# Dell PowerEdge R7625

## Technical Guide

Regulatory Model: E94S
Regulatory Type: E94S001
November 2024
Rev. A05

DELL Technologies

## Notes, cautions, and warnings

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

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

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

# Contents

# 1

# System overview

The PowerEdge R7625 system is a 2U server that supports:

- Two AMD EPYC 4th Generation 9004 series processor with up to 128 cores
- Optional Direct Liquid Cooling(DLC) for required CPU SKU and/or configurations
- Up to 24 RDIMMs, with up to 6 TB of memory and speeds up to 4800 MT/s
- Two redundant AC or DC power supply units
- Up to 8 x 3.5-inch SATA/SAS drives or 8 x 2.5 SATA/SAS/NVMe or 12 x 3.5-inch SATA/SAS or 16 x 2.5-inch SATA/SAS/NVMe 24 x 2.5-inch SATA/SAS/NVMe (HDD/SSD) drives
- Up to 32 x EDSFF E3.S, or 16 x EDSFF E3.S, or 8 x EDSFF E3.S, 4 x EDSFF E3.S (rear) NVMe Gen5 drives
- PCI Express® (PCIe) 5.0 enabled expansion slots
- Network interface technologies to cover Network Interface Card (NIC)

**Topics:**



## Key workloads

Customers looking for accelerated compute to maximize performance in a dense, scalable server architecture to address the following applications:

- High Performance Computing
- Virtual Desktop Infrastructure (VDI)
- Virtualization

## New technologies

**Table 1. New technologies**

| Technology | Detailed Description |
|---|---|
| AMD Genoa Processor (SP5) | Core count: Up to 128 core processor |
| | 5nm process technology |
| | AMD Interchip global memory interconnect (xGMI) up to 64 lanes |
| | Speeds up to 4.1 GHz |
| | Maximum TDP: 400 W |
| 4800 MT/s DDR5 Memory | Up to 12 channels with 1 DPC per CPU and 24 DIMMs in total |
| | Supports RDIMM, 3DS DIMM DDR5 with ECC up to 4800 MT/s |
| PCIe Gen | Gen5 @32 GT/s |
| PCIe Slot | Up to eight PCIe Slots with x8 or x16 lanes |
| Flex I/O | LOM board, 2 x1Gb with BCM5720 LAN controller |
| | Rear I/O with:<br>• 1 GB Dedicated Management Network Port<br>• 1 x USB 3.0 |

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

| Technology | Detailed Description |
|---|---|
| | • 1 x USB 2.0<br>• VGA port (optional for Direct Liquid Cooling configuration) |
| | Serial Port Option with STD RIO board |
| | OCP Mezz 3.0 (supported by x8 PCIe lanes) (optional) |
| | Front I/O with:<br>• 1 x iDRAC Direct (Micro-AB USB) port<br>• 1 x USB 2.0<br>• 1 x VGA |
| CPLD 1-wire | Support payload data of Front PERC, Riser, BOSS N1, BP, and Rear I/O to BIOS and iDRAC. |
| Dedicated PERC | PERC 11<br>• HBA355i, H355, H755, H755N<br>PERC 12<br>• H965i<br>• H965e<br>• HBA465i<br>• HBA465e |
| Software RAID | S160 |
| Power Supplies | 60 mm / 86 mm dimension is the new PSU form factor on a 16G design. |
| | Platinum 800 W AC/HVDC |
| | Platinum 1100 W AC/HVDC |
| | Platinum 1400 W AC/HVDC |
| | Titanium 1400 W AC/HVDC |
| | Titanium 1800 W AC/HVDC |
| | Platinum 2400 W AC/HVDC |
| | Titanium 2800 W AC/HVDC |
| | Titanium 3200 W AC/HVDC |

# 2

# System features and generational comparison

The following table shows the comparison between the PowerEdge 7625 with the PowerEdge R7525.

**Table 2. Features comparison**

| Features | PowerEdge R7625 | PowerEdge R7525 |
|---|---|---|
| Processors | Two AMD® EPYC™ 4th Generation 9004 series processors | Two AMD® EPYC™ Generation 2 or Generation 3 processors |
| CPU interconnect | Inter-chip global memory interconnect (xGMI) 32GT/sec | Inter-chip global memory interconnect (xGMI) 16GT/sec |
| Memory | 24 x DDR5 RDIMM (6 TB), bandwidth up to 4800 MT/S | 32 x DDR4 RDIMM (2TB), LRDIMM (4TB), bandwidth up to 3200 MT/S |
| Storage Controllers | • PERC 11: HBA355i, H355, H755, H755N<br>• PERC 12: H965i, H965e, HBA465e, HBA465i<br>• Software RAID: S160<br>• BOSS-N1 | • Adapters: HBA355E, H840<br>• PERC: H345, H745, H755, H755N<br>• Software RAID: S150 |
| Drive Bays | Front bays:<br>• Up to 8 x 3.5-inch SAS4/SATA (HDD/SSD) max 160 TB<br>• Up to 12 x 3.5-inch SAS/SATA (HDD/SSD) max 240 TB<br>• Up to 8 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 122.88 TB<br>• Up to 16 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 245.76 TB<br>• Up to 24 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 368.64 TB<br>• Up to 8 x EDSFF E3.S Gen5 NVMe (SSD) max 61.44 TB<br>• Up to 16 x EDSFF E3.S Gen5 NVMe (SSD) max 122.88 TB<br>• Up to 32 x EDSFF E3.S Gen5 NVMe (SSD) max 245.76 TB<br>Rear bay:<br>• Up to 2 x 2.5-inch SAS4/SATA/NVMe (HDD/SSD) max 30.72 TB<br>• Up to 4 x 2.5-inch SAS4/SATA/NVMe (HDD/SSD) max 61.44 TB<br>• Up to 4 x E3.S (NVMe Gen5 ) max 30.72 TB | Front bays:<br>• 3.5 inches, 2.5 inches - 12 Gb SAS, 6 Gb SATA, NVMe HDD |
| Power Supplies | Hot swap PSUs with full redundancy<br>• 3200 W Titanium 277 VAC or 336 VDC<br>• 2800 W Titanium 200—240 VAC or 240 HVDC<br>• 2400 W Platinum 100—240 VAC or 240 HVDC | Hot swap PSUs with full redundancy<br>• Mixed Mode (MM) AC/HVDC (Platinum) 800 W, 1400 W, 2400 W<br>• Titanium 1100 W Mixed Mode AC/HVDC, (-48 V) 1100 W DC PSU<br>, |

**Table 2. Features comparison (continued)**

| Features | PowerEdge R7625 | PowerEdge R7525 |
|---|---|---|
| | • 1800 W Titanium 200—240 VAC or 240 HVDC<br>• 1400 W Titanium 100—240 VAC or 240 HVDC<br>• 1400 W Platinum 100—240 VAC or 240 HVDC<br>• 1400 W Titanium 277 VAC or 336 HVDC<br>• 1100 W Titanium 100—240 VAC or 240 HVDC<br>• 1100 W LVDC -48 — -60 VDC<br>• 800 W Platinum 100—240 VAC or 240 HVDC | |
| Cooling Options | • Air Cooling<br>• Optional Direct Liquid Cooling (DLC) | • Air Cooling |
| Fans | Up to six High performance Silver / High Performance Gold hot plug fans | Up to six Standard (STD) / High performance (HPR) / Very High Performance (VHP) hot plug fans |
| Dimension | Height: 86.8 mm (3.41 inches) | Height: 86.8 mm (3.41 inches) |
| | Width: 482 mm (18.97 inches) | Width: 482 mm (18.97 inches) |
| | Depth: 772.13 mm (30.39 inches) with bezel | Depth: 772.13 mm (30.39 inches) with bezel |
| | Depth: 758.29 mm (29.85 inches) without bezel | Depth: 758.29 mm (29.85 inches) without bezel |
| Form Factor | 2U rack server | 2U rack server |
| Embedded Management | • iDRAC9<br>• iDRAC Direct<br>• iDRAC RESTful with Redfish<br>• iDRAC Service Manual<br>• Quick Sync 2 wireless module | • iDRAC9<br>• iDRAC Direct<br>• iDRAC Service Module<br>• Quick Sync 2 wireless module |
| Bezel | Optional LCD bezel or security bezel | Optional LCD bezel or security bezel |
| OpenManage Software | • OpenManage Enterprise<br>• OpenManage Power Manager plugin<br>• OpenManage SupportAssist plugin<br>• OpenManage Update Manager plugin<br>• CloudIQ for PowerEdge plug in<br>• OpenManage Enterprise Integration for VMware vCenter<br>• OpenManage Integration for Microsoft System Center<br>• OpenManage Integration with Windows Admin Center | • OpenManage Enterprise<br>• OpenManage Power Center |
| Mobility | OpenManage Mobile | OpenManage Mobile |
| OpenManage Integrations | • BMC TrueSight<br>• Microsoft System Center<br>• OpenManage Integration with ServiceNow<br>• Red Hat Ansible Modules<br>• Terraform Providers<br>• VMware vCenter and vRealize Operations Manager | • BMC TrueSight<br>• Microsoft System Center<br>• Red Hat Ansible Modules<br>• VMware vCenter |
| Security | • Cryptographically signed firmware | • Cryptographically signed firmware<br>• Secure Boot |

**Table 2. Features comparison (continued)**

| Features | PowerEdge R7625 | | PowerEdge R7525 | |
|---|---|---|---|---|
| | • Data at Rest Encryption (SEDs with local or external key mgmt)<br>• Secure Boot<br>• Secure Erase<br>• Secured Component Verification (Hardware integrity check)<br>• Silicon Root of Trust<br>• System Lockdown (requires iDRAC9 Enterprise or Datacenter)<br>• TPM 2.0 FIPS, CC-TCG certified, TPM 2.0 China NationZ<br>• AMD Secure Memory Encryption (SME)<br>• AMD Secure Encrypted Virtualization (SEV) | | • Secure Erase<br>• Silicon Root of Trust<br>• System Lockdown (requires iDRAC9 Enterprise or Datacenter)<br>• TPM 1.2/2.0 (optional), TCM 2.0 optional<br>• AMD Secure Memory Encryption (SME)<br>• AMD Secure Encrypted Virtualization (SEV) | |
| Embedded NIC | 2 x 1GbE LOM card (optional) | | 2 x 1GE LOM | |
| Networking Options | 1 x OCP card 3.0 (optional)<br>**NOTE:** The system allows either LOM card or an OCP card or both to be installed in the system. | | OCP x16 Mezz 3.0 | |
| GPU Options | Up to two double wide 300W, or six single wide 75W accelerators | | Up to three double wide 300W or six single wide 75W accelerators | |
| Ports | Front Ports<br>• 1 x Dedicated iDRAC (micro-USB USB) port<br>• 1 x USB 2.0<br>• 1 x VGA | Rear Ports<br>• 1 x USB 2.0<br>• 1 x iDRAC ethernet port<br>• 1 x USB 3.0<br>• 1 x Serial port (optional)<br>• 1 x VGA (optional for Direct Liquid Cooling configuration) | Front Ports<br>• 1 x Dedicated iDRAC micro-USB<br>• 1 x USB 2.0 | Rear Ports<br>• 1 x USB 2.0<br>• 1 x iDRAC Direct/ ethernet port<br>• 1 x USB 3.0<br>• 1 x Serial port (optioanl)<br>• 1 x VGA |
| | Internal Port: 1 x USB 3.0 | | Internal Port: 1 x USB 3.0 | |
| PCIe | Up to eight PCIe slots<br>• 4 x PCIe Gen5 slots<br>• 8 x PCIe Gen4 slots | | 8 x PCIe Gen4 slots | |
| Operating System and Hypervisors | • Canonical Ubuntu Server LTS<br>• Microsoft Windows Server with Hyper-V<br>• Red Hat Enterprise Linux<br>• SUSE Linux Enterprise Server<br>• VMware ESXi<br>For specifications and interoperability details, see Dell Enterprise Operating Systems on Servers, Storage, and Networking page at Dell.com/OSsupport. | | • Canonical Ubuntu Server LTS<br>• Citrix Hypervisor<br>• Windows Server LTSC with Hyper-V<br>• Red Hat Enterprise Linux<br>• SUSE Linux Enterprise Server<br>• VMware ESXi<br>For specifications and interoperability details, see Dell Enterprise Operating Systems on Servers, Storage, and Networking page at Dell.com/OSsupport. | |

