

# Dell PowerEdge XE7740

## Technical Guide

## 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.

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# PowerEdge XE7740 system configurations and features

The PowerEdge XE7740 system is a 4U server that supports:

- Two Intel® Xeon® 6 series processors with up to 86 cores per processor
- Up to 32 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.

**CAUTION:** This equipment is not suitable for use in locations where children are likely to be present.

## Topics:

- [Key workloads](#)
- [New technologies](#)

## Key workloads

The Dell PowerEdge XE7740 are ideal for:

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

## New technologies

**Table 1. New technologies**

| Technology              | Detailed Description   |
|-------------------------|--|
| Intel Xeon 6 processors | Core count: Up to 86 cores per processor   |
|                         | UPI speed: Up to 4 links per CPU, speed: 24 GT/s   |
|                         | Maximum number of PCIe lanes per CPU:88 PCIe Gen 5.0 lanes per CPU, PCIe bifurcation x16, x8, x4, x2(Gen5) |
|                         | Maximum TDP: 350 W   |

**Table 1. New technologies (continued)**

| Technology              | Detailed Description   |
|-------------------------|--|
| 6400 MT/s DDR5 Memory   | Max 16 DIMMs per processor; Dual DIMM per channel (32x total), 8 channels of DDR5 memory per CPU   |
|                         | Supports DDR5 ECC RDIMM  |
|                         | DDR5 memory 1 DPC at 6400 MT/s, DDR5 Memory 2 DPC at 5200 MT/s   |
| 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<br>Option 2: 16x PCIe Gen 5 x16 SW-FHFL up to 75W   |
| Flex I/O                | Rear I/O with: <ul style="list-style-type: none"> <li>● 1 x Dedicated iDRAC/BMC Direct Ethernet port</li> <li>● 2 x USB 3.1 Type A port</li> <li>● 1 x VGA port</li> </ul>   |
|                         | 1 PCIe Gen 5 OCP 3.0 Compatible I/O (supported by x8 PCIe lanes)   |
|                         | Front I/O with: <ul style="list-style-type: none"> <li>● 1 x USB 2.0 Type-A (optional)</li> <li>● 1 x Mini-Display port (optional)</li> <li>● 1 x USB 2.0 Type-C dual mode (Host/iDRAC Direct port)</li> </ul>   |
| M-PESTI                 | Half-duplex protocol between MCU and CPLD, like 1wire for Cordoba protocol.  |
| Power Supplies          | 73.5 mm dimension PSU  |
|                         | <ul style="list-style-type: none"> <li>● 3200W Titanium 200-240 V AC or 240 V DC</li> </ul> Multi capacity for 3200W PSU: <ul style="list-style-type: none"> <li>○ 3200W for 220.1-240 V AC</li> <li>○ 2900W for 200-220 V AC</li> </ul> <ul style="list-style-type: none"> <li>● 3200W Titanium 277 V AC or 336 V DC</li> <li>● 2400W Titanium 200-240 V AC or 240 V DC</li> </ul> Multi capacity for 2400W PSU: <ul style="list-style-type: none"> <li>○ 2400 W for 200-240 V AC</li> <li>○ 1400 W for 100-120 V AC</li> </ul> |

# Product Features

**Table 2. Features of PowerEdge XE7740**

| Feature                      | PowerEdge XE7740  |
|------------------------------|---|
| <b>Processor</b>             | Two Intel® Xeon® 6 series processors, with up to 86 cores per processor   |
| <b>Chipset</b>               | N/A   |
| <b>Accelerators</b>          | <ul style="list-style-type: none"> <li>8x PCIe Gen 5 x16 DW-FHFL up to 600 W or,</li> <li>16x PCIe Gen 5 x16 SW-FHFL up to 75 W.</li> </ul>   |
| <b>Memory</b>                |   |
| DIMM speed, maximum capacity | Up to 6400 MT/s, 4 TB max   |
| Memory type                  | RDIMM   |
| Memory module slots          | 32 DDR5 DIMM slots<br>Supports registered ECC DDR5 DIMMs only.  |
| <b>Storage</b>               |   |
| Front bays                   | <ul style="list-style-type: none"> <li>Up to 8 x EDSFF E3.S Gen5 NVMe (SSD) max 122.88 TB</li> </ul>  |
| Rear bays                    | N/A   |
| <b>Storage controllers</b>   |   |
| 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  |
| <b>Power supply</b>          | <ul style="list-style-type: none"> <li>3200 W Titanium 200-240 V AC or 240 V DC, hot swap redundant</li> </ul> <p>Multi capacity for 3200 W PSU:</p> <ul style="list-style-type: none"> <li>3200 W for 220.1-240 V AC</li> <li>2900 W for 200-220 V AC</li> </ul> <ul style="list-style-type: none"> <li>3200 W Titanium 277 V AC or 336 V DC</li> <li>2400 W Titanium 200-240 V AC or 240 V DC, hot swap redundant</li> </ul> <p>Multi capacity for 2400 W PSU:</p> <ul style="list-style-type: none"> <li>2400 W for 200-240 V AC</li> <li>1400 W for 100-120 V AC</li> </ul> <p><b>⚠ CAUTION: 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.</b></p> |
| <b>Cooling Options</b>       | <ul style="list-style-type: none"> <li>Air Cooling</li> </ul>   |

**Table 2. Features of PowerEdge XE7740 (continued)**

| <b>Feature</b>                          | <b>PowerEdge XE7740</b>  |
|---|--|
| <b>Fans</b>                             | <ul style="list-style-type: none"> <li>Up to four sets of high performance (HPR) platinum grade fans (dual fan module) installed in the mid tray</li> <li>Up to twelve high performance (HPR) platinum grade fans installed on the front of the system</li> <li>All are hot swap fans.</li> </ul>  |
| <b>Ports</b>                            |  |
| Network options                         | One PCIe Gen 5 OCP 3.0 Compatible I/O (supported by x8 PCIe lanes)   |
| 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   |
| <b>Slots</b>                            |  |
| PCIe                                    | Up to eight PCIe Gen5 x16 SW-FHHL cards, each up to 150 W  |
| <b>Form factor</b>                      | 4U rack server   |
| <b>Dimensions and weight</b>            |  |
| 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 71.35 Kg (157.30 pounds)   |
| Bezel                                   | Optional Security Bezel  |
| <b>System management</b>                |  |
| Embedded management                     | <ul style="list-style-type: none"> <li>iDRAC10</li> <li>iDRAC RESTful API with Redfish</li> <li>RACADM CLI</li> </ul>  |
| Tools                                   | IPMI   |
| Change Management                       | Enterprise Catalogs/Linux Repositories   |
| Security                                | <ul style="list-style-type: none"> <li>Chassis Intrusion Detection</li> <li>Cryptographically signed firmware</li> <li>Data at Rest Encryption (SEDs with local or external key mgmt)</li> <li>Secure Boot</li> <li>Secured Component Verification (Hardware integrity check)</li> <li>Secure Erase</li> <li>Silicon Root of Trust</li> <li>System Lockdown</li> <li>TPM 2.0 FIPS, CC-TCG certified</li> </ul> |
| <b>Operating System and Hypervisors</b> | <ul style="list-style-type: none"> <li>Canonical Ubuntu Server LTS</li> <li>Red Hat Enterprise Linux</li> <li>SUSE Linux Enterprise Server</li> </ul>  |

**Table 2. Features of PowerEdge XE7740 (continued)**

| Feature | PowerEdge XE7740   |
|---------|--|
|         | <ul style="list-style-type: none"><li data-bbox="571 271 762 297">• VMware ESXi</li></ul> <p data-bbox="571 304 1489 365"><b>NOTE:</b> VMware ESXi OS is not supported on PowerEdge XE7740 with RTX Pro 6000 GPUs.</p> <p data-bbox="571 383 1390 443">For specifications and interoperability details, see <a href="#">Dell Enterprise Operating Systems on Servers, Storage, and Networking</a> page at <a href="#">Dell.com/OSsupport</a></p> |

## Chassis views and features

### Topics:

- Front view of the system
- Rear view of the system
- Inside the system
- QR code for PowerEdge XE7740 system resources

### Front view of the system

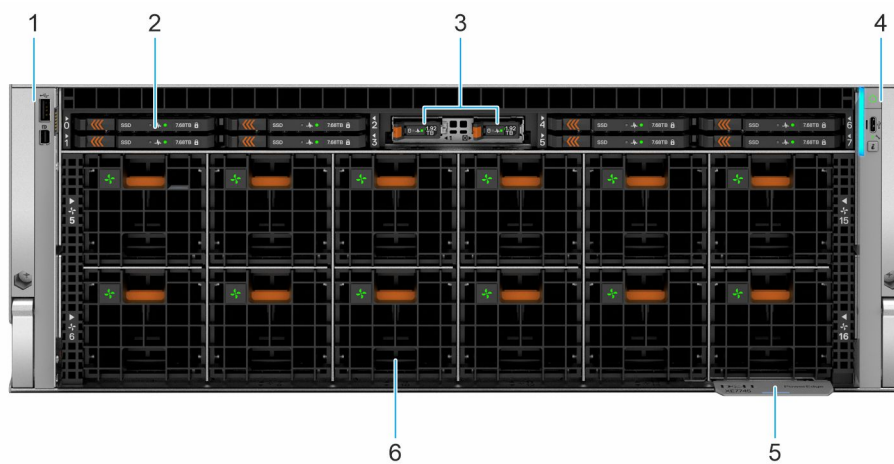


Figure 1. XE7740 chassis front view

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.  |

## Rear view of the system

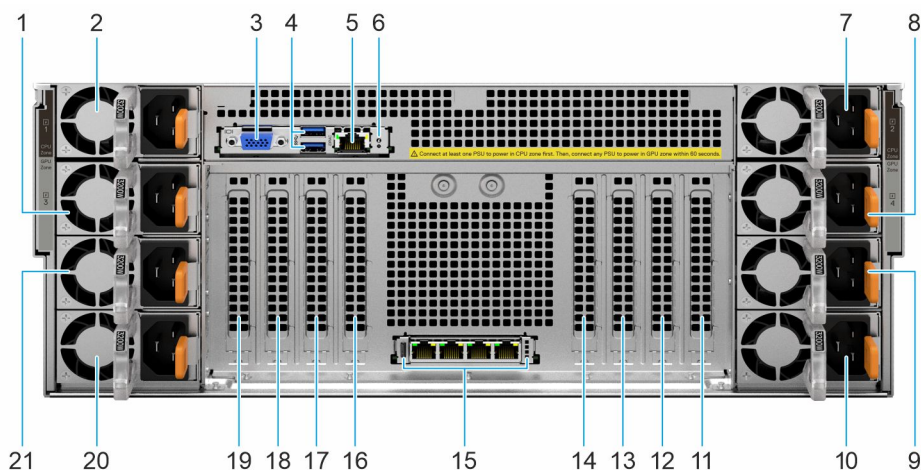














Figure 2. XE7740 chassis rear view


Table 4. Rear view of the system

| Item | Ports, panels, or slots         | Icon  | Description  |
|------|---------------------------------|---|--|
| 1    | Power supply unit (PSU) 3       |    | PSU3 of the system   |
| 2    | Power supply unit (PSU) 1       |   | PSU1 of the system   |
| 3    | VGA port                        |  | Enables you to connect a display device to the system.   |
| 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 <i>Dell Remote Access Controller User's Guide</i> at <a href="#">PowerEdge Manuals</a> .  |
| 6    | System Identification (ID) LED  |  | <p>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.</p> <p><b>NOTE:</b> If the server stops responding during POST, press and hold the <b>System ID</b> button for more than five seconds to enter the BIOS progress mode.</p> <p><b>NOTE:</b> To reset the iDRAC (if not disabled on the iDRAC setup page by pressing F2 during system boot), press and hold the <b>System ID</b> button for more than 15 seconds.</p> |
| 7    | Power supply unit (PSU) 2       |  | PSU2 of the system   |
| 8    | Power supply unit (PSU) 4       |  | PSU4 of the system   |
| 9    | Power supply unit (PSU) 6       |  | PSU6 of the system   |
| 10   | Power supply unit (PSU) 8       |  | PSU8 of the system   |
| 11   | PCIe slot 9                     | N/A   | Enables you to connect the PCI Express expansion cards.  |

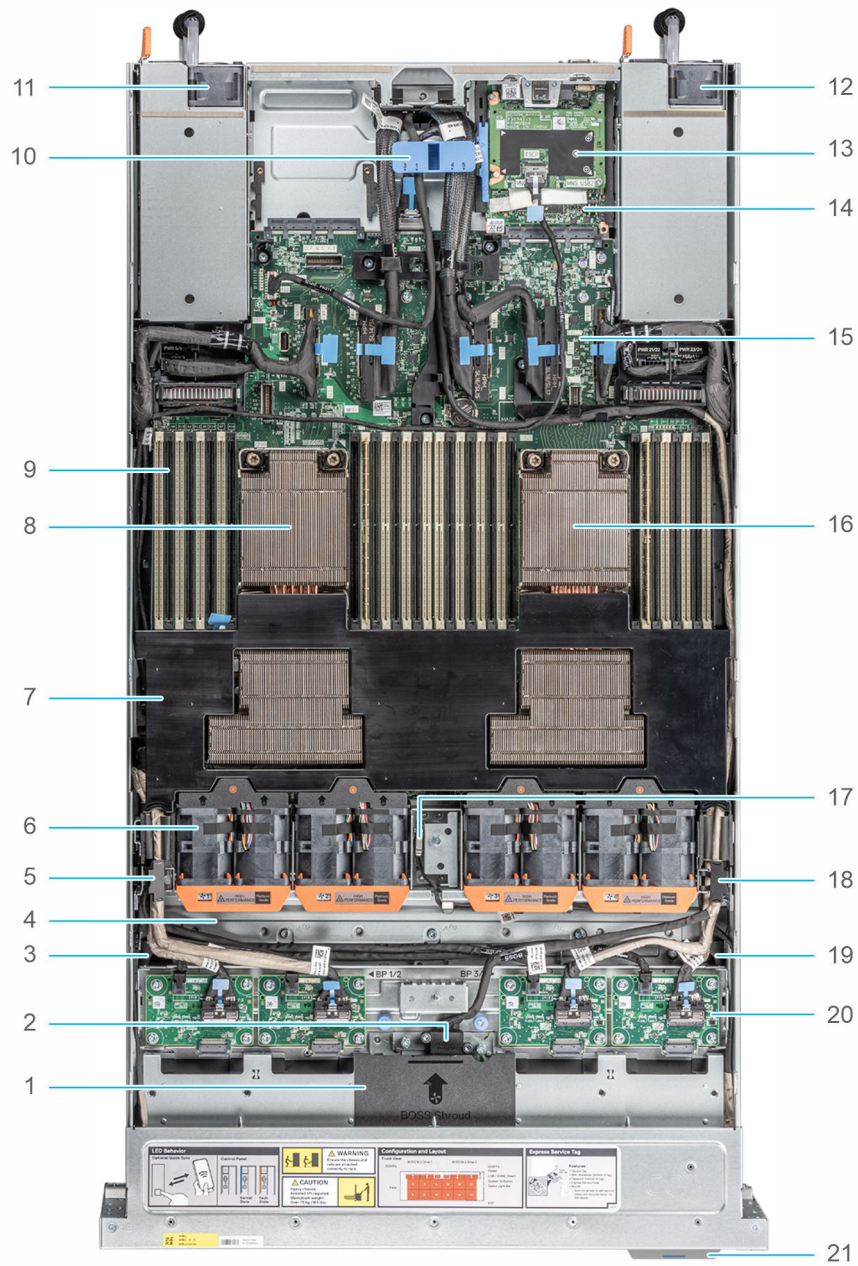
**Table 4. Rear view of the system (continued)**

| Item | Ports, panels, or slots   | Icon  | Description   |
|------|---------------------------|---|---|
| 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 |  | PSU7 of the system  |
| 21   | Power supply unit (PSU) 5 |  | 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

