Dell PowerEdge XE7745

Technical Guide

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DELL Technologies

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

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PowerEdge XE7745 system configurations and features

The PowerEdge XE7745 system is a 4U server that supports:

- Two 5th Generation AMD EPYC 9005 Series processors with up to 192 Zen5 cores per processor
- Up to 24 DDR5 DIMM slots
- Eight redundant AC or DC power supply units
- Four sets of high-performance platinum grade(dual fan module) fans on the mid tray and twelve high-performance platinum grade fans on the front of the system
- Up to eight PCIe Gen5 slots to support the latest Gen5 PCIe devices, including networking adapters for enabling a flexible networking design.
- Up to eight PCIe Gen5 x16 DW-FHFL or sixteen PCIe Gen5 x16 SW-FHFL slots for GPUs
- Up to 8 x E3.S NVMe direct-attach drives.

NOTE: For more information about how to hot swap NVMe PCIe SSD devices, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at Dell Support page **> Browse all products** > **Infrastructure** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Select This Product** > **Documentation** > **Manuals and Documents**.

CAUTION: Do not install network cards, or other PCIe devices on your system that are not validated and tested by Dell. Do not install or remove GPUs without first consulting Dell. Damage caused by unauthorized and invalidated hardware installation will cause the system warranty to be null and void.

Topics:

Key workloads

The Dell PowerEdge XE7745 are ideal for:

- Gen AI fine-tuning
- Gen AI inferencing
- Natural Language Processing
- Digital Twins

New technologies

Table 1. New technologies

Technology	Detailed Description
2S 4U AMD EPYC 9005 processors	Core count: Up to 192 Zen5 cores per processor
	xGMI speed: Up to 4 links per CPU, speed: 32 GT/s
	Maximum number of PCIe lanes per CPU: Integrated 64 PCIe 5.0 lanes @ 32 GT PCIe Gen5 **NOTE:** The 4x Broadcom Atlas II switches support 144 lanes.
	Maximum TDP: 500 W

Table 1. New technologies (continued)

Technology	Detailed Description
6400 MT/s DDR5 Memory	Max 12 DIMMs per processor; 24 DIMMs per system
	Supports DDR5 ECC RDIMM
PCIe Gen	Gen5 @32 GT/s
Rear PCIe slot	Up to 8x PCIe Gen5 x16 SW-FHHL cards up to 150W
Internal GPU PCIe slots	• Option 1: 8x PCIe Gen 5 x16 DW-FHFL up to 600W • Option 2: 16x PCIe Gen 5 x16 SW-FHFL up to 75W
Flex I/O	Rear I/O with: • 1 x Dedicated iDRAC/BMC Direct Ethernet port • 2 x USB 3.1 Type A port • 1 x VGA port
	1 PCIe Gen 5 OCP 3.0 Compatible I/O (supported by x8 PCIe lanes) **NOTE:** x8 + x8 PCIe lanes in a multi-root (SNAP I/O) configuration.
	Front I/O with: • 1 x USB 2.0 Type-A (optional) • 1 x Mini-Display port (optional) • 1 x USB 2.0 Type-C dual mode (Host/iDRAC Direct port)
M-PESTI	Support payload data of PCIe cards, BP, and Rear I/O to BOSS-N1 DC-MHS and iDRAC.
Power Supplies	73.5 mm dimension PSU
	3200W Titanium 200-240 V AC or 240 V DC
	Multi capacity for 3200W PSU: • 3200W for 220.1-240 V AC • 2900W for 200-220 V AC

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Product Features

Table 2. Features of PowerEdge XE7745

Feature	PowerEdge XE7745
Processor	Two 5th Generation AMD EPYC 9005 Series processors, with up to 192 cores for Zen5 processor
Chipset	AMD chipset
Accelerators	• 8x PCIe Gen 5 x16 DWFL up to 600W or • 16x PCIe Gen 5 x16 FH up to 75W
Memory	
DIMM speed, maximum capacity	Up to 6000 MT/s, 2.3 TB max
Memory type	RDIMM
Memory module slots	24 DDR5 DIMM slots
	Supports registered ECC DDR5 DIMMs only. **NOTE:** Future releases will support 128GB DIMMs, increasing the maximum capacity to 3TB and achieving speeds of up to 6400 MT/s
Storage	
Front bays	• Up to 8 x EDSFF E3.S Gen5 NVMe (SSD) max 122.88 TB
Rear bays	N/A
Storage controllers	
Internal controllers	N/A
External controllers	N/A
Software RAID	N/A
Internal boot	Boot Optimized Storage Subsystem (BOSS-N1 DC-MHS): HWRAID 1, 2 x M.2 NVMe SSDs
	Internal USB

Power supply	• 3200W Titanium 200-240 V AC or 240 V DC, hot swap redundant **
	• Multi capacity for 3200W PSU:
	  ○ 3200W for 220.1-240 V AC
	  ○ 2900W for 200-220 V AC
	CAUTION: **The system requires at least one PSU installed in the CPU zone to power on. The system requires at least one PSU in the CPU zone and one PSU in the GPU zone to maintain BMC and standby power. If the GPU zone has no PSU installed, the system will remain on hold. To ensure full redundancy, install N+N number of PSUs in each zone, i.e., 1+1 in CPU zone and 3+3 in GPU zone. Removing all PSUs from the CPU zone while system is power on will cause immediate shutdown and potential data loss.

Cooling Options	• Air Cooling
Fans	• Up to four sets of high performance (HPR) platinum grade fans (dual fan module) installed in mid tray

Table 2. Features of PowerEdge XE7745 (continued)

Feature	PowerEdge XE7745
	• Up to twelve high performance (HPR) platinum grade fans installed on the front of the system • All are hot swap fans
Ports	
Network options	1 PCIe Gen 5 OCP 3.0 Compatible I/O (supported by x8 PCIe lanes) **NOTE:** x8 + x8 PCIe lanes in a multi-root (SNAP I/O) configuration.
Front ports	1 x USB 2.0 Type-A (optional)
	1 x Mini-Display port (optional)
	1 x USB 2.0 Type-C dual mode (Host/iDRAC Direct port)
Rear ports	1 x Dedicated iDRAC/BMC Direct Ethernet port
	2 x USB 3.1 Type A port
	1 x VGA
Internal ports	1 x USB 3.1 Type-A
Slots	
PCIe	Up to 8 PCIe Gen5 x16 SW-FHHL cards, each up to 150W
Form factor	4U rack server
Dimensions and weight	
Height	174.3 mm (6.86 inches)
Width	482 mm (18.98 inches)
Depth	899.56 mm (35.42 inches) with bezel
	886.73 mm (34.91 inches) without bezel
Weight	Max 68.5 Kg (151.02 pounds)
Bezel	Optional Security Bezel
System management	
Embedded management	• iDRAC10 • iDRAC RESTful API with Redfish • RACADM CLI
Tools	IPMI
Change Management	Enterprise Catalogs / Linux Repositories
Security	• AMD Secure Memory Encryption (SME) • AMD Secure Encrypted Virtualization (SEV) • Chassis Intrusion Detection • Cryptographically signed firmware • Data at Rest Encryption (SEDs with local or external key mgmt) • Secure Boot • Secured Component Verification (Hardware integrity check) • Secure Erase • Silicon Root of Trust • System Lockdown • TPM 2.0 FIPS, CC-TCG certified
Operating System and Hypervisors	• Canonical Ubuntu Server LTS

Table 2. Features of PowerEdge XE7745 (continued)

Feature	PowerEdge XE7745
	For specifications and interoperability details, see Dell Enterprise Operating Systems on Servers, Storage, and Networking page at Dell.com/OSsupport

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Chassis views and features

Topics:

Front view of the system

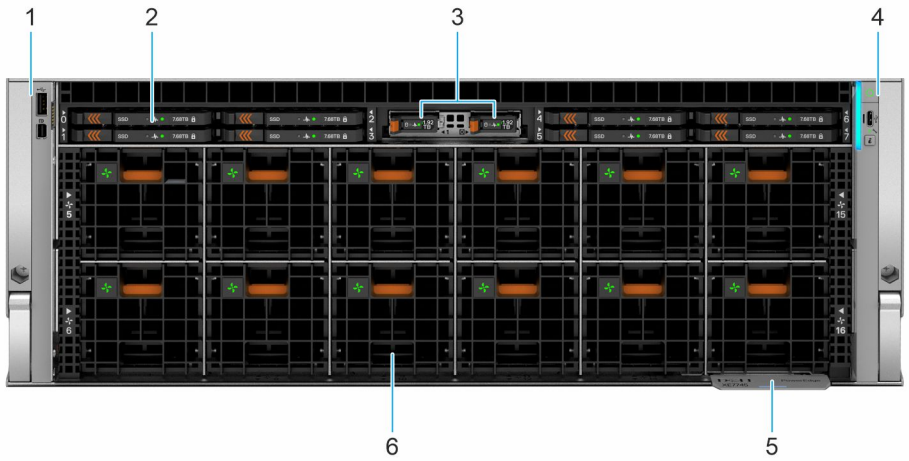

Figure 1. XE7745 chassis front view

Table 3. Features available on the front of the 8 x E3.S NVME system

Item	Ports, panels, and slots	Icon	Description
1	Left control panel	N/A	Contains the Mini DP and USB 2.0 port.
2	Drives	N/A	Enables you to install drives that are supported on your system.
3	BOSS-N1 DC-MHS	N/A	Enables the BOSS-N1 DC-MHS controller.
4	Right control panel	N/A	Contains the system health, system ID, status LED indicator, power button, and iDRAC Direct (Type-C USB) port.
5	Express Service Tag	N/A	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.
6	GPU fans	N/A	Enables you to install GPU fans for thermal regulation.

Right Control Panel (RCP)

The right control panel (RCP) - primary encompasses many of the features that are no longer supported by the left control panel.

Features of the right control panel (RCP) - primary include:

1. System ID button
2. Status LED for Host
3. USB 2.0 Type-C port
4. System health and System ID indicator (bicolored)
5. Power button

NOTE: LED remains off when the Type C USB is owned by the host.

Figure 2. Right Control Panel (RCP) - Primary

Table 4. System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system ID button to switch to system health mode.
Blinking amber	Indicates that the system is experiencing a fault. Check the System event log for specific error messages. EEMI guide

Left Control Panel (LCP)

The LCP supports an optional KVM module.

The LCP is offered in two SKUs:

- Blank
- KVM module

Figure 3. Left Control Panel (LCP) - Secondary blank

1. Blank control panel

Figure 4. Left Control Panel (LCP) - Secondary with optional KVM

1. USB 2.0 (LCP/KVM)
2. Mini DisplayPort

Rear view of the system

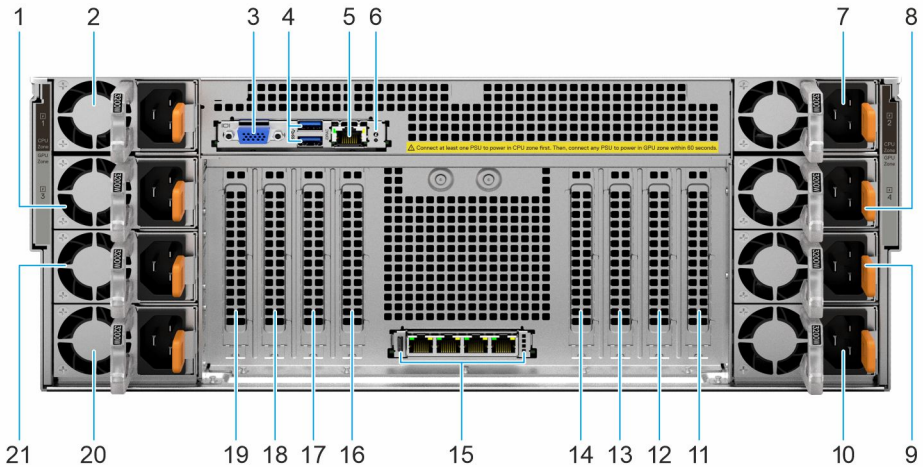

Figure 5. XE7745 chassis rear view

Table 5. Rear view of the system

Item	Ports, panels, or slots	Icon	Description
1	Power supply unit (PSU) 3	N/A	PSU3 of the system
2	Power supply unit (PSU) 1	N/A	PSU1 of the system
3	VGA port		Enables you to connect a display device to the system.

Table 5. Rear view of the system (continued)

Item	Ports, panels, or slots	Icon	Description
4	USB 3.1 ports		The USB port is 9-pin and 3.1-compliant. This port enables you to connect USB devices to the system.
5	Dedicated iDRAC10 Ethernet port		Enables you to remotely access iDRAC. For more information, see the Integrated *Dell Remote Access Controller User's Guide* at PowerEdge Manuals.
6	System Identification (ID) LED		The System Identification (ID) feature is available on the front and back of the system. The front panel has a button, while the back panel has an LED. Press the button on the front panel to identify a system in a rack by turning on the system ID LED on the back panel. 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 the front button is pressed again. Press the button to toggle the system ID LED between on and off modes. **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.
7	Power supply unit (PSU) 2	N/A	PSU2 of the system
8	Power supply unit (PSU) 4	N/A	PSU4 of the system
9	Power supply unit (PSU) 6	N/A	PSU6 of the system
10	Power supply unit (PSU) 8	N/A	PSU8 of the system
11	PCIe slot 9	N/A	Enables you to connect the PCI Express expansion cards.
12	PCIe slot 8	N/A	Enables you to connect the PCI Express expansion cards.
13	PCIe slot 7	N/A	Enables you to connect the PCI Express expansion cards.
14	PCIe slot 6	N/A	Enables you to connect the PCI Express expansion cards.
15	OCP NIC card	N/A	The OCP NIC card supports OCP 3.0. The OCP NIC card is optional and provides host LOM functionality through one or more ports integrated on the OCP card.
16	PCIe slot 4	N/A	Enables you to connect the PCI Express expansion cards.
17	PCIe slot 3	N/A	Enables you to connect the PCI Express expansion cards.
18	PCIe slot 2	N/A	Enables you to connect the PCI Express expansion cards.
19	PCIe slot 1	N/A	Enables you to connect the PCI Express expansion cards.
20	Power supply unit (PSU) 7	N/A	PSU7 of the system
21	Power supply unit (PSU) 5	N/A	PSU5 of the system

There are 2 PSUs installed on the CPU zone (PSU 1 and PSU 2) and 6 PSUs (PSU 3, PSU 4, PSU 5, PSU 6, PSU 7, PSU 8) on the GPU zone.

NOTE: To meet the minimum requirements for system standby, one PSU must be installed and powered in each zone.