# 3

# Chassis views and features

**Topics:**

- Chassis views

## Chassis views

### Front view of the system

**Figure 1. Front view of 24 x 2.5-inch drive system**

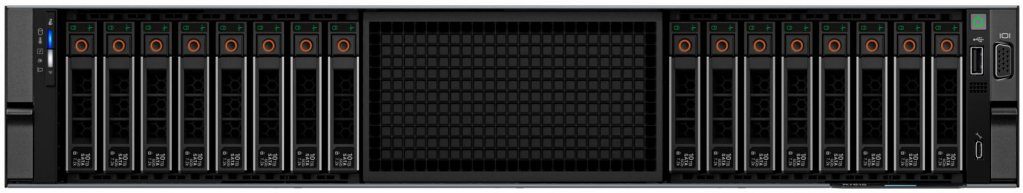

**Figure 2. Front view of 16 x 2.5-inch drive system**

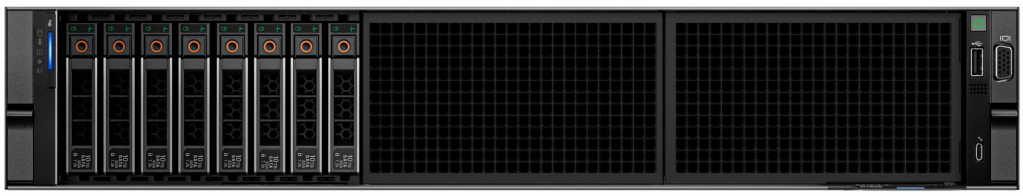

**Figure 3. Front view of 8 x 2.5-inch drive system**

Figure 4. Front view of 12 x 3.5-inch drive system

Figure 5. Front view of 8 x 3.5-inch drive system

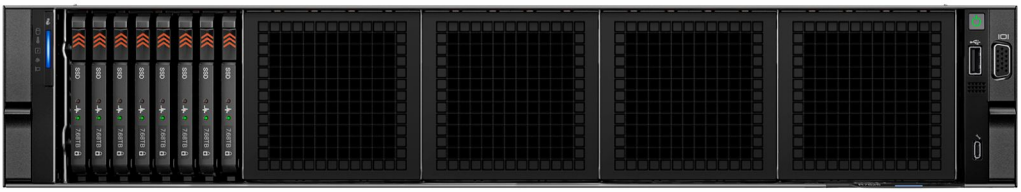

Figure 6. Front view of 8 x E3.S drive system

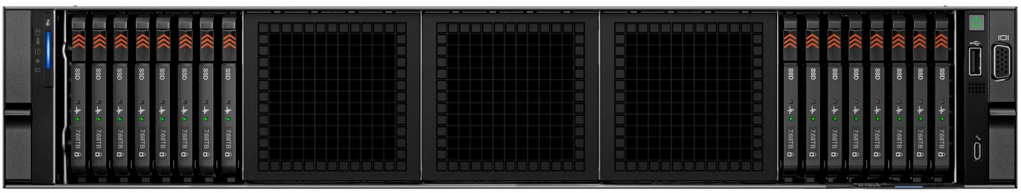

Figure 7. Front view of 16 x E3.S drive system

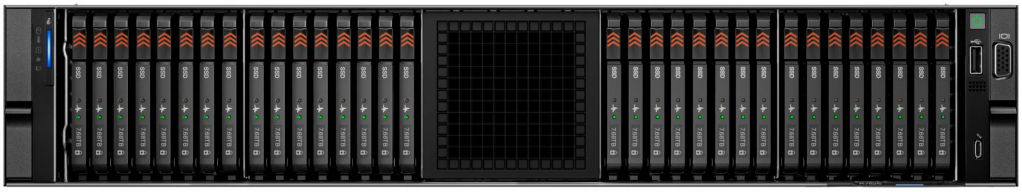

Figure 8. Front view of 32 x E3.S drive system

# Rear view of the system

Figure 9. Rear view of the system

Figure 10. Rear view of the system with 2 x 2.5-inch rear drive module

Figure 11. Rear view of the system with 4 x 2.5-inch rear drive module

Figure 12. Rear view of the system with 4 x EDSFF E3.S rear drive module

# Inside the system

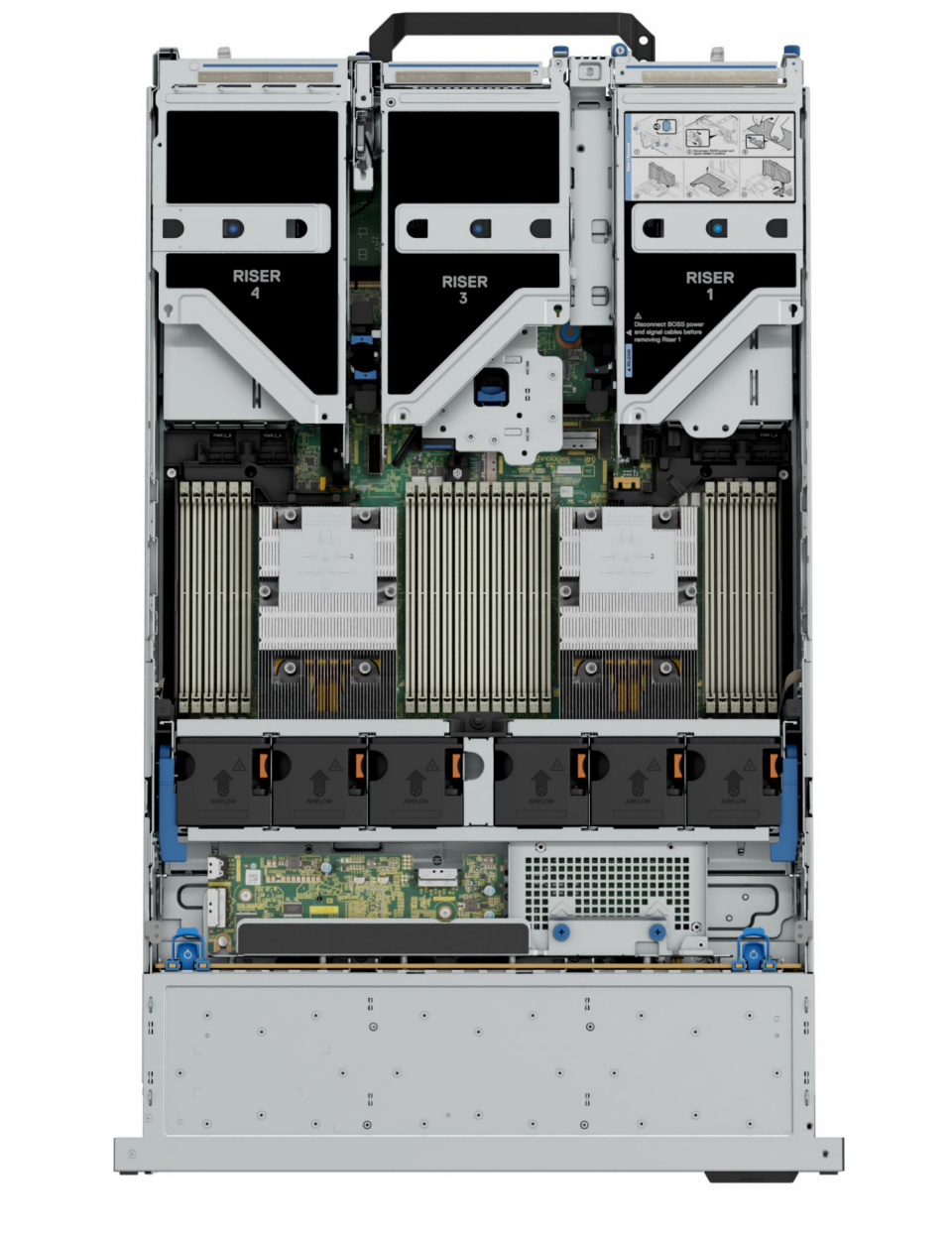


**Figure 13. Inside the system**

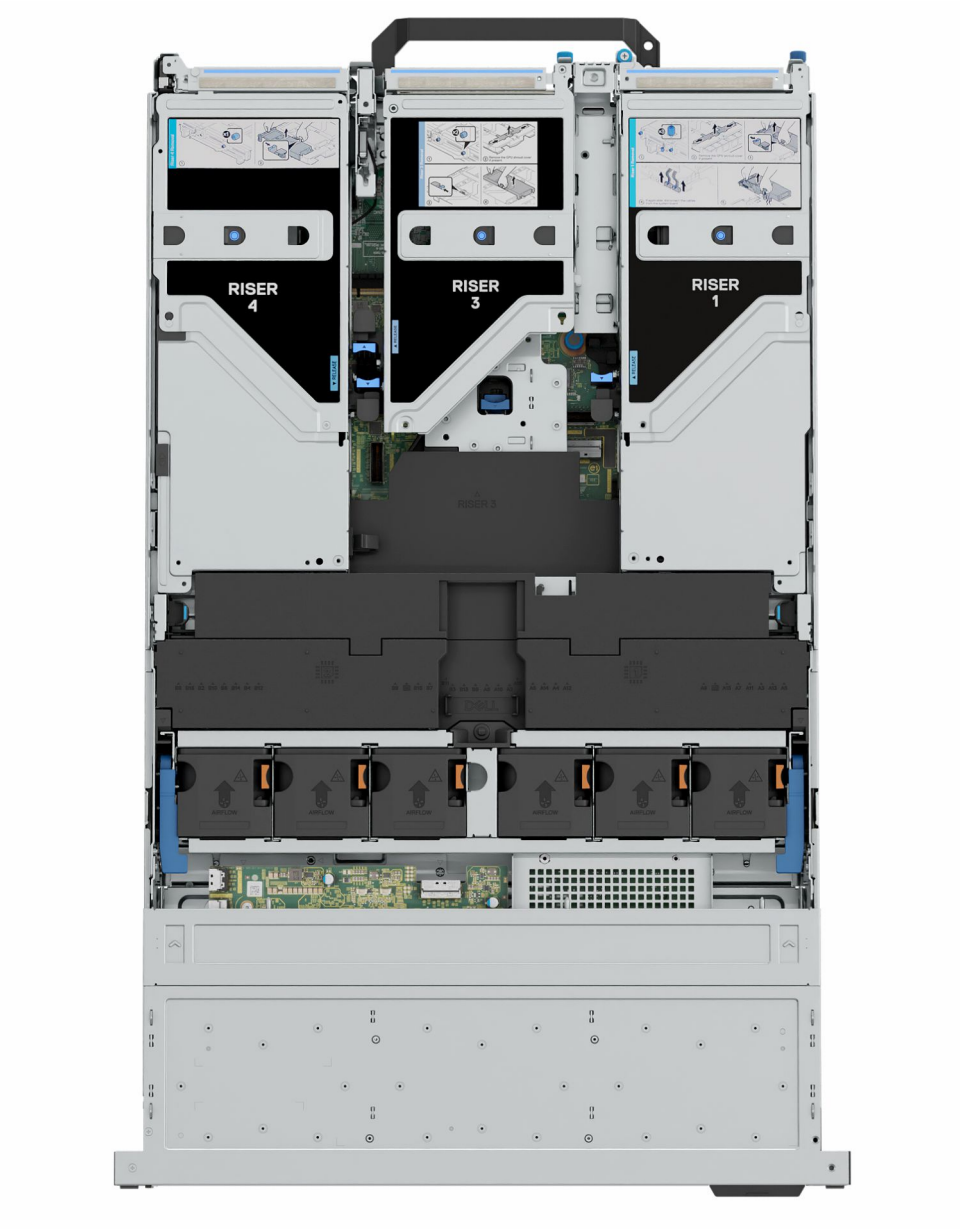


**Figure 14. Inside the system with full length risers and GPU shroud**

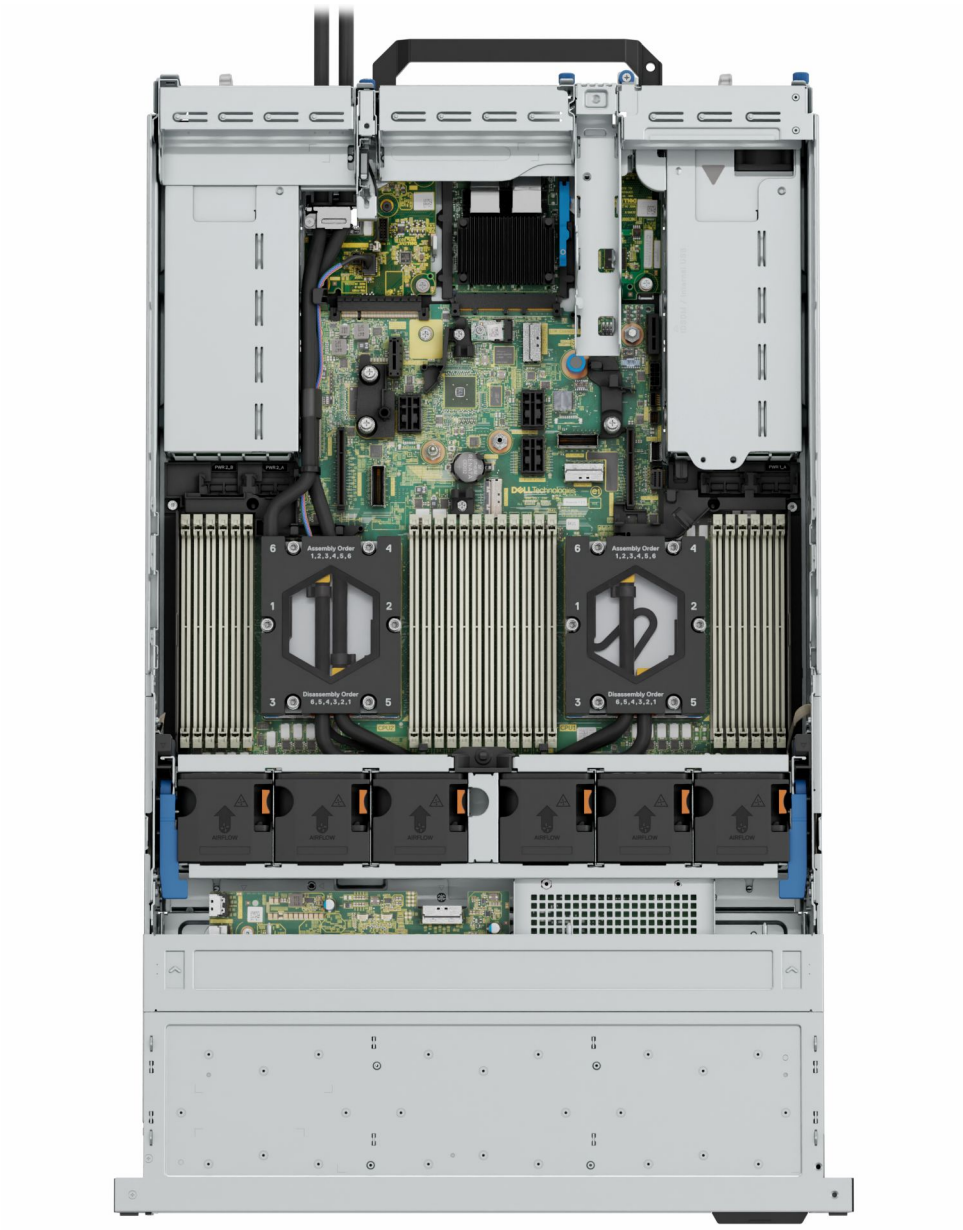

**Figure 15. Inside the system with processor liquid cooling module**

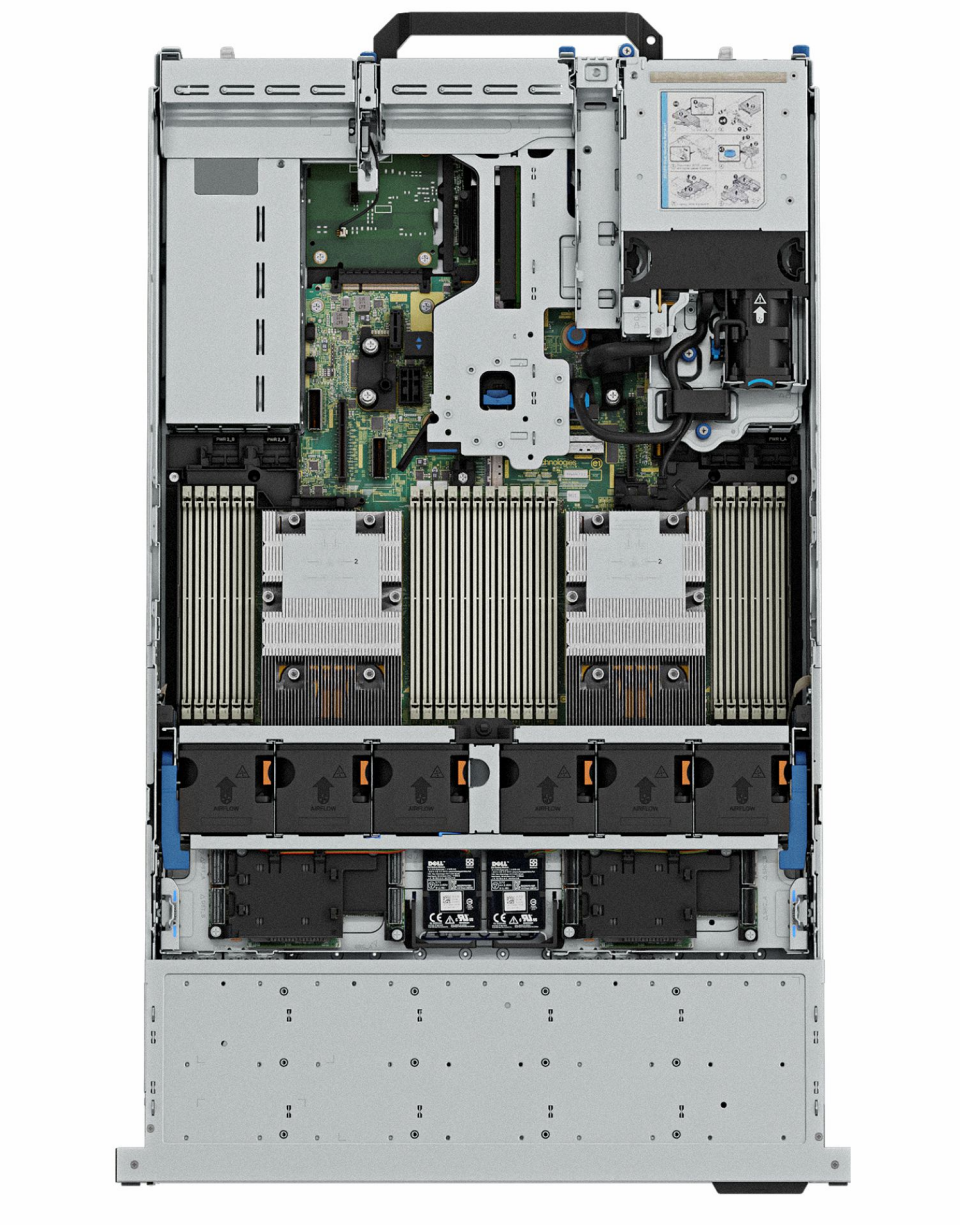

**Figure 16. Inside the system with risers 4 x EDSFF E3.S**

# 4

# Processor

**Topics:**

- Processor features

## Processor features

The AMD EPYC™9004 Series Processor ("Genoa") is the 4th Generation AMD EPYC™ System on a chip (SOC) supporting the modern data center. The AMD EPYC™ 9004 Series Processor is based on AMD's SP5 compatible socket infrastructure with a new BIOS. AMD EPYC™9004 Series Processor is not drop-in compatible to AMD's SP3 socket infrastructure for EPYC™ Series 7002 ("Rome") and 7003 ("Milan") Processors. Based on AMD's "Zen4" and "Zen4c" cores, integrated I/O controllers, up to 32 MB of L3 cache per core, advanced security, and synchronized fabric and memory clock speeds, "Genoa" is designed for improved performance, lower TCO, and faster time to results with next gen technologies.

The following lists the features and functions included in the AMD Genoa offering:

- Supports up to 128 AMD Zen4c cores, 96 AMD Zen4 x86 cores with enhance performance with 32 MB L3 cache/core. Integrated I/O support for up to 128 lanes with PCI Express 5 on Dell platforms (AMD support up to 160 I/O lanes with 2P).
- Enhanced Memory Performance with support up to 4800 MT/s DIMMs (1 DPC), 3DS RDIMM support. Enhanced Memory Performance with: Infinity Fabric™ and Memory Clock Synchronized. Largest Available x86 L3 Cache –Up to 32 MB / core.
- Memory Capacity up to 12 channels DDR5 and up to 256 GB/channel support with 2, 4, 6, 8, 10 and 12 channel performance optimization options.
- Enhanced physical and virtual security with AMD Infinity Guard that includes silicon embedded security and virtual features (Secure Memory Encryption and Secure Encrypted Virtualization-Secure Nested Paging (SEV-SNP) to further improve platform and data security capabilities.