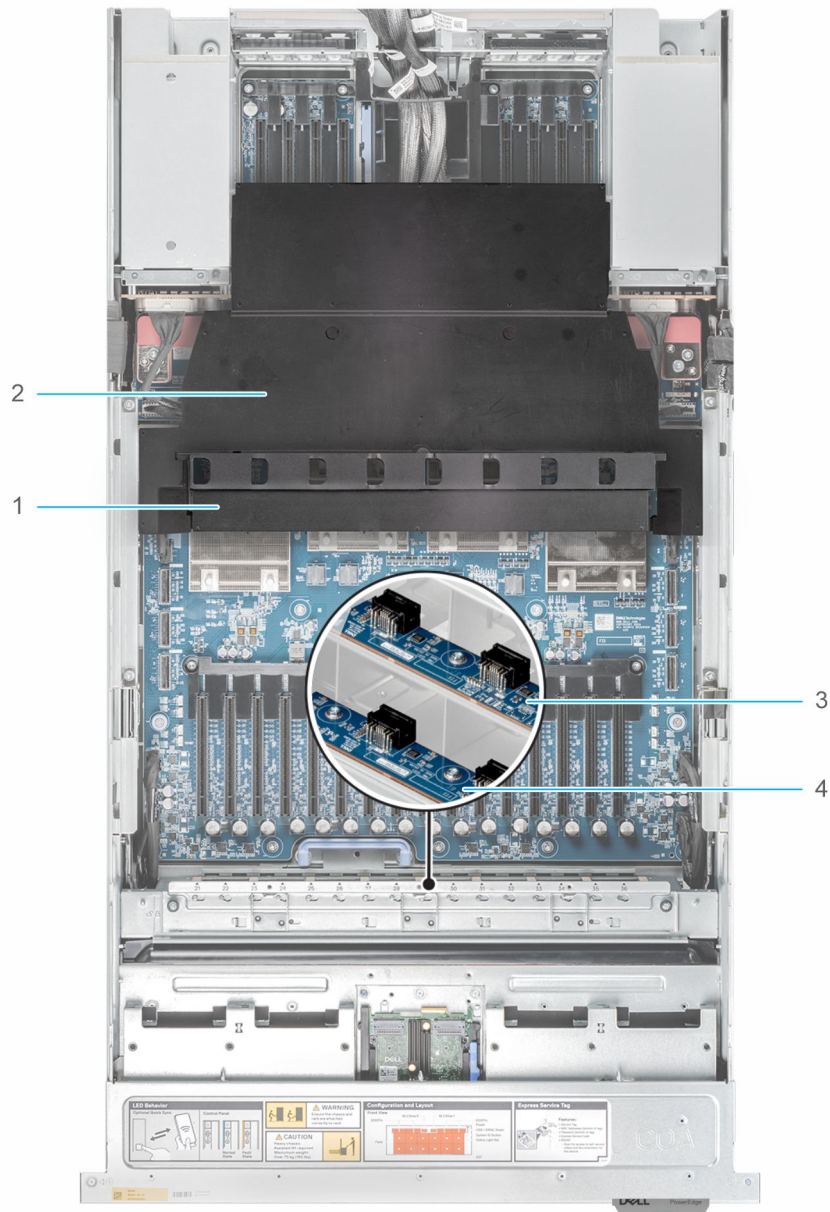


**Figure 3. Inside view of XE7740 - 1U Top CPU Zone**

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



- 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 5. Inside view of XE7740 - 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

## QR code for PowerEdge XE7740 system resources

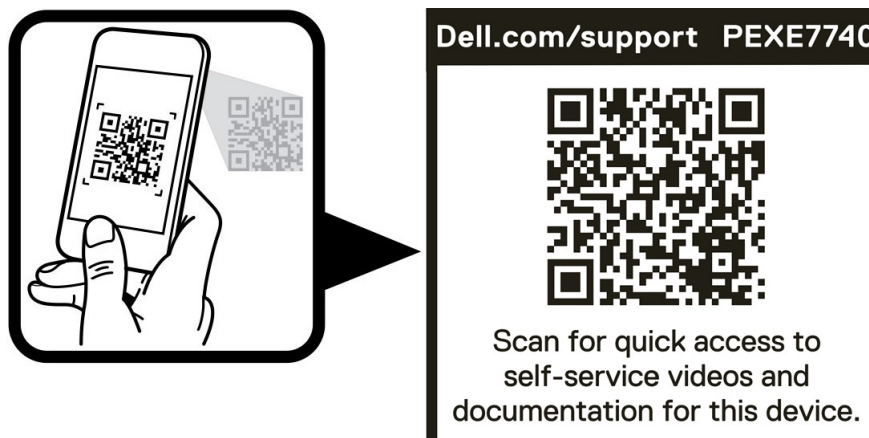


Figure 6. QR code for PowerEdge XE7740 system

# Processor

## Topics:

- [Processor features](#)

## Processor features

The Intel® Xeon® 6 series processor stack is comprised entirely of performance cores (P-Cores) providing high core counts optimized for power and performance. Intel® Xeon® 6700P processors offering high core counts optimized for performance per core, upgraded memory speeds, enhanced I/O, expanded UPI speeds, and added software extension security will be available.

The following lists the features and functions that are in the Intel® Xeon® 6700P Processor offering:

- Optimized for multi-threaded applications and workloads
- High core counts with up to 86 cores at 350 W TDP
- Enhanced DDR5 memory with speed up to 6400 MT/s in one DIMM per channel (1DPC) and 5200 MT/s in two DIMM per channel (2DPC) configurations
- Faster UPI 2.0 with up to four Intel Ultra Path Interconnect (Intel® UPI) at up to 24 GT/s, increasing multi-socket bandwidth
- PCIe 5.0 with up to 88 lanes per CPU
- Security features leveraging Software Guard Extensions (SGX) for Application Isolation

## Supported processors

The following table shows the Intel® Xeon 6 processor SKUs that are supported on the XE7740.

**Table 5. Supported processors**

| Processor | Clock Speed (GHz) | Cache (M) | Cores | Threads | Memory Speed (MT/s) | Memory Capacity | TDP   |
|-----------|-------------------|-----------|-------|---------|---------------------|-----------------|-------|
| 6787P     | 2                 | 336       | 86    | 172     | 6400                | 4 TB            | 350 W |
| 6767P     | 2.4               | 336       | 64    | 128     | 6400                | 4 TB            | 350 W |
| 6747P     | 2.7               | 288       | 48    | 96      | 6400                | 4 TB            | 330 W |

# Memory subsystem

## Topics:


- [Supported memory](#)
- [System memory guidelines](#)


## Supported memory

The XE7740 supports up to 32 DIMMs (16 per socket), with up to 4 TB of memory and speeds of up to 6400 MT/s.

The XE7740 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 6. Memory technology**


| Feature        | PowerEdge XE7740 (DDR5)  |
|----------------|--|
| DIMM type      | RDIMM  |
| Transfer speed | 6400 MT/s(1DPC) and 5200 MT/s (2DPC)<br> <b>NOTE:</b> 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 XE7740.

**Table 7. Supported DIMMs**

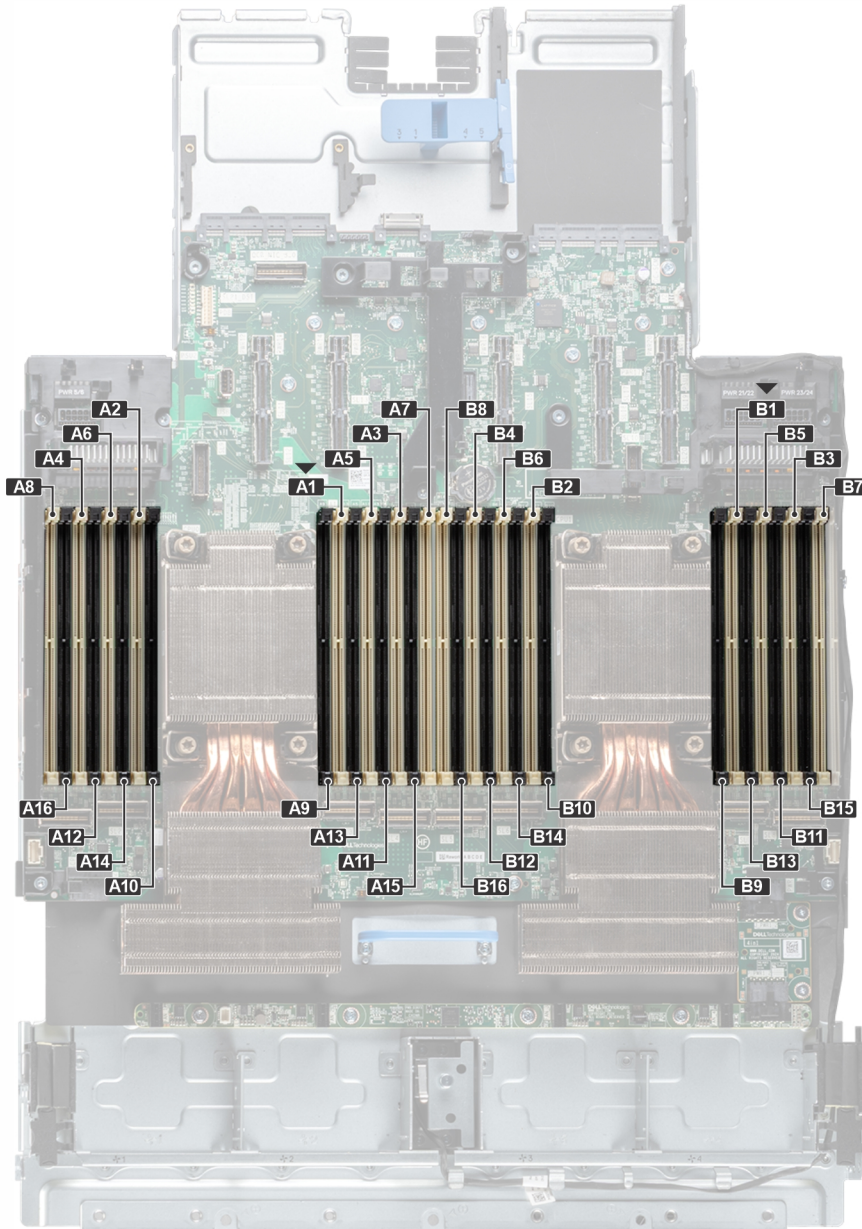
| DIMM Speed (MT/s) | DIMM Type | DIMM Capacity (GB) | Ranks per DIMM | Data Width | DIMM Volts (V) |
|-------------------|-----------|--------------------|----------------|------------|----------------|
| 6400              | RDIMM     | 32                 | 2              | x8         | 1.1            |
| 6400              | RDIMM     | 64                 | 2              | x4         | 1.1            |
| 6400              | RDIMM     | 96                 | 2              | x4         | 1.1            |
| 6400              | RDIMM     | 128                | 2              | x4         | 1.1            |

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

## System memory guidelines

The PowerEdge XE7740 system supports DDR5 registered DIMMs (RDIMMs).

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



**Figure 7. Memory channels**

Memory channels are organized as follows:

**Table 8. Memory channels**

| Processor   | Channel A       | Channel B        | Channel C        | Channel D        | Channel E        | Channel F        | Channel G        | Channel H        |
|-------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Processor 0 | Slots A1 and A9 | Slots A5 and A13 | Slots A3 and A11 | Slots A7 and A15 | Slots A2 and A10 | Slots A6 and A14 | Slots A4 and A12 | Slots A8 and A16 |
| Processor 1 | Slots B1 and B9 | Slots B5 and B13 | Slots B3 and B11 | Slots B7 and B15 | Slots B2 and B10 | Slots B6 and B14 | Slots B4 and B12 | Slots B8 and B16 |

**Table 9. Supported memory matrix**

| DIMM type | Rank | Capacity | DIMM rated voltage and speed | Operating Speed          |                          |
|-----------|------|----------|------------------------------|--------------------------|--------------------------|
|           |      |          |                              | Granite Rapids Processor |                          |
|           |      |          |                              | 1 DIMM per channel (DPC) | 2 DIMM per channel (DPC) |
| RDIMM     | 2 R  | 32 GB    | DDR5 (1.1 V), 6400 MT/s      | Up to 6400 MT/s          | Up to 5200 MT/s          |
|           |      | 64 GB    |                              |                          |                          |
|           |      | 96 GB    |                              |                          |                          |
|           |      | 128 GB   |                              |                          |                          |

**Table 10. Memory Capacity Requirement For Supported GPU Cards - H200 NVL and RTX Pro 6000**

| GPU Card            | H200NVL (DW, 141G)      |                         |                         |                          | RTX Pro 6000 (DW, 96G)  |                         |                         |                          |
|---------------------|-------------------------|-------------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
|                     | 2x GPUs<br>Minimum 256G | 4x GPUs<br>Minimum 512G | 6x GPUs<br>Minimum 768G | 8x GPUs<br>Minimum 1024G | 2x GPUs<br>Minimum 256G | 4x GPUs<br>Minimum 512G | 6x GPUs<br>Minimum 768G | 8x GPUs<br>Minimum 1024G |
| 32G (16pcs, 512G)   | Supported               | Not Supported           | Not Supported           | Not Supported            | Supported               | Not Supported           | Not Supported           | Not Supported            |
| 32G (32pcs, 1024G)  | Supported               | Supported               | Supported               | Not Supported            | Supported               | Supported               | Supported               | Not Supported            |
| 64G (16pcs, 1024G)  | Supported               | Supported               | Supported               | Not Supported            | Supported               | Supported               | Supported               | Not Supported            |
| 64G (32pcs, 2048G)  | Supported               | Supported               | Supported               | Supported                | Supported               | Supported               | Supported               | Supported                |
| 96G (16pcs, 1536G)  | Supported               | Supported               | Supported               | Supported                | Supported               | Supported               | Supported               | Supported                |
| 96G (32pcs, 3072G)  | Supported               | Supported               | Supported               | Supported                | Supported               | Supported               | Supported               | Supported                |
| 128G (16pcs, 2048G) | Supported               | Supported               | Supported               | Supported                | Supported               | Supported               | Supported               | Supported                |
| 128G (32pcs, 4096G) | Supported               | Supported               | Supported               | Supported                | Supported               | Supported               | Supported               | Supported                |

**Table 11. Memory Capacity Requirement For Supported GPU Cards - H100 NVL, L40S, L4 and Intel Gaudi3**

| GPU Card           | H100NVL (DW, 94G)       |                          | L40S (DW, 48G)          |                         | L4 (SW, 24G)            |                         | Intel Gaudi3 (DW, 128G) |                          |
|--------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
|                    | 4x GPUs<br>Minimum 512G | 8x GPUs<br>Minimum 1024G | 4x GPUs<br>Minimum 256G | 8x GPUs<br>Minimum 512G | 4x GPUs<br>Minimum 288G | 8x GPUs<br>Minimum 576G | 4x GPUs<br>Minimum 768G | 8x GPUs<br>Minimum 1536G |
| 32G (16pcs, 512G)  | Not Supported           | Not Supported            | Supported               | Supported               | Supported               | Not Supported           | Not Supported           | Not Supported            |
| 32G (32pcs, 1024G) | Supported               | Not Supported            | Supported               | Supported               | Supported               | Supported               | Supported               | Not Supported            |
| 64G (16pcs, 1024G) | Supported               | Not Supported            | Supported               | Supported               | Supported               | Supported               | Supported               | Not Supported            |

**Table 11. Memory Capacity Requirement For Supported GPU Cards - H100 NVL, L40S, L4 and Intel Gaudi3 (continued)**

| GPU Card                  | H100NVL<br>(DW, 94G)       |                             | L40S<br>(DW, 48G)          |                            | L4<br>(SW, 24G)            |                            | Intel Gaudi3<br>(DW, 128G) |                             |
|---------------------------|----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
|                           | 4x GPUs<br>Minimum<br>512G | 8x GPUs<br>Minimum<br>1024G | 4x GPUs<br>Minimum<br>256G | 8x GPUs<br>Minimum<br>512G | 4x GPUs<br>Minimum<br>288G | 8x GPUs<br>Minimum<br>576G | 4x GPUs<br>Minimum<br>768G | 8x GPUs<br>Minimum<br>1536G |
| 64G (32pcs,<br>2048G)     | Supported                  | Supported                   | Supported                  | Supported                  | Supported                  | Supported                  | Supported                  | Supported                   |
| 96G (16pcs,<br>1536G)     | Supported                  | Supported                   | Supported                  | Supported                  | Supported                  | Supported                  | Supported                  | Not<br>Supported            |
| 96G (32pcs,<br>3072G)     | Supported                  | Supported                   | Supported                  | Supported                  | Supported                  | Supported                  | Supported                  | Supported                   |
| 128G<br>(16pcs,<br>2048G) | Supported                  | Supported                   | Supported                  | Supported                  | Supported                  | Supported                  | Supported                  | Supported                   |
| 128G<br>(32pcs,<br>4096G) | Supported                  | Supported                   | Supported                  | Supported                  | Supported                  | Supported                  | Supported                  | Supported                   |

# Storage

## Topics:

- [Internal storage configuration](#)
- [Supported Drives](#)

## Internal storage configuration

XE7740 available internal storage configuration:

- 8 x EDSFF E3.S Gen5 NVMe

## Supported Drives

**Table 12. 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 XE7740:

**Table 13. 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](#).

# Networking

## Topics:

- [Overview](#)
- [OCP 3.0 support](#)

## 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 14. OCP 3.0 feature list**

| Feature             | OCP 3.0      |
|---------------------|--------------|
| Form factor         | SFF          |
| PCIe Gen            | Gen5         |
| Max PCIe width      | x8           |
| 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 XE7740:

**Table 15. Supported OCP cards**

| Form factor | Vendor   | Port type | Port speed | Port count |
|-------------|----------|-----------|------------|------------|
| OCP 3.0     | Mellanox | SFP28     | 25 GbE     | 2          |
|             | Mellanox | QSFP56    | 100 GbE    | 2          |
|             | Intel    | BT        | 10 GbE     | 2          |
|             | Broadcom | SFP28     | 25 GbE     | 4          |
|             | Broadcom | BT        | 100 GbE    | 2          |

**Table 15. Supported OCP cards (continued)**

| Form factor | Vendor   | Port type | Port speed | Port count |
|-------------|----------|-----------|------------|------------|
|             | Broadcom | BT        | 10 GbE     | 2          |
|             | Broadcom | SFP28     | 25 GbE     | 2          |