Inside the system

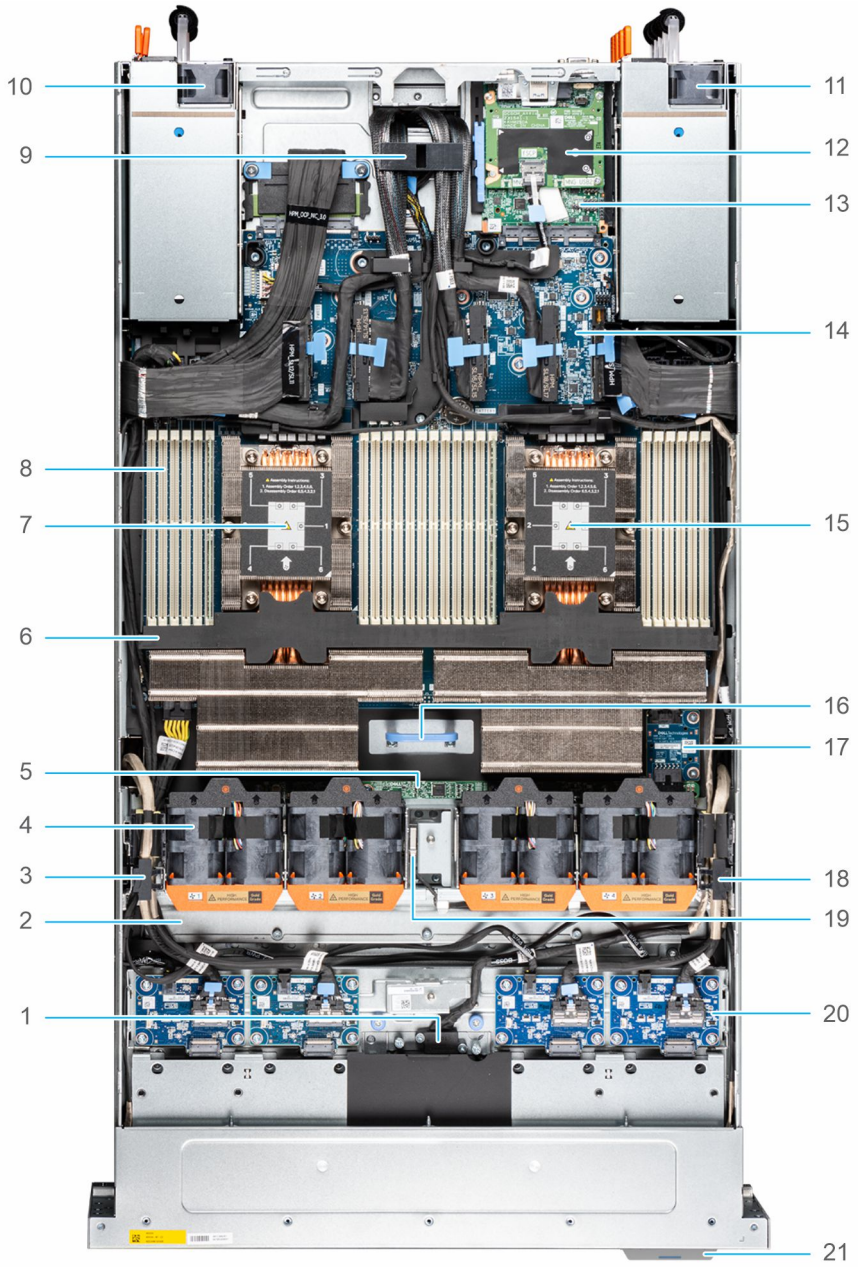

Figure 6. Inside view of XE7745 - 1U Top CPU Zone

1. BOSS cable
2. HPM Tray
3. Left side wall bracket
4. Cooling fans
5. Fan board
6. Air shroud
7. Heatsink on Processor 0
8. DIMM slots
9. High speed I/O cable holder
10. Power Supply Unit 2
11. Power Supply Unit 1
12. Attic board

13. DC-SCM Board
14. HPM board (System board)
15. Heatsink on Processor 1
16. HPM board handle
17. Fan relocation board
18. Right side wall bracket
19. Intrusion switch
20. Backplane
21. Luggage tag

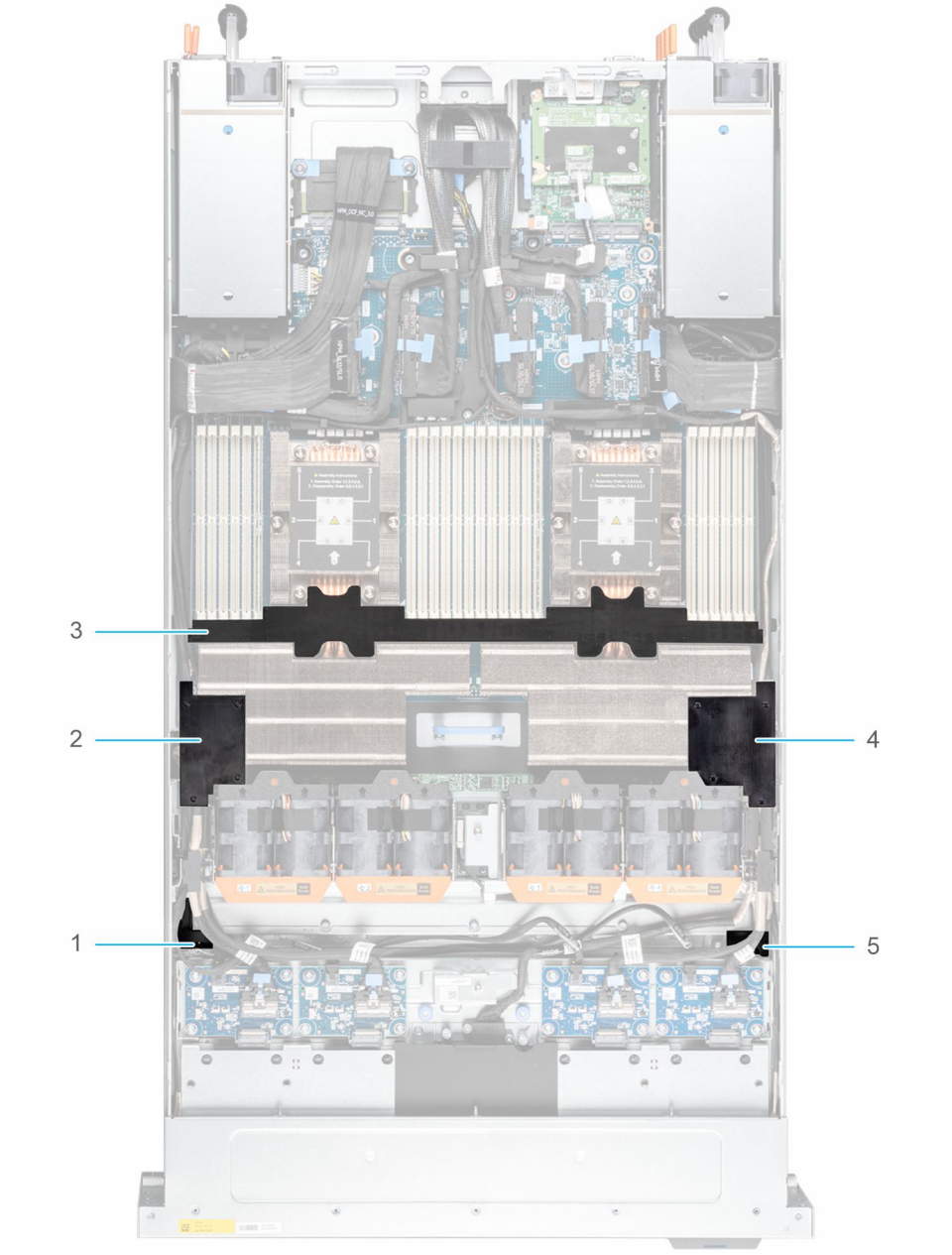

Figure 7. Inside view of XE7745 - 1U Top CPU Zone with Shrouds

1. Left air gap sealing filler
2. Left auxiliary air shroud
3. Air shroud
4. Right auxiliary air shroud
5. Right air gap sealing filler

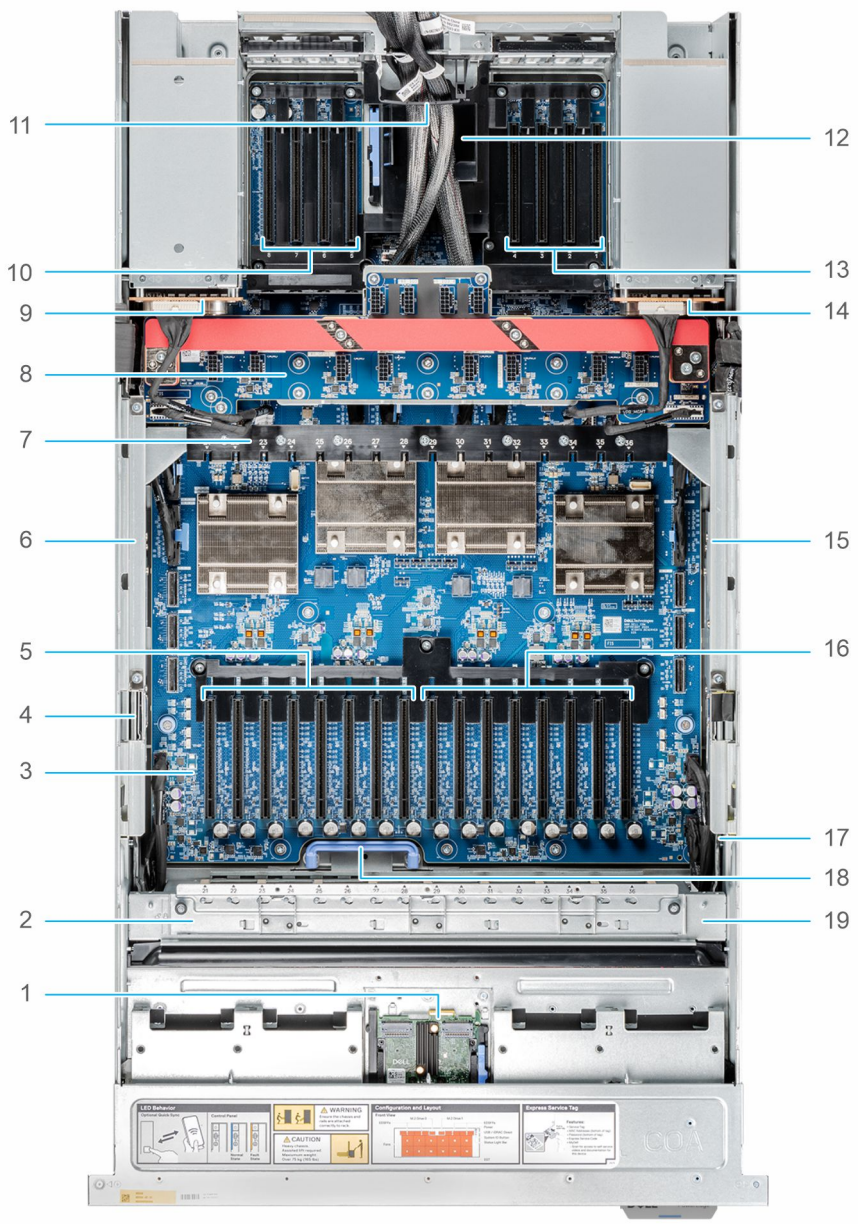

Figure 8. Inside view of XE7745 - 3U Bottom GPU Zone

1. BOSS module
2. GPU top holding bracket
3. PBB module
4. Front cable holder bracket
5. GPU Slots 21-28
6. Chassis sided bar bracket - Left
7. Rear GPU guiding supporter
8. APB Assembly
9. VPB Assembly - Left
10. PCIe slots 6-9
11. Rear cable holder
12. OCP slot
13. PCIe slots 1-4
14. VPB Assembly - Right
15. Chassis sided bar bracket - Right
16. GPU Slots 29-36

17. GPU fan board cable
18. PBB front handle
19. Front GPU shroud assembly

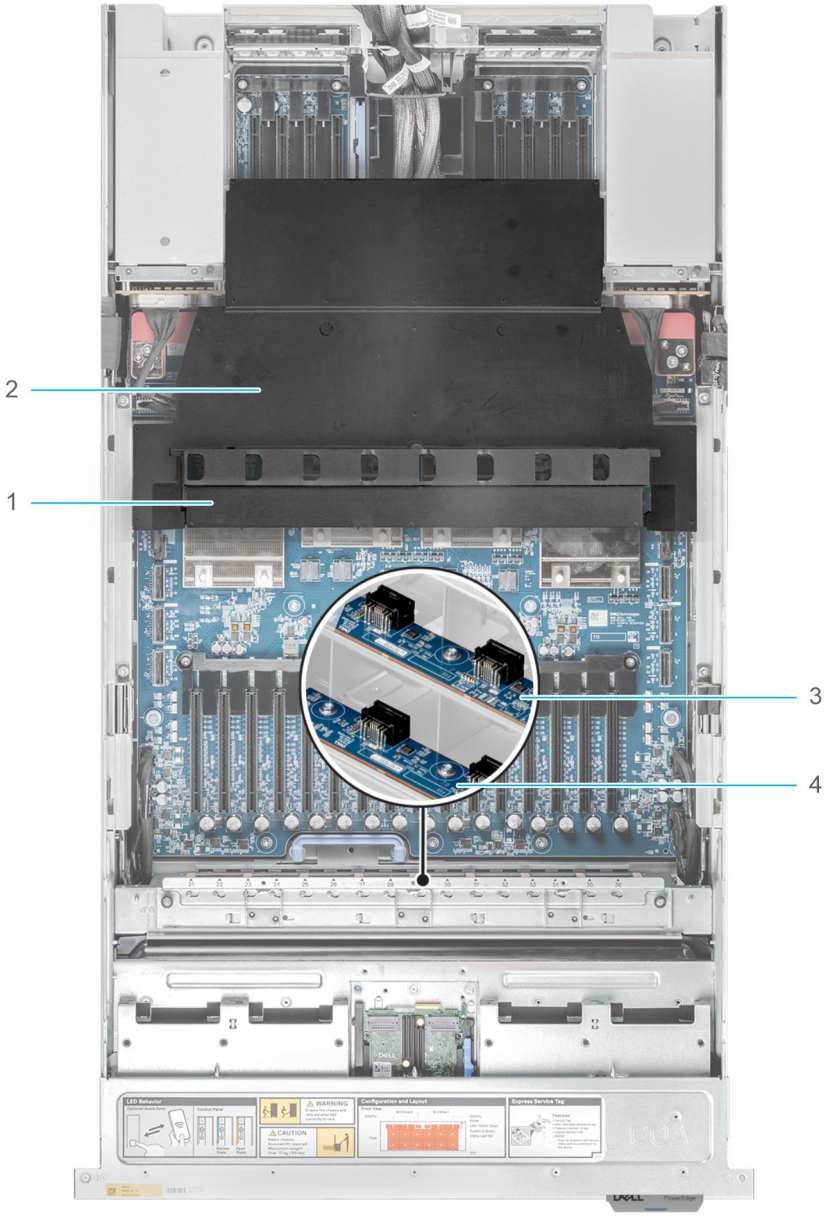

Figure 9. Inside view of XE7745 - 3U Bottom GPU Zone with GPU shroud and GPU fan boards

1. Rear GPU gap filler
2. Rear GPU air shroud
3. Upper GPU fan board
4. Lower GPU fan board

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Processor

Topics:

- Processor features

Processor features

The AMD EPYC™ 9005 system on a chip (SOC) is the next-generation data center CPU supporting socket compatibility with EPYC™ 9004 series in the SP5 socket infrastructure. Based on AMD's new enhanced Zen5 CPU cores with integrated I/O controllers, AMD EPYC™ SOC offers significant performance improvement from current generation production and the best performance per price and lowers TCO through an optimal balance of compute, memory, I/O, and security.

The following lists the features and functions in the AMD Family 1 Ah Models 00h-0Fh and 10H-1FH Socket SP5 processors:

- Compute
  - Zen5 cores:
    - Up to 192 cores with 2 x threads per socket and up to 500 W TDP
    - Up to 32 MB L3 shared by 16 cores/CCD
    - 1 MB L2/core, 32/48 KB instruction/data L1 per core
- Memory
  - 12 DDR5 memory channels up to 6000 MT/s (1DPC)
  - RDIMM
  - Dynamic PPR for non-Chipkill DIMMs
  - Up to 2 DPC capacity of 3TB/socket
- Integrated I/O
  - PCIe5 supports, peak xGMI3 product speeds up to 32 Gbps.
  - Up to 160 lanes of High Speed I /O
  - Server Controller Hub (USB, UART, SPI, LPC, I2C, so on)

Supported processors

The following table shows the 5th Generation AMD EPYC 9005 Series processor SKUs that are supported on the XE7745.

Table 6. Supported processors

Processor	Base Clock Speed (GHz)	Max Clock Speed (GHz)	Cache (M)	Cores	Threads	Memory Speed (MT/s)	Memory Capacity	TDP
9965	2.25	3.7	384	192	384	6000	6TB	500
9755	2.7	4.1	512	128	256	6000	6TB	500
9655	2.6	4.5	384	96	192	6000	6TB	400
9575F	3.3	5.0	256	64	128	6000	6TB	400
9555	3.2	4.4	256	64	128	6000	6TB	360

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Memory subsystem

Topics:

Supported memory

The XE7745 supports up to 24 DIMMs (12 per socket), with up to 2.3 TB of memory and speeds of up to 6000 MT/s.

The XE7745 supports registered (RDIMMs) which use a buffer to reduce memory loading and provide greater density, allowing for the maximum platform memory capacity. Unbuffered DIMMs (UDIMMs) are not supported.