## Supported processors

### Table 3. Supported processor for the PowerEdge R7625

| Processor model number | Base frequency in GHz | Cores/ Threads | Default TDP in W | cTDP in W | L3 Cache in MB | Max DDR frequency (1 DPC) MT/s |
|---|---|---|---|---|---|---|
| 9754 | 2.25 | 128/256 | 360 | 360 - 400 | 256 | 4800 |
| 9734 | 2.20 | 112/224 | 340 | 340 - 400 | 256 | 4800 |
| 9684X | 2.20 | 96/192 | 400 | 320 - 400 | 1152 | 4800 |
| 9654 | 2.40 | 96/192 | 360 | 320 - 400 | 384 | 4800 |
| 9634 | 2.25 | 84/168 | 290 | 240 - 300 | 384 | 4800 |

**Table 3. Supported processor for the PowerEdge R7625 (continued)**

| Processor model number | Base frequency in GHz | Cores/ Threads | Default TDP in W | cTDP in W | L3 Cache in MB | Max DDR frequency (1 DPC) MT/s |
|---|---|---|---|---|---|---|
| 9554 | 3.10 | 64/128 | 360 | 320 - 400 | 256 | 4800 |
| 9534 | 2.45 | 64/128 | 280 | 240 - 300 | 256 | 4800 |
| 9454 | 2.75 | 48/96 | 290 | 240 - 300 | 256 | 4800 |
| 9384X | 3.1 | 32/64 | 320 | 320 - 400 | 768 | 4800 |
| 9354 | 3.25 | 32/64 | 280 | 240 - 300 | 256 | 4800 |
| 9334 | 2.70 | 32/64 | 210 | 200 - 240 | 128 | 4800 |
| 9254 | 2.90 | 24/48 | 200 | 200 - 240 | 128 | 4800 |
| 9224 | 2.50 | 24/48 | 200 | 200 - 240 | 64 | 4800 |
| 9124 | 3.00 | 16/32 | 200 | 200 - 240 | 64 | 4800 |
| 9474F | 3.60 | 48/96 | 360 | 360 - 320 | 256 | 4800 |
| 9374F | 3.85 | 32/64 | 320 | 320 - 320 | 256 | 4800 |
| 9274F | 4.05 | 24/48 | 320 | 320 - 320 | 256 | 4800 |
| 9184X | 3.55 | 16/32 | 320 | 320 - 400 | 768 | 4800 |
| 9174F | 4.10 | 16/32 | 320 | 320 - 320 | 256 | 4800 |

**NOTE:** The processors are 12 channel and has a maximum frequency of 4800 MT/s (1DPC).

# 5

# Memory subsystem

**Topics:**

- Supported memory

## Supported memory

The R7625 supports up to 24 DIMMs (12 per socket), with up to 6 TB of memory and speeds of up to 4800 MT/s.

The R7625 support 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 4. Memory technology comparison**

| Feature | PowerEdge R7625 (DDR5) |
|---|---|
| DIMM type | RDIMM |
| Transfer speed | 4800 MT/s (1DPC) |
| Voltage | 1.1 V |

**Table 5. Supported DIMMs**

| DIMM PN | DIMM Speed (MT/s) | DIMM Type | DIMM Capacity (GB) | Ranks per DIMM | Data Width | DIMM Volts (V) |
|---|---|---|---|---|---|---|
| 1V1N1 | 4800 | DDR5 RDIMM | 16 | 1 | x8 | 1.1 |
| W08W9 | 4800 | DDR5 RDIMM | 32 | 2 | x8 | 1.1 |
| J52K5 | 4800 | DDR5 RDIMM | 64 | 2 | x4 | 1.1 |
| FFX9N | 4800 | DDR5 RDIMM | 96 | 2 | x4 | 1.1 |
| MMWR9 | 4800 | DDR5 RDIMM | 128 | 4 | x4 | 1.1 |
| PCFCR | 4800 | DDR5 RDIMM | 256 | 8 | x4 | 1.1 |
| 5DR48 | 5600 | DDR5 RDIMM | 16 | 1 | x8 | 1.1 |
| P8XPW | 5600 | DDR5 RDIMM | 32 | 2 | x8 | 1.1 |
| 58F8N | 5600 | DDR5 RDIMM | 64 | 2 | x4 | 1.1 |

# 6

# Storage

**Topics:**



## Storage controllers

Dell's RAID controller options offer performance improvements, including the fPERC solution. fPERC provides a base RAID HW controller without consuming a PCIe slot by using a small form factor and high-density connector to the base planar. 16G PERC Controller offerings are a heavy leverage of the 15G PERC family. The Value and Value Performance levels carry over to 16G from 15G. New to 16G, is the Harpoon-based Premium Performance tier offering. This high-end offering drives IOPs performance and enhanced SSD performance.