## OCP NIC 3.0 vs 2.0

**Table 16. OCP 3.0 and 2.0 NIC comparison**

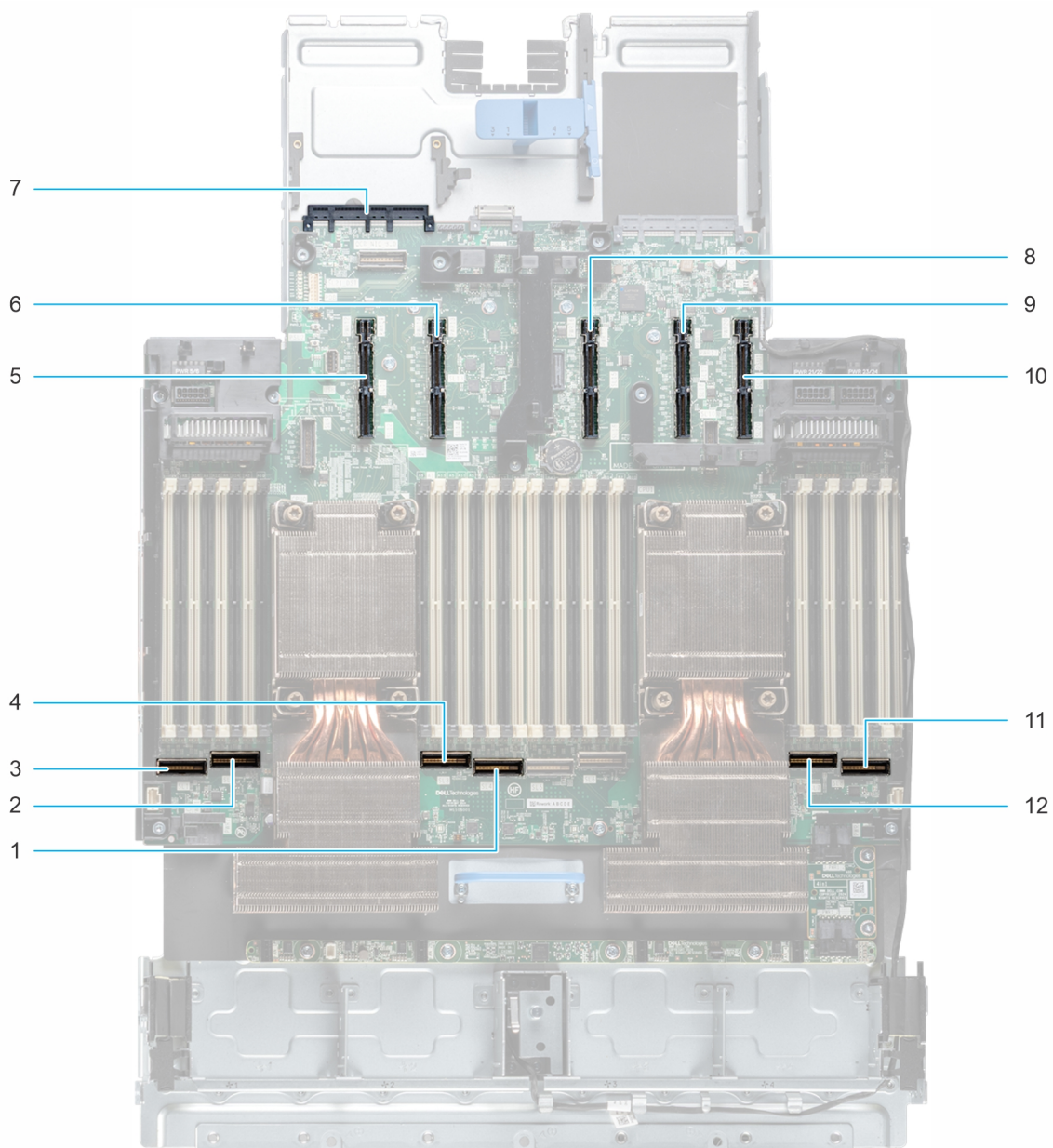
| Form Factor       | OCP 3.0   | OCP 2.0 (LOM Mezz) | Notes  |
|-------------------|-----------|--------------------|--|
| PCIe Gen          | Gen5      | Gen3               | Supported OCP3 is SFF (small form factor).                               |
| Max PCIe Lanes    | Up to x16 | Up to x16          | 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  |

# PCIe subsystem

## Topics:

- PCIe connectors
- Expansion card specifications

## PCIe connectors



**Figure 8. PBB (PCIe Base Board) upstream connector location on the HPM board**

1. PCIe Switch 2 Upstream Port Connector (HPM\_SL4)
2. PCIe Switch 1 Upstream Port Connector (HPM\_SL2)

3. PCIe Switch 1 Upstream Port Connector (HPM\_SL1)
5. PCIe Switch 1 Upstream Port Connector (HPM\_SL11/HPM\_SL12)
7. OCP NIC Connector\_CPU0
9. PCIe Switch 3 Upstream Port Connector (HPM\_SL17/HPM\_SL18)
11. PCIe Switch 4 Upstream Port Connector (HPM\_SL8)
4. PCIe Switch 2 Upstream Port Connector (HPM\_SL3)
6. PCIe Switch 2 Upstream Port Connector (HPM\_SL13/HPM\_SL14)
8. PCIe Switch 3 Upstream Port Connector (HPM\_SL15/HPM\_SL16)
10. PCIe Switch 4 Upstream Port Connector (HPM\_SL19/HPM\_SL20)
12. PCIe Switch 4 Upstream Port Connector (HPM\_SL7)

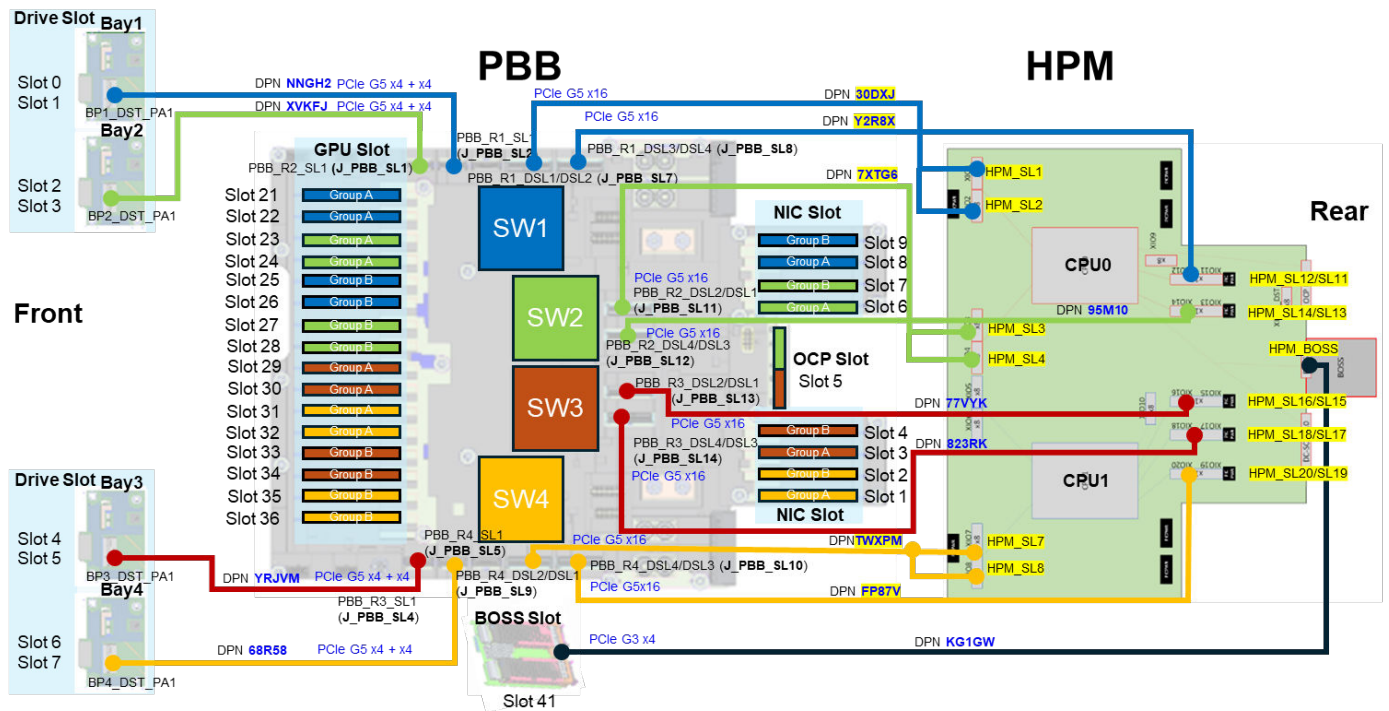


Figure 9. GPU slot mapping

## Expansion card specifications

The PowerEdge XE7740 system supports multiple PCI express (PCIe) slots (Gen5 slots), one OCP NIC and one BOSS on the system.

Table 17. Expansion card slots supported on the system

| Category | PCIe slot | Width | Processor connection | Height      | Length      | Slot width | Power |
|----------|-----------|-------|----------------------|-------------|-------------|------------|-------|
| GPU      | Slot 21   | DW/SW | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 22   | SW    | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 23   | DW/SW | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 24   | SW    | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 25   | DW/SW | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 26   | SW    | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 27   | DW/SW | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 28   | SW    | Processor 0          | Full Height | Full Length | x16        | 75 W  |
|          | Slot 29   | DW/SW | Processor 1          | Full Height | Full Length | x16        | 75 W  |

**Table 17. Expansion card slots supported on the system (continued)**

| Category              | PCIe slot | Width | Processor connection | Height      | Length      | Slot width | Power |
|-----------------------|-----------|-------|----------------------|-------------|-------------|------------|-------|
|                       | Slot 30   | SW    | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 31   | DW/SW | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 32   | SW    | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 33   | DW/SW | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 34   | SW    | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 35   | DW/SW | Processor 1          | Full Height | Full Length | x16        | 75 W  |
|                       | Slot 36   | SW    | Processor 1          | Full Height | Full Length | x16        | 75 W  |
| PBB (PCIe Base Board) | Slot 1    | SW    | Processor 1          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 2    | SW    | Processor 1          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 3    | SW    | Processor 1          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 4    | SW    | Processor 1          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 6    | SW    | Processor 0          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 7    | SW    | Processor 0          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 8    | SW    | Processor 0          | Full Height | Half Length | x16        | 75 W  |
|                       | Slot 9    | SW    | Processor 0          | Full Height | Half Length | x16        | 75 W  |
| OCP                   | Slot 5    | NA    | Processor 0          | NA          | NA          | x8         | 75 W  |
| BOSS                  | Slot 41   | NA    | Processor 0          | NA          | NA          | x4         | 75 W  |

# 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:

- [PCIe GPU support](#)

## PCIe GPU support

The PowerEdge XE7740 server supports NVIDIA H200 NVL, H100 NVL, RTX Pro 6000, L40S, L4 and INTEL Gaudi3 PCIe GPU cards on PBB.

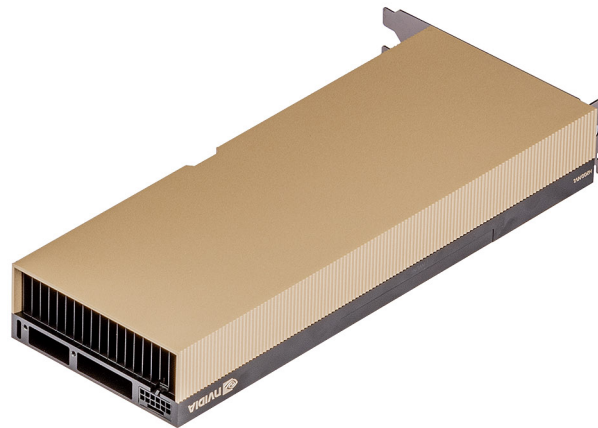


Figure 10. DW GPU: NVIDIA H200 NVL



Figure 11. DW GPU: NVIDIA H100 NVL



**Figure 12. DW GPU: RTX Pro 6000**



**Figure 13. DW GPU: NVIDIA L40S**



**Figure 14. SW GPU: NVIDIA L4**

The XE7740 supports the following NVIDIA and Intel GPUs:

**Table 18. XE7740 NVIDIA GPU support list**

| GPU Card        | Maximum Qty | Slot Priority  | PCIe     | Form Factor |
|-----------------|-------------|--|----------|-------------|
| NVIDIA H200 NVL | 8           | 25, 27, 29, 31, 21, 23, 33, 35                                 | Gen5 x16 | DW          |
| NVIDIA H100 NVL | 8           | 25, 27, 29, 31, 21, 23, 33, 35                                 | Gen5 x16 | DW          |
| NVIDIA L40S     | 8           | 25, 27, 29, 31, 21, 23, 33, 35                                 | Gen4 x16 | DW          |
| NVIDIA L4       | 16          | 25, 26, 27, 28, 29, 30, 31, 32, 21, 22, 23, 24, 33, 34, 35, 36 | Gen4 x16 | SW          |
| INTEL Gaudi3    | 8           | 25, 27, 29, 31, 21, 23, 33, 35                                 | Gen5 x16 | DW          |
| RTX Pro 6000    | 8           | 25, 27, 29, 31, 21, 23, 33, 35                                 | Gen5 x16 | DW          |

**Table 19. XE7740 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_R5, J_SL1, J_SL2     | SW1                | J_SLOT21          |
| GPU slot-22 | SW    | FH-FL        | CPU0      | 75W   | J_R5, J_SL1, J_SL2     | SW1                | J_SLOT22          |
| GPU slot-23 | DW/SW | FH-FL        | CPU0      | 75W   | J_R4, J_SL3, J_SL4     | SW2                | J_SLOT23          |
| GPU slot-24 | SW    | FH-FL        | CPU0      | 75W   | J_R4, J_SL3, J_SL4     | SW2                | J_SLOT24          |
| GPU slot-25 | DW/SW | FH-FL        | CPU0      | 75W   | J_R5, J_SL1, J_SL2     | SW1                | J_SLOT25          |
| GPU slot-26 | SW    | FH-FL        | CPU0      | 75W   | J_R5, J_SL1, J_SL2     | SW1                | J_SLOT26          |
| GPU slot-27 | DW/SW | FH-FL        | CPU0      | 75W   | J_R4, J_SL3, J_SL4     | SW2                | J_SLOT27          |
| GPU slot-28 | SW    | FH-FL        | CPU0      | 75W   | J_R4, J_SL3, J_SL4     | SW2                | J_SLOT28          |
| GPU slot-29 | DW/SW | FH-FL        | CPU1      | 75W   | J_R2, J_R3             | SW3                | J_SLOT29          |
| GPU slot-30 | SW    | FH-FL        | CPU1      | 75W   | J_R2, J_R3             | SW3                | J_SLOT30          |
| GPU slot-31 | DW/SW | FH-FL        | CPU1      | 75W   | J_R1, J_SL7, J_SL8     | SW4                | J_SLOT31          |
| GPU slot-32 | SW    | FH-FL        | CPU1      | 75W   | J_R1, J_SL7, J_SL8     | SW4                | J_SLOT32          |
| GPU slot-33 | DW/SW | FH-FL        | CPU1      | 75W   | J_R2, J_R3             | SW3                | J_SLOT33          |
| GPU slot-34 | SW    | FH-FL        | CPU1      | 75W   | J_R2, J_R3             | SW3                | J_SLOT34          |
| GPU slot-35 | DW/SW | FH-FL        | CPU1      | 75W   | J_R1, J_SL7, J_SL8     | SW4                | J_SLOT35          |
| GPU slot-36 | SW    | FH-FL        | CPU1      | 75W   | J_R1, J_SL7, J_SL8     | SW4                | J_SLOT36          |

**Table 20. Supported GPUs with GPU blanks and GPU shroud filler**

| Case | GPU                  | Width | RC configuration | GPU PW Cable | PW cable*4 | GPU Blank | GPU Shroud filler | Rear GPU shroud | NVL*4 Bridge (H200) | NVL*2 Bridge (H100) |
|------|----------------------|-------|------------------|--------------|------------|-----------|-------------------|-----------------|---------------------|---------------------|
| 1    | GPU less             | N/A   | RC0-1            | N/A          | N/A        | 8         | N/A               | 1               | N/A                 | N/A                 |
| 2    | H200 x 8 (NVL4)      | DW    | RC0-2            | Yes          | N/A        | N/A       | 1                 | 1               | 2                   | N/A                 |
| 2.5  | H200 x 8 (No Bridge) | DW    | RC0-1            | Yes          | N/A        | N/A       | 1                 | 1               | 0                   | N/A                 |
| 3    | H200 x 4 NVL4        | DW    | RC0-2            | Yes          | Yes        | 4         | 1                 | 1               | 1                   | N/A                 |
| 4    | H100 x 8 (NVL2)      | DW    | RC0-1            | Yes          | N/A        | N/A       | 1                 | 1               | N/A                 | 12                  |
| 4.5  | H100 x 8 (No Bridge) | DW    | RC0-1            | Yes          | N/A        | N/A       | 1                 | 1               | N/A                 | 0                   |
| 5    | H100 x 4 NVL2        | DW    | RC0-1            | Yes          | Yes        | 4         | 1                 | 1               | N/A                 | 6                   |
| 6    | H200 x 4 No Bridge   | DW    | RC0-1            | Yes          | Yes        | 4         | 1                 | 1               | N/A                 | N/A                 |
| 7    | H100 x 4 No Bridge   | DW    | RC0-1            | Yes          | Yes        | 4         | 1                 | 1               | N/A                 | N/A                 |
| 8    | L40s x 8             | DW    | RC0-1            | Yes          | N/A        | N/A       | 1                 | 1               | N/A                 | N/A                 |
| 9    | L40s x 4             | DW    | RC0-1            | Yes          | Yes        | 4         | 1                 | 1               | N/A                 | N/A                 |
| 10   | L4 x 16              | SW    | RC0-1            | N/A          | N/A        | N/A       | N/A               | 1               | N/A                 | N/A                 |
| 11   | L4 x 8               | SW    | RC0-1            | N/A          | N/A        | 4         | N/A               | 1               | N/A                 | N/A                 |

## NVIDIA NVLink bridge

### Supported NVIDIA NVLink bridges

The PowerEdge XE7740 server supports 2-way and 4-way NVIDIA NVLink bridges. NVIDIA NVLink is a high-speed point-to-point (P2P) peer transfer connection that allows one GPU to exchange data with another GPU.