Table 7. Memory technology comparison

Feature	PowerEdge XE7745 (DDR5)
DIMM type	RDIMM
Transfer speed	Supports 1 DPC and up to 6000 MT/s. **NOTE:** Maximum DIMM transfer speed support dependent on CPU SKU and DIMM population
Voltage	1.1 V

NOTE: Maximum DIMM transfer speed support dependent on CPU SKU and DIMM population.

The following table lists the supported DIMMs for the XE7745.

Table 8. Supported DIMMs

DIMM Speed (MT/s)	DIMM Type	DIMM Capacity (GB)	Ranks per DIMM	Data Width	DIMM Volts (V)
6400	RDIMM	32	2	x8	1.1
6400	RDIMM	64	2	x4	1.1
6400	RDIMM	96	2	x4	1.1

NOTE: The processor may reduce the performance of the rated DIMM speed.

System memory guidelines

The PowerEdge XE7745 system supports DDR5 registered DIMMs (RDIMMs).

Your system memory is organized into 12 channels per processor (one memory sockets per channel), 12 memory sockets per processor and 24 memory sockets per system.

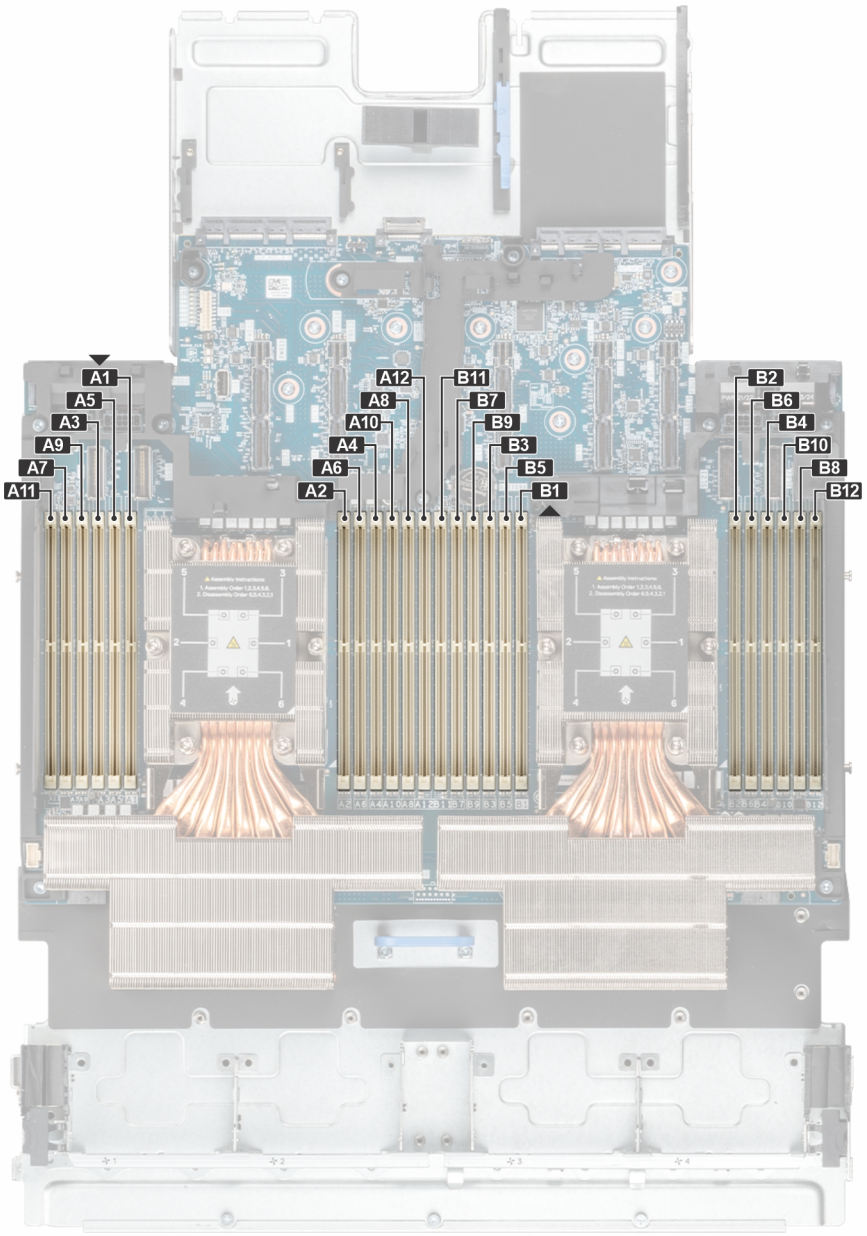

Figure 10. Memory channels

Memory channels are organized as follows:

Table 9. Memory channels A through F

Processor	Channel A	Channel B	Channel C	Channel D	Channel E	Channel F
Processor 0	Slots A1	Slots A5	Slots A3	Slots A9	Slots A7	Slots A11
Processor 1	Slots B1	Slots B5	Slots B3	Slots B9	Slots B7	Slots B11

Table 10. Memory channels G through L

Processor	Channel G	Channel H	Channel I	Channel J	Channel K	Channel L
Processor 0	Slots A2	Slots A6	Slots A4	Slots B10	Slots A8	Slots A12
Processor 1	Slots B2	Slots B6	Slots B4	Slots B10	Slots B8	Slots B12

Table 11. Supported memory matrix

DIMM type	Rank	Capacity	DIMM rated voltage and speed	Operating Speed
				1 DIMM per channel (DPC)
RDIMM	2 R	32 GB	DDR5 (1.1 V), 6400 MT/s	Up to 6000 MT/s
		64 GB	DDR5 (1.1 V), 6400 MT/s	
		96 GB	DDR5 (1.1 V), 6400 MT/s	

NOTE: The processor may reduce the performance of the rated DIMM speed.

Table 12. Memory Capacity Requirement For Supported GPU Cards

GPU Card	L40S (DW, 48G)
Memory Capacity	**8x GPUs, 384G** **Min. 576G** **Recommended 768G**
32G (12pcs, 384G)	Not Supported
32G (24pcs, 768G)	Supported
64G (12pcs, 768G)	Supported
64G (24pcs, 1536G)	Supported
96G (12pcs, 1152G)	Supported
96G (24pcs, 2304G)	Supported

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Storage

Topics:

Storage controllers

Storage controllers are not supported in this release.

Supported Drives

Table 13. Supported drives

Form Factor	Type	Speed	Rotational Speed	Capacities
EDSFF E3.S	NVMe	Gen5	SSD	1.6 TB, 1.92, 3.2 TB, 3.84 TB, 6.4 TB, 7.68 TB, 15.36 TB

Solid State Drives (SSDs)

SSD Facts

Unlike hard disk drives (HDDs) which use a spinning platter to store data, solid state drives (SSDs) use solid state memory NAND flash. HDDs have several different mechanical moving parts which make them susceptible to vibrational and handling interference. Solid state drives, on the other hand have no moving parts and are less susceptible to vibrational or handling damage even when impacted during use.

SSDs deliver high-performance I/O operations per second (IOPS), and low latency for transaction - intensive server and storage applications. Properly used in systems, they reduce total cost of ownership (TCO) through low power consumption and low operating temperature.

Dell offers different solid state drive (SSD) solutions to meet different customer needs. Enterprise & Data Center SSDs, as a class, are unique compared to client or consumer-based SSD in terms of reliability, performance, and architecture. While consumer-based SSDs, such as those utilized in notebooks are designed with a focus on consumer-based workloads, rigidity and battery life, enterprise-class SSDs are designed around enterprise application I/O (I/O) requirements with focus points of random I/O performance, reliability, and protection of data during a sudden power-down.

Understanding the basics of enterprise-class SSDs allow customers to make informed decisions when comparing solutions:

- Over-provisioning: The Achilles' heel of SSDs are their write characteristics. To rewrite an area of an SSD that has already been written, the data must be erased and then written. In order to overcome a portion of the write performance penalty, Dell enterprise SSDs found across Dell PowerEdge products, all employ a practice that is known as over-provisioning of Flash. This practice keeps native Flash capacity beyond the user-defined capacity and uses the additional space as a scratch pad of sorts to quickly put down application write data on areas of Flash that are already in an erased state. The SSDs perform cleanup functions of this over-provisioned Flash space during time periods typically not impacting application performance.
- Write Endurance: Write endurance is the number of program/erase (P/E or write cycles) that can be applied to a block of flash memory before the storage media becomes unreliable. Due to different data center workloads and read/write needs, Dell offers different enterprise SSDs with different endurance ratings so customers can design the right solution for their needs.

Below are the different categories (swim lanes) of enterprise SSDs Dell offers:

- Mixed Use (MU, 3 WPD): 70/30 read/write workloads with medium endurance. E-mail/messaging, OLTP, and Ecommerce are example workloads.
- Read Intensive (RI, 1 WPD): 90/10 read/write workloads with lower endurance. Database warehousing, media streaming, and VOD solutions are example workloads.

Dell enterprise SSDs support two kinds of host interface options:

- NVMe SSD: NVMe SSDs are a mainstream, high-performance, high reliability solid-state storage device that enables IOPS performance of up to 2000x more than conventional rotating hard drives.
- SATA SSD: SATA SSDs are based on the industry-standard SATA interface. SATA SSDs provide reasonable performance for enterprise servers.

There are two classes of NVMe drives used in servers: Enterprise NVMe and Data Center NVMe SSDs:

- Data Center NVMe SSDs: This class features a balance of various factors, including performance, latency, data protection, power consumption, and affordability.
- Enterprise NVMe SSDs: Representing the premium option, this class boasts the best performance, lowest latency, robust data protection, wide capacity ranges, and extensive firmware features. However, this comes at the expense of higher power consumption and a higher price point.

Together, Dell's Enterprise and Data Center NVMe drive portfolio offers a diverse range of options for customers, covering everything from high-performance drives to cost-optimized solutions. Additionally, these drives challenge the existence of any interface other than NVMe for SSDs.

Dell Enterprise SSDs support E3.S form factor:

- E3.S: Part of the EDSFF family, E3.S is targeted to NVMe SSDs with x4 PCIe link widths. It supports power profiles up to 25 W and is positioned to be a primary form factor for mainstream NVMe server storage subsystems as it can be used across a wide variety of platforms including modular and short depth chassis.

SSD Feature Matrix

The following table shows the types of SSD configurations on the PowerEdge XE7745:

Table 14. SSD feature matrix

Type	Model	Interface	Class	Speed	Form Factor	Endurance	Security	Capacity
SSD	Agnostic	NVMe	Data Center	Gen5	E3.S	MU	ISE	1.6 TB
SSD	Agnostic	NVMe	Data Center	Gen5	E3.S	RI	ISE	1.92 TB
SSD	Agnostic	NVMe	Enterprise	Gen5	E3.S	MU	ISE	3.2 TB
SSD	Agnostic	NVMe	Enterprise	Gen5	E3.S	RI	ISE	3.84 TB
SSD	Agnostic	NVMe	Data Center	Gen5	E3.S	RI	ISE	3.84 TB
SSD	Agnostic	NVMe	Enterprise	Gen5	E3.S	MU	ISE	6.4 TB
SSD	Agnostic	NVMe	Enterprise	Gen5	E3.S	RI	ISE	7.68 TB
SSD	Agnostic	NVMe	Enterprise	Gen5	E3.S	RI	ISE	15.3 TB
SSD	Agnostic	NVMe	Data Center	Gen5	E3.S	MU	ISE	3.2 TB

This document is updated as changes happen, so be sure to bookmark it rather than downloading an offline copy to stay with the latest information or see the Drive and Platform Matrix.

Internal storage configuration

XE7745 available internal storage configuration:

- 8 x EDSFF E3.S Gen5 NVMe

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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 these adapters are rigorously validated for worry-free, fully supported use in Dell servers.

OCP 3.0 support

Table 15. OCP 3.0 feature list

Feature	OCP 3.0
Form factor	SFF
PCIe Gen	Gen5
Max PCIe width	x8 (+ x8 for multi-root cards only)
Max number of ports	2
Port type	SFP28/QSFP56
Max port speed	100 GbE
NC-SI	Yes
SNAP I/O	Yes
WoL	Yes
Power consumption	15 W–35 W

Supported OCP cards

Supported OCP cards for XE7745:

Table 16. Supported OCP cards

Form factor	Vendor	Port type	Port speed	Port count
OCP 3.0	Mellanox	SFP28	25GbE	2
	Mellanox	QSFP56	100 GbE	2

OCP NIC 3.0 vs 2.0

Table 17. OCP 3.0 and 2.0 NIC comparison

Form Factor	OCP 3.0	OCP 2.0 (LOM Mezz)	Notes
PCIe Gen	Gen5	Gen3	Supported OCP3 is SFF (small form factor).
Max PCIe Lanes	Up to x16	Up to x16	See server slot priority matrix.
Shared LOM/DC-SCM	Yes	Yes	Only OCP on slot 5 (DC-SCM) can support BMC port redirect as shared NIC.
Aux Power	Yes	Yes	Used for Shared LOM

8

PCIe subsystem

Topics:

- PCIe connectors
- Expansion card specifications

PCIe connectors

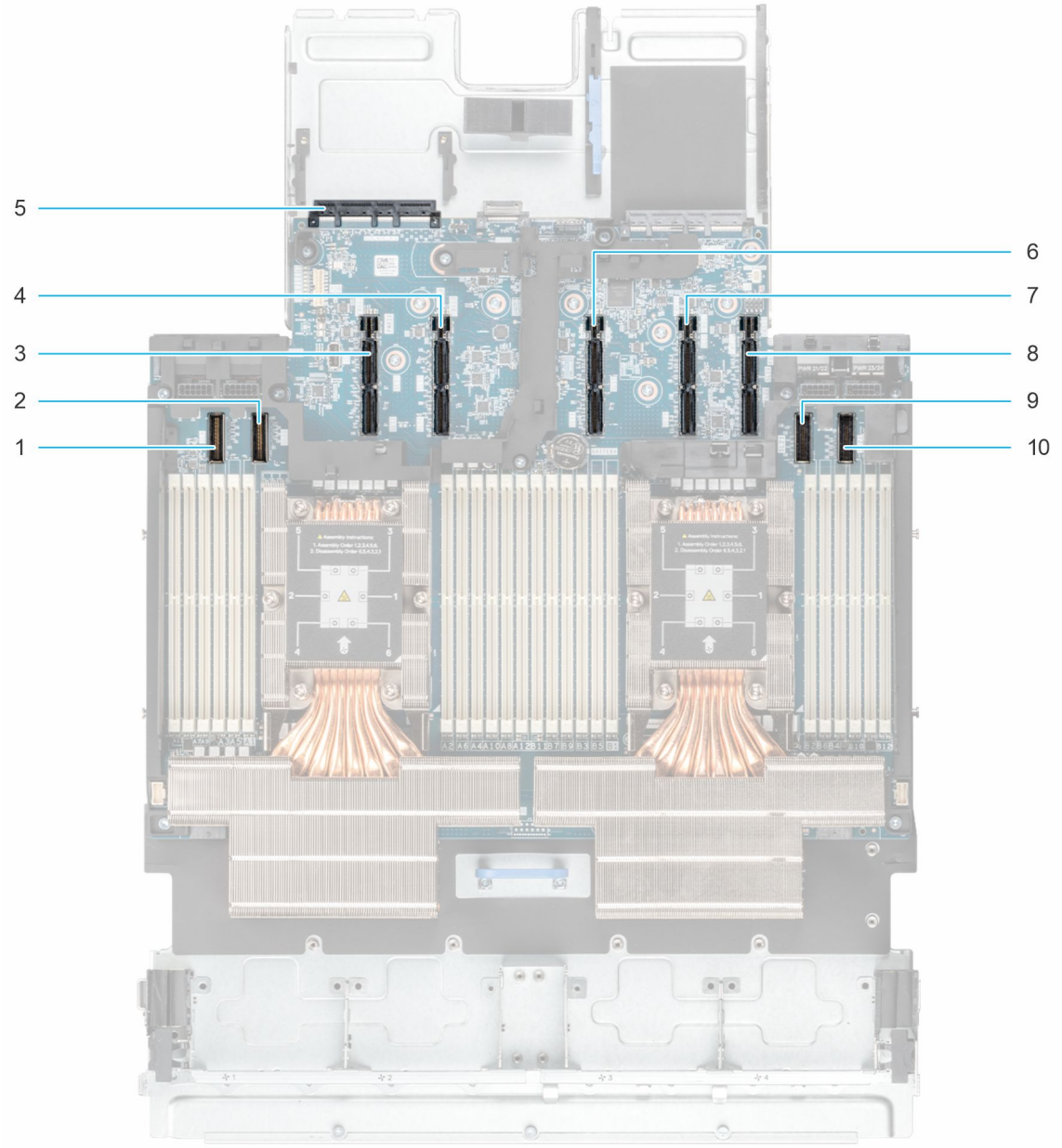


Figure 11. PBB (PCIe Base Board) upstream connector location on the HPM board

1. PCIe Switch 2 Upstream Port Connector (SL9_CPU0)
2. PCIe Switch 2 Upstream Port Connector (SL10_CPU0)

3. PCIe Switch 1 Upstream Port Connector (SL11/SL12/PWR11/PWR12_CPU0)
4. PCIe Switch 2 Upstream Port Connector (SL13/SL14/PWR13/PWR14_CPU0)
5. PCIe Switch 1 Upstream Port Connector (OCP NIC Connector_CPU0)
6. PCIe Switch 3 Upstream Port Connector (SL15/SL16/PWR15/PWR16_CPU1)
7. PCIe Switch 3 Upstream Port Connector (SL17/SL18/PWR17/PWR18_CPU1)
8. PCIe Switch 4 Upstream Port Connector (SL19/SL20/PWR19/PWR20_CPU1)
9. PCIe Switch 4 Upstream Port Connector (SL21_CPU1)
10. PCIe Switch 4 Upstream Port Connector (SL22_CPU1)

Expansion card specifications

The PowerEdge XE7745 system supports multiple PCI express (PCIe) slots (Gen5 slots), one OCP NIC and one BOSS on the system.