**NOTE:** The size of the RAID 1 drives must be less than that of the second RAID container.

**Table 6. PERC Series controller offerings**

| Performance Level | Controller and Description |
|---|---|
| Entry | S160 |
| Value | H355, HBA355 (internal/external), HBA465 (internal/external) |
| Premium Performance | H755, H755N, H965 (internal/external) |

**NOTE:** For more information about the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card, and on deploying the cards, see the storage controller documentation at Storage Controller Manuals.

## Supported Drives

The table that is shown below lists the internal drives that are supported by the R7625.

**Table 7. Supported Drives**

| Form Factor | Type | Speed | Rotational Speed | Capacities |
|---|---|---|---|---|
| 2.5 inches | SAS | 12 Gb | 7.2 K | 2 TB, 4 TB, 8 TB, 12 TB, 16 TB, 20 TB |
| 2.5 inches | SAS | 12 Gb | 10 K | 600 GB, 1.2 TB, 2.4 TB |
| 3.5 inches | SATA | 6 Gb | 7.2 K | 2 TB, 4 TB, 8 TB, 12 TB, 16 TB, 20 TB |
| 2.5 inches | vSAS SSD | 12 Gb | N/A | 960 GB, 1.92 TB, 3.84 TB, 7.68 TB |
| 2.5 inches | SAS SSD | 24 Gb | N/A | 800 GB, 960 GB, 1.6 TB, 1.92 TB, 3.84 TB, 7.68 TB |
| 2.5 inches | SATA SSD | 6 Gb | N/A | 480 GB, 960 GB, 1.92 TB, 3.84 TB |
| 2.5 inches | NVMe SSD | Gen4 | N/A | 400 GB, 800 GB, 1.6 TB, 1.92 TB, 3.2 TB, 3.84 TB, 6.4 TB, 7.68 TB, 15.36 TB |

**Table 7. Supported Drives (continued)**

| Form Factor | Type | Speed | Rotational Speed | Capacities |
|---|---|---|---|---|
| 2.5 inches | DC NVMe SSD | Gen4 | N/A | 960 GB, 3.84 TB |
| EDSFF E3.S | NVMe | Gen5 | SSD | 3.84 TB, 7.68 TB |

# Internal storage configuration

**Table 8. Internal Storage Configuration Matrix**

| Total HDD/ SSD (not BOSS) | NVMe Enabled / Universal Slots | 16G Storage Front | Rear Storage | PERC Qty | Storage Controller(s) | Controller Form Factor |
|---|---|---|---|---|---|---|
| 0* | 0 / 0 | N/A | N/A | 0 | N/A | N/A |
| 8 | 0 / 0 | 8x 3.5" SAS3/SATA | N/A | 1 | HBA355iF/H355F | Front PERC |
| 12 | 0 / 0 | 12x 3.5" SAS3/SATA | N/A | 1 | HBA355i / H355 / H755 | PERC Adapter |
| 14 | 0 / 0 | 12x 3.5" SAS3/SATA | Rear 2x2.5" univ SAS4 | 1 | HBA355i / H355 / H755 | PERC Adapter |
| 14 | 0 / 0 | 12x 3.5" SAS3/SATA | Rear 2x2.5" univ SAS4 | 1 | H965i | PERC Adapter |
| 16 | 0 / 0 | 12x 3.5" SAS3/SATA | Rear 4x2.5" univ SAS4 | 1 | HBA355i / H355 / H755 | PERC Adapter |
| 16 | 0 / 0 | 12x 3.5" SAS3/SATA | Rear 4x2.5" univ SAS4 | 1 | H965i | PERC Adapter |
| 12 | 0 / 0 | 12x 3.5" SAS3/SATA | N/A | 1 | HBA355 | PERC Adapter |
| 16 | 0 / 0 | 12x 3.5" SAS3/SATA | 4x Rear E3 G5x4 | 1 | HBA355i/HBA355/ H755/S160 | PERC Adapter |
| 8 | 8 / 0 | 8x U.2 G4 | N/A | 0 | S160 _NVMe | N/A |
| 8 | 8 / 0 | 8x U.2 G4 | N/A | 1 | H755N F | Front PERC |
| 8 | 8 / 0 | 8x U.2 G4 | N/A | 1 | H965i F | Front PERC |
| 8 | 0 / 8 | 8x 2.5" Universal | N/A | 1 | HBA355i F/H355 F/ H755 F/S160 | Front PERC |
| 16 | 0 / 0 | 16x 2.5" SAS4/SATA | N/A | 1 | HBA355i F/H355 F/ H755 F | Front PERC |
| 16 | 0 / 0 | 16x 2.5" SAS4/SATA | N/A | 1 | H965i F | Front PERC |
| 16 | 16 / 0 | 16x U.2 G4 | N/A | 0 | S160 | N/A |
| 16 | 16 / 0 | 16x U.2 G4 | N/A | 2 | H755N F | Front PERC |
| 16 | 16 / 0 | 16x U.2 G4 | N/A | 2 | H965i F | Front PERC |
| 24 | 8 / 0 | 16x 2.5" SAS4/SATA + 8x U.2 G4 | N/A | 1 | HBA355i F/H355 F/ H755 F/S160 | Front PERC |
| 24 | 8 / 0 | 16x 2.5" SAS4/SATA + 8x U.2 G4 | N/A | 1 | H965i Adpt/S160 | PERC Adapter |
| 24 | 0 / 0 | 24x 2.5" SAS4/SATA | N/A | 1 | HBA355i F/H355 F/ H755 F | Front PERC |

**Table 8. Internal Storage Configuration Matrix (continued)**

| Total HDD/ SSD (not BOSS) | NVMe Enabled / Universal Slots | 16G Storage Front | Rear Storage | PERC Qty | Storage Controller(s) | Controller Form Factor |
|---|---|---|---|---|---|---|
| 24 | 0 / 0 | 24x 2.5" SAS4/SATA | N/A | 1 | H965i F | Front PERC |
| 24 | 0 / 8 | 24x 2.5" SAS4/SATA | N/A | 1 | HBA355i F/H355 F/ H755 F | Front PERC |
| 24 | 0 / 6 | 24x 2.5" SAS4/SATA | N/A | 1 | H965i F | Front PERC |
| 26 | 0 / 0 | 24x 2.5" SAS4/SATA | Rear 2x2.5" univ SAS4 | 1 | HBA355i F/H355 F/ H755 F | Front PERC |
| 26 | 0 / 0 | 24x 2.5" SAS4/SATA | Rear 2x2.5" univ SAS4 | 1 | H965i F | Front PERC |
| 26 | 2 / 0 | 24x 2.5" SAS4/SATA | Rear 2x2.5" univ SAS4 | 1 | HBA355i F/H355 F/ H755 F | Front PERC |
| 26 | 2 / 0 | 24x 2.5" SAS4/SATA | Rear 2x2.5" univ SAS4 | 1 | H965i F | Front PERC |
| 28 | 0 / 0 | 24x 2.5" SAS4/SATA | Rear 4x2.5" univ SAS4 | 1 | HBA355i F/H355 F/ H755 F | Front PERC |
| 28 | 0 / 0 | 24x 2.5" SAS4/SATA | Rear 4x2.5" univ SAS4 | 1 | H965i F | Front PERC |
| 28 | 4 / 0 | 24x 2.5" SAS4/SATA | Rear 4x2.5" univ SAS4 | 1 | HBA355i F/H355 F/ H755 F/S160 | Front PERC |
| 28 | 4 / 0 | 24x 2.5" SAS4/SATA | Rear 4x2.5" univ SAS4 | 1 | H965i F/S160 | Front PERC |
| 24 | 24 / 0 | 24x U.2 G5 Switched | N/A | 0 | S160 | N/A |
| 24 | 24 / 0 | 24x U.2 G5 Switched | N/A | 2 | H965i F | Front PERC |
| 16 | 16 / 0 | 16x E3.S G4 Ortho | N/A | 2 | H755N F | Front PERC |
| 16 | 16 / 0 | 16x E3.S G4 Ortho | N/A | 2 | H965i F | Front PERC |
| 32 | 32 / 0 | 32x E3.S G5 Ortho | N/A | 0 | S160 | N/A |
| 36 | 36 / 0 | 32x E3.S G5 Ortho | 4x E3 G5 Rear Ortho | 0 | S160 | N/A |
| 8 | 8 / 0 | 8x E3.S G5 Ortho | N/A | 0 | S160 | N/A |
| 16 | 16 / 0 | 16x E3.S G5 Ortho | N/A | 0 | S160 | N/A |
| 20 | 20 / 0 | 16xE3.S (NVMe G5) +4x SCM E3.S 2T | N/A | 0 | S160 | N/A |

**NOTE:** *BOSS/IDSDM Mandatory: All other configurations support optional BOSS/IDSDM.

# External Storage

The R7625 support the external storage device types listed in the table below.

**Table 9. Support for External Storage Devices**

| Device Type | Description |
|---|---|
| External Tape | Supports connection to external USB tape products |

**Table 9. Support for External Storage Devices (continued)**

| Device Type | Description |
|---|---|
| NAS/IDM appliance software | Supports NAS software stack |
| JBOD | Supports connection to ME5 series JBODs |

# 7

# Networking

**Topics:**



## Overview

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

## OCP 3.0 support

**Table 10. OCP 3.0 feature list**

| Feature | OCP 3.0 |
|---|---|
| Form factor | SFF |
| PCIe Gen | Gen4 |
| Max PCIe width | x8, x16 (with OCP cable) |
| Max no.of ports | 4 |
| Port type | BT/SPF/SFP+/SFP28/SFP56/Q56 |
| Max port speed | 25 GbE, 100 GbE (with OCP cable) |
| NC-SI | Yes |
| SNAPI | No |
| WoL | Yes |
| Power consumption | 15-35 W |

## Supported OCP cards

**Table 11. Supported OCP cards**

| Form Factor | DPN | Vendor | Port type | Max Port speed | Port Count | Max PCIe width |
|---|---|---|---|---|---|---|
| OCP 3.0 | 2VY37 | Broadcom | Q56 | 100 GbE | 2 | x16 |
| | FD63G | Mellanox | SFP56 | 100 GbE | 2 | x16 |
| | DN78C | Mellanox | SFP28 | 25 GbE | 2 | x16 |
| | 3Y64D | Broadcom | SFP28 | 25 GbE | 4 | x16 |
| | 24FG6 | Broadcom | SFP28 | 25 GbE | 2 | x8 |
| | PWH3C | Intel | SFP28 | 25 GbE | 2 | x8 |

### Table 11. Supported OCP cards (continued)

| Form Factor | DPN | Vendor | Port type | Max Port speed | Port Count | Max PCIe width |
|---|---|---|---|---|---|---|
| | Y4VV5 | Intel | SFP28 | 25 GbE | 4 | x16 |
| | W5HC8 | Broadcom | BT | 10 GbE | 4 | x16 |
| | F6X1R | Intel | BT | 10 GbE | 2 | x8 |
| | RN1M5 | Broadcom | BT | 10 GbE | 2 | x8 |
| | G9XC9 | Broadcom | BT | 1 GbE | 4 | x8 |
| | D1C51 | Intel | BT | 1 GbE | 4 | x4 |
| | HY4CV | Intel | BT | 1 GbE | 4 | x4 |
| | VJWVJ | Broadcom | BT | 1 GbE | 4 | x4 |