When connecting two H100 NVL GPUs, three 2-way bridges are required per pair. For four GPUs, six bridges are necessary. Each of the three bridges spans across two PCIe slots. To ensure proper functionality and maximize bridge bandwidth, the connection between adjacent NVIDIA H100 NVL cards must use all three NVLink bridges. For optimal performance and balanced topology, any adjacent pair of NVIDIA H100 NVL cards in the server should be connected. It is advisable to bridge both NVIDIA H100 NVL cards of a paired set under the same CPU. While it is possible to bridge two GPUs under different CPUs, it is not recommended. The figure below shows the correct and incorrect NVLink connection topologies for NVIDIA H100 NVL cards:

## H100 2-way NVLink Topology - Top Views

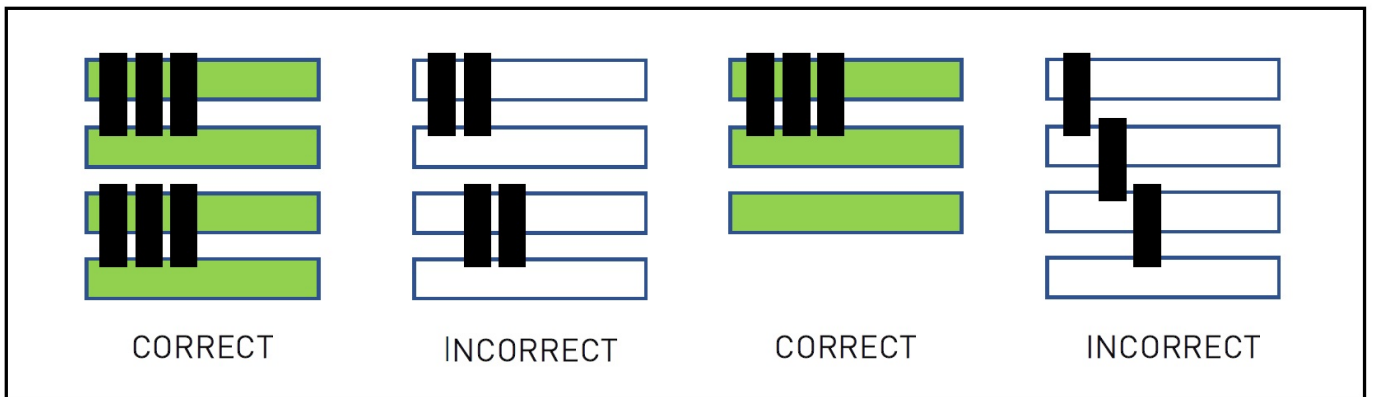


Figure 15. H100 2-way NVLink topology

The figure below illustrates a dual-processor server with eight GPUs using a PCIe switch 2-way NVLink bridge connection for NVIDIA H100 NVL cards:

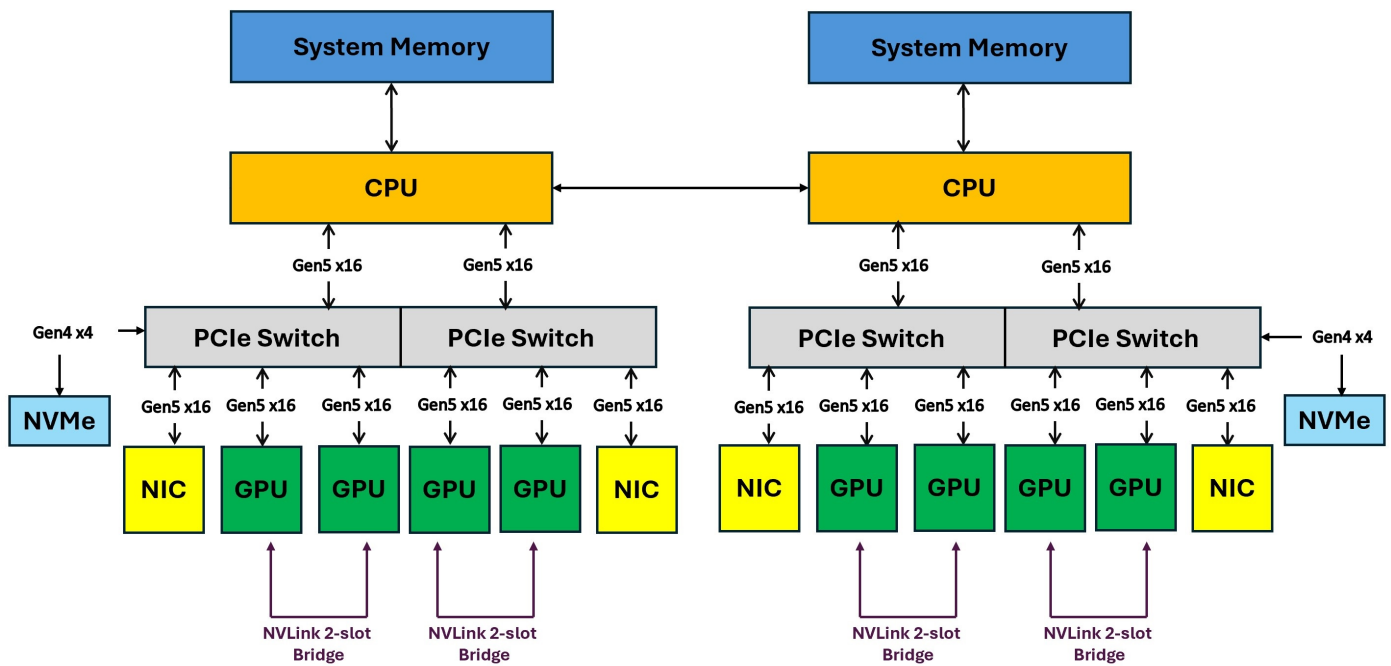
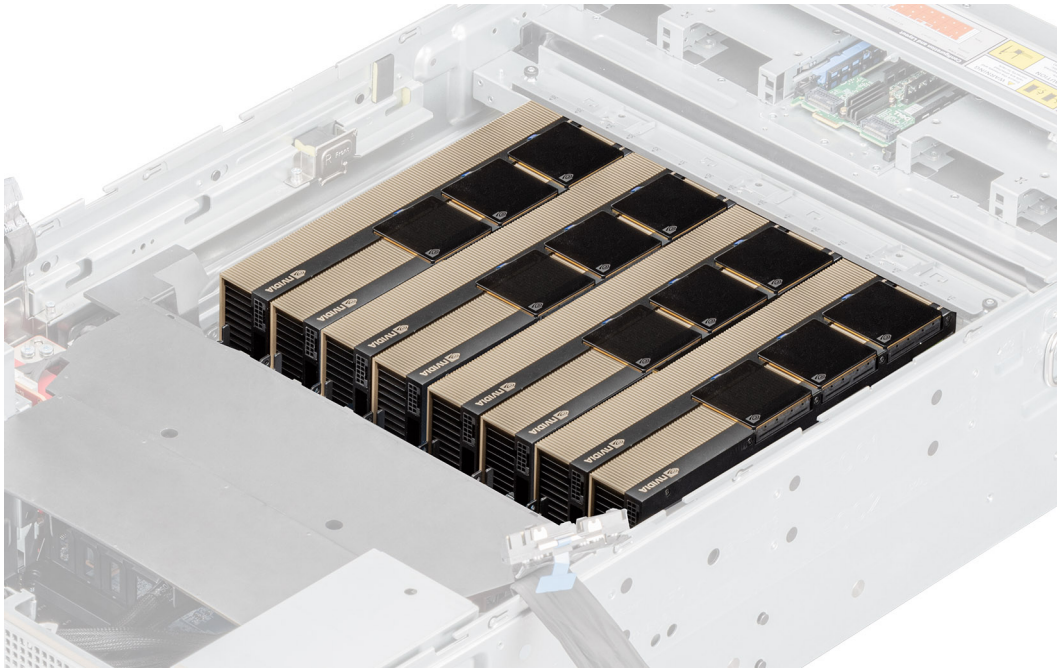


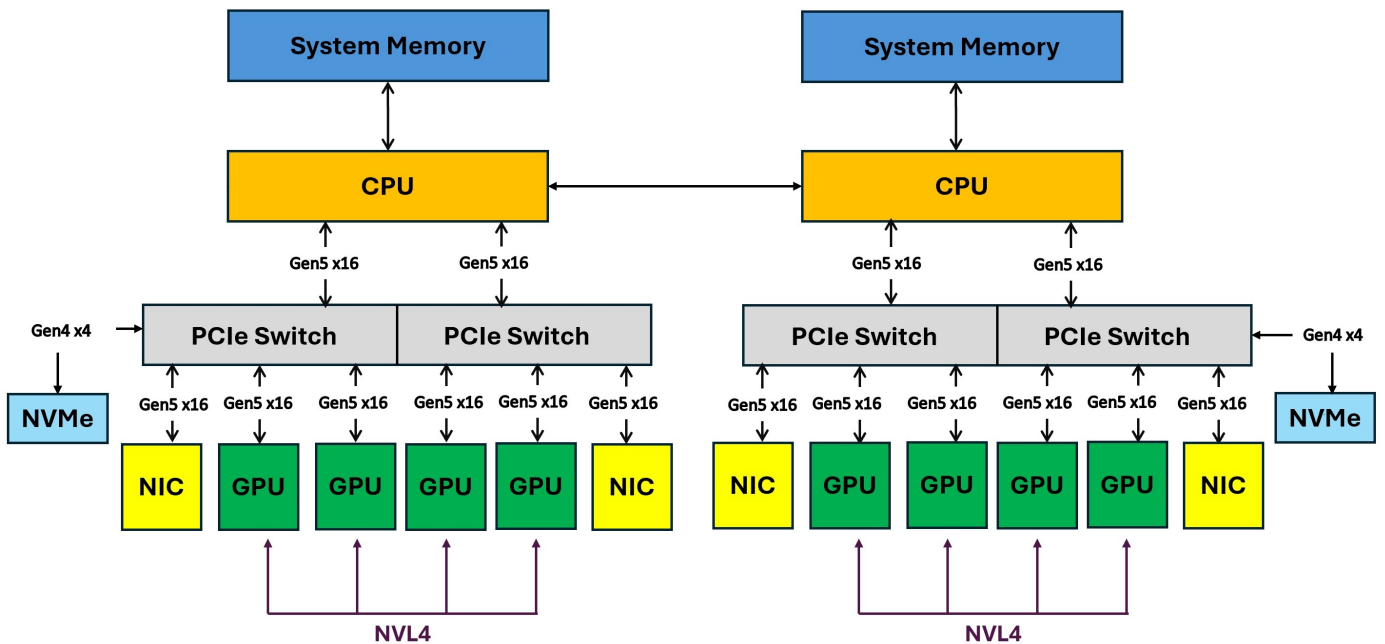
Figure 16. Dual Processor Server with 8 DW H100 GPUs and 2-way NVLink Bridge



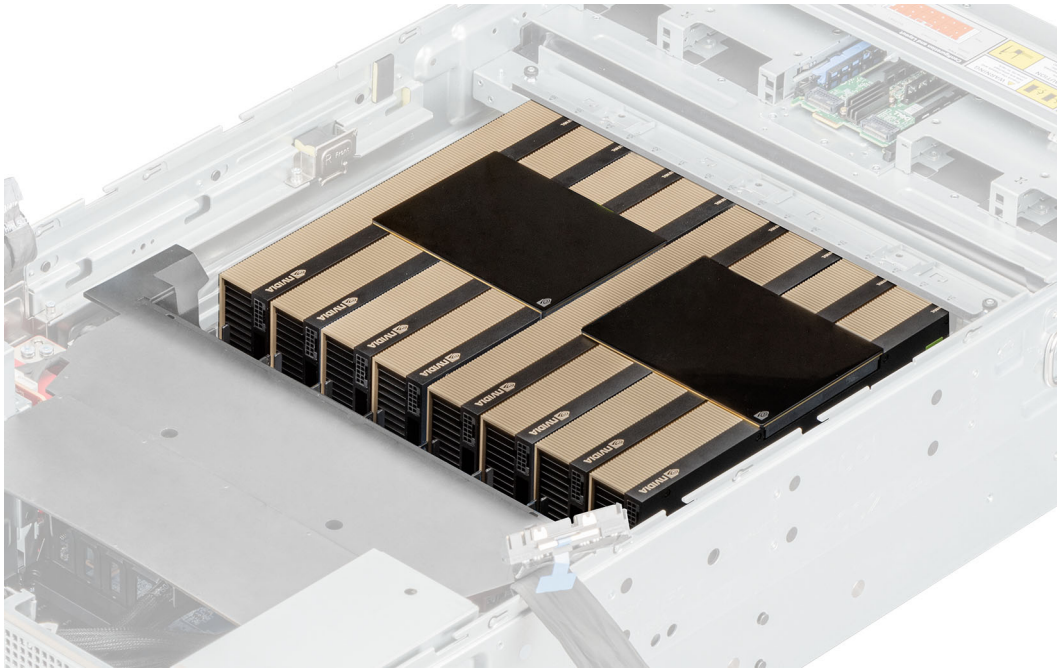
**Figure 17. 2-Way NVLink Bridges with H100 NVL GPUs installed on PBB Board**

When connecting H200 NVL GPUs, the 4-way bridge is installed on the connectors on the top of the H200 GPU PCIe cards. For four GPUs, one 4-way bridge is needed, while for eight DW H200 GPU cards, two bridges are required. Each bridge spans across four DW PCIe slots. Although it is possible to bridge H200 GPUs with 4-way NVLink under different CPUs, it is not recommended. The figure below illustrates a dual-processor server with eight GPUs using a PCIe switch 4-way NVLink bridge connection for NVIDIA H200 NVL cards:

The figure below illustrates a dual-processor server with eight GPUs using a PCIe switch 4-way NVLink bridge connection for NVIDIA H200 NVL cards:



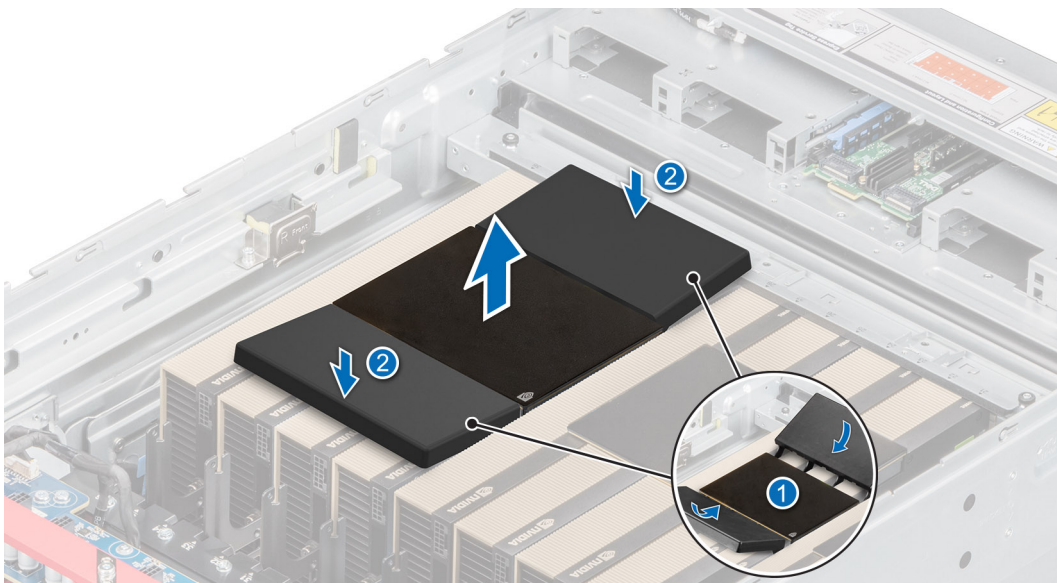
**Figure 18. Dual Processor Server with 8 DW H200 GPUs and 4-way NVLink Bridge**



**Figure 19. 4-Way NVLink Bridges with H200 NVL GPUs installed on PBB Board**

To prevent damage to the NVLink interface, NVL Bridges must be removed using the NVL Bridge removal tool. Improper removal without this tool can cause damage. Each NVLink bridge requires two removal tools. The following steps should be performed simultaneously with two removal tools, one on each side of the NVL Bridge:

1. Insert the tool hooks between the GPUs and engage the hook to the bottom of the NVLink, pivoting the tool on the GPU.
2. Gently press the tool down until it bottoms out on the GPU.