Table 18. Expansion card slots supported on the system

Category	PCIe slot	Processor connection	Height	Length	Slot width	Power
GPU	Slot 21	Processor 0	Full Height	Full Length	x16	75 W
	Slot 22	Processor 0	Full Height	Full Length	x16	75 W
	Slot 23	Processor 0	Full Height	Full Length	x16	75 W
	Slot 24	Processor 0	Full Height	Full Length	x16	75 W
	Slot 25	Processor 0	Full Height	Full Length	x16	75 W
	Slot 26	Processor 0	Full Height	Full Length	x16	75 W
	Slot 27	Processor 0	Full Height	Full Length	x16	75 W
	Slot 28	Processor 0	Full Height	Full Length	x16	75 W
	Slot 29	Processor 1	Full Height	Full Length	x16	75 W
	Slot 30	Processor 1	Full Height	Full Length	x16	75 W
	Slot 31	Processor 1	Full Height	Full Length	x16	75 W
	Slot 32	Processor 1	Full Height	Full Length	x16	75 W
	Slot 33	Processor 1	Full Height	Full Length	x16	75 W
	Slot 34	Processor 1	Full Height	Full Length	x16	75 W
	Slot 35	Processor 1	Full Height	Full Length	x16	75 W
	Slot 36	Processor 1	Full Height	Full Length	x16	75 W
PBB (PCIe Base Board)	Slot 1	Processor 1	Full Height	Full Length	x16	75 W
	Slot 2	Processor 1	Full Height	Full Length	x16	75 W
	Slot 3	Processor 1	Full Height	Full Length	x16	75 W
	Slot 4	Processor 1	Full Height	Full Length	x16	75 W
	Slot 6	Processor 0	Full Height	Full Length	x16	75 W
	Slot 7	Processor 0	Full Height	Full Length	x16	75 W
	Slot 8	Processor 0	Full Height	Full Length	x16	75 W
	Slot 9	Processor 0	Full Height	Full Length	x16	75 W
OCP	Slot 5	Processor 0	NA	NA	x8	75 W
BOSS	Slot 41	Processor 0	NA	NA	x4	75 W

9

Accelerator support

Accelerators such as Graphics Processing Units (GPUs), Field Programmable Gate Arrays (FPGAs) and Intelligence Processing Units (IPUs) complement and accelerate processors, using parallel processing to crunch large volumes of data faster. Accelerated data centers can also deliver better economics, providing breakthrough performance with fewer servers, resulting in faster insights and lower costs.

Topics:

Supported PCIe GPU cards

The PowerEdge XE7745 server supports NVIDIA L40S PCIe GPU cards on PBB.

Figure 12. DW GPU: NVIDIA L40S

The XE7745 supports the following NVIDIA GPUs:

Table 19. XE7745 NVIDIA GPU support list

GPU Card	Maximum Qty	Slot Priority	PCIe	Form Factor
NVIDIA L40S	8	21, 23, 25, 27, 29, 31, 33, 35	Gen4 x16	DW

Table 20. XE7745 GPU Expansion Slots Mapping

Location	Width	Card support	Processor	Power	Upstream HPM Root Port	Switch chip on PBB	PBB SW Connection
GPU slot-21	DW/SW	FH-FL	CPU0	75W	J_OCPNIC	SW1	J_PBB_SL7
GPU slot-22	SW	FH-FL	CPU0	75W	J_OCPNIC	SW1	J_PBB_SL7
GPU slot-23	DW/SW	FH-FL	CPU0	75W	J_SL10, J_SL9	SW2	J_PBB_SL11
GPU slot-24	SW	FH-FL	CPU0	75W	J_SL10, J_SL9	SW2	J_PBB_SL11
GPU slot-25	DW/SW	FH-FL	CPU0	75W	JR5 (SL11, SL12)	SW1	J_PBB_SL8

Table 20. XE7745 GPU Expansion Slots Mapping (continued)

Location	Width	Card support	Processor	Power	Upstream HPM Root Port	Switch chip on PBB	PBB SW Connection
GPU slot-26	SW	FH-FL	CPU0	75W	JR5 (SL11, SL12)	SW1	J_PBB_SL8
GPU slot-27	DW/SW	FH-FL	CPU0	75W	JR4 (SL13, SL14)	SW2	J_PBB_SL12
GPU slot-28	SW	FH-FL	CPU0	75W	JR4 (SL13, SL14)	SW2	J_PBB_SL12
GPU slot-29	DW/SW	FH-FL	CPU1	75W	JR2 (SL17, SL18)	SW3	J_PBB_SL14
GPU slot-30	SW	FH-FL	CPU1	75W	JR2 (SL17, SL18)	SW3	J_PBB_SL14
GPU slot-31	DW/SW	FH-FL	CPU1	75W	J_SL22, J_SL21	SW4	J_PBB_SL9
GPU slot-32	SW	FH-FL	CPU1	75W	J_SL22, J_SL21	SW4	J_PBB_SL9
GPU slot-33	DW/SW	FH-FL	CPU1	75W	JR3 (SL15, SL16)	SW3	J_PBB_SL13
GPU slot-34	SW	FH-FL	CPU1	75W	JR3 (SL15, SL16)	SW3	J_PBB_SL13
GPU slot-35	DW/SW	FH-FL	CPU1	75W	JR1 (SL19, SL20)	SW4	J_PBB_SL10
GPU slot-36	SW	FH-FL	CPU1	75W	JR1 (SL19, SL20)	SW4	J_PBB_SL10

10

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

Table 21. 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.
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 Dell EIPT.
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.
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 ● AC Blind Mate Find additional information at: Power and Cooling

PSU specifications

The PowerEdge XE7745 system supports up to eight AC or DC power supply units (PSUs).

Table 22. PSU Specifications

PSU	Power Ratings	Class	Heat dissipation	Frequence (Hz)	Input Voltage	Current (A)
3200 W Mixed Mode Multi-capacity	3200 W	Titanium	12,000 BTU/hr	50/60	220.1-240 V AC	16
		N/A	12,000 BTU/hr	N/A	240 Vdc	14.5
	2900 W	Titanium	12,000 BTU/hr	50/60	200-220 V AC	16

NOTE: Heat dissipation is calculated using the PSU wattage rating.

NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Enterprise Infrastructure Planning Tool available at Enterprise Infrastructure Planning Tool.

Figure 13. PSU power cables

Table 23. PSU power cables

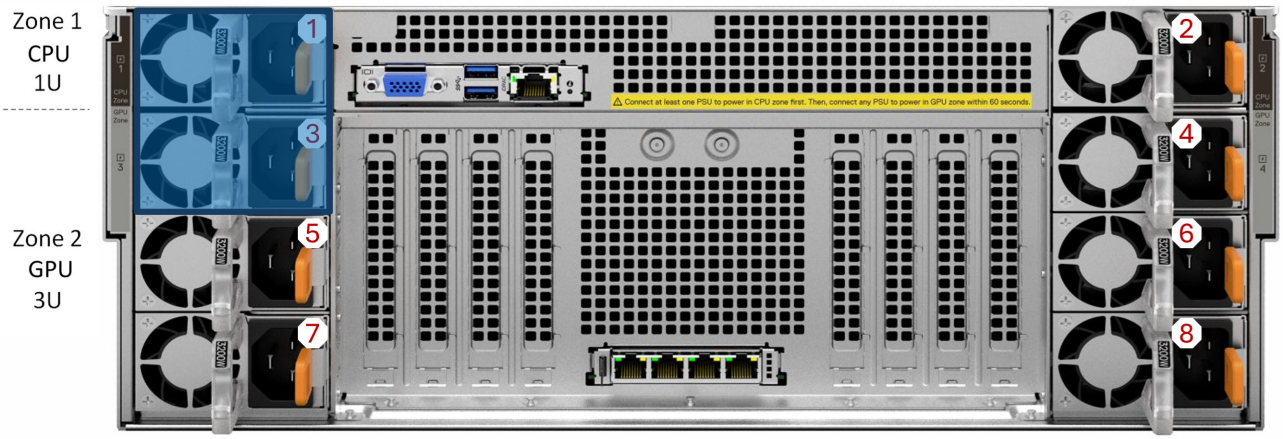
Form factor	Output	Power cable
Redundant 73.5 mm	3200 W mixed mode	C19

NOTE: The PowerEdge XE7745 does not support power supply units from mixed sub-vendors.

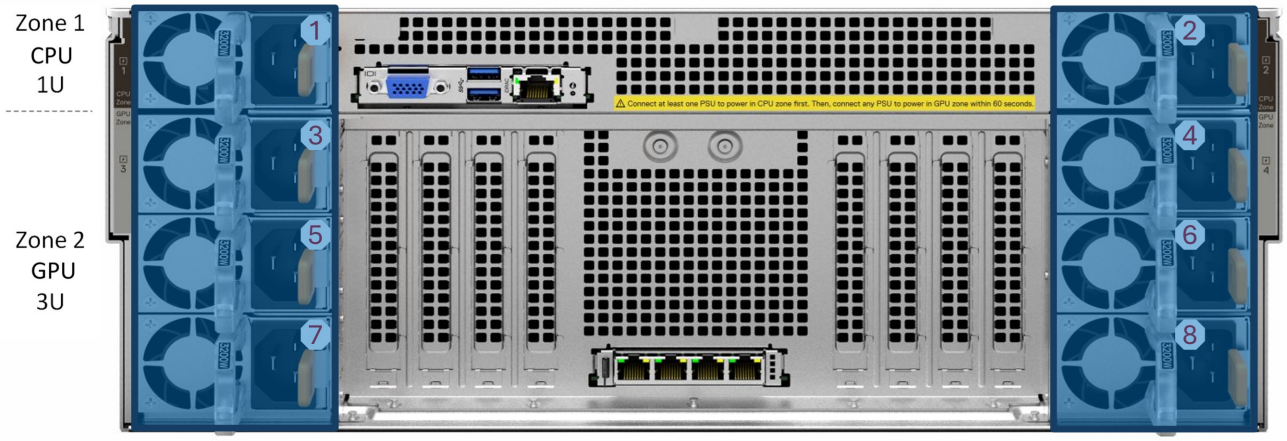
Power Supply Requirements:

There are 2 PSUs installed on the CPU zone and 6 PSUs on the GPU zone.

- **Zone 1 (CPU 1U Zone):**
  - PSU 1
  - PSU 2
- **Zone 2 (GPU 3U Zone):**
  - PSU 3
  - PSU 4
  - PSU 5
  - PSU 6
  - PSU 7
  - PSU 8



NOTE: At least one power supply unit must be installed in each zone for BMC and standby power support.



NOTE: All eight power supply units must be installed across both zones for maximum performance with full redundancy.

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.

1. Reliability	• Component hardware reliability remains the top thermal priority. • System thermal architectures and thermal control algorithms are designed to ensure there are no tradeoffs in system level hardware life.
2. Performance	• Performance and uptime are maximized through the development of cooling solutions that meet the needs of even the densest of hardware configurations.
3. Efficiency	• 17G servers are designed with an efficient thermal solution to minimize power and airflow consumption, and/or acoustics for acoustical deployments. • Dell's advanced thermal control algorithms enable minimization of system fans speeds while meeting the above Reliability and Performance tenets.
4. Forward Compatibility	• Forward compatibility means that thermal controls and thermal architecture solutions are robust to scale to new components that historically would have otherwise required firmware updates to ensure proper cooling. • The frequency of required firmware updates is thus reduced.

Figure 14. Thermal design characteristics

The thermal design of the PowerEdge XE7745 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, and 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. For more information, see the Dell PowerEdge XE7745 Installation and Service Manual at PowerEdge Manuals and "Advanced Thermal Control: Optimizing across Environments and Power Goals" on Dell.com.
- Cooling redundancy: The XE7745 allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the XE7745 reliable under a wide range of operating environments.

Acoustics

Acoustical configurations of XE7745

Dell PowerEdge XE7745 is a rack-mount server for unattended data center environment. Cooling needs thus air mover speeds and acoustical output are high, and so the XE7745 is not recommended for deployment in proximity to humans.

If humans need to interact with the servers in the deployment area, e.g., for setup, servicing, diagnostics, etc., then they should follow their company's Safety policies for hearing protection, which may include regular monitoring with a sound pressure level meter and requirements for ear plugs when the ambient A-weighted sound pressure (LpA-ambient) level exceeds a certain value. Single product A-weighted sound pressure levels reported according to ISO7779 are provided in the following tables and may be referenced to predict when the company's Safety policies for hearing protection may need to be employed.

CAUTION: Ear protection is highly recommended during the operation of this server.

Table 24. Configurations tested for acoustical experience

Configuration	E3.S
Fan Type	4 x High Performance Platinum (4056) + 12 x High Performance Platinum (6056)
CPU TDP	2 x AMD Turin 400W
RDIMM Memory	16 x 32 GB DDR5
Backplane Type	4 x (2) E3.S BP
HDD/SSD	8 x E3.S
PERC	None
BOSS	17G BOSS
BOSS M.2	Micron 480GB
OCP	10G OCP NIC
PSU Type	8 x 3200 W M-CPRS PSU
Bezel	Yes
GPU	8 x NVIDIA L40S, 350W
PCIe 1	100G NIC
PCIe 2	100G NIC

Table 24. Configurations tested for acoustical experience (continued)

Configuration	E3.S
PCIe 3	100G NIC
PCIe 4	100G NIC

Table 25. Acoustical experience of XE7745 configurations

Configuration		E3.S
Acoustical Performance: Idle/ Operating @ 25°C Ambient		
$L_{wA,m}$ (B)	Idle[4]	8.3
	Operating/Customer usage operating[5][6]	8.4
K_v (B)	Idle [4]	0.4
	Operating/Customer usage operating[5][6]	0.4
$L_{pA,m}$ (dB)	Idle[4]	74
	Operating/Customer usage operating[5][6]	75
Prominent discrete tones[3]		Noticeable tones (Prominence ratio ≥ 15 dB)
Acoustical Performance: Idle @ 28°C Ambient		
$L_{wA,m}$[1] (B)		8.7
K_v (B)		0.4
$L_{pA,m}$[2] (dB)		77
Acoustical Performance: Max. loading @ 35°C Ambient		
$L_{wA,m}$[1] (B)		9.2
K_v (B)		0.4
$L_{pA,m}$[2](dB)		84

[1]LwA, m: The declared mean A-weighted sound power level (LwA) is calculated per section 5.2 of ISO 9296 with data collected using the methods described in ISO 7779 (2010). Engineering data presented here may not be fully compliant with ISO 7779 declaration requirements.