## OCP NIC 3.0 vs. rack Network Daughter Card comparisons

### Table 12. OCP 3.0, 2.0, and rNDC NIC comparison

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

# 8

# PCIe subsystem

**Topics:**

- PCIe risers

## PCIe risers

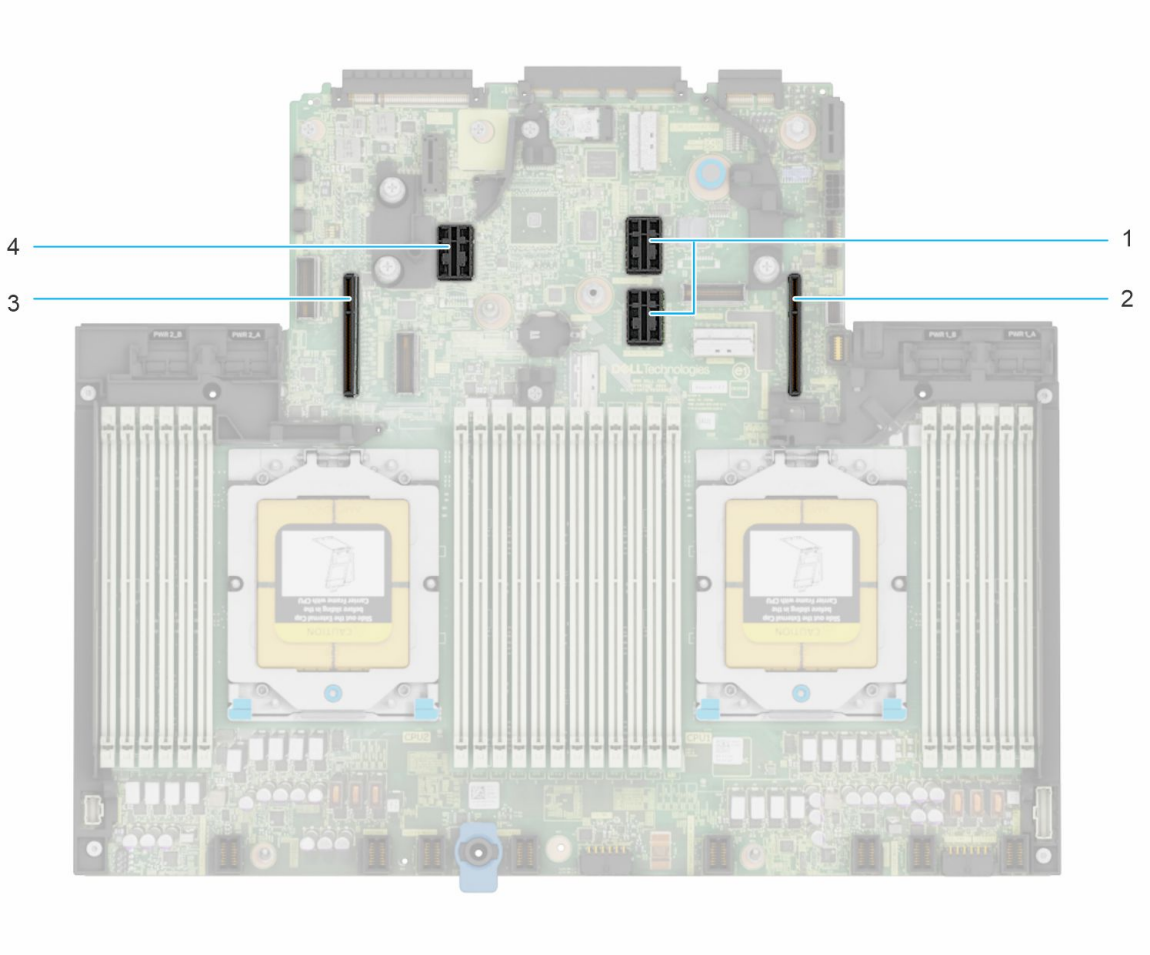


**Figure 17. Expansion card riser slot connectors**

1. Riser 2
2. Riser 1
3. Riser 4
4. Riser 3

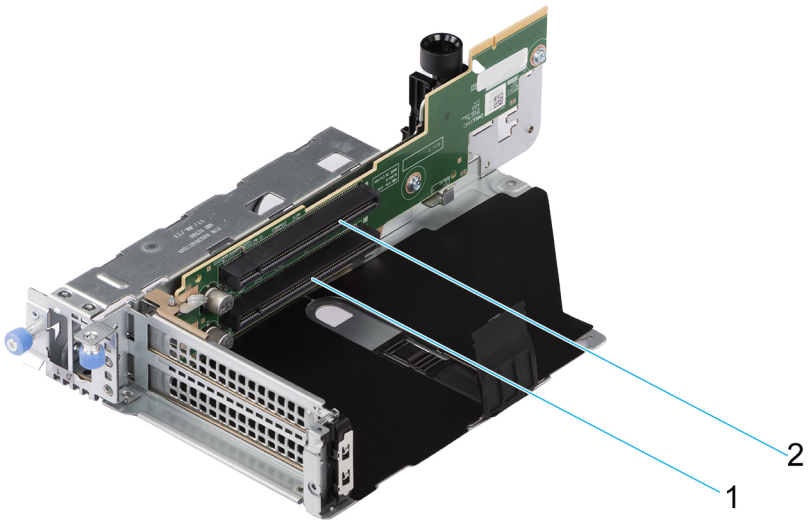


**Figure 18. Riser 1B**

1. Slot 1
2. Slot 2

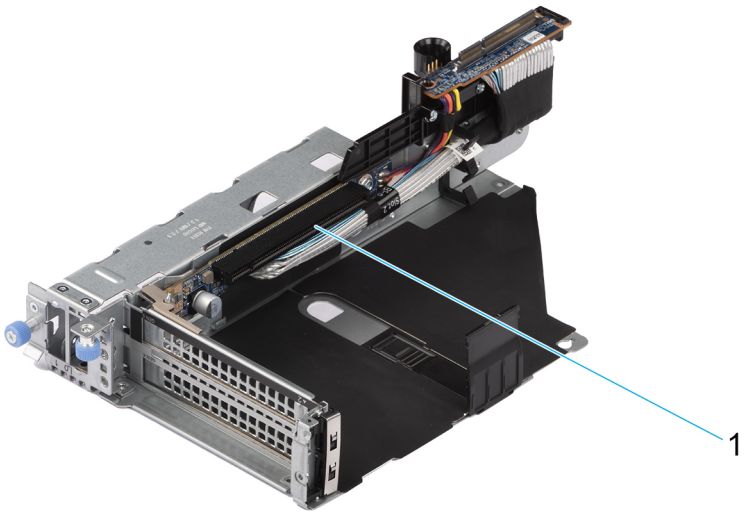


**Figure 19. Riser 1P HL**

1. Slot 2

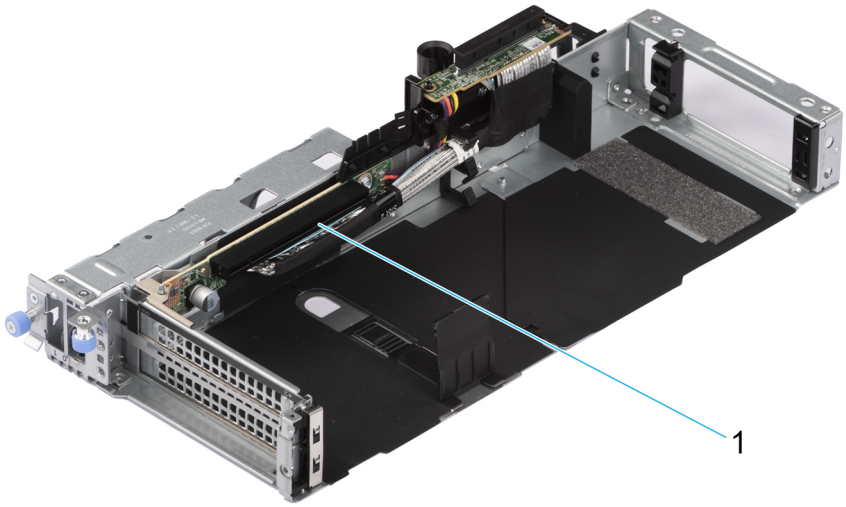


**Figure 20. Riser 1P FL**

1. Slot 2

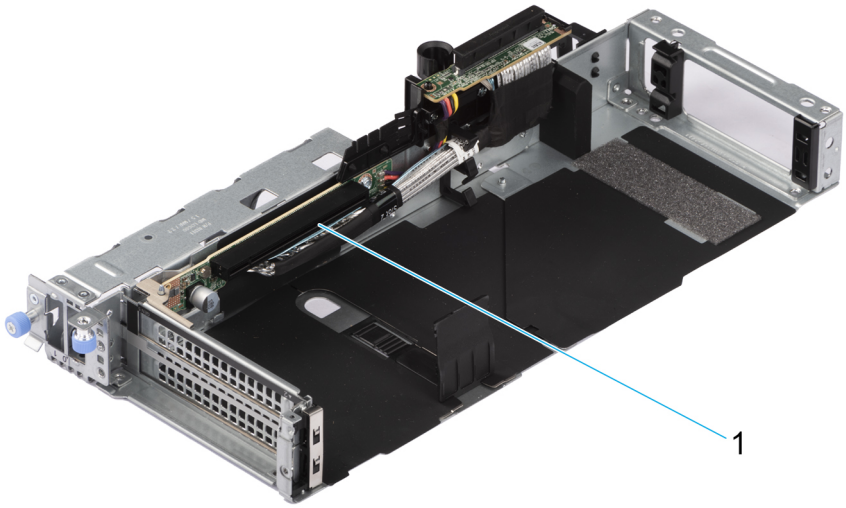


**Figure 21. Riser 1Q**

1. Slot 2

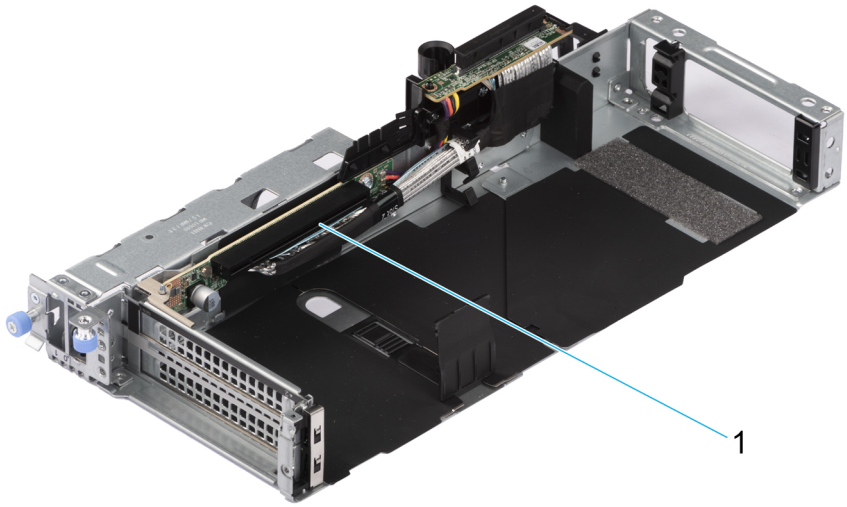


**Figure 22. Riser 1S FL**

1. Slot 2

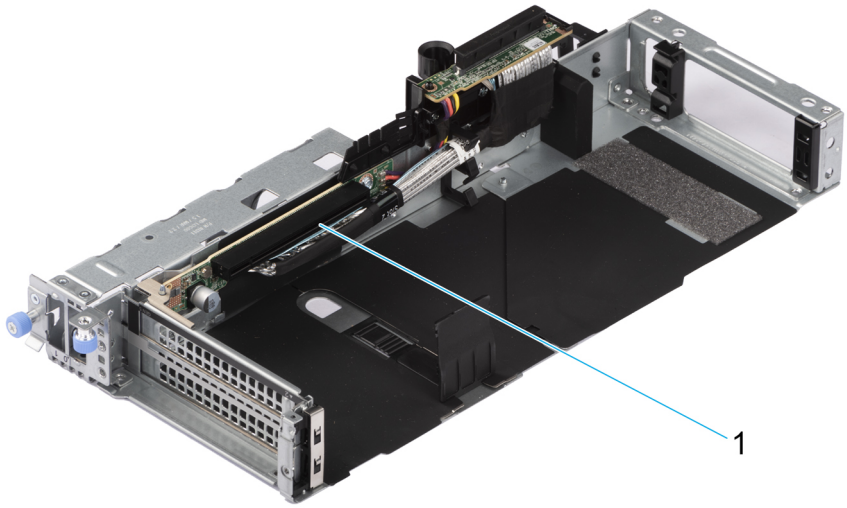


**Figure 23. Riser 1S HL**

1. Slot 2

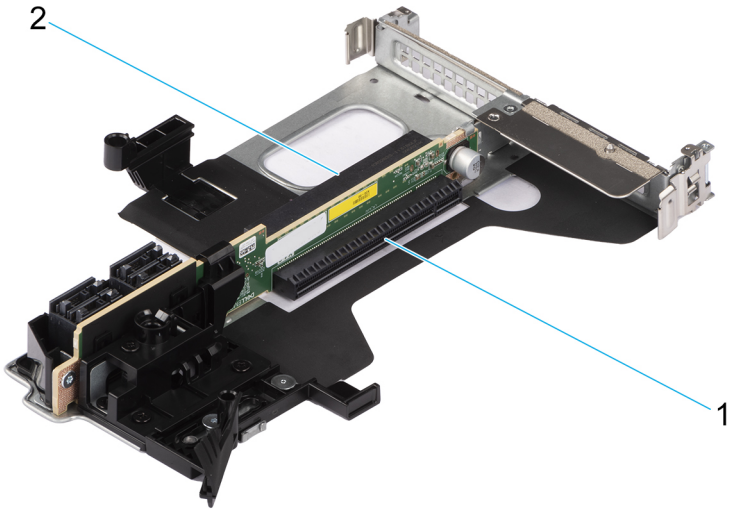


**Figure 24. Riser 2A**

1. Slot 6
2. Slot 3

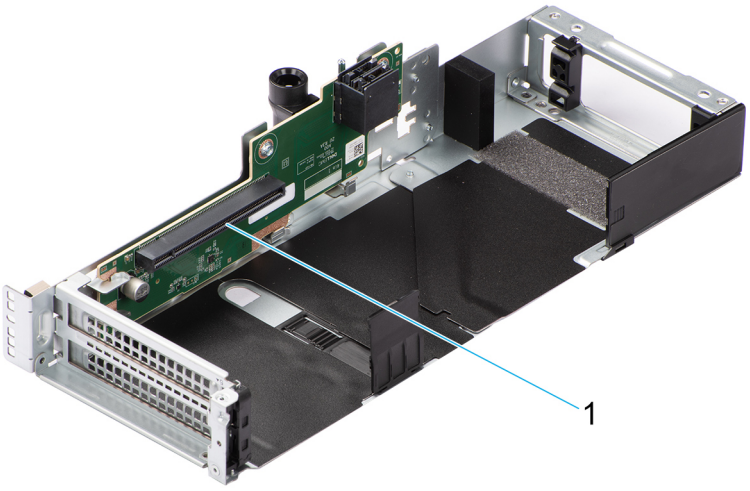


**Figure 25. Riser 3A FL**

1. Slot 5

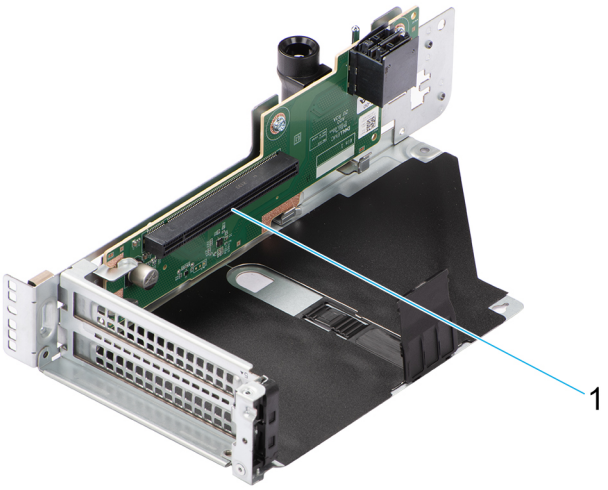


**Figure 26. Riser 3A HL**

1. Slot 5

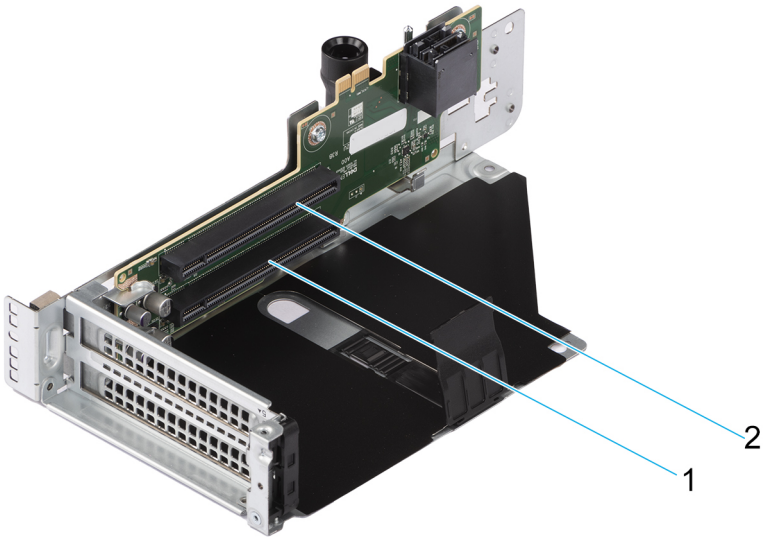


**Figure 27. Riser 3B**

1. Slot 4
2. Slot 5

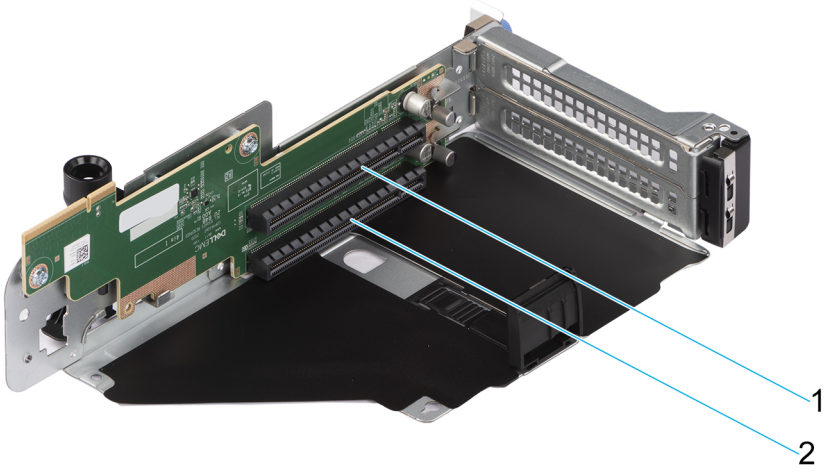


**Figure 28. Riser 4B**

1. Slot 8
2. Slot 7

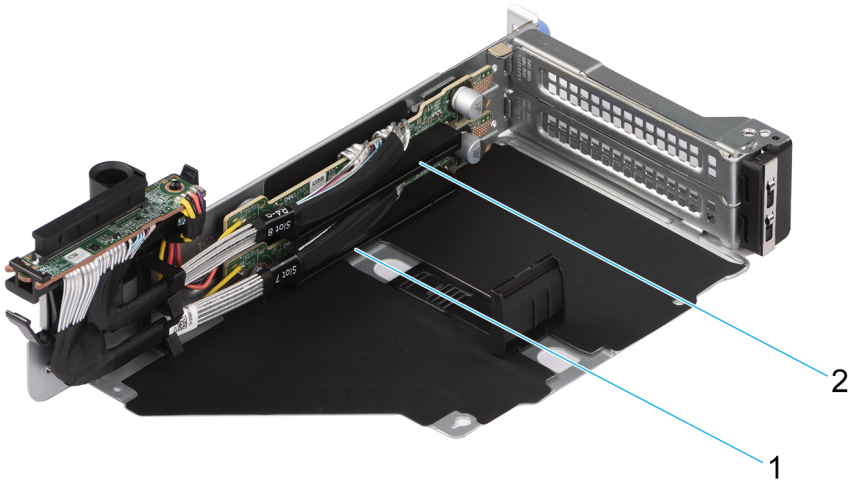


**Figure 29. Riser 4Q**

1. Slot 7
2. Slot 8

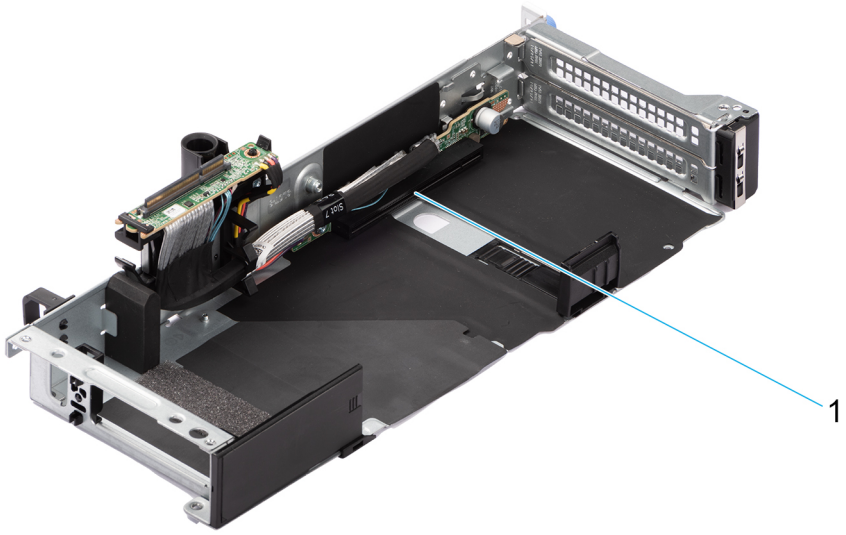


**Figure 30. Riser 4P FL**

1. Slot 7

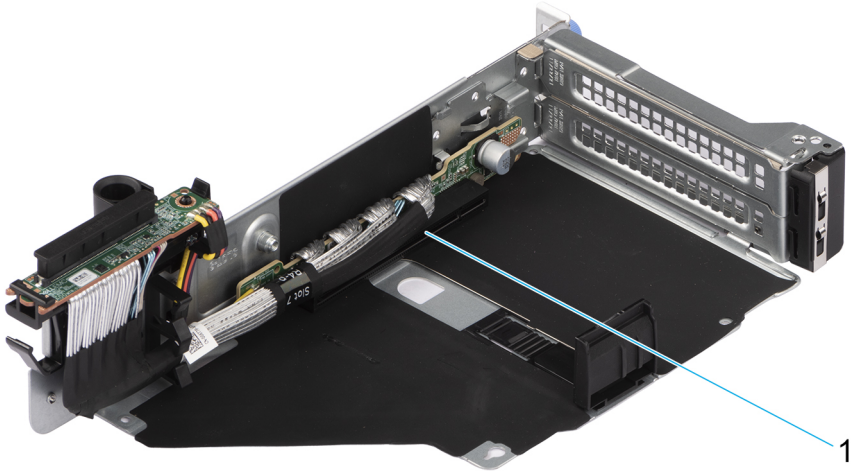


**Figure 31. Riser 4P HL**

1. Slot 7