**Figure 20. Removing the H200 NVL 4-way Bridge**

## Power, thermal, and acoustics

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

### Topics:

- [Power](#)
- [Thermal](#)
- [Acoustics](#)

## 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 <a href="#">Dell EIPT</a> .   |
| 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: <ul style="list-style-type: none"> <li>• Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5%</li> <li>• More accurate reporting of power</li> </ul>   |
| Rack infrastructure               | Dell offers some of the industry's highest-efficiency power infrastructure solutions, including: <ul style="list-style-type: none"> <li>• <a href="#">Power distribution units</a> (PDUs)</li> <li>• <a href="#">Uninterruptible power supplies</a> (UPSs)</li> <li>• <a href="#">Energy Smart containment rack enclosures</a></li> <li>• AC Blind Mate</li> </ul> Find additional information at: <a href="#">Power and Cooling</a> |

## PSU specifications

The PowerEdge XE7740 system supports up to eight AC or DC power supply units (PSUs).

**Table 22. PSU Specifications**

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

**Table 22. PSU Specifications (continued)**

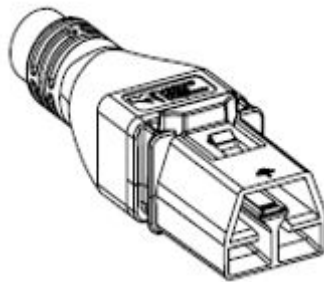
| PSU                     | Power Ratings | Class    | Heat dissipation | Frequency (Hz) | Input Voltage | Current (A) |
|-------------------------|---------------|----------|------------------|----------------|---------------|-------------|
| 3200 W 277V AC and HVDC | 3200 W        | Titanium | 12,000 BTU/hr    | 50/60          | 277 V AC      | 12.9        |
|                         |               | N/A      | 12,000 BTU/hr    | N/A            | 336 V DC      | 10.47       |
| 2400 W Mixed Mode       | 2400 W        | Titanium | 9000 BTU/hr      | 50/60          | 200-240 V AC  | 16 - 13.2   |
|                         |               | N/A      | 9000 BTU/hr      | N/A            | 240 Vdc       | 10.9        |
|                         | 1400 W        | N/A      | 9000 BTU/hr      | 50/60          | 100-120 V AC  | 16 - 13.2   |

**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 21. PSU power cables**



**Figure 22. APP 2006G1 power cord**

**Table 23. PSU power cables**

| Form factor       | Output                 | Power cable    |
|-------------------|------------------------|----------------|
| Redundant 73.5 mm | 3200 W mixed mode      | C19            |
|                   | 2400 W mixed mode      | C19            |
|                   | 3200 W 277 V AC & HVDC | APP/Saf-D-Grid |

**NOTE:** The PowerEdge XE7740 does not support power supply units from mixed sub-vendors.

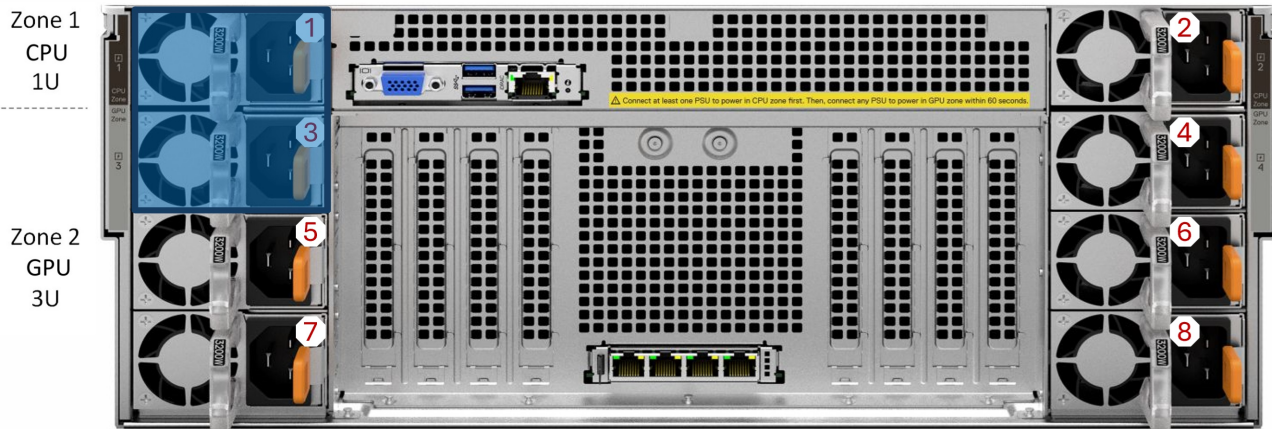
## Power Supply Requirements:

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

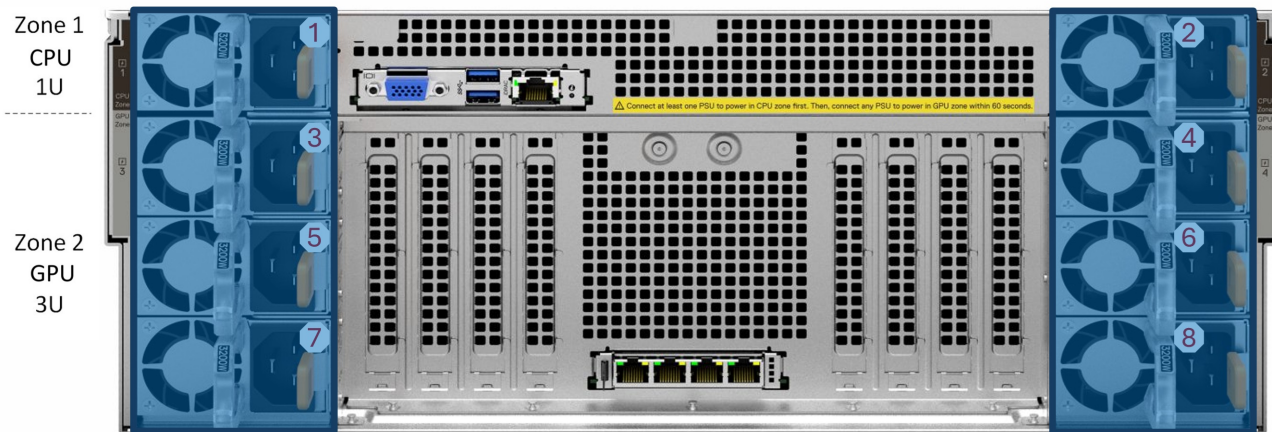
- **Zone 1 (CPU 1U Zone):**
  - PSU 1
  - PSU 2
- **Zone 2 (GPU 3U Zone):**
  - PSU 3

- PSU 4
- PSU 5
- PSU 6
- PSU 7
- PSU 8

**CAUTION:** 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.



**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.

## PSU-GPU Configuration Matrix

Below table lists the PSU-GPU Configuration Matrix.

**Table 24. PSU-GPU Configuration Matrix - 3200 W PSUs**

| GPU Card  |          |                            |                  |                      | PSU              | 3200 W        |               |                   |               |               |           |
|-----------|----------|----------------------------|------------------|----------------------|------------------|---------------|---------------|-------------------|---------------|---------------|-----------|
|           |          |                            |                  |                      |                  | Zone 1 (CPU)  | 1             | 0                 | Zone 1 (CPU)  | 1             | 1         |
|           |          |                            |                  |                      |                  | Zone 2 (GPU)  | 3             | 0                 | Zone 2 (GPU)  | 3             | 3         |
| Config    | Quantity | GPU Card                   | GPU EDP - Per(W) | GPU EDP -Totally (W) | GPU Max Power(W) | Not Redundant | PSU Redundant | A/B Grid          | Not Redundant | PSU Redundant | A/B Grid  |
| Full GPUs | 8        | Nvidia H200 NVL (600W)     | 1200             | 9600                 | 4800             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported |
|           | 8        | Nvidia RTX Pro 6000 (600W) | 1200             | 9600                 | 4800             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported |
|           | 8        | Intel Gaudi 3 (600W)       | 1224.3           | 9794.4               | 4800             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported |
|           | 8        | Nvidia H100 NVL (400W)     | 720              | 5760                 | 4800             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 8        | Nvidia L40S (350W)         | 550              | 4400                 | 4800             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 16       | Nvidia L4 (72W)            | 175              | 2800                 | 9600             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
| Half GPUs | 4        | Nvidia H200 NVL (600W)     | 1200             | 4800                 | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 4        | Nvidia RTX Pro 6000 (600W) | 1080             | 4320                 | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 4        | Intel Gaudi 3 (600W)       | 1224.3           | 4897.2               | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 4        | Nvidia H100 NVL (400W)     | 720              | 2880                 | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 4        | Nvidia L40S (350W)         | 472.8            | 1891.2               | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|           | 8        | Nvidia L4 (72W)            | 154.8            | 1238.4               | 4800             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |

**Table 24. PSU-GPU Configuration Matrix - 3200 W PSUs (continued)**

| GPU Card |          |                            |                  |                      | PSU              | 3200 W        |               |                   |               |               |           |
|----------|----------|----------------------------|------------------|----------------------|------------------|---------------|---------------|-------------------|---------------|---------------|-----------|
|          |          |                            |                  |                      |                  | Zone 1 (CPU)  | 1             | 0                 | Zone 1 (CPU)  | 1             | 1         |
|          |          |                            |                  |                      |                  | Zone 2 (GPU)  | 3             | 0                 | Zone 2 (GPU)  | 3             | 3         |
| Config   | Quantity | GPU Card                   | GPU EDP - Per(W) | GPU EDP -Totally (W) | GPU Max Power(W) | Not Redundant | PSU Redundant | A/B Grid          | Not Redundant | PSU Redundant | A/B Grid  |
| 2 GPUs   | 2        | Nvidia H200 NVL (600W)     | 1200             | 2400                 | 1200             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
|          | 2        | Nvidia RTX Pro 6000 (600W) | 1200             | 2400                 | 1200             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported |
| 6 GPUs   | 6        | Nvidia H200 NVL (600W)     | 1200             | 7200                 | 3600             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported |
|          | 6        | Nvidia RTX Pro 6000 (600W) | 1200             | 7200                 | 3600             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported |

**Table 25. PSU-GPU Configuration Matrix - 2400 W PSUs**

| GPU Card  |          |                            |                  |                      | PSU              | 2400 W        |               |                   |               |               |               |
|-----------|----------|----------------------------|------------------|----------------------|------------------|---------------|---------------|-------------------|---------------|---------------|---------------|
|           |          |                            |                  |                      |                  | Zone 1 (CPU)  | 1             | 0                 | Zone 1 (CPU)  | 1             | 1             |
|           |          |                            |                  |                      |                  | Zone 2 (GPU)  | 3             | 0                 | Zone 2 (GPU)  | 3             | 3             |
| Config    | Quantity | GPU Card                   | GPU EDP - Per(W) | GPU EDP -Totally (W) | GPU Max Power(W) | Not Redundant | PSU Redundant | A/B Grid          | Not Redundant | PSU Redundant | A/B Grid      |
| Full GPUs | 8        | Nvidia H200 NVL (600W)     | 1200             | 9600                 | 4800             | Not Supported | Not Supported | SKU not supported | Supported     | Supported     | Not Supported |
|           | 8        | Nvidia RTX Pro 6000 (600W) | 1200             | 9600                 | 4800             | Not Supported | Not Supported | SKU not supported | Supported     | Supported     | Not Supported |
|           | 8        | Intel Gaudi 3 (600W)       | 1224.3           | 9794.4               | 4800             | Not Supported | Not Supported | SKU not supported | Supported     | Supported     | Not Supported |
|           | 8        | Nvidia H100 NVL (400W)     | 720              | 5760                 | 4800             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported     |
|           | 8        | Nvidia L40S (350W)         | 550              | 4400                 | 4800             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported     |

**Table 25. PSU-GPU Configuration Matrix - 2400 W PSUs (continued)**

| GPU Card  |          |                            |                  |                      | PSU              | 2400 W        |               |                   |               |               |               |
|-----------|----------|----------------------------|------------------|----------------------|------------------|---------------|---------------|-------------------|---------------|---------------|---------------|
|           |          |                            |                  |                      |                  | Zone 1 (CPU)  | 1             | 0                 | Zone 1 (CPU)  | 1             | 1             |
|           |          |                            |                  |                      |                  | Zone 2 (GPU)  | 3             | 0                 | Zone 2 (GPU)  | 3             | 3             |
| Config    | Quantity | GPU Card                   | GPU EDP - Per(W) | GPU EDP -Totally (W) | GPU Max Power(W) | Not Redundant | PSU Redundant | A/B Grid          | Not Redundant | PSU Redundant | A/B Grid      |
|           | 16       | Nvidia L4 (72W)            | 175              | 2800                 | 9600             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
| Half GPUs | 4        | Nvidia H200 NVL (600W)     | 1200             | 4800                 | 2400             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported     |
|           | 4        | Nvidia RTX Pro 6000 (600W) | 1080             | 4320                 | 2400             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported     |
|           | 4        | Intel Gaudi 3 (600W)       | 1224.3           | 4897.2               | 2400             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Supported     |
|           | 4        | Nvidia H100 NVL (400W)     | 720              | 2880                 | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
|           | 4        | Nvidia L40S (350W)         | 472.8            | 1891.2               | 2400             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
|           | 8        | Nvidia L4 (72W)            | 154.8            | 1238.4               | 4800             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
| 2 GPUs    | 2        | Nvidia H200 NVL (600W)     | 1200             | 2400                 | 1200             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
|           | 2        | Nvidia RTX Pro 6000 (600W) | 1200             | 2400                 | 1200             | Supported     | Supported     | SKU not supported | Supported     | Supported     | Supported     |
| 6 GPUs    | 6        | Nvidia H200 NVL (600W)     | 1200             | 7200                 | 3600             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Not Supported |
|           | 6        | Nvidia RTX Pro 6000 (600W) | 1200             | 7200                 | 3600             | Supported     | Not Supported | SKU not supported | Supported     | Supported     | Not Supported |

**Table 26. Total Power Consumption - Other Components**

| Components | Quantity | Total Power Consumption |
|------------|----------|-------------------------|
| GPU Fans   | 12       | 2160                    |

**Table 26. Total Power Consumption - Other Components (continued)**

| Components | Quantity | Total Power Consumption |
|------------|----------|-------------------------|
| Baseboard  | 1        | 200                     |
| NIC        | 8        | 1000                    |

## Redundancy Policy Options

Users can select from various redundancy policies based on system requirements and power availability. Each policy determines how the system behaves during PSU failures and ensures optimal power distribution.

**Table 27. Redundancy Policy Details**

| Redundancy Policy | GPU Power Brake | Trigger Point (Zone 2 GPU)                  | Status   |
|-------------------|-----------------|---|--|
| Not Redundant     | Not supported   | System shuts down if PSU is insufficient    | All PSUs actively support the system power requirement               |
| PSU Redundant     | Supported       | Depends on iDRAC calculation when PSU drops | iDRAC calculates FTR value based on system power requirement         |
| A/B Grid          | Supported       | Triggered when more than 4 PSUs drop        | Splits PSUs into two grids (A and B), each with its own power source |

### Not Redundant:

- No failover capability.
- If PSU power is insufficient, the system shuts down immediately.
- All PSUs work together to meet power demand.

### PSU Redundant:

- Provides failover capability.
- iDRAC dynamically calculates the required power and adjusts based on PSU availability.
- Ensures system stability during PSU failure.

### A/B Grid:

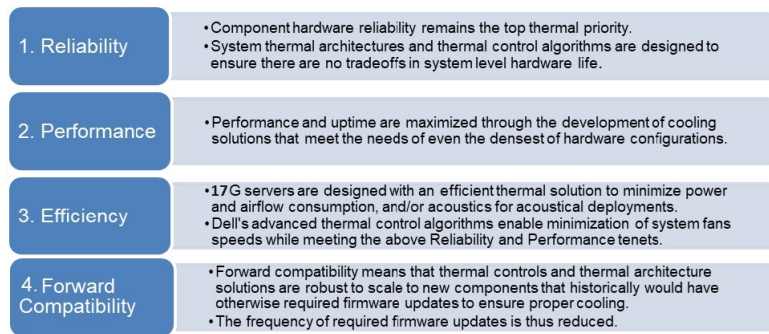
- High-availability configuration.
- PSUs are divided into two independent grids (A and B), each with its own power source.
- Maintains operation even if multiple PSUs fail (up to 4 PSU drops).

## Thermal

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

## Thermal design

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



**Figure 23. Thermal design characteristics**

The thermal design of the PowerEdge XE7740 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 XE7740 Installation and Service Manual at [PowerEdge Manuals](#) and "Advanced Thermal Control: Optimizing across Environments and Power Goals" on Dell.com.
- Cooling redundancy: The XE7740 allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the XE7740 reliable under a wide range of operating environments.

## Acoustics

### Acoustical configurations of XE7740

Dell PowerEdge XE7740 is a rack-mount server for unattended data center environment.

To achieve optimal performance of GPUs and CPUs, the fan speed is increased, resulting in higher acoustic levels. XE7740 is not recommended for deployment in acoustically sensitive environments, such as work areas lacking acoustic insulation. When multiple XE7740 units are located in the same area, it is advisable to use hearing protection devices for health and safety reasons.