[2]LpA, m: The declared mean A-weighted emission sound pressure level is at the bystander position per section 5.3 of ISO 9296 and measured using methods described in ISO 7779. The system is placed in a 24U rack enclosure, 25cm above a reflective floor. Engineering data presented here may not be fully compliant with ISO 7779 declaration requirements.

[3]Prominent tones: Criteria of Annex D of ECMA-74 and the Prominence Ratio method of ECMA-418 are followed to determine if discrete tones are prominent and to report them, if so.

[4]Idle mode: The steady-state condition in which the server is energized but not operating any intended function.

[5]Operating mode: The maximum of the steady state acoustical output at 50% of CPU TDP or active storage drives for the respective sections of Annex C of ECMA-74.

[6] Customer Usage Operating mode: The operating mode is represented by the maximum of the steady state acoustical output at 10%~50% of CPU TDP, 10~50% of Memory, 10% IOPs, and >50% GPU load as the components showed in the above configurations.

11

Rack, rails, and cable management

Topics:

Rails and cable management information

The rail offerings for the PowerEdge XE7745 include only one type, which is the sliding rail.

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 that is 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 Generic Tool-less stab-in sliding rail supports tool-less installation in 19" EIA-310-E compliant square hole and unthreaded round hole 4-post racks. It allows for the full extension of the system out of the rack, enabling serviceability of key internal components.

B37 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, unthreaded round hole racks including all generations of the Dell racks. Also supports tool-less installation in threaded round hole 4-post racks.
- Support full extension of the system out of the rack to allow serviceability of key internal components.

Installing Stab-in Rails to the system

WARNING: Follow the safety instructions included in the Safety, Environmental, and Regulatory information document shipped with the system.

WARNING: To avoid injury, do not attempt to lift the system by yourself.

WARNING: A lift is required to move systems weighing above 120lbs/54.4kg.

Figure 15. Identify the rail kit contents

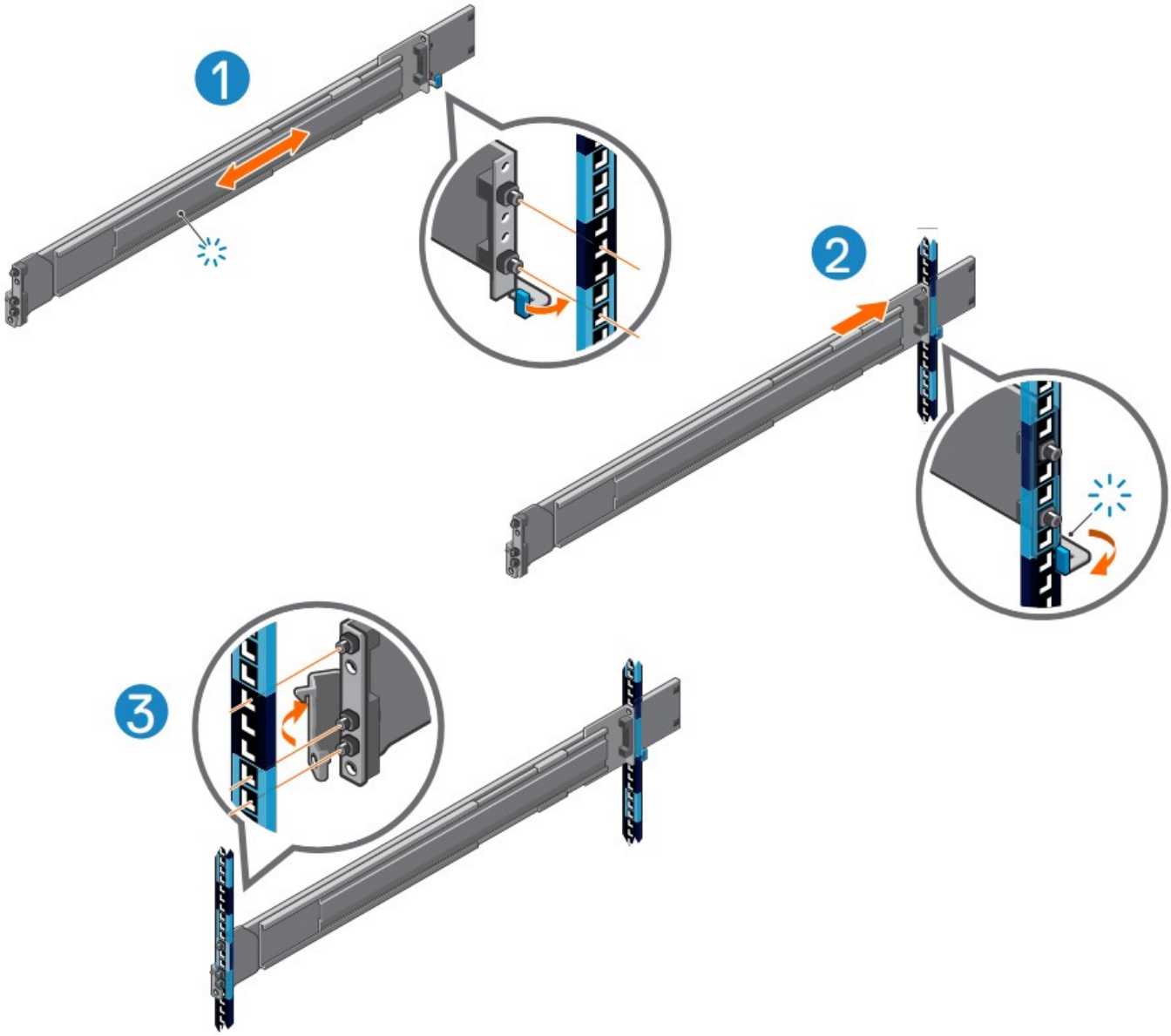


Figure 16. Install the rail | 4-POST racks

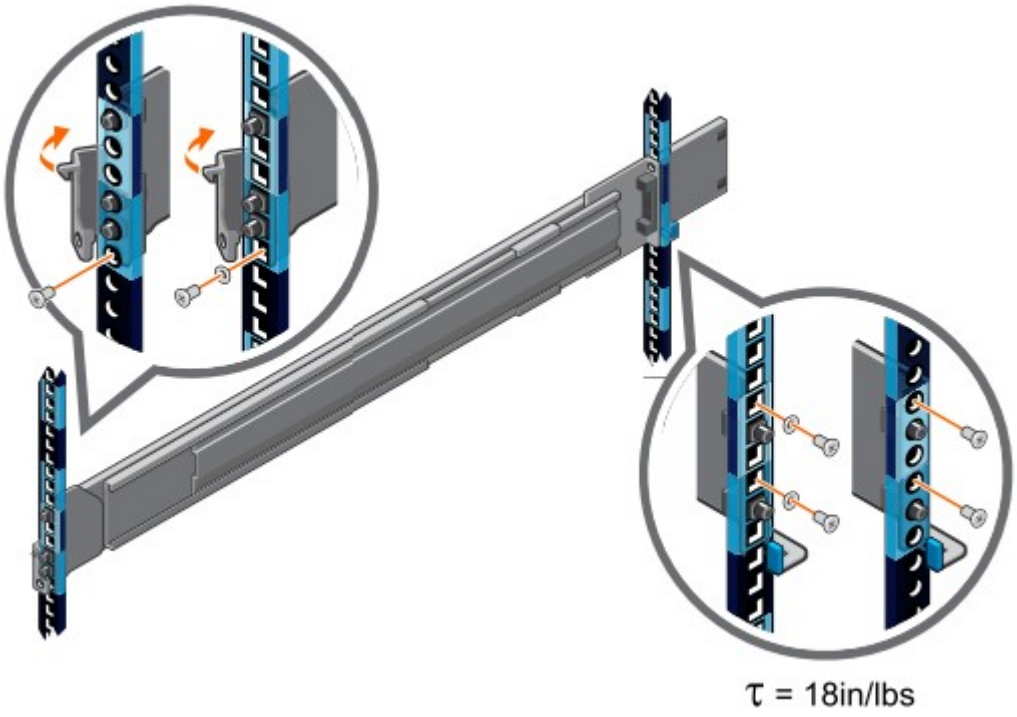


Figure 17. Install the supplied hardware to secure rails for the rack level shipping

- For square hole racks, install the supplied conical washer to the screw before installing the screw.
- For unthreaded round hole racks, install only the screw without the conical washer.
- All screws are required for rack-level shipping, and front screws are required for all installations.

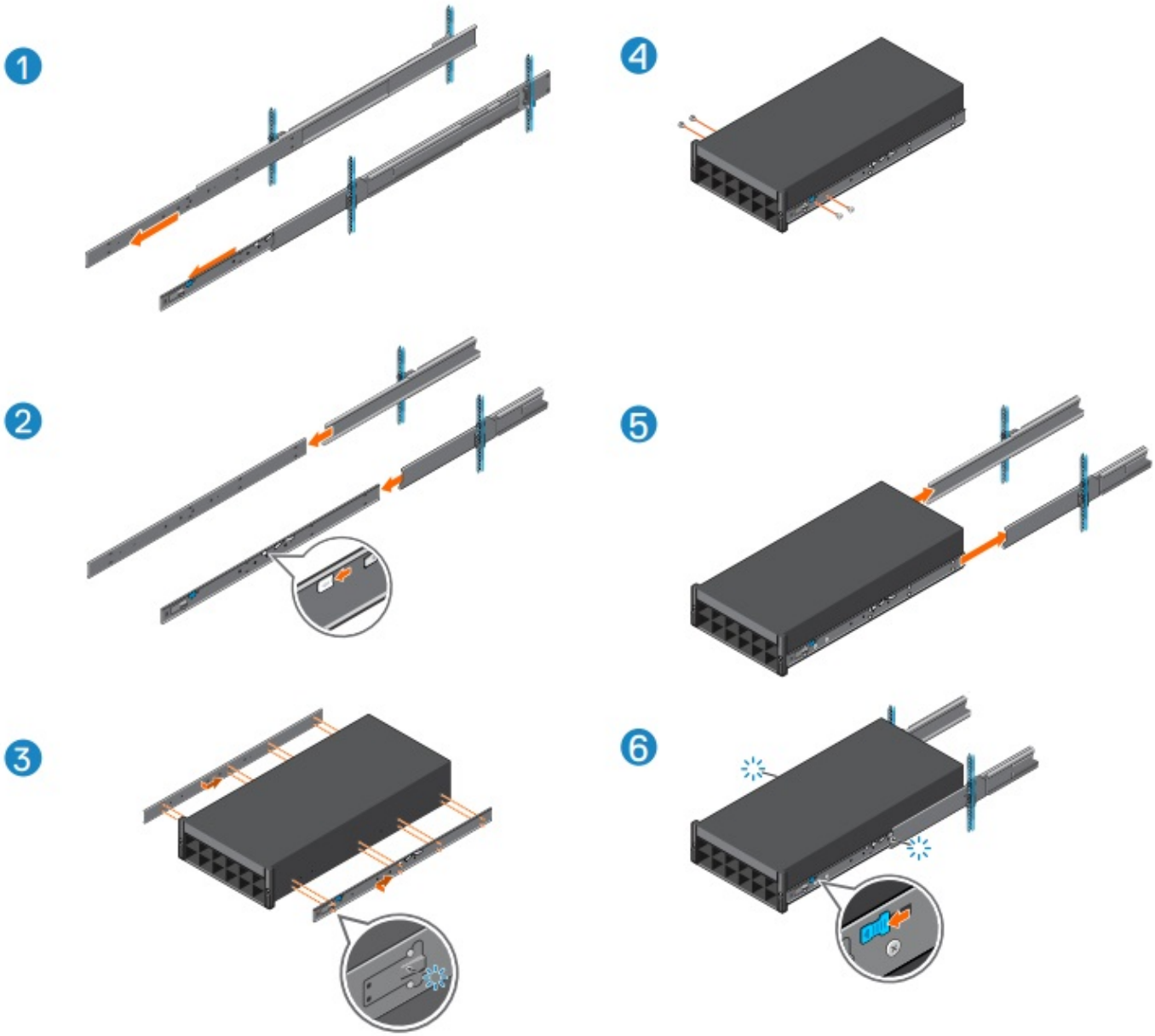


Figure 18. Installing Stab-in Rails to the system

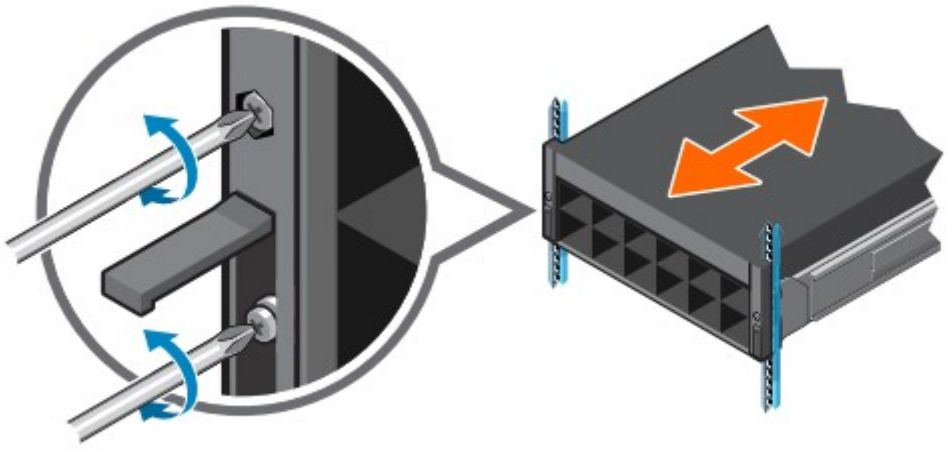


Figure 19. Securing or releasing the system from the rails

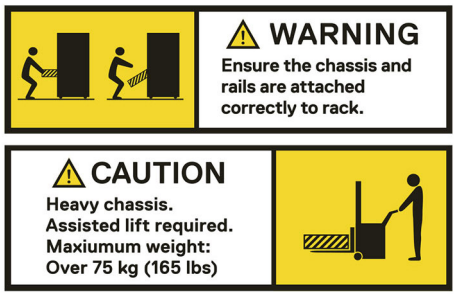


Figure 20. System Information Label

12

Operating Systems and Virtualization

Topics:

- Supported operating systems

Supported operating systems

The PowerEdge XE7745 system supports the following operating system:

- Canonical Ubuntu Server LTS

For specifications and interoperability details, see OS support.

13

Dell Systems Management

Dell delivers management solutions that help IT administrators deploy, update, monitor, and manage IT assets. OpenManage solutions and tools enable you to solve and respond to problems quickly by manage Dell servers efficiently in physical and remote environments, and operating in-band and out-of-band (agent-free).

The OpenManage portfolio includes innovative embedded management tools such as the integrated Dell Remote Access Controller (iDRAC) and consoles like OpenManage Enterprise, OpenManage Power Manager Plugin, and tools like Repository Manager. Dell has developed comprehensive systems management solutions that are based on open standards by connecting and/or integrating it's offers with top system management vendors and frameworks such as Ansible, Microsoft, and VMware, enabling advanced management of Dell hardware. The key tools for managing Dell PowerEdge servers are iDRAC and OpenManage Enterprise (OME) console. OpenManage Enterprise helps the system administrators with the life cycle management of multiple generations of PowerEdge servers. OME has additional functions that can be added with plugins like OpenManage Enterprise Services, Update Manager, APEX AIOps Observability (formerly CloudIQ), and Power Manager. It also offers integration with VMware vCenter and Microsoft System Center, and a set of tools, including Repository Manager, enabling easy management of PowerEdge hardware. The four main pillars of Dell systems management closely align with the issues and business challenges that are faced by many IT departments.

- Automating IT management.
- ○ Comprehensive automation management for reducing OPEX and increasing uptime and overall efficiency of systems.
  - ○ Comprehensive suite of tools to automate according to your needs.
- Management made simple.
  - ○ Simple but powerful tools for managing your Dell servers.
  - ○ Integrated tools that streamline support engagements.
  - ○ Innovative at-the-box management features.
- Secure by default.
  - ○ Dell servers offer robust security defenses to prevent the next generation of malicious attacks.
  - ○ Security is designed deep into the hardware and firmware architecture for optimal protection.
- Smarter infrastructure management.
  - ○ It offers a next-generation 1-to-many console to manage your IT and server infrastructure.
  - ○ Embedded intelligence that is infrastructure-aware to optimize troubleshooting and deployment.