## Table 13. PCIe Riser Configs

| Config # | RSR Configuration | # of CPUs | PERC type supported | Rear Storage Possible | x8 CPU 1 | x16 CPU 1 | x8 CPU 2 | x16 CPU 2 |
|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 2 | Front PERC | No | 0 | 0 | 0 | 0 |
| 1 | R1B + R4B | 2 | Front PERC | No | 2 | 0 | 2 | 0 |
| 2 | R1B + R2A + R3B + R4B | 2 | Front PERC / Adaptor PERC | No | 2 | 1 | 4 | 1 |
| 3 | R1Q + R2A + R3B + R4Q | 2 | Front PERC / Adaptor PERC | No | 2 | 1 | 4 | 1 |
| 4 | R1P + R2A + R3B + R4P | 2 | Front PERC / Adaptor PERC | No | 0 | 2 | 2 | 2 |
| 5 | R1S + R2A + R3A +R4P | 2 | Front PERC | No | 0 | 3 | 0 | 3 |

**Table 13. PCIe Riser Configs (continued)**

| Config # | RSR Configuration | # of CPUs | PERC type supported | Rear Storage Possible | x8 CPU 1 | x16 CPU 1 | x8 CPU 2 | x16 CPU 2 |
|---|---|---|---|---|---|---|---|---|
| 6 | R2A + R4Q | 2 | Front PERC / Adaptor PERC | Yes | 0 | 1 | 2 | 1 |
| 7 | R1Q + R2A + R4Q | 2 | Front PERC / Adaptor PERC | Yes | 2 | 1 | 2 | 1 |
| 8 | U.2 R1 Paddle card + R2A + R3B + R4D Paddle card | 2 | No | No | 0 | 2 | 2 | 2 |
| 9 | R1B + R2A | 1 | Front PERC / Adaptor PERC | No | 2 | 1 | 0 | 0 |
| 10 | R2A + R3B | 2 | Front PERC / Adaptor PERC | Yes | 0 | 1 | 2 | 1 |
| 11 | R1-E3 Paddle card + R2A + R3B + 2U R4-E3 Paddle card | 2 | No | Yes | 0 | 2 | 2 | 2 |
| 12 | R1-E3X4 Paddle card+R2A+R3B +R4-E3 Paddle card | 2 | No | No | 0 | 2 | 2 | 2 |
| 13 | R1-E3 Paddle card+R2A+R3B +R4-SCMX4 Paddle card | 2 | No | No | 0 | 2 | 2 | 2 |
| 14 | R2a+R3a+R1_ R4 Paddle card | 2 | No | No | 0 | 1 | 0 | 2 |
| 15 | R2a+R3a+E3 R1_R4 Paddle Card | 2 | No | No | 0 | 1 | 0 | 2 |