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

**Table 28. Configurations tested for acoustical experience**

| Configuration | Volume1   | Volume2   |
|---------------|---|---|
| Fan Type      | 4 x High Performance Platinum (4056)<br>+ 12 x High Performance Platinum (6056) | 4 x High Performance Platinum (4056)<br>+ 12 x High Performance Platinum (6056) |
| CPU TDP       | 2 x Intel Granite Rapids 350W   | 2 x Intel Granite Rapids 350W   |
| RDIMM Memory  | 32 x 32 GB DDR5   | 32 x 32 GB DDR5   |
| HDD/SSD       | 8 x E3.S  | 8 x E3.S  |
| PERC          | N/A   | N/A   |

**Table 28. Configurations tested for acoustical experience (continued)**

| Configuration | Volume1               | Volume2               |
|---------------|-----------------------|-----------------------|
| BOSS          | 17G BOSS              | 17G BOSS              |
| BOSS M.2      | Micron 480GB          | Micron 480GB          |
| OCP           | 10G OCP NIC           | 10G OCP NIC           |
| PSU Type      | 8 x 3200 W M-CPRS PSU | 8 x 3200 W M-CPRS PSU |
| Bezel         | Yes                   | Yes                   |
| GPU           | 8 x NVIDIA H100NVL    | 16 x NVIDIA L4        |
| PCIe 1        | 100G NIC              | 100G NIC              |
| PCIe 2        | 100G NIC              | 100G NIC              |
| PCIe 3        | 100G NIC              | 100G NIC              |
| PCIe 4        | 100G NIC              | 100G NIC              |

**Table 29. Acoustical experience of XE7740 configurations**

| Configuration  | Volume1  | Volume2  |     |
|--|--|--|-----|
| Acoustical Performance: Idle/ Operating @ 25°C Ambient |  |  |     |
| L <sub>wA,m</sub> (B)                                  | Idle <sup>(4)</sup>                                  | 8.3  | 8.6 |
|  | Operating/Customer usage operating <sup>(5)(6)</sup> | 9.0  | 8.6 |
| K <sub>v</sub> (B)                                     | Idle <sup>(4)</sup>                                  | 0.4  | 0.4 |
|  | Operating/Customer usage operating <sup>(5)(6)</sup> | 0.4  | 0.4 |
| L <sub>pA,m</sub> (dB)                                 | Idle <sup>(4)</sup>                                  | 69   | 72  |
|  | Operating/Customer usage operating <sup>(5)(6)</sup> | 75   | 72  |
| Prominent discrete tones <sup>(3)</sup>                | Noticeable tones<br>(Prominence ratio ≥ 15 dB)       | Noticeable tones<br>(Prominence ratio ≥ 15 dB) |     |
| Acoustical Performance: Idle @ 28°C Ambient            |  |  |     |
| L <sub>wA,m</sub> <sup>(1)</sup> (B)                   | 8.6  | 8.9  |     |
| K <sub>v</sub> (B)                                     | 0.4  | 0.4  |     |
| L <sub>pA,m</sub> <sup>(2)</sup> (dB)                  | 72   | 73   |     |
| Acoustical Performance: Max. loading @ 35°C Ambient    |  |  |     |
| L <sub>wA,m</sub> <sup>(1)</sup> (B)                   | 9.1 / 10.3   | 9.4 / 10.3                                     |     |
| K <sub>v</sub> (B)                                     | 0.4  | 0.4  |     |
| L <sub>pA,m</sub> <sup>(2)</sup> (dB)                  | 75 / 87  | 77 / 87  |     |

<sup>(1)</sup>L<sub>wA, m</sub>: The declared mean A-weighted sound power level (L<sub>wA</sub>) 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.

<sup>(2)</sup>L<sub>pA, m</sub>: 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.

<sup>(3)</sup>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.

<sup>(4)</sup>Idle mode: The steady-state condition in which the server is energized but not operating any intended function.

<sup>(5)</sup>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.

<sup>(6)</sup> 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.

## PowerEdge XE7740 acoustical dependencies

Dell PowerEdge XE7740 is a rack-mount server for an unattended data center environment. To achieve optimal performance of GPUs and CPUs, the fan speed is increased, resulting in higher acoustic levels. XE7740 is not recommended for deployment in acoustically sensitive environments, such as work areas lacking acoustic insulation. When multiple XE7740 units are located in the same area, it is advisable to use hearing protection devices for health and safety reasons.

Some product features impact acoustical server output more than others. The following features are considered strong drivers of acoustical response, thus configurations, or operating conditions that include these features may increase air mover speed and acoustical output of the server:

- Ambient temperature: Dell evaluates the acoustical performance of servers in a  $23\pm 2^{\circ}\text{C}$  environment. Ambient temperatures more than  $25^{\circ}\text{C}$  has higher acoustical output and may experience larger fluctuations between state changes.
- GPU and Processor thermal design power (TDP): Higher-wattage GPUs and processors may require more airflow to cool under load and thus increase the potential acoustical output of the system.

# Rack, rails, and cable management

## Topics:

- [Rails and cable management information](#)

## Rails and cable management information

The rail offerings for the PowerEdge XE7740 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.

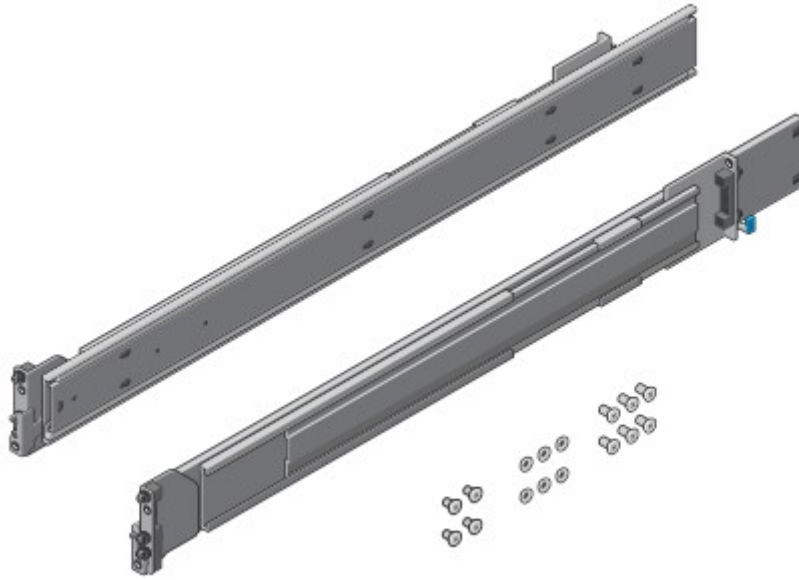


Figure 24. Identify the rail kit contents

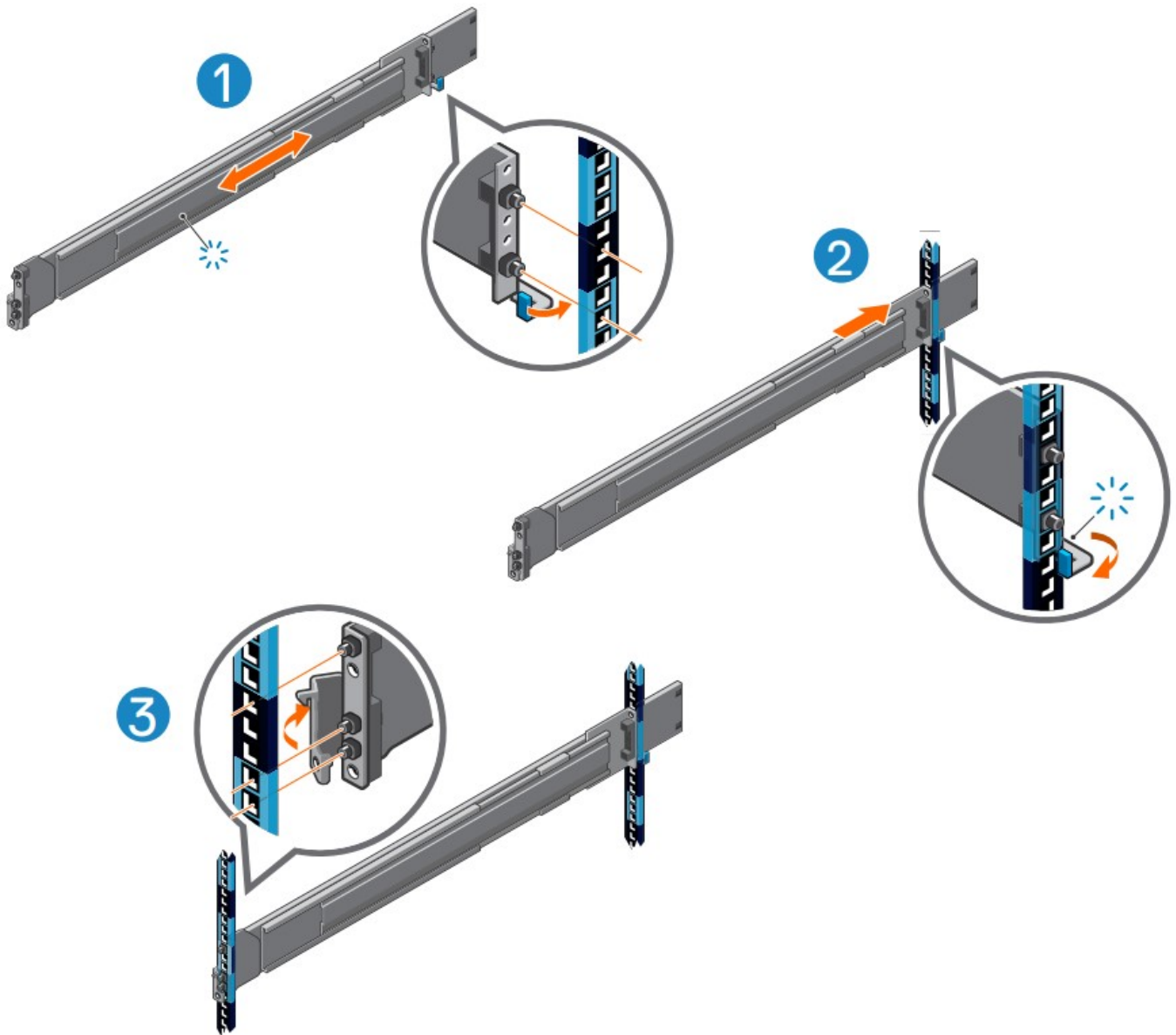
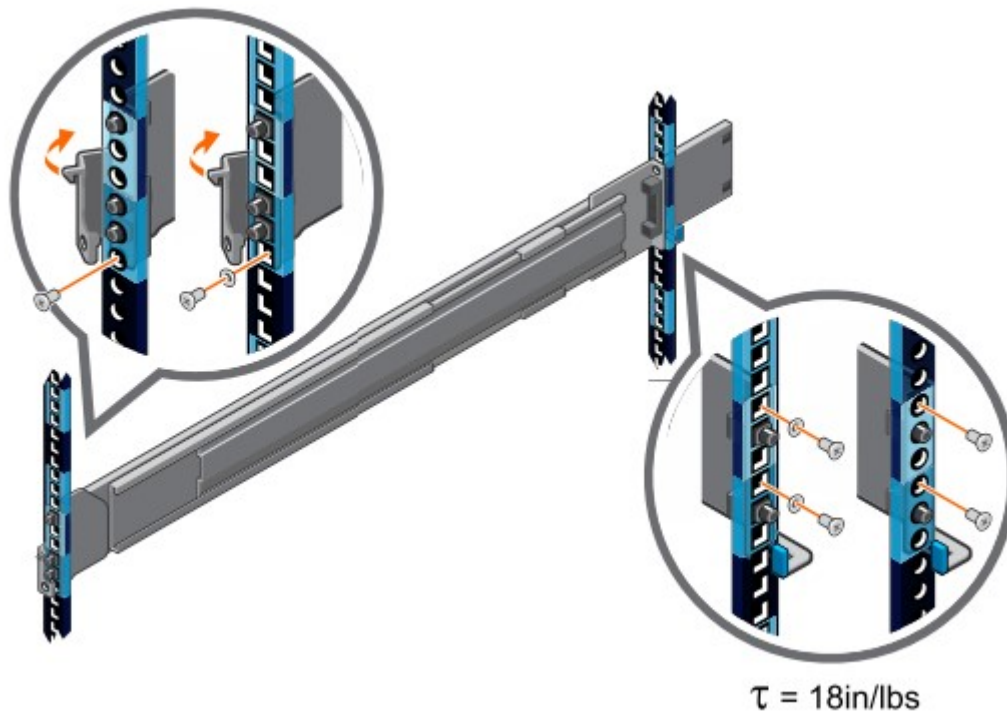


Figure 25. Install the rail | 4-POST racks



**Figure 26. 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.

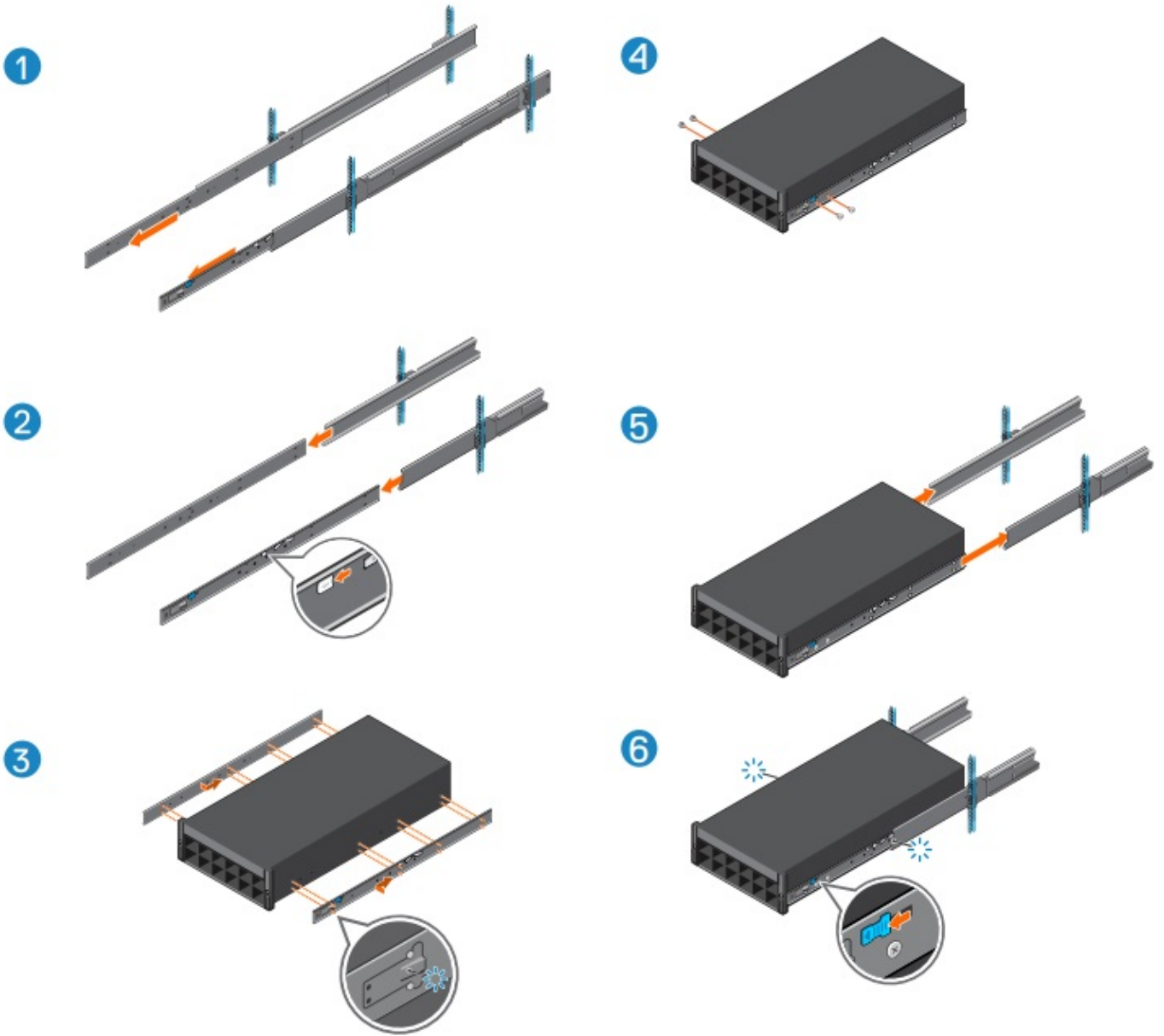


Figure 27. Installing Stab-in Rails to the system

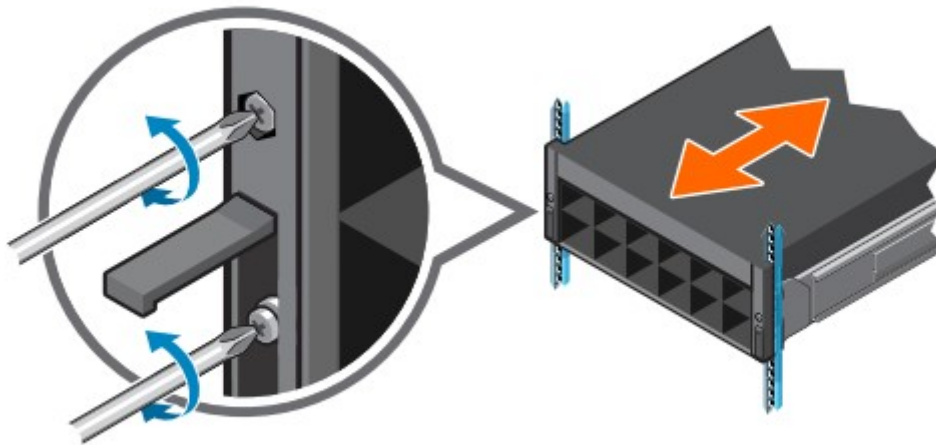


Figure 28. Securing or releasing the system from the rails



Figure 29. System Information Label

# Operating Systems and Virtualization

## Topics:

- [Supported operating systems](#)

## Supported operating systems

The PowerEdge XE7740 system supports the following operating system:

- Canonical Ubuntu Server LTS
- RedHat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi

 **NOTE:** VMware ESXi OS is not supported on PowerEdge XE7740 with RTX Pro 6000 GPUs.

For specifications and interoperability details, see [OS support](#).