This document provides an overview of the OpenManage Systems Management offerings to help IT administrators choose the appropriate tools to completely manage Dell PowerEdge servers.

- The latest Dell Systems Management Overview Guide.

Topics:

- Integrated Dell Remote Access Controller (iDRAC)
- Systems Management software support matrix

Integrated Dell Remote Access Controller (iDRAC)

iDRAC10 delivers advanced, agent-free, local and remote server administration. Embedded in every PowerEdge server, iDRAC10 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; 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 iDRAC10 in-place across the Dell PowerEdge portfolio, the same IT administration techniques and tools can be applied throughout. This consistent management platform allows 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.

Zero-Touch Provisioning (ZTP) is embedded in iDRAC. ZTP is an Intelligent Automation Dell's agent-free management. Once a PowerEdge server is connected to power and networking that system can be monitored and fully managed, whether you are standing in front of the server or remotely over a network. 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, and System Lockdown, iDRAC10 is purpose-built to simplify server administration. For those customers whose existing management platform uses in-band management, Dell does provide iDRAC Service Module, a lightweight service that can interact with both iDRAC10 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.

iDRAC10 offers the following license tiers:

Table 26. iDRAC10 license tiers

License	Description
iDRAC10 Core	• Available for all servers. • Core system management features for users who are cost conscious.
iDRAC10 Enterprise	• Available as an upsell on all servers. • Includes all features of Core. Also, includes additional automation features and virtual console and security features. • Bundled with Secure Enterprise Key Management (SEKM) and Secure Component Verification (SCV) licenses. **NOTE:** Available in March 2025
iDRAC10 Datacenter*	• Available as an upsell on all servers. • Includes all features of Core and Enterprise. • Includes key features such as telemetry streaming and thermal management. • Includes advanced accelerators (GPU and DPU) system management and advanced air and liquid cooling. **NOTE:** Available in June 2025

NOTE: *Expected to be available during the future releases. Planned Offerings are subject to change and may not be released as originally designed.

For a full list of iDRAC features by license tier, see the **Integrated Dell Remote Access Controller 10 User's Guide** at Dell.com.

For more details on iDRAC10 including white papers and videos, see:

- Support for Integrated Dell Remote Access Controller 10 (iDRAC10) is 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	iDRAC10	Supported
	iDRAC Direct	Supported
	iDRAC RESTful API with Redfish	Supported
Change Management	Dell Repository Manager	Supported

Table 27. Systems Management software support matrix (continued)

Categories	Features	PE mainstream
	Dell System Update	Supported
	Enterprise Catalogs	Supported
	Server Update Utility (SUU)	Supported
OpenManage console	CloudIQ for PowerEdge plug-in	Supported
	OpenManage Enterprise (OME)	Supported
	OME APEX AIOps Observability	Supported
	OME integration for Microsoft System Center	Supported
	OME Integration for VMware vCenter (with VMware Aria Operations)	Supported
	OpenManage Integration for Windows Admin Center	Supported
	OME Power Manager	Supported
	OME Services	Supported
	OME Update Manager	Supported
OpenManage Integrations	BMC TrueSight	Supported
	Microsoft System Center	Supported
	OpenManage Integration with ServiceNow	Supported
	Red Hat Ansible Modules	Supported
	Terraform Providers	Supported
	VMware vCenter and vRealize Operations Manager	Supported
Security	Cryptographically signed firmware	Supported
	Secure Boot	Supported
	Secured Component Verification (Hardware integrity check)	Supported
	Secure Erase	Supported
	Silicon Root of Trust	Supported
	TPM 2.0 FIPS, CC-TCG certified	Supported
	AMD Secure Memory Encryption (SME)	Supported
	AMD Secure Encrypted Virtualization (SEV)	Supported
Operating system	Canonical Ubuntu Server LTS	Supported

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Appendix A: Additional specifications

Topics:

Chassis dimensions

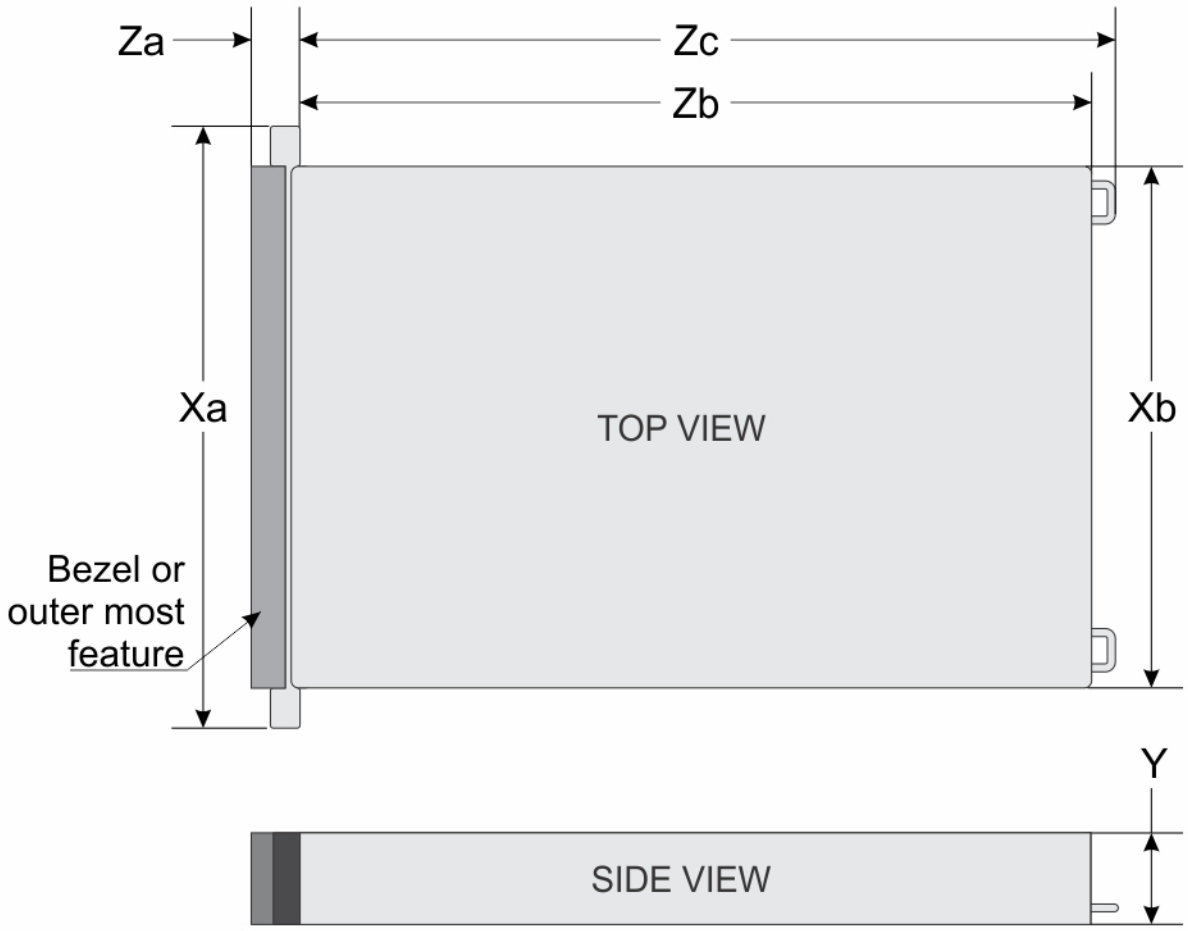

Figure 21. Chassis dimensions

Table 28. PowerEdge XE7745 chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
8 drives	482.0 mm (18.90 inches)	445 mm (17.52 inches)	174.3 mm (6.86 inches)	34.83 mm (1.37 inches)With bezel 22 mm (0.87 inches)Without bezel	830.2 mm (32.68 inches) Ear to rear wall	864.73 mm (34.04 inches) Ear to PSU handle

NOTE: Zb is the nominal rear wall external surface where the system board I/O connectors reside.

System weight

Table 29. PowerEdge XE7745 system weight

System configuration	Maximum weight (with all drives/SSDs)
E3.S Gen5 NVMe drives	68.5 Kg (151.02 pounds)

Table 30. PowerEdge XE7745 weight handling recommendations

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

NIC port specifications

The PowerEdge XE7745 system supports one 10/100/1000 Mbps BMC Ethernet, optional Open Compute Project (OCP) card and PCIe Add-in card NIC.

Table 31. NIC port specification for the system

Feature	Specifications
Datacenter-Secure Control Module (DC-SCM)	1 GB x 1
OCP NIC 3.0 card	25 GbE x 2
PCIe Add-in Card (AIC) NIC	400 GbE x 1, 200 GbE x 2

Video specifications

The PowerEdge XE7745 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)
640 x 480	60	8, 16, 32
800 x 600	60	8, 16, 32
1024 x 768	60	8, 16, 32
1152 x 864	60	8, 16, 32

Table 32. Supported video resolution options (continued)

Resolution	Refresh rate (Hz)	Color depth (bits)
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1400 x 1050	60	8, 16, 32
1440 x 900	60	8, 16, 32
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

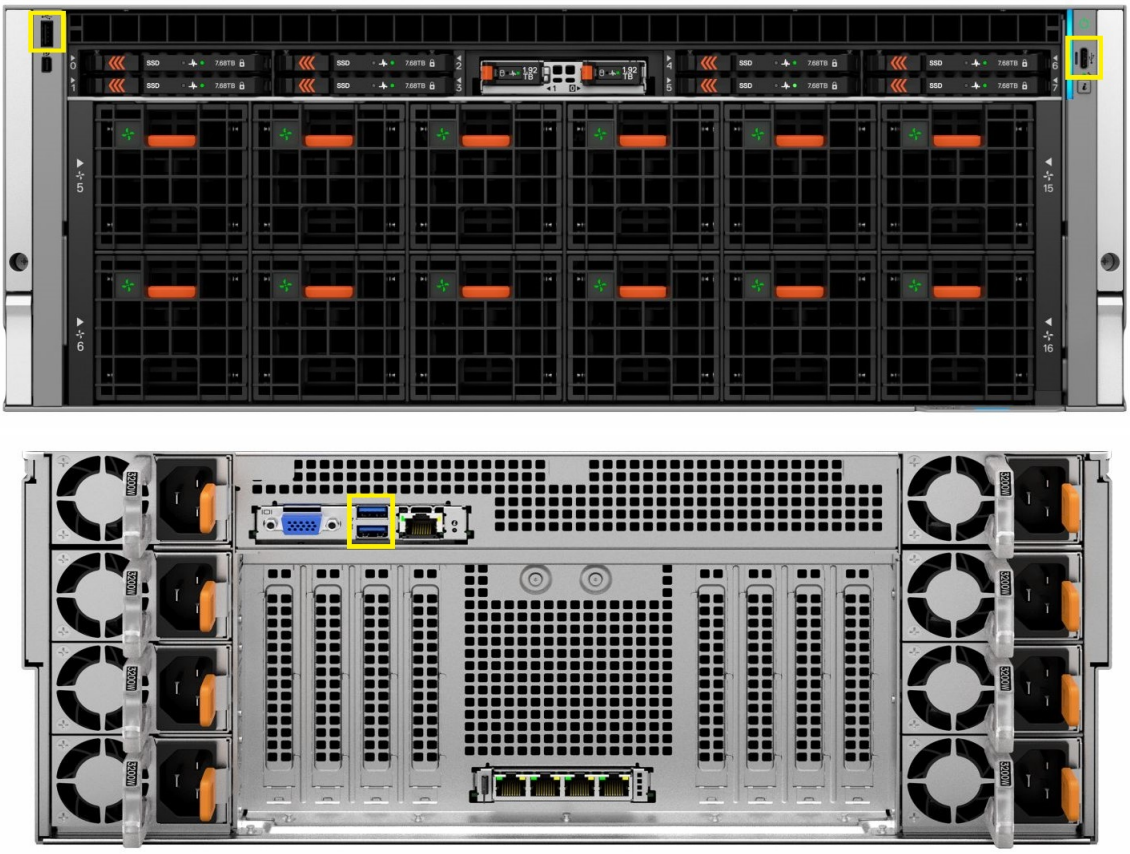

Figure 22. Front and rear USB Ports

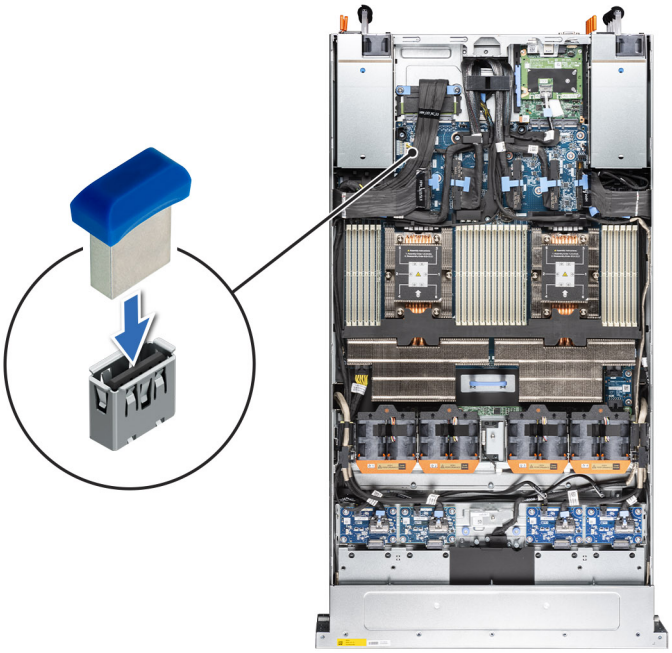

Figure 23. Internal USB Port

Table 33. Systems USB Specifications

Front		Rear		Internal	
USB port type	**No. of ports**	**USB port type**	**No. of ports**	**USB port type**	**No. of ports**
USB 2.0 Type-A (optional LCP KVM)	1	USB 3.1 Type-A	2	USB x.3.1 Type-A	1
USB 2.0 Type-C (HOST/BMC Direct)	1				

PSU rating

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

Table 34. PSUs highline and lowline ratings

PSU	3200 W Titanium
Peak Power (Highline/-72 VDC)	4960 W
Highline/-72 VDC	3200 W
Peak Power (Lowline/-40 VDC)	N/A
Lowline/-40 VDC	N/A
Highline 240 VDC	3200 W
DC-(48—60) V	N/A

The PowerEdge XE7745 server supports up to eight AC power supplies with 1+1 or 3+3 redundancy, autosensing, and auto-switching capabilities. The server is divided into two zones:

- 1U CPU zone: Supports up to two power supplies configured with 1+1 redundancy.
- 3U GPU zone: Supports up to six power supplies configured with 3+3 redundancy.

If multiple PSUs are present during POST, the wattage capacities of the PSUs are compared. If the wattages of the PSUs do not match, the PSU with the higher wattage is enabled. Additionally, a PSU mismatch warning is displayed in the BIOS, iDRAC, or on the system LCD.

If only a single PSU is present in the system during power on, then the system will halt power up in S6 and present an error message prompting the user to install at least one PSU into each power zone.

If a PSU is added while the system is running, the wattage capacity of the PSU currently in use must match the newly added PSU to enable it. Otherwise, the PSU will be marked as mismatched in iDRAC, and the newly added PSU will not be enabled.

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

Table 35. PSU efficiency level

Efficiency Targets by Load						
Form factor	**Output**	**Class**	**10%**	**20%**	**50%**	**100%**
Redundant 73.5 mm	3200 W AC	Titanium	90.00%	94.00%	96.00%	91%

Environmental specifications

NOTE: For additional information about environmental certifications, refer to the *Product Environmental Datasheet* located with the **Manuals & Documents** on Dell Support.

Table 36. Continuous Operation Specifications for ASHRAE A2

Parameters	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 (33.8°F/984 Ft) above 900 m (2953 Ft)

Table 37. Common Environmental Specifications for all categories

Parameters	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 (41°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°C to 65°C (-40°F 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 ft)
Maximum operational altitude	3,048 meters (10,000 ft)

Table 38. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.21 G_{rms} at 5 Hz to 500 Hz (all operation orientations)
Storage	1.38 G_{rms} at 7 Hz to 250 Hz for 15 minutes

Table 39. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	Six consecutively performed shock pulses in the positive and negative x, y, and z axis of 6 G for up to 11 ms.