# 9

# Power, thermal, and acoustics

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

**Topics:**



## Power

**Table 14. 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 Enterprise Infrastructure Planning Tool. |
| 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:<br>● Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5%.<br>● More accurate reporting of power<br>● Better performance under a power cap |
| Power capping | Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage AMD's GUARDMI for circuit-breaker fast capping. |
| Systems Management | iDRAC Enterprise and Datacenter provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level.<br>Dell OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies. |
| Active power management | AMD's GUARDMI is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of AMD's GUARDMI accessed through Dell iDRAC9 Datacenter and OpenManage Power Center that allows policy-based management of power and thermal at the individual server, rack, and data center level. Hot spare reduces power consumption of redundant power supplies. Thermal control off a speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption.<br>Idle power enables Dell servers to run as efficiently when idle as when at full workload. |
| Fresh Air cooling | See ASHRAE A3/A4 Thermal Restriction. |

**Table 14. Power tools and technologies (continued)**

| Feature | Description |
|---|---|
| Rack infrastructure | Dell offers some of the industry's highest-efficiency power infrastructure solutions, including:<br>• Power distribution units (PDUs)<br>• Uninterruptible power supplies (UPSs)<br>• Energy Smart containment rack enclosures<br>Find additional information at: Data Center Power and Cooling Solutions. |

# Power Supply Units

Energy Smart power supplies have intelligent features, such as the ability to dynamically optimize efficiency while maintaining availability and redundancy. Also featured are enhanced power-consumption reduction technologies, such as high efficiency power conversion and advanced thermal-management techniques, and embedded power-management features, including high-accuracy power monitoring. The table below shows the power supply unit options that are available for the R7625.

**Table 15. Power supply Unit Options**

| PSU | Class | Heat dissipation (maximum) (BTU/hr) | Frequency (Hz) | Voltage | AC | | DC | Current (A) |
|---|---|---|---|---|---|---|---|---|
| | | | | | High line wattage | Low line wattage | | |
| 800 W Mixed Mode | Platinum | 3000 | 50/60 | 100-240 V AC | 800 W | 800 W | N/A | 9.2-4.7 |
| | N/A | 3000 | N/A | 240 V DC | N/A | N/A | 800 W | 3.8 |
| 1100 W Mixed Mode | Titanium | 4125 | 50/60 | 100-240 V AC | 1100 W | 1050 W | N/A | 12-6.3 |
| | N/A | 4125 | N/A | 240 V DC | N/A | N/A | 1100 W | 5.2 |
| 1400 W Mixed Mode | Platinum | 5250 | 50/60 | 100-240 V AC | 1400 W | 1050 W | N/A | 12-8 |
| | | 5250 | N/A | 240 V DC | N/A | N/A | 1400 W | 6.6 |
| | Titanium | 5250 | 50/60 | 100-240 V AC | 1400 W | 1050 W | N/A | 12-8 |
| | | 5250 | N/A | 240 V DC | N/A | N/A | 1400 W | 6.5 |
| | Titanium | 5250 | 50/60 | 277 V AC | 1400 W | 1050 W | N/A | 5.8 |
| | | 5250 | N/A | 336 V DC | N/A | N/A | 1400 W | 5.17 |
| 1800 W Mixed Mode | Titanium | 6610 | 50/60 | 200-240 V AC | 1800 W | N/A | N/A | 10 |
| | N/A | 6610 | N/A | 240 V DC | N/A | N/A | 1800 W | 8.2 |
| 2400 W Mixed Mode | Platinum | 9000 | 50/60 | 100-240 V AC | 2400 W | 1400 W | N/A | 16-13.5 |
| | N/A | 9000 | N/A | 240 V DC | N/A | N/A | 2400 W | 11.2 |
| 2800 W Mixed Mode | Titanium | 10500 | 50/60 | 200-240 V AC | 2800 W | N/A | N/A | 15.6 |
| | N/A | 10500 | N/A | 240 V DC | N/A | N/A | 2800 W | 13.6 |
| 3200 W Mixed Mode | Titanium | 12000 | 50/60 | 277 V AC | 3200 W | N/A | N/A | 13 |
| | N/A | 12000 | N/A | 336 V DC | N/A | N/A | 3200 W | 11.5 |
| 1100 W DC | N/A | 4265 | N/A | -48—(-60) V DC | N/A | N/A | 1100 W | 27 |

**NOTE:** If a system with AC 2400 W PSUs operates at low line 100-120 V AC, then the power rating per PSU is derated to 1400 W.

**NOTE:** If a system with AC 1400W/1100W PSUs operates at low line 100-120 V AC, then the power rating per PSU is derated to 1050 W.

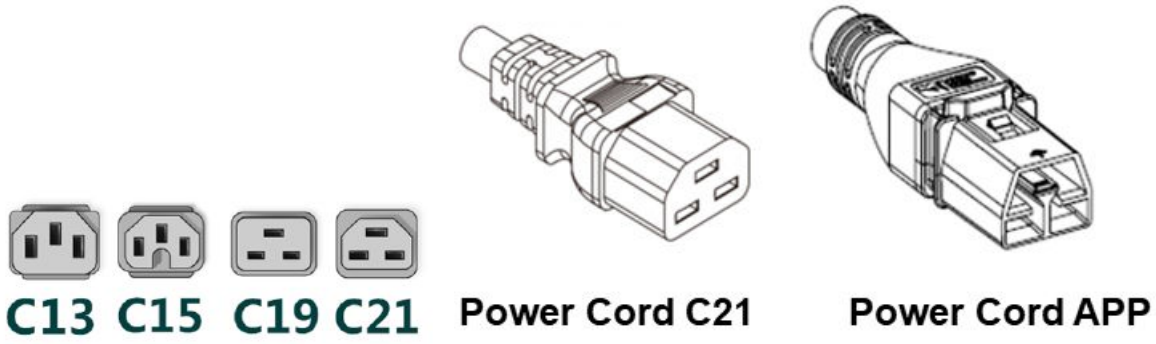


**Figure 32. PSU power cords**

**Table 16. PSU power cords**

| Form factor | Output | Power cord |
|---|---|---|
| Redundant 60 mm | 800 W AC | C13 |
| | 1100 W AC | C13 |
| | 1100 W -48 LVDC | C13 |
| | 1400 W AC | C13 |
| | 1800 W AC | C15 |
| Redundant 86 mm | 2400 W AC | C19 |
| | 2800 W AC | C21 |
| | 3200 W AC | APP 2006G1 |

**NOTE:** C19 power cord combined with C20 to C21 jumper power cord can be used to adapt a 2800 W PSU.

**NOTE:** C13 power cord combined with C14 to C15 jumper power cord can be used to adapt a 1800 W PSU.

# 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.

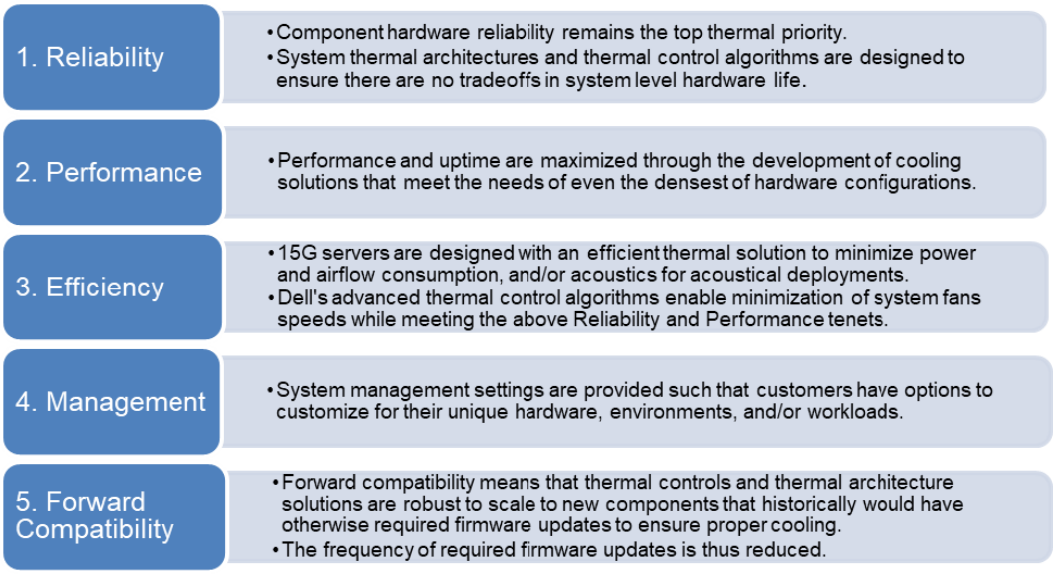


**Figure 33. Thermal design characteristics**

The thermal design of the PowerEdge R7625 reflects the following:

- Optimized thermal design: The system layout is architected for optimum thermal design.
- System component placement and layout are designed to provide maximum airflow coverage to critical components with minimum expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the fan speed based on several different responses from all system-component temperature sensors, as well as inventory for system configurations. Temperature monitoring includes components such as processors, DIMMs, chipset, the inlet air ambient, hard disk drives, and OCP.
- Open and closed loop thermal fan speed control: Open loop thermal control uses system configuration to determine fan speed based on inlet air ambient temperature. Closed loop thermal control method uses feedback temperatures to dynamically determine proper fan speeds.
- User-configurable settings: With the understanding and realization that every customer has unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user- configurable settings residing in the iDRAC "BIOS setup" screen. For more information, see the at Dell PowerEdge R7625 Installation and Service Manual and “Advanced Thermal Control: Optimizing across Environments and Power Goals” on Dell.com.
- Cooling redundancy: The R7625 allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Cooling redundancy: The R7625 with >4 fans allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the R7625 reliable under a wide range of operating environments.

# Acoustics

## Acoustical configurations of R7625

Dell PowerEdge R7625 is a rack-mount server for which acoustical output ranges from that appropriate for an office to that of data centers. Acoustical performance is provided in terms of five configuration: Minimum, Typical-1, Typical-2, GPU and Feature Rich.

Although the R7625 is designed for use in data centers, some users may prefer to use it in a quieter setting.

**Table 17. Configurations tested for acoustical experience**

| Configuration | Minimum | Typical-1, 2.5-inch | Typical-2, 3.5-inch | GPU configuration | Feature Rich |
|---|---|---|---|---|---|
| CPU Type | AMD | AMD | AMD | AMD | AMD |
| CPU TDP / Cores | 200 W / 24C | 200 W / 24C | 200 W / 24C | 260 W / 32C | 320 W / 32C |

### Table 17. Configurations tested for acoustical experience (continued)

| Configuration | Minimum | Typical-1, 2.5-inch | Typical-2, 3.5-inch | GPU configuration | Feature Rich |
|---|---|---|---|---|---|
| CPU Quantity | 2 | 2 | 2 | 2 | 2 |
| RDIMM Memory | 16 GB, RDIMM | 16 GB, RDIMM | 32 GB, RDIMM | 32 GB, RDIMM | 32 GB, RDIMM |
| Memory Quantity | 6 | 12 | 12 | 24 | 24 |
| Backplane Type | 12 x 3.5-inch BP | 8 x 2.5-inch BP | 12 x 3.5-inch BP + 4 x E3 rear BP | 24 x 2.5-inch exp BP | 24 x 2.5-inch exp BP |
| HDD Type | 3.5-inch SATA | 2.5-inch SSD | 3.5-inch HDD + E3 | 2.5-inch SSD | 2.5-inch SSD |
| HDD Quantity | 1 | 8 | 12 x 3.5-inch + 4 x E3 | 16 | 24 |
| PSU Type | 800 W | 800 W | 1400 W | 2400 W | 2400 W |
| PSU Quantity | 2 | 2 | 2 | 2 | 2 |
| OCP | Dual Port 10 GbE | Dual Port 25 GbE | Dual Port 25 GbE | Dual Port 25 GbE | Dual Port 25 GbE |
| PCI 1 | X | 25 Gb PCI | 10 Gb PCI | GPU: Double-Wide | 100 Gb PCI |
| PCI 2 | X | 25 Gb PCI | 10 Gb PCI | 100 Gb PCI | 100 Gb PCI |
| PCI 3 | X | X | X | 100 Gb PCI | X |
| PCI 4 | X | X | X | GPU: Double-Wide | X |

### Table 18. Acoustical experience of R7625 configurations

| Configuration | | Minimum | Typical-1, 2.5-inch | Typical-2, 3.5-inch | GPU configuration | Feature Rich |
|---|---|---|---|---|---|---|
| Acoustical Performance: Idle/ Operating @ 25°C Ambient | | | | | | |
| $L_{wA,m}$ (B) | Idle[4] | 5.0 | 4.6 | 6.8 | 6.7 | 7.3 |
| | Operating[5][6] | 5.4 | 5.1 | 6.8 | 6.7 | 7.3 |
| $K_v$ (B) | Idle [4] | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| | Operating[5][6] | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| $L_{pA,m}$ (dB) | Idle[4] | 35 | 32 | 51 | 52 | 57 |
| | Operating[5][6] | 39 | 33 | 51 | 52 | 57 |
| Prominent tones[3] | | Prominence ratio < 15 dB | | | | |
| Acoustical Performance: Idle @ 28°C Ambient | | | | | | |
| $L_{wA,m}$[1] (B) | | 5.2 | 4.6 | 6.9 | 6.9 | 7.4 |
| $K_v$ (B) | | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| $L_{pA,m}$[2] (dB) | | 37 | 32 | 51 | 55 | 58 |
| Acoustical Performance: Max. loading @ 35°C Ambient | | | | | | |
| $L_{wA,m}$[1] (B) | | 7.2 | 6.7 | 7.9 | 8.3 | 8.8 |
| $K_v$ (B) | | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| $L_{pA,m}$[2](dB) | | 57 | 52 | 61 | 69 | 73 |

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

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

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

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

[5]Operating mode: Operating mode is represented by 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.