# 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.

iDRAC10 offers the following license:

**Table 30. iDRAC10 license for PowerEdge XE7740 system:**

| License            | Description  |
|--------------------|--|
| iDRAC10 Datacenter | <ul style="list-style-type: none"> <li>• Available as an upsell on all servers.</li> <li>• Includes additional automation features and virtual console and security features.</li> <li>• Bundled with Secure Enterprise Key Management (SEKM) and Secure Component Verification (SCV) licenses.</li> <li>• Includes key features such as telemetry streaming and thermal management.</li> <li>• Includes advanced accelerators (GPU and DPU) system management and advanced air and liquid cooling.</li> </ul> |

For a full list of iDRAC features by license tier, see the **Integrated Dell Remote Access Controller 10 User's Guide** at [Dell.com](http://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](http://Knowledge Base) page at [Dell.com](http://Dell.com)

## Systems Management software support matrix

**Table 31. 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     |
|                     | 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     |

**Table 31. Systems Management software support matrix (continued)**

| <b>Categories</b>       | <b>Features</b>   | <b>PE mainstream</b> |
|-------------------------|---|----------------------|
|                         | 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            |
| Operating system        | Canonical Ubuntu Server LTS                               | Supported            |

## Appendix A: Additional specifications

### Topics:

- Chassis dimensions
- System weight
- NIC port specifications
- Video specifications
- USB Ports
- PSU rating
- Environmental specifications

### Chassis dimensions

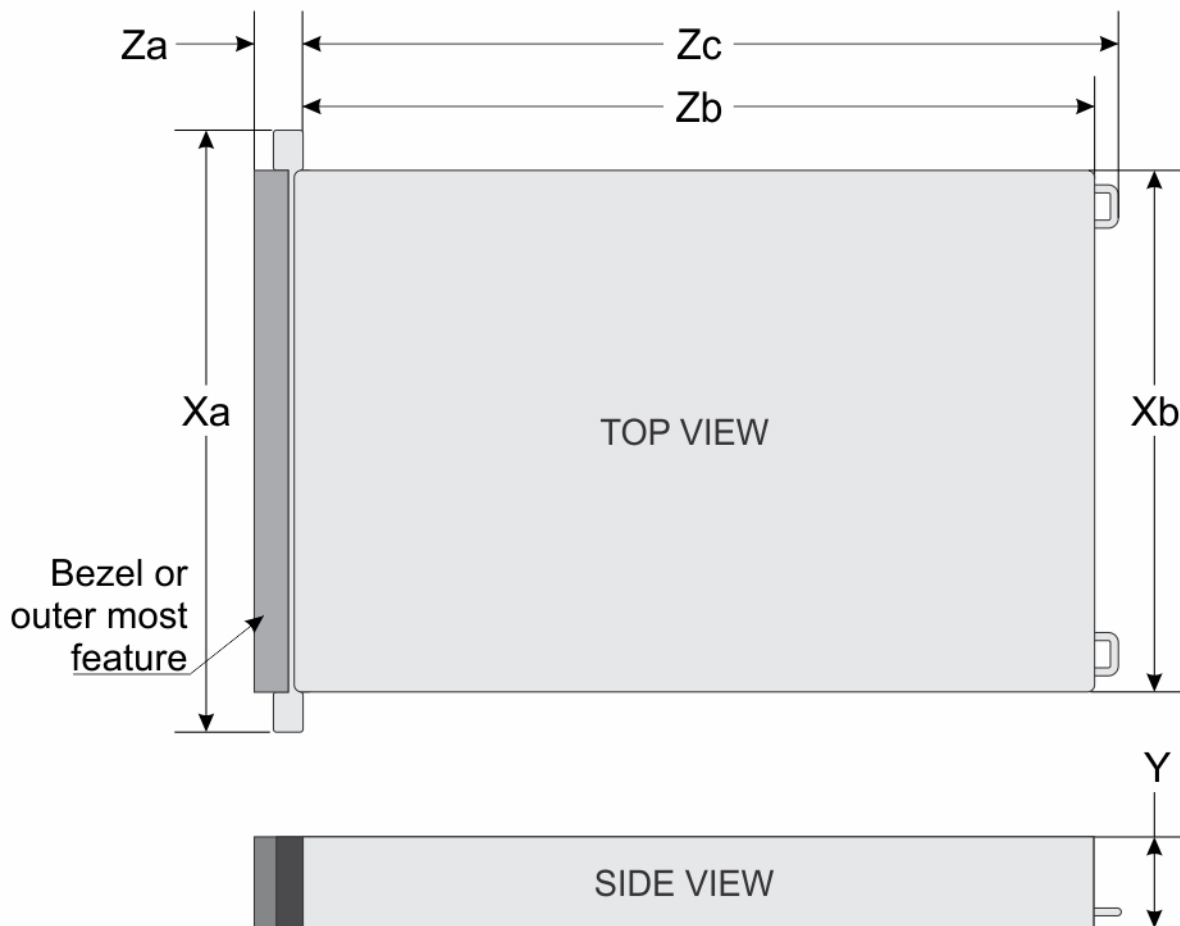


Figure 30. Chassis dimensions

**Table 32. PowerEdge XE7740 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<br>22 mm (0.87 inches) without bezel | 830.2 mm (32.68 inches)<br>ear to rear wall | 864.73 mm (34.04 inches)<br>ear to PSU handle |

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

## System weight

**Table 33. PowerEdge XE7740 system weight**

| System configuration  | Maximum weight (with all drives/SSDs) |
|-----------------------|---------------------------------------|
| E3.S Gen5 NVMe drives | 71.35 Kg (157.30 pounds)              |

**Table 34. PowerEdge XE7740 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 |

**WARNING:** The system is heavy, so ensure adequate support and balance during movement and installation; a lift is required for loads over 120 pounds, as the system can slide and cause damage when being installed or removed from a higher position on the rack.

**CAUTION:** Lift the system by using the provided lifting handles on the chassis and refrain from using clips or other chassis points to lift the system. Nondesignated lift-points on the chassis may cause system damage due to the inability to support the system weight while lifting.

## NIC port specifications

The PowerEdge XE7740 system supports one 10/100/1000 Mbps BMC Ethernet, optional Open Compute Project (OCP) card, DPU card and PCIe Add-in card NIC.

**Table 35. NIC port specification for the system**

| Feature                                   | Specifications                               |
|---|--|
| Datacenter-Secure Control Module (DC-SCM) | 1 GbE x 1                                    |
| OCP NIC 3.0 card                          | 100 GbE x 2, 25 GbE x 4, 25 GbE x 2, 10G x 2 |
| DPU card                                  | 200 GbE x 2                                  |
| PCIe Add-in Card (AIC) NIC                | 400 GbE x 1, 200 GbE x 2, 100 GbE x 2        |

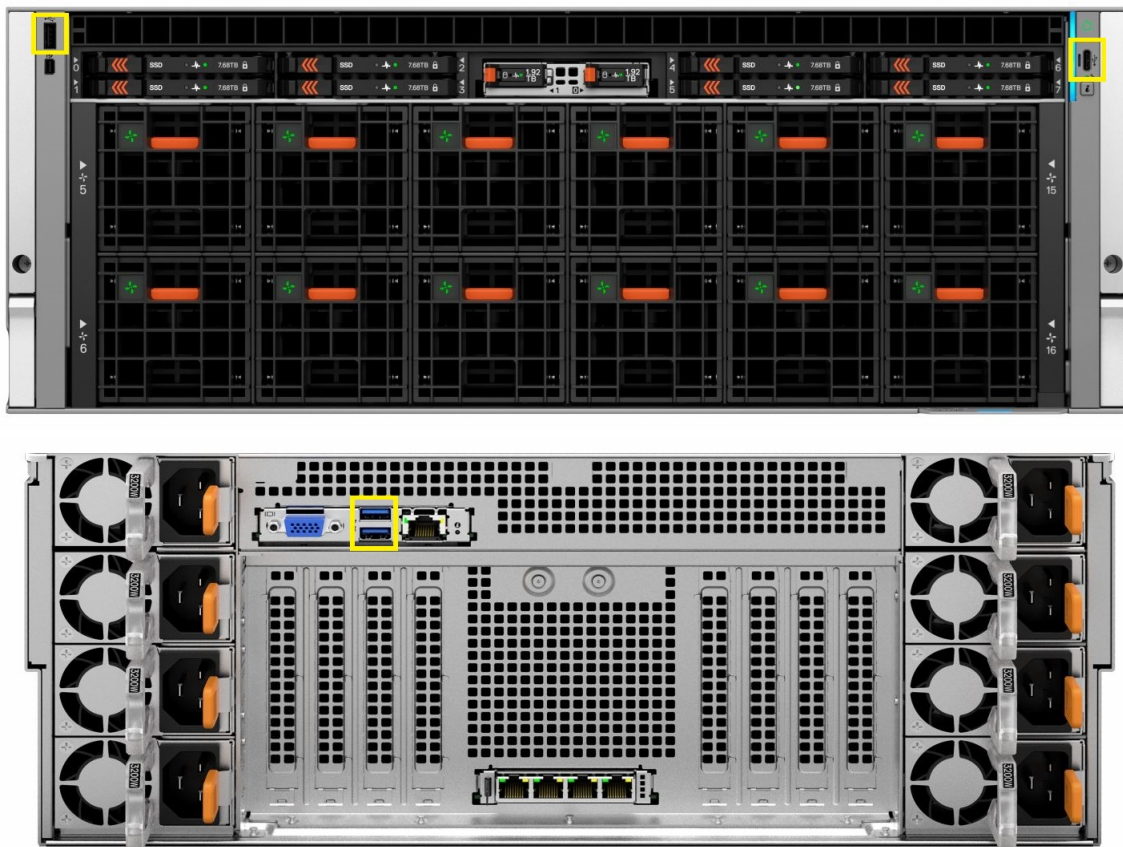
## Video specifications

The PowerEdge XE7740 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

**Table 36. 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          |
| 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 31. Front and rear USB Ports**

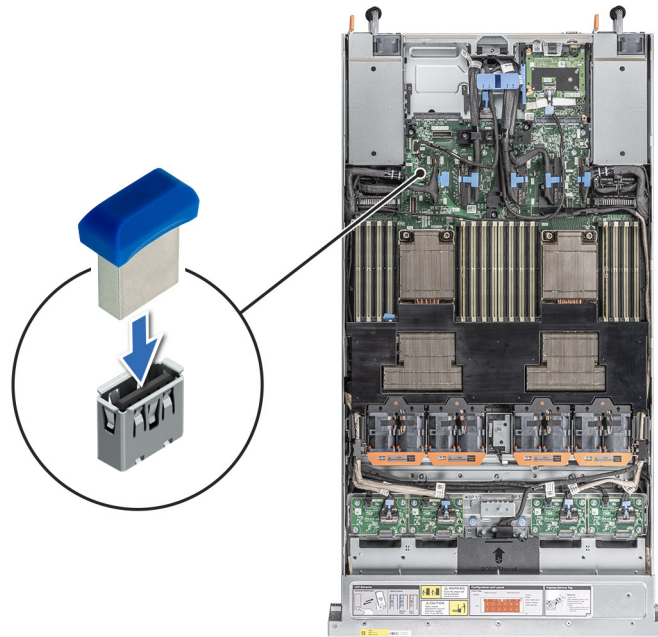


Figure 32. Internal USB Port

Table 37. 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 38. PSUs highline and lowline ratings

| PSU                           | 2400 W Titanium (Input Voltage) | 3200 W Titanium (Input Voltage)                       | 3200 W Titanium 277Vac & HVDC (Input Voltage) |
|-------------------------------|---------------------------------|---|---|
| Peak Power (Highline/-72 VDC) | 3720 W (200 - 240 V AC )        | 4495 W (200 - 220 V AC )<br>4960 W (220.1 - 240 V AC) | 4960 W (277 V AC)                             |
| Highline/-72 VDC              | 2400 W (200 - 240 V AC )        | 2900 W (200 - 220 V AC)<br>3200 W (220.1 - 240 V AC)  | 3200 W (277 V AC)                             |
| Peak Power (Lowline/-40 VDC)  | 2170 W                          | N/A   | N/A   |
| Lowline/-40 VDC               | 1400 W                          | N/A   | N/A   |
| Highline 240 VDC              | 2400 W                          | 3200 W  | N/A   |
| Highline 336 VDC              | N/A                             | N/A   | 3200 W  |

**Table 38. PSUs highline and lowline ratings (continued)**

| PSU          | 2400 W Titanium (Input Voltage) | 3200 W Titanium (Input Voltage) | 3200 W Titanium 277Vac & HVDC (Input Voltage) |
|--------------|---------------------------------|---------------------------------|---|
| DC-(48—60) V | N/A                             | N/A                             | N/A   |

The PowerEdge XE7740 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 39. PSU efficiency level**

| Efficiency Targets by Load |                               |          |        |        |        |      |
|----------------------------|-------------------------------|----------|--------|--------|--------|------|
| Form factor                | Output                        | Class    | 10%    | 20%    | 50%    | 100% |
| Redundant 73.5 mm          | 2400 W AC Mixed Mode          | Titanium | 90.00% | 94.00% | 96.00% | 91%  |
|                            | 3200 W AC Mixed Mode          | Titanium | 90.00% | 94.00% | 96.00% | 91%  |
|                            | 3200 W Titanium 277Vac & HVDC | 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 40. 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 41. 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<br><b>NOTE:</b> * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change. |

**Table 41. Common Environmental Specifications for all categories (continued)**

| Parameters                         | Allowable continuous operations                   |
|------------------------------------|---|
| 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 42. Maximum vibration specifications**

| Maximum vibration | Specifications  |
|-------------------|---|
| Operating         | 0.21 G <sub>rms</sub> at 5 Hz to 500 Hz for 10 min (all operation orientations) |
| Storage           | 1.38 G <sub>rms</sub> at 7 Hz to 250 Hz for 15 minutes                          |

**Table 43. 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. |
| 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 44. Particulate contamination specifications**

| Particulate contamination   | Specifications  |
|---|---|
| Air filtration: Conventional Data Center only                         | <p>Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit</p> <ul style="list-style-type: none"> <li><b>NOTE:</b> Filtering room air with a MERV8 filter, as specified in ANSI/ASHRAE Standard 127, is a recommended method for achieving the necessary environmental conditions.</li> <li><b>NOTE:</b> Air entering the data center must have MERV11 or MERV13 filtration.</li> <li><b>NOTE:</b> 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.</li> </ul> |
| Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment) | <p>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.</p> <ul style="list-style-type: none"> <li><b>NOTE:</b> In environments commonly above ISA-71 Class G1 or that may have known challenges, special filters may be required.</li> </ul>  |
| Conductive dust: data center and non-data center environments         | <p>Air must be free of conductive dust, zinc whiskers, or other conductive particles.</p> <ul style="list-style-type: none"> <li><b>NOTE:</b> 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.</li> </ul>  |

**Table 44. Particulate contamination specifications (continued)**

| Particulate contamination                                    | Specifications  |
|--|---|
|  | <p><b>NOTE:</b> This condition applies to data center and non-data center environments.</p>   |
| Corrosive dust: data center and non-data center environments | <ul style="list-style-type: none"> <li>Air must be free of corrosive dust.</li> <li>Residual dust present in the air must have a deliquescent point less than 60% relative humidity.</li> </ul> <p><b>NOTE:</b> This condition applies to data center and non-data center environments.</p> |

**Table 45. 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 46. 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 47. Thermal restriction matrix - Intel Xeon 6 Series processors**

| Configuration |       |       | 8 x EDSFF E3.S NVMe |                     |
|---------------|-------|-------|---------------------|---------------------|
| Processor     | TDP   | Cores | Fan Type            | Ambient temperature |
| 6787P         | 350 W | 86    | HPR PLATINUM        | 35°C                |
| 6767P         | 350 W | 64    |                     |                     |
| 6747P         | 350 W | 48    |                     |                     |

**Table 48. Processor and heat sink matrix**

| Heat sink | Processor TDP    |
|-----------|------------------|
| CPU HSK   | Supports all TDP |

**Table 49. 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        | 128GB RDIMM 6400 | 35°C                           |
|               | 96GB RDIMM 6400  | 35°C                           |
|               | 64GB RDIMM 6400  | 35°C                           |

**Table 49. Thermal restriction matrix - Memory and GPU/FPGA (continued)**

| Configuration |                     | 8 x EDSFF E3.S NVMe            |
|---------------|---------------------|--------------------------------|
| Rear storage  |                     | No rear drives                 |
| Memory/GPU    |                     | HPR PLATINUM fans with CPU HSK |
|               |                     | Ambient temperature            |
|               | 32GB RDIMM 6400     | 35°C                           |
| GPU<br>8x GPU | NVIDIA H200 NVL     | 30°C                           |
|               | NVIDIA H100 NVL     | 35°C                           |
|               | NVIDIA L40S         | 35°C                           |
|               | NVIDIA L4           | 35°C                           |
|               | NVIDIA RTX Pro 6000 | 30°C*                          |
|               | Intel Gaudi3        | 35°C                           |

**i** **NOTE:** \*When four NVIDIA RTX Pro 6000 GPUs are installed in the middle PCIe slots, the maximum supported ambient temperature is 35 °C.