Table 39. Maximum shock pulse specifications (continued)

Maximum shock pulse	Specifications
Storage	Executed shock pulses in z axis (one pulse) of 71G for up to 2ms

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any equipment damage or failure from particulates and gaseous contamination. If the levels of particulates or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 40. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration: Conventional Data Center only	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit **NOTE:** Filtering room air with a MERV8 filter, as specified in ANSI/ASHRAE Standard 127, is a recommended method for achieving the necessary environmental conditions. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration. **NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.
Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment)	Filtration is not required for cabinets that are anticipated to be opened six times or less per year. Class 8 per ISO 1466-1 filtration as defined above is required otherwise. **NOTE:** In environments commonly above ISA-71 Class G1 or that may have known challenges, special filters may be required.
Conductive dust: data center and non-data center environments	Air must be free of conductive dust, zinc whiskers, or other conductive particles. **NOTE:** Conductive dust, which can interfere with equipment operation, can originate from various sources, including manufacturing processes and zinc whiskers that may develop on the plating of raised floor tiles. **NOTE:** This condition applies to data center and non-data center environments.
Corrosive dust: data center and non-data center environments	• Air must be free of corrosive dust. • Residual dust present in the air must have a deliquescent point less than 60% relative humidity. **NOTE:** This condition applies to data center and non-data center environments.

Table 41. Gaseous contamination specifications

Gaseous contamination	Specifications	Notes
Copper coupon corrosion rate	ISA-71 Class G1: <300 Å/month	Per ANSI/ISA71.04
Silver coupon corrosion rate	ISA-71 Class G1: <200 Å/month	Per ANSI/ISA71.04

Thermal restriction matrix

Table 42. Label reference

Label	Description
HPR PLATINUM	High performance Platinum (HPR PLTM) fan
HSK	Heat sink
LP	Low profile
FH	Full height
FL	Full length

Table 43. Thermal restriction matrix - 5th Generation AMD EPYC 9005 Series processor

Configuration			8 x EDSFF E3.S NVMe	
Processor	**TDP**	**Cores**	**Fan Type**	**Ambient temperature**
9965	500 W	192	HPR PLATINUM	35°C
9755	500 W	128		
9655	400 W	96		
9575F	400 W	64		
9555	360 W	64		

Table 44. Processor and heat sink matrix

Heat sink	Processor TDP
CPU HSK	Supports all TDP

Table 45. Thermal restriction matrix - Memory and GPU/FPGA

Configuration		8 x EDSFF E3.S NVMe
Rear storage		**No rear drives**
Memory/GPU		**HPR PLATINUM fans with CPU HSK**
		Ambient temperature
Memory	96GB RDIMM 6400	35°C
	64GB RDIMM 6400	35°C
	32GB RDIMM 6400	35°C
GPU	NVIDIA L40S	35°C

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Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 46. Industry standard documents

Standard	URL for information and specifications
ACPIAdvance Configuration and Power Interface Specification, v6.4	ACPI
Ethernet IEEE Std 802.3-2022	IEEE Standards
MSFT WHQL Microsoft Windows Hardware Quality Labs	Windows Hardware Compatibility Program
IPMI Intelligent Platform Management Interface, v2.0	IPMI
DDR5 Memory DDR5 SDRAM Specification	DDR5 SDRAM
PCI Express PCI Express Base Specification, v5.0	PCIe specifications
PMBus Power System Management Protocol Specification, v1.2	PMBus specifications
SAS Serial Attached SCSI, 3 (SAS-3) (T10/INCITS 519)	SCSI storage interfaces
SATA Serial ATA Rev. 3.3	SATA IO
SMBIOS System Management BIOS Reference Specification, v3.3.0	DMTF SMBIOS
TPM Trusted Platform Module Specification, v2.0	TPM specifications
UEFI Unified Extensible Firmware Interface Specification, v2.7	UEFI specifications
PI Platform Initialization Specification, v1.7	
USB Universal Serial Bus v2.0 and SuperSpeed v3.0 (USB 3.1 Gen1)	USB document library
NVMe Express Base Specification. Revision 2.0c	NVMe specifications
NVMe Command Set Specifications 1. NVM Express NVM Command Set Specification. Revision 1.1c 2. NVM Express Zoned Namespaces Command Set. Revision 1.0c 3. NVM Express® Key Value Command Set. Revision 1.0c	
NVMe Transport Specifications 1. NVM Express over PCIe Transport. Revision 1.0c 2. NVM Express RDMA Transport Revision. 1.0b 3. NVM Express TCP Transport. Revision 1.0c	
NVMe NVM Express Management Interface. Revision 1.2c	
NVMe NVMe Boot Specification. Revision 1.0	

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Appendix C: Additional resources

Table 47. 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 HPM 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
MyDell label	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

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Appendix D: Service and support

Topics:

Why attach service contracts

Dell PowerEdge servers include a standard hardware warranty that highlights our commitment to product quality by guaranteeing repair or replacement of defective components. While industry-leading, our warranties are limited to 1 or 3 years, depending on model, and do not cover software assistance. Call records show that customers are most often seeking Dell technical support for software related issues like configuration guidance, troubleshooting, upgrade assistance or performance tuning. Encourage customers to purchase ProSupport service contracts to supplement warranty coverage and ensure optimal support for both hardware and software. ProSupport provides a complete hardware guarantee beyond the original warranty period.

ProSupport Infrastructure Suite

ProSupport Infrastructure Suite is a set of support services that enable customers to build the solution that is right for their organization. It is an industry-leading, enterprise-class support that aligns with the criticality of your systems, the complexity of your environment, and the allocation of your IT resources.

Figure 24. ProSupport Enterprise Suite

	Basic Hardware Support	ProSupport	BEST ProSupport Plus
Customer Advocacy *via assigned Services Account Manager* ⓘ			
Benefit from personalized services assistance that aligns with your business goals.			✓
Stay ahead of challenges with actionable insights gained through comprehensive service intelligence.			✓
Experience fast critical issue resolution through coordinated team response and executive escalation paths.			✓
Ensure **coverage continuity** by planning effectively for technology lifecycle transitions.			✓
Proactive Monitoring & Actionable Insights *via Dell's connectivity solutions and tools*			
Quickly visualize performance through a current system health score		✓	✓
Cybersecurity monitoring and mitigation recommendations provide another layer of protection		✓	✓
Predictive performance and capacity analysis address bottlenecks		✓	✓
Prevent or plan for downtime with predictive hardware anomaly detection		✓	✓
Energy consumption and carbon footprint forecasting support sustainability and stewardship initiatives		✓	✓
Get ahead of problems with proactive issue detection with automated case creation	✓	✓	✓
Streamline internal IT efforts with efficient service request and escalation management tools	✓	✓	✓
Minimize disruptions by self-dispatching eligible parts	✓	✓	✓
Support Essentials			
Keep systems code current and performing at peak through Proactive System Maintenance			✓
Count on Mission Critical Support during Sev 1 incidents and natural disasters ⓘ			✓
Enjoy priority access to senior technical support engineers			✓
Bringing your own software? We provide limited 3rd party software support ⓘ			✓
Choose onsite parts delivery and labor response that meets your needs	Next Business Day	NBD or 4-hour	4-hour
Select product coverage that best augments your internal resources	Hardware	Hardware & Software	Hardware & Software
Have an issue? We are here for you by phone, chat and online	Local business hours	24/7/365	24/7/365

ProSupport Plus for Infrastructure

ProSupport Plus for Infrastructure is the ultimate solution for customers seeking preventative maintenance and optimal performance on their business-critical assets. The service caters to customers who require proactive, predictive, and personalized support for systems that manage critical business applications and workloads. 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, including the following "Top five reasons to buy ProSupport Plus (PSP)"

1. **Priority access to specialized support experts:** Immediate advanced troubleshooting from an engineer that understands Dell infrastructure solutions.
2. **Mission Critical Support:** When critical (Severity 1) support issues happen, the customer is assured that we do all that we can to get them back up and running as quickly as possible.
3. **Service Account Manager:** A customer's #1 support advocate, ensuring they get the best possible proactive and predictive support experience.
4. **Systems maintenance:** On a semiannual basis, we will keep a customer's ProSupport Plus system(s) up to date by installing the latest firmware, BIOS, and driver updates to improve performance and availability.
5. **Third-party software support:** Dell is a customer's single point of accountability for any eligible third-party software that is installed on their ProSupport Plus system, whether they purchased the software from us or not.

ProSupport for Infrastructure

Comprehensive 24x7 support for hardware and software – best for production, but not critical, workloads and applications. The 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
- A central point of accountability for all hardware and software issues
- Hypervisor, operating system, and application support
- Dell security advisories
- Onsite response service levels 4 hour or Next Business Day options

- Proactive issue detection with automated case creation
- Predictive hardware anomaly detection
- Incident Manager assigned for Severity 1 cases
- Collaborative third-party support
- Access to AIOps Platforms - (MyService360, TechDirect, and CloudIQ)
- Consistent experience regardless of where customers are located or what language that they speak.

Basic Hardware Support

Provides reactive hardware support during normal business hours, excluding local national holidays. No software support or software-related guidance. For improved levels of support, choose ProSupport or ProSupport Plus.

Specialty Support Services

Optional specialty support services complement the ProSupport Infrastructure Suite to provide additional proficiencies that are critical for modern data center operations.

Hardware coverage add-ons to ProSupport

- **Keep Your Hard Drive (KYHD), Keep Your Component (KYC), or Keep Your GPU (KYGPU):**

  Normally if a device fails under warranty, Dell replaces it using a one-for-one exchange process.KYHD/KYCC/KYGPU gives you the option to retain your device. It provides full control of sensitive data and minimizes security risk by letting you retain possession of failed drives, components, or GPU when receiving replacement parts without incurring additional cost.
- **Onsite Diagnosis Service:**

  Ideal for sites with non-technical staff. Dell field technician performs initial troubleshooting diagnosis onsite and transfers to Dell remote engineers to resolve the issue.
- **ProSupport Add-on for HPC:**

  Sold as an add-on to a ProSupport service contract, the ProSupport Add-on for HPC provides solution-aware support to cover the additional requirements that are required to maintain an HPC environment such as:

  - Access to senior HPC experts
  - Advanced HPC cluster assistance: Performance, interoperability, and configuration
  - Enhanced HPC solution level end-to-end support
  - Remote pre-support engagement with HPC Specialists during ProDeploy implementation
- **ProSupport Add-on for Telco (Respond & Restore):**

  An add-on service designed for the top 31 TELCO customers globally, Respond & Restore provides direct access to Dell solution experts who specialize in TELCO carrier-grade support. This add-on also provides a hardware uptime guarantee, meaning if a system fails, Dell has it installed and operational within 4 hours for Severity 1 issues. Dell incurs penalties and fees if SLAs are not met.

Personalized Support and Supplemental Site-wide Expertise

- **Technical Account Manager:**

  Designated technology lead who monitors and manages the performance and configuration of specific technology sets.
- **Designated Remote Support:**

  Personalized support expert who manages all troubleshooting and resolution of IT assets.
- **Multivendor Support Service:**

  Support your third-party devices as one service plan for servers, storage, and networking (includes coverage for: Broadcom, Cisco, Fujitsu, HPE, Hitachi, Huawei, IBM, Lenovo, NetApp, Oracle, Quanta, SuperMicro and others).

Services for large enterprises

- **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 (combined total of server, storage, networking, so forth). This offering is built on standard ProSupport features that leverage our global scale and are tailored to specific customer needs. While not for everyone, this service option offers a truly unique solution for our largest customers with the most complex environments.

  - Team of assigned Services Account Managers with remote or onsite options
  - Assigned technical and field engineers who are trained on the customer's environment and configurations.
  - On-demand reporting and recommendations that are enabled by ProSupport AIOps tools (MyService360, TechDirect, and CloudIQ)
  - Flexible onsite support and parts options that fit their operational model
  - A tailored support plan and training for their operations staff
- **ProSupport One for CSPs (Cloud Serviced Providers)**

  ProSupport One for CSPs is a unique offer that is designed for a limited set of Dell accounts purchasing Gen AI computing solutions greater than 1,000 servers and $250M in sales. PS1 for CSPs improves the entire services experience combining support, deployment (rack integration), residency services, a designated support engineer and the LOIS parts locker as one holistic bundle. Special pricing has been determined to compete effectively against competitors and provide the best customer experience. PS1 for CSPs can only be sold with XE Servers and all networking platforms (Dell and NVIDIA). All other products would be eligible for the standard PS1DC not this special bundle offer. More details on PS1 for CSPs here.
- **Logistics Online Inventory Solution (LOIS)**

  Ideal for large organizations that have their own staff to support their data center. Dell offers a service that is called Logistics Online Inventory Solution which is an onsite parts locker that provides self-maintainers with a local inventory of common replacement components. Having access to these parts lockers allows the self-maintainer to replace a failed component immediately without delay. Each replacement part would automatically initiate a replenishment of the parts inventory that is shipped the next day or delivered onsite by Dell during a regular scheduled visit (called Scheduled Onsite Service). As part of the LOIS system, customers can integrate their systems directly to Dell TechDirect using APIs to help streamline the support management process.

End-of-Life Services

- **Post Standard Support (PSS)**

  Extend service life beyond the initial seven years of ProSupport, adding up to five more additional years of hardware coverage.
- **Data Sanitization & Data Destruction**

  Renders data unrecoverable on repurposed or retired products, ensuring security of sensitive data and enabling compliance and provides NIST-compliant certification.
- **Asset Recovery Services**

  Recycle, resale, and disposal of hardware. Helps you securely and responsibly retire IT assets that are no longer needed while protecting both your business and the planet.

ProDeploy Infrastructure Suite

ProDeploy Infrastructure Suite provides various deployment offerings that satisfy a customer's unique needs. It is made up of various sub-offers: Factory Configuration Services, Rack Integration, Basic Deployment, ProDeploy, ProDeploy Plus, and optionally ProDeploy FLEX which allows for some customization of the features listed.

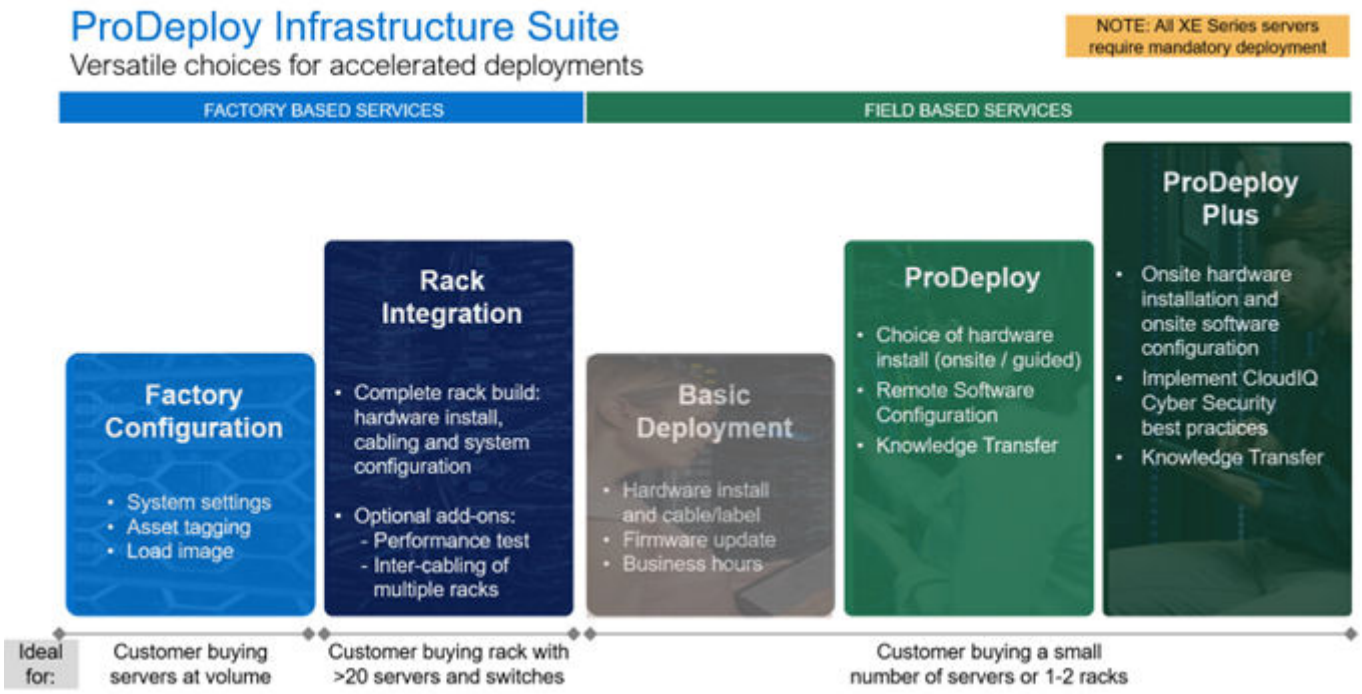

Figure 25. ProDeploy Infrastructure Suite

Factory-based Services

Pre-configured systems or complete racks, customized prior to shipping to the customer's site.