10

# Rack, rails, and cable management

**Topics:**



# Rails and cable management information

The rail offerings for the PowerEdge R7625 consist of two general types: sliding and static. The cable management offerings consist of an optional cable management arm (CMA) and an optional strain relief bar (SRB).

See the Dell Enterprise Systems Rail Sizing and Rack Compatibility 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:

- Spacing between the front and rear mounting flanges of the rack
- Type and location of any equipment that is mounted in the back of the rack such as power distribution units (PDUs)
- Overall depth of the rack

## Sliding rails features summary

The sliding rails allow the system to be fully extended out of the rack for service. There are two types of sliding rails available, ReadyRails II sliding rails and Stab-in/Drop-in sliding rails. The sliding rails are available with or without the optional cable management arm (CMA) or strain relief bar (SRB).

**B21 ReadyRails sliding rails for 4-post racks**

- Supports drop-in installation of the chassis to the rails.
- Support for tool-less installation in 19" EIA-310-E compliant square or un-threaded round hole 4-post racks including all generations of the Dell racks.
- Support for tooled installation in 19" EIA-310-E compliant threaded hole 4-post racks.
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Support for optional strain relief bar (SRB).
- Support for optional cable management arm (CMA).

**NOTE:** For situations where CMA support is not required, the outer CMA mounting brackets can be uninstalled from the sliding rails. This reduces the overall length of the rails and eliminates the potential interferences with rear mounted PDUs or the rear rack door.

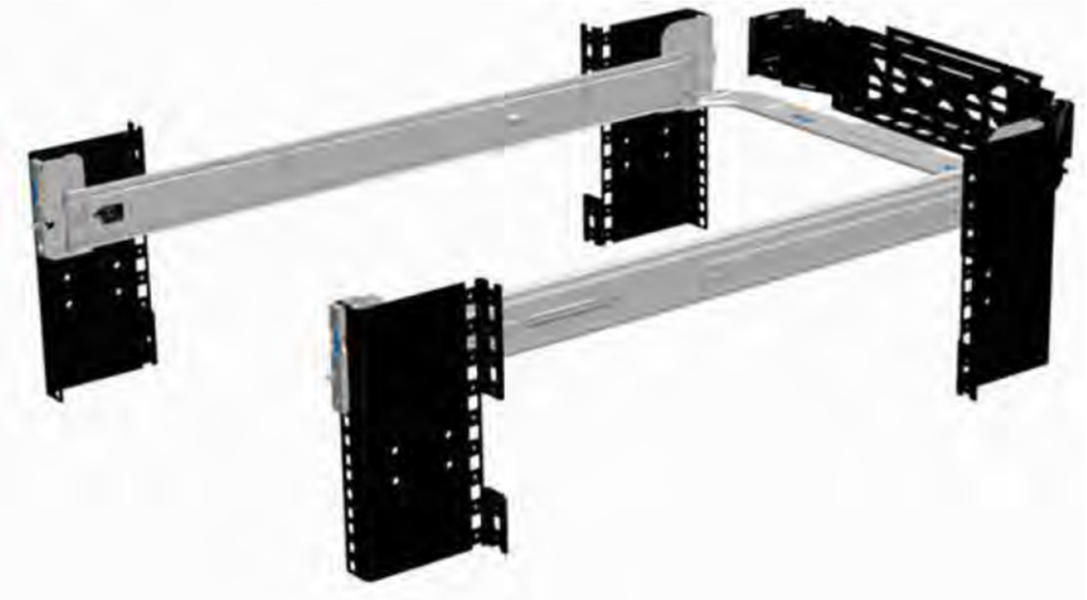

**Figure 34. Sliding rails with optional CMA**

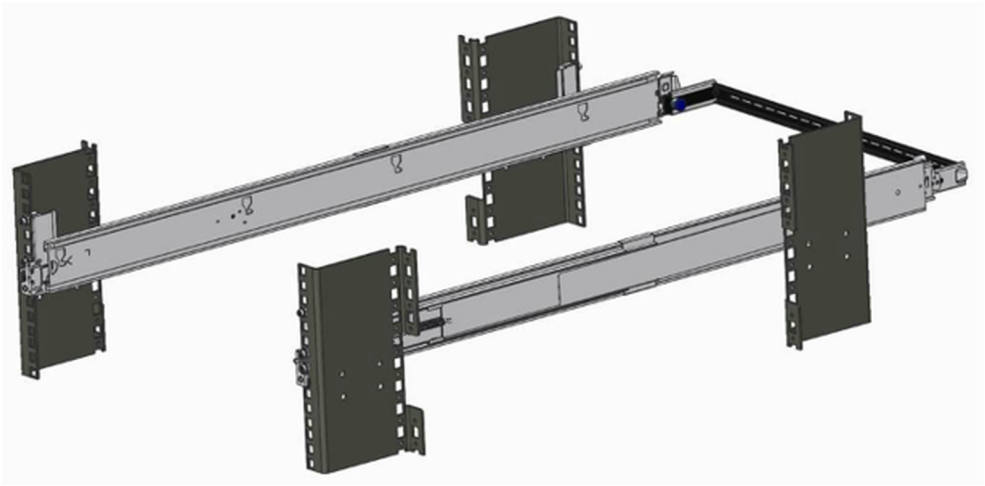

**Figure 35. Sliding rails with optional SRB**

### B22 Stab-in/Drop-in sliding rails for 4-post racks

- Supports drop-in or stab-in installation of the chassis to the rails.
- Support for tool-less installation in 19" EIA-310-E compliant square, un-threaded round hole racks including all generations of the Dell racks. Also supports tool-less installation in threaded round hole 4-post racks.
- Support for tool-less installation in Dell Titan or Titan-D racks
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Support for optional cable management arm (CMA).
- Support for optional strain relief bar (SRB).

**NOTE:** For situations where CMA support is not required, the outer CMA mounting brackets can be uninstalled from the sliding rails. This reduces the overall length of the rails and eliminates the potential interferences with rear mounted PDUs or the rear rack door.

# B20 static rails summary

The static rails offer a greater adjustability range and a smaller overall mounting footprint than the sliding rails because of their reduced complexity and lack of need for CMA support. The static rails support a wider variety of racks than the sliding rails. However, they do not support serviceability in the rack and are thus not compatible with the CMA. The static rails are also not compatible with SRB.

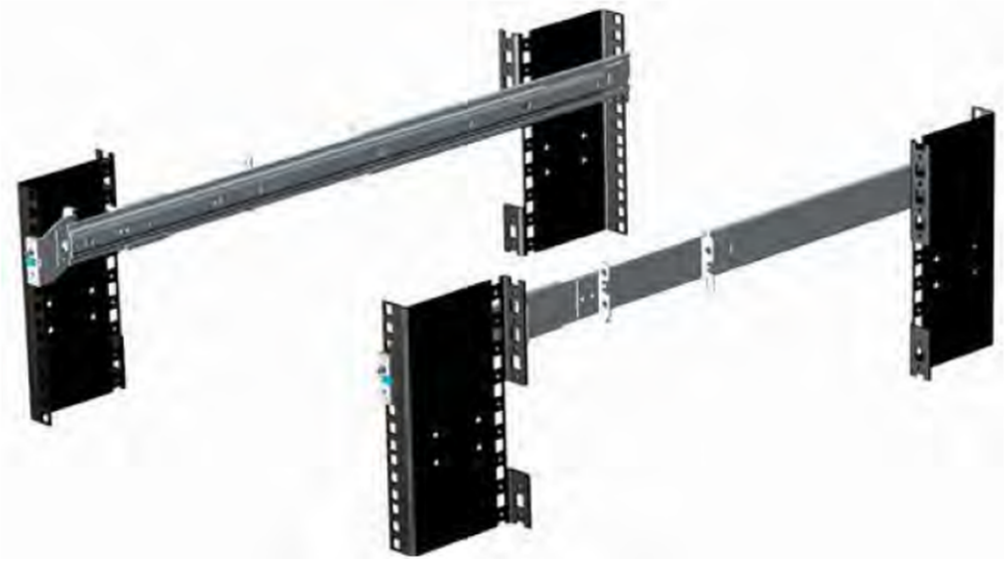

**Figure 36. Static rails**

### Static rails features summary

Static rails for 4-post & 2-post racks:

- Supports stab-in installation of the chassis to the rails.
- Support tool-less installation in 19" EIA-310-E compliant square or un-threaded round hole 4-post racks including all generations of Dell racks.
- Support tooled installation in 19" EIA-310-E compliant threaded hole 4-post and 2-post racks.
- Support for tooled installation in Dell Titan or Titan-D rack.

**NOTE:**

- Screws are not included with the static rail kit since racks are offered with various thread types. The screws are provided for mounting static rails in racks with threaded mounting flanges.
- Screw head diameter should be 10 mm or less.

### 2-Post racks installation

If installing to 2-Post (Telco) racks, the ReadyRails static rails (B20) must be used. Sliding rails support mounting in 4-post racks only.

**Figure 37. Static rails in 2-post center mount configuration**

#### Installation in the Dell Titan or Titan-D racks

For tool-less installation in Titan or Titan-D racks, the Stab-in/Drop-in Sliding rails (B22) must be used. This rail collapses down sufficiently to fit in the rack with mounting flanges that are spaced about 24 inches apart from front to back. The Stab-in/Drop-in Sliding rail allows bezels of the servers and storage systems to be aligned when installed in these racks. For tooled installation, Stab-in Static rails (B20) must be used for bezel alignment with Storage systems.

## Cable management arm (CMA)

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

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

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

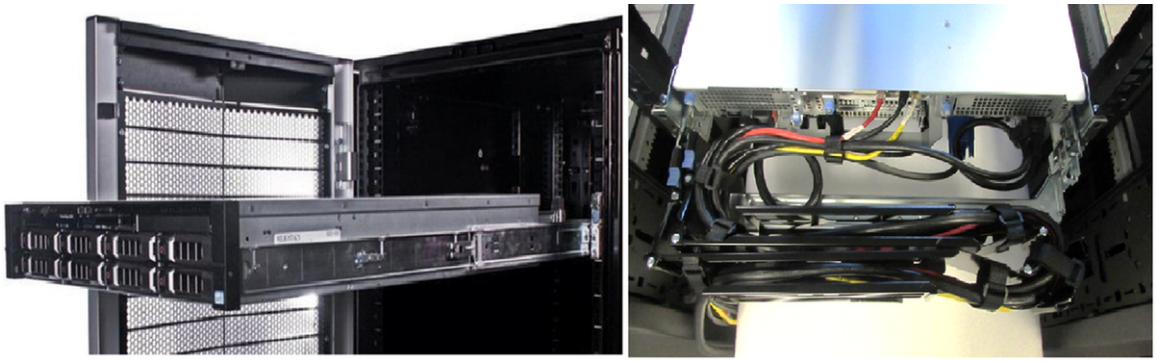

**Figure 38. Sliding rails with CMA cabling**

## Strain Relief Bar (SRB)

The optional strain relief bar (SRB) for the PowerEdge R7625 organizes and supports cable connections at the rear end of the server to avoid damage from bending.

