers at no additional charge
● Improve productivity: Replace manual, high-effort routines with automated support
● Accelerate time to resolution: Receive issue alerts, automatic case creation, and proactive contact from Dell experts
● Gain insight and control: Optimize enterprise devices with insights in portals reporting like TechDirect, and get predictive issue detection before the problem starts

ⓘ **NOTE:** Connect devices can access these features. Features vary depending on the service level agreement for the connected device. ProSupport Plus customers experience the full set of automated support capabilities.

Table 46. Features enabled by connectivity

—	Basic hardware warranty	ProSupport	ProSupport Plus
Automated issue detection and system state information collection	Supported	Supported	Supported
Proactive, automated case creation and notification	Not supported	Supported	Supported

Table 46. Features enabled by connectivity (continued)

—	Basic hardware warranty	ProSupport	ProSupport Plus
Predictive issue detection for failure prevention	Not supported	Not supported	Supported

Get started at DellTechnologies.com/secureconnectgateway.

Dell TechDirect

TechDirect helps boost IT team productivity when supporting Dell systems.

Boost your productivity with online servoce for Dell products from TechDirect. From deployment to technical support, TechDirect lets you do more with less effort and faster resolution. You can:

- OPen and manage support requests or in-warranty systems
- Execute online self-service for parts dispatch
- Collaborate on ProDeploy infrastructure deployment projects online
- Manage proactive and preditive alerts from secure connect gateway technology that help maximize uptime
- Integrate services functionality into your help desk with TechDirect APIs
- Join over 10,000 companies that choose TechDirect

Register at TechDirect.Dell.com.

Dell Technologies Consulting Services

Our expert consultants help customers transform faster, and quickly achieve business outcomes for the high value workloads Dell PowerEdge systems can handle. From strategy to full-scale implementation, Dell Technologies Consulting can help determine how to perform IT, workforce, or application transformation. We use prescriptive approaches and proven methodologies that are combined with portfolio and partner ecosystem of Dell Technologies to help achieve real business outcomes. From multi cloud, applications, DevOps, and infrastructure transformations, to business resiliency, data center modernization, analytics, workforce collaboration, and user experiences-we are here to help.

Dell Managed Services

Some customers prefer Dell to manage the complexity and risk of daily IT operations, Dell Managed Services utilizes proactive, AI enabled delivery operations and modern automation to help customers realize desired business outcomes from their infrastructure investments. With these technologies, our experts run, update and fine-tune customer environments aligned with service levels, while providing environment-wide and down-to-the-device visibility. There are two types of managed service offers. First the outsourcing model or CAPEX model where Dell manages the customer owned assets using our people and tools. The second is the as-a-Service model or OPEX model called APEX. In this service, Dell owns all technology and all the management of it. Many customers will have a blend of the two management types depending on the goals of the organization.

Managed | Outsourcing or CAPEX model

We manage your technology using our people and tools.[1]
- Managed detection and response*
- Technology Infrastructure
- End-user (PC/desktop)
- Service desk operations
- Cloud Managed (Pub/Private)
- Office365 or Microsoft Endpoint

APEX | as-a-Service or OPEX model

We own all technology so you can off-load all IT decisions.
- APEX Cloud Services
- APEX Flex on Demand elastic capacity
- APEX Data Center Utility pay-per-use model

1 – Some minimum device counts may apply. Order via: ClientManagedServices.sales@dell.com

* Managed detection and response covers the security monitoring of laptops, servers, & virtual servers. Min. 50 devices combined. No Networking or Storage-only systems [SAN/NAS]. Available in 32 countries. Details here

Figure 28. Dell Managed Services

Dell Technologies Education Services

Build the IT skills required to influence the transformational outcomes of the business. Enable talent and empower teams with the right skills to lead and perform transformational strategy that drives competitive advantage. Leverage the training and certification required for real transformation.

Dell Technologies Education Services offers PowerEdge server training and certifications that are designed to help customers achieve more from their hardware investment. The curriculum delivers the information and the practical, firsthand skills that their team must confidently install, configure, manage, and troubleshoot Dell servers.

To learn more or register for a class today, see Education.Dell.com.