Rack Integration or ProDeploy FLEX Rack Integration

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 are packaged and bundled to meet specific shipping and distribution requirements for each customer location to facilitate the rollout process. Once the server is onsite, Dell can install and configure the server to the environment using any of the field-based deployment services outlined in the next section.

- STANDARD SKUs for Rack Integration is available in then USA only and requires:
  - 20 or more devices (XE, R and C series servers, VxRail and all Dell or non-Dell switches).
  - Shipping to contiguous USA.
- USE CUSTOM QUOTE for Rack Integration scenarios that require:
  - Any Direct Liquid Cooling (DLC) implementation
  - Shipping to multiple locations or shipment to any country outside USA or shipping outside contiguous USA
  - Air-cooled racks containing less than 20 servers
  - Any rack that includes Storage

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 are packaged and bundled to meet specific shipping and distribution requirements for each customer location to facilitate the rollout process. Once the server is onsite, Dell can install and configure the server to the environment using any of the field-based deployment services outlined in the next section.

ProDeploy Flex | Modular deployment (built in factory, onsite or remote)

Pre -deployment	Single point of contact for project management	●
	Expanded end-to-end project management	Selectable
	Site readiness review and implementation planning	●
Deployment	Deployment service hours	24/7
	Hardware installation options [1]	Onsite, factory[2,5] or remote[3]
	System software installation and configuration options [1]	Onsite, factory[2,5] or remote[3]
	Multivendor networking deployment [4]	Onsite, factory[2,5] or remote[3]
	Onsite Deployment in remote locations	Selectable
	Onsite Deployment in challenging environments	Selectable
	Onsite Deployment with special site-based protocols or requirements	Selectable
	Install connectivity software based on Secure Connect Gateway technology	●
	Dell NativeEdge Orchestrator deployment	Selectable
	Configure 3rd party software applications and workloads [4]	Selectable
Post -deployment	Deployment verification, documentation, and knowledge transfer	●
	Configuration data transfer to Dell support	●
Online collaboration	Online collaborative environment - Planning, managing and tracking delivery process	●

[1] Hardware and Software delivery methods can be independently chosen; selecting Rack integration for software requires hardware Rack integration to also be selected.
[2] Factory Rack Integration for server and VxRail; includes associated Dell network switches; final onsite rack installation available.
[3] Remote hardware option includes project specific instructions, documentation and live expert guidance for hardware installation.
[4] Select 3rd party multivendor networking and software applications.
[5] Pair with Field Onsite Hardware service for final installation.

Figure 26. ProDeploy Flex modular services

Field-based services

Put PowerEdge servers to work faster with Dell field-based deployment services. Whether we are deploying one server to one thousand – we have you covered. Dell provides versatile delivery options to fit every budget and operating model.

- **ProDeploy Plus:** Elevate Infrastructure deployments with our most complete service from planning through onsite hardware installation and software configuration including the implementation of cybersecurity best practices. ProDeploy Plus provides the skill and scale that is needed to successfully execute demanding deployments in today's complex IT environments. The deployment starts with a site readiness review and implementation plan. Certified deployment experts perform the software configuration to include setup of leading operating systems and hypervisors. Dell will also configure PowerEdge software tools to include iDRAC and OpenManage system utilities as well as support AIOps platforms: MyService360, TechDirect, and CloudIQ. Unique to ProDeploy Plus, the cybersecurity implementation helps customers understand potential security risks and make recommendations for reducing product attack surfaces. The system is tested, validated prior to completion. The customer will also receive full project documentation and knowledge transfer to complete the process.
- **ProDeploy:** ProDeploy provides remote software configuration and choice of hardware installation (onsite or guided). ProDeploy is great for customers who are price sensitive or willing to participate in some portion of the deployment to include providing remote access to their network. The ProDeploy remote software includes everything mentioned in ProDeploy Plus except it does not include the added value, cybersecurity implementation, and implementatiod best practices.
- **Basic Deployment:** Basic Deployment delivers worry-free professional installation by experienced technicians. This service is often sold to Competency Enabled Partners who will have Dell do the hardware installation while they complete the software configuration. Furthermore, Basic Deployment tends to be purchased by large enterprises who have smart technical staff. These companies just need Dell to install the hardware, and they will perform the software configuration. The last use case for Basic Deployment is when paired with Factory Configuration services. The servers are preconfigured in the factory, and the basic deployment service will install the system into the rack to finalize the deployment.

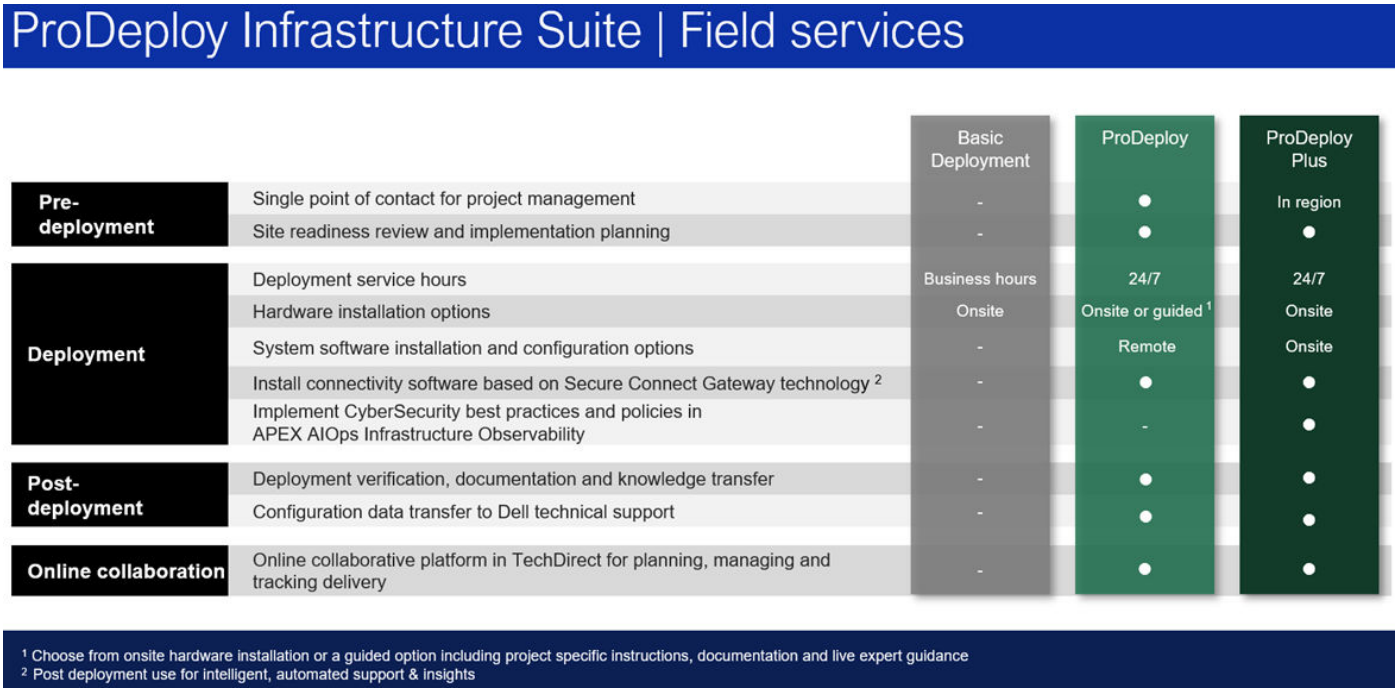

Figure 27. ProDeploy Infrastructure Suite - Field services

Supplemental Deployment Services

Additional ways to expand scope or deploy for unique scenarios.

Two Host Adder (requires PD/PDP)

Deploying new storage, compute, or networking devices may require interconnection to other servers (also called hosts). The Dell delivery team will set up four hosts per device as part of every ProDeploy service. For example, if the customer is buying two storage arrays the ProDeploy service will automatically include connectivity of four hosts each (4x2=8 total hosts per project since there are two devices). This supplemental "Two Host Adder" service provides for the configuration of additional hosts above what is already provided as part of the ProDeploy service. In many cases, customers can work with us while we set up the included hosts, so they may understand how to do the rest themselves. Always ask the customer how many hosts are being connected and sell the host adder depending on the customer's technology skillset. Note that this service applies to the connectivity of Dell devices not 3rd party devices.

Additional Deployment Services (ADT) – sold with or without PD/PDP

You can expand the scope of a ProDeploy engagement leveraging Additional Deployment Time (ADT). ADT covers additional tasks above the normal deliverables of the ProDeploy offers. ADT can also be used as a standalone service without ProDeploy. SKUs are available for both Project Management and Technical Resource Expertise. SKUs are sold as blocks of four hours remote or eight hours onsite. The delivery team can help in scoping the number of hours required for additional tasks.

Data Migration Services

Migrating data sets is no easy task. Our experts use proven tools and process to streamline data migrations and avoid compromising data. A customer project manager works with our experienced team of experts to create a migration plan. Data migration is part of every technology upgrade, platform change, and shift to the cloud. You can rely on Dell data migration services to perform a seamless transition.

Residency Services

Certified technical professionals act like an extension of your IT staff to enhance internal capabilities and resources and help you realize faster adoption and maximized ROI of new technology. Residency Services help customers transition to new capabilities quickly by leveraging specific technology skill sets. 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.

- Global experts available to serve in-person (onsite) or virtual (remote)
- Engagements starting at 2 weeks with flexibility to adjust
- Residency is available for project management needs, and many different technology skills sets such as: Server, storage, Gen AI, networking, security, multi-cloud, data mgmt., and modern workforce application residents

Unique Deployment Scenarios

Custom Deployment Services

When a deployment is beyond the scope of the ProDeploy Infrastructure Suite, you can turn to the custom deployment services team to address complex implementation scenarios and customer unique requirements. The Dell custom deployment team is staffed with solution architects who will assist with customer scoping calls to define the project and develop the statement of work. Custom services can handle a wide range of deployments that can be performed in the factory or onsite. All custom engagement services are requested through SFDC.

Deployment of AI or HPC

Dell provides a number of deploy options for Artificial Intelligence (AI) or High-Performance Computing (HPC) implementations. These complex environments require specialists that understand advanced feature sets. Dell deploys and understands the complexities to optimize the environment. AI and HPC deployments are always scoped as custom service engagements.

Deployment choices for cluster implementation

Approaches, Best Practices, and Key Considerations

Custom deploy	IRSS 7000 Solution (Product Design) + Choose one	GOOD	BETTER	BEST
Scope	**Rack Integration Services**	**Baseline Cluster Configuration**	**Custom Deploy of Fabric and Cluster**	**Design AI Strategy & Deploy Cluster**
Factory rack build, cabling & cooling	●	Rack arrives from factory	Rack arrives from factory	Rack arrives from factory
Configure devices per requirement	●			
Rack ship & select testing onsite	●			
80 hours consulting to define workload strategy & design network				●
Onsite Infrastructure Assessment			●	●
Review system design and plan		●	●	●
Configure servers and switches		●	●	●
Inter-rack cabling and labeling			●	●
Liquid connectivity and leak test[1]			●	●
Cluster Configuration		●	●	●
Cluster acceptance testing		●	●	●
Ideal for	Customers seeking fully integrated racks and will configure the cluster themselves	Customers who will do inter-rack cabling and need assistance with configuration and testing of cluster	Customers who have a solid AI strategy and will outsource the entire implementation to Dell	Customers seeking design strategy for GPU optimization, scaling, and connectivity with full deployment

Figure 28. Deployment choices for cluster implementation

DAY 2 – Automation Services with Ansible

Dell solutions are built as “automation ready” with integrated APIs (Application Programming Interfaces) to allow customers to programmatically call actions on the product through code. Although Dell has published Anisble automation use cases,

some customers need additional assistance with GitOps. By the end of the service, the customer will have the foundational components required to accelerate automation and understand how the programming works together: Day 1 and Day 2 use case automation scripts (ansible modules), CI/CD tool (Jenkins), and Version control (Git).

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 the portfolio and partner ecosystem of Dell Technologies to help achieve real business outcomes. From multicloud, 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 that are 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.

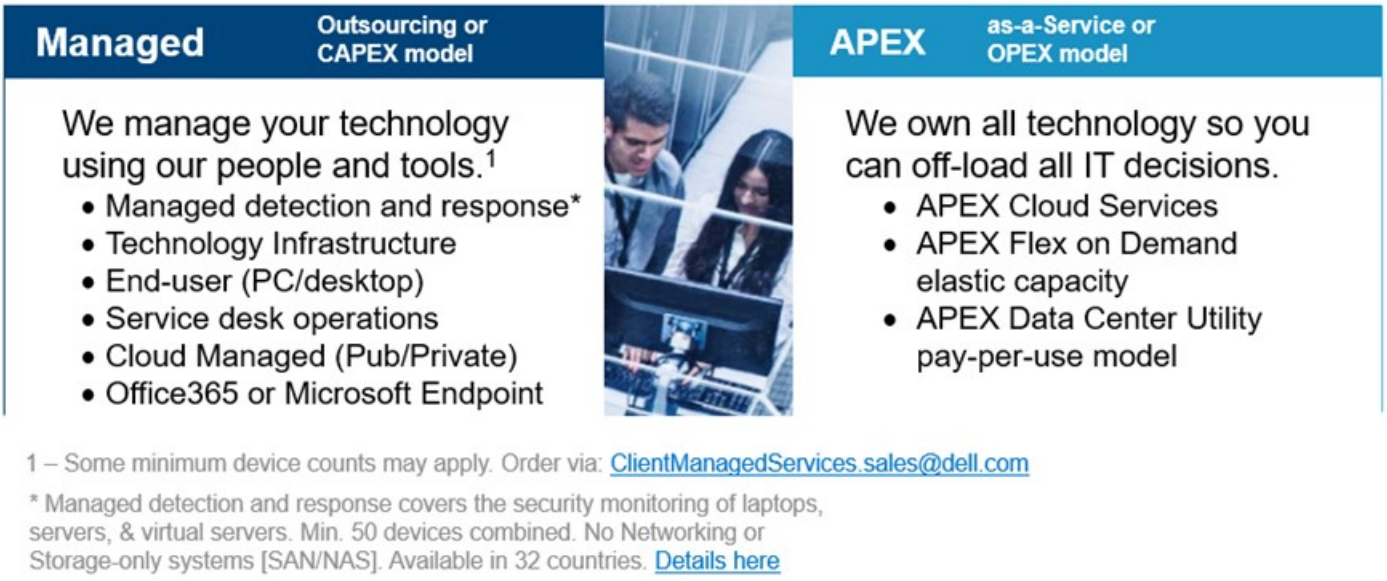

Figure 29. Dell Managed Services

Managed Detection and Response (MDR)

Dell Technologies Managed Detection and Response (MDR) is powered by Secureworks Taegis XDR software platform. MDR is a managed service that secures the customer's IT environment against malicious actors and provides remediation if and when a threat is identified. When a customer purchases MDR, they will receive the following features from our team:

- Dell badge resources
- Agent rollout assistance to help deploy the Secureworks Endpoint Agent
- 24x7 threat detection and investigation
- Up to 40 hrs per quarter of response and active remediation activities
- If the customer experiences a breach, we will provide up to 40 hrs per year of Cyber incident response initiation
- Quarterly reviews with the customer to review the data

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 that is 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.

Resources

Service for powerEdge