### Other Restrictions

- 100 Gb and higher OCP cards require an 85°C optical cable or DAC.
- DPU B3220:
  - The DAC cable has a maximum ambient temperature limit of 30°C for supported operation.
  - AOC cable is not supported.

## Appendix B. Standards compliance

The system conforms to the following industry standards.

**Table 50. Industry standard documents**

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

## Appendix C: Additional resources

**Table 51. Additional resources**

| Resource                                       | Description of contents  | Location  |
|--|--|---|
| Installation and Service Manual                | <p>This manual, available in PDF format, provides the following information:</p> <ul style="list-style-type: none"> <li>• Chassis features</li> <li>• System Setup program</li> <li>• System indicator codes</li> <li>• System BIOS</li> <li>• Remove and replace procedures</li> <li>• Diagnostics</li> <li>• Jumpers and connectors</li> </ul> | <a href="https://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a> |
| Getting Started Guide                          | <p>This guide ships with the system, and is also available in PDF format. This guide provides the following information:</p> <ul style="list-style-type: none"> <li>• Initial setup steps</li> </ul>   | <a href="https://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a> |
| Rack Installation Guide                        | <p>This document ships with the rack kits, and provides instructions for installing a server in a rack.</p>  | <a href="https://Dell.com/Support/Manuals">Dell.com/Support/Manuals</a> |
| System Information Label                       | <p>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.</p>   | Inside the system chassis cover   |
| MyDell label                                   | <p>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.</p>   | Inside the system chassis cover   |
| Enterprise Infrastructure Planning Tool (EIPT) | <p>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.</p>   | <a href="https://Dell.com/calc">Dell.com/calc</a>                       |

# Appendix D: Service and support

## Topics:

- Why attach service contracts
- ProSupport Infrastructure Suite
- Specialty Support Services
- ProDeploy Infrastructure Suite
- Supplemental Deployment Services
- Dell Technologies Consulting Services

## Why attach service contracts

Dell PowerEdge XE servers include a standard three-year hardware warranty covering repair or replacement of defective components. This warranty reflects the commitment to product quality but is limited to hardware-related issues and does not include software support. For extended warranty coverage and comprehensive support of both hardware and software, choose the ProSupport Infrastructure Suite.

## ProSupport Infrastructure Suite

Enterprise-class support that aligns with the criticality of your systems, the complexity of your environment, and how you allocate your IT resources. ProSupport Infrastructure Suite offers three service tiers: Basic Hardware Support, ProSupport for Infrastructure and ProSupport Plus for Infrastructure. These services extend hardware coverage, ensuring continued support beyond the standard warranty period. ProSupport and ProSupport Plus also address common software-related issues, ensuring comprehensive support for both hardware and software. ProSupport Plus offers enhanced capabilities, including support for third-party software, proactive system maintenance, and personalized guidance for performance optimization and other advanced needs. To ensure uninterrupted operation and optimal performance of Dell PowerEdge XE servers, it is recommended to evaluate and select the appropriate ProSupport Infrastructure Suite service based on the specific requirements of your environment.

|   | Basic Hardware Support | ProSupport          | BEST<br>ProSupport Plus |
|---|------------------------|---------------------|-------------------------|
| <b>Outcome Assistance and Advocacy</b> via assigned Technical Customer Success Manager ⓘ                  |                        |                     |                         |
| Enjoy a frictionless customer experience with cross-functional lifecycle management aligned to your goals |                        |                     | ✓                       |
| Accelerate time-to-value through onboarding assistance, education and success planning                    |                        |                     | ✓                       |
| Turn challenges into opportunities with actionable strategies powered by data and AI-driven analytics     |                        |                     | ✓                       |
| Ensure coverage continuity while preparing to scale for future success                                    |                        |                     | ✓                       |
| <b>Proactive Monitoring &amp; Actionable Insights</b> 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   | ✓                      | ✓                   | ✓                       |
| <b>Support Essentials</b>   |                        |                     |                         |
| Receive an assigned incident manager for Sev 1 issues who will work your issue through to resolution      |                        | ✓                   | ✓                       |
| Count on Mission Critical Support during Sev 1 incidents and natural disasters ⓘ                          |                        |                     | ✓                       |
| Keep systems code current and performing at peak through Proactive System Maintenance                     |                        |                     | ✓                       |
| Get priority access to senior technical support engineers—skip the queues and callbacks                   |                        |                     | ✓                       |
| 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                |

Figure 33. ProSupport Infrastructure Suite

## ProSupport Plus for Infrastructure

ProSupport Plus for Infrastructure is designed for customers who require proactive, predictive, and personalized support for business-critical systems. This service is ideal for environments managing essential applications and workloads where optimal performance and preventative maintenance are paramount. ProSupport Plus is recommended for PowerEdge XE servers to ensure comprehensive, preventative support for business-critical systems.

ProSupport Plus includes 4-hour onsite parts and labor response, all the features of ProSupport, and the following exclusive to ensure maximum uptime and system reliability:

1. **Priority Access to Senior Support Experts:** First in line access to Dell's most experienced support engineers for advanced troubleshooting and issue resolution.
2. **Mission Critical Support:** Rapid response and resolution for Severity 1 issues to minimize downtime and restore operations as quickly as possible.
3. **Technical Customer Success Manager (TCSM):** A dedicated advocate for cross-functional lifecycle management, advocacy, onboarding, and strategic planning throughout your technology journey.
4. **Proactive Systems Maintenance:** Semiannual updates to firmware, BIOS, and drivers to enhance system performance and availability.
5. **Third-Party Software Support:** Dell serves as a single point of accountability for eligible third-party software installed on ProSupport Plus systems, regardless of whether the software was purchased from Dell.

## ProSupport for Infrastructure

ProSupport for Infrastructure provides comprehensive 24x7x365 support for hardware and software, ideal for production workloads and applications that are important but not business-critical. ProSupport for Infrastructure is designed to keep your IT environment running smoothly with expert assistance and proactive solutions. This service ensures minimized disruptions and maximized availability of PowerEdge XE server workloads through:

- **24x7x365 Support:** Immediate remote support routing to the next available technician (no waiting for a call back), with 4-hour and Next Business Day onsite parts and labor dispatch options.
- **Broad, Centralized Support:** A single point of contact for hardware and software assistance, covering hypervisors, operating systems, applications, and eligible third-party software purchased from Dell and installed on ProSupport-covered servers.
- **Incident Management:** A dedicated Incident Manager for Severity 1 issues, collaborating with Dell experts and staying engaged until resolution.
- **Enhanced Proactive and Predictive Tools:** AI-driven anomaly detection, automated case creation followed by proactive outreach from Dell support, and infrastructure health/cybersecurity/energy monitoring via Dell AIOps and connectivity platforms.
- **Global Consistency:** A seamless support experience, regardless of location or language.

## Basic Hardware Support

Basic Hardware Support provides foundational support for hardware issues, including:

- Access to technical support during local business hours (phone, chat, online).
- Next Business Day (NBD) onsite parts and labor response.
- Hardware troubleshooting only (no software troubleshooting, unless it's to confirm hardware functionality).
- Proactive automated issue detection and automated case creation if the system is connected (customer receives notification and must contact Dell to proceed; unattended queue approach).

## Specialty Support Services

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

## Hardware coverage add-ons to ProSupport or ProSupport Plus

- **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. A Dell certified field technician performs initial troubleshooting diagnosis onsite and collaborates with remote Dell support engineers to resolve the issue. Customers can request dispatch of an onsite technician at any time for any severity support incident.

- **ProSupport Add-on for HPC (High Performance Computing):**

The ProSupport Add-on for HPC enhances a ProSupport Infrastructure Suite service contract by providing solution-aware support tailored to the unique needs of maintaining an HPC environment. Key features include:

- Access to Senior HPC Experts: Direct support from specialists with deep expertise in HPC systems.
- Advanced HPC Cluster Assistance: Guidance on performance optimization, interoperability, and configuration.
- Enhanced End-to-End Support: Comprehensive solution-level support for HPC environments.
- Remote Pre-Support Engagement: Collaboration with HPC specialists during deployment implementation to ensure a smooth setup process.

- **Carrier-Grade Support:**

Carrier-Grade Support service is designed for leading global telecommunications customers. It offers direct access to Dell solution experts specializing in telecommunications applications and outcomes. This service includes a hardware uptime guarantee, ensuring system restoration within 4 hours for Severity 1 issues. If service-level agreements (SLAs) are not met, Dell assumes penalties and fees, reinforcing its commitment to reliability and performance.

## Personalized support and supplemental infrastructure expertise

- **Technical Account Manager (TAM):** The Dell TAM service provides a designated technology expert who monitors and manages the performance and configuration of specific technology sets. TAMs strive to gain deep knowledge of your environment and business goals in order to deliver recommendations for Dell solutions that optimize IT performance and resilience.
- **Designated Support Engineer (DSE):** The Dell DSE service provides an assigned technical expert that delivers personalized, hands-on troubleshooting expertise. Acting as your direct point of contact for all support needs, our DSEs ensure swift problem resolution, real-time communication and tailored recommendations to help you maintain a resilient and efficient IT environment.
- **Multivendor Support Service (MVS):** Support your non-Dell infrastructure devices under one support contract serviced by Dell. An MVS support contract can include 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 is designed to deliver scalable, efficient, and reliable support for complex IT environments. ProSupport One for Data Center is available for large and distributed data centers with over 1,000 assets (including servers, storage, data protection, and networking devices) or a significant investment in Dell storage and HCI products. Built on the foundation of ProSupport, this support offer is designed for Dell's largest customers, enabling them to customize a support solution that meets their unique hardware and software needs. Key benefits include:

- **Customized Support:** Tailor support services to address unique data center environments and existing IT systems and capabilities.
- **Cost-Effective Options:** Choose support that aligns with technical support consumption and budget, optimizing investments while maintaining required service levels.
- **Resource Augmentation:** Add a Technical Account Manager (TAM) or Designated Support Engineer (DSE) to augment your team. TAMs provide advanced knowledge and advice to help customers realize maximum value from their enterprise investments and the DSE is a designated product-focused troubleshooting expert who understands the environment to enhance overall health.
- **Enhanced Infrastructure Management:** Leverage advanced automation, real-time infrastructure monitoring, and AI-powered analytics to streamline operations, reduce risks, and minimize downtime.

- **Onsite Parts Service (OPS)**

Ideal for large organizations that have their own staff to support their data center, OPS enables Dell and the customer to collaboratively manage parts inventory located at the customer's designated facility. Dell Logistics Online Inventory Solution (LOIS) software program is used to monitor and automate replenishment of inventory in the customer's onsite parts locker. As a replacement part is scanned out of inventory for use, the LOIS software automatically initiates a replenishment order with Dell that is either shipped the next day or delivered onsite by Dell during a scheduled onsite service visit. LOIS also allows customers to integrate their inventory system directly to Dell TechDirect using APIs to further streamline the support and parts management processes.

## End-of-Life Services

- **Asset Recovery Services** are available on infrastructure products such as servers, storage and networking assets. The service provides secure disposition, regulatory compliance, value recovery, and environmental reporting—helping customers retire IT infrastructure with confidence while supporting sustainability goals.
- **Data Sanitization & Data Destruction** services render data unrecoverable on repurposed or retired products such as servers, storage and data protection hardware. Data Sanitization is performed according to NIST SP 800-88 r1 guidelines which ensures complete and irreversible removal of sensitive data from devices. When erasure is not feasible, Data Destruction services provide physical destruction of hard drives. All activities are documented, with detailed compliance reports provided for both data sanitization and data destruction outcomes—helping organizations retire infrastructure assets safely and in alignment with regulatory expectations.

## ProDeploy Infrastructure Suite

### ProDeploy Flex for factory rack integration and cluster services

For small or large opportunities desiring preconfigured servers and/or networking delivered in fully or partially populated racks, our services for AI infrastructure deployment deliver end-to-end, rack-scale deployment and validation for PowerEdge XE platforms paired with options for AI networking. These services include factory rack integration (L11), cluster build (L12), and acceptance testing to ensure Day-1 readiness and peak performance for AI workloads.

- Infrastructure Readiness Assessment to evaluate the data center prior to an AI deployment to include: datacenter layout, power/cooling (including liquid cooling), cabling, airflow, and site logistics.
- Factory rack integration (L11) of advanced PowerEdge XE servers integrated with NVIDIA InfiniBand switches or Ethernet options from Dell or NVIDIA are put through a set of strenuous tests to validate functionality of the solution prior to shipping.
- Rack placement, power connectivity, and liquid-cooling connectivity if applicable.
- Cluster build (L12) turns multiple integrated racks into a high-performance cluster: deploy all inter-rack cabling, configure the AI fabric, validate cluster, and perform acceptance testing.
- Knowledge transfer and project documentation to equip your team for Day-2 operations and ongoing improvements.

ProDeploy Flex for factory rack integration is the most effective method to deploy rack solutions and optimize at scale.

### ProDeploy Plus for onsite builds

For smaller quantity solutions that don't require factory rack integration, ProDeploy Plus is ideal. This service provides expert onsite installation and configuration for complex PowerEdge XE platforms. All implementations are performed by Dell-badged employees, not 3<sup>rd</sup> parties, to ensure the utmost care and expertise is maintained through the entire process.

- Accelerate time to value with Dell engineers, site readiness and implementation planning, full onsite software installation and configuration, and validation prior to handoff.
- Proven speed: up to 3x faster planning and deployment versus in house admins with the ProDeploy Infrastructure Suite.
- Ideal for smaller XE deployments or unique proof-of-concept racks when factory services are not being used; complements rack integration for larger, rack scale AI builds.
- Reduce risk on GPU dense systems with Dell's specialized XE deployment practices and testing rigor built for AI servers.

# Supplemental Deployment Services

Additional ways to expand scope or deploy for unique scenarios.

## 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: AI expertise, compute, storage, networking, security, multi-cloud, data management, and modern workforce applications.

## Additional Deployment Time (ADT)

You can expand the scope of a ProDeploy engagement leveraging Additional Deployment Time (ADT). ADT covers additional non-complex tasks beyond the usual quantity of deliverables of the ProDeploy offers. ADT can also be used as a standalone service without ProDeploy, to accomplish tasks related to Project Management or Technical Resource Expertise. ADT is sold in blocks of four hours remote or eight hours onsite. The Dell delivery team can help scope the number of hours required for specific customer needs.

## Data Migration Services

Migrating data sets is no easy task. Our experts use proven tools and processes 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 while our customers can keep their focus on their core business.

## 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 Ansible 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

## Accelerate Modernization Initiatives with Dell Consulting

When it comes to your IT and business goals, there are a ton of possible initiatives you can focus on and problems you can solve. But it can be confusing and complex when deciding what you should prioritize for your organization and where to start. The experts at Dell Technologies Consulting Services help you harmonize your business and IT needs with our outcome-focused approach. From strategy to full-scale implementation, we can deliver more, faster, so you and your organization can get back to innovating. We listen to and understand your unique needs, then collaborate with you to help you deliver the most value to your business. With decades of expertise and repeatable, proven processes, you get consistent outcomes and accelerated time-to-value. All with a holistic approach to your business outcomes. So whether you're looking to deliver cloud platforms, workforce experiences, data and applications, or achieve a resilient security posture for your business, you can be confident that your organization is heading in the right direction with Dell.

The first step: Half-day workshops.

Identify priorities to build your digital future. Our facilitated workshop discussions focus on the activities required to achieve your desired end state and conclude with next steps to further advance your business and IT strategies.

Available workshops: AI, Multicloud, Apps & Data, Modern Workforce, Security & Resiliency.

## 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.

## Cyber-Security Services

### Managed Detection and Response (MDR)

Dell Managed Detection and Response Pro Plus is our fully-managed, 360° security operations solution comprised of our most cutting-edge, preventive and responsive cybersecurity services. MDR Pro Plus was designed with your top security concerns in mind, allowing you to focus on your core business goals while Dell handles your security operations. First, we have Vulnerability Management. With this service, we'll do ongoing scanning of the customer's environment looking for software that needs to be patched. Next is Pen Testing and Attack Simulation Management. This service will continuously validate security controls and policies with automated Breach and Attack Simulation (BAS), because a misconfiguration can lead to an exposure which an attacker can exploit. The service also includes an annual penetration test to determine if a skilled threat actor could exploit pathways leading to critical assets or data. Third, Managed Security Awareness Training. This service will educate the customer's end users so that they don't inadvertently put the customer at risk. If you think about our annual compliance training modules, there is always a security module. This is the same type of thing, but rather than once a year, it will be smaller, bite-size pieces of content delivered throughout the year. Fourth is our Managed Detection and Response service which provides 24x7 threat detection and investigation, analysis of end-to-end activity by threat actors, threat hunting, and quick initiation of cyber incident response when needed. Customers can choose between SecureWorks Taegis XDR, CrowdStrike Falcon XDR or Microsoft Defender XDR as the security analytics platform our analysts will use to monitor their environment. All four of these services are delivered by experienced, certified Dell security experts using advanced technology such as the SecureWorks Taegis XDR, CrowdStrike Falcon XDR or Microsoft Defender XDR security platforms.

## 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 Learning Services offers training and certifications that are designed to help customers achieve more from their hardware investment. To learn more or register for a class today, see [learning.dell.com](https://learning.dell.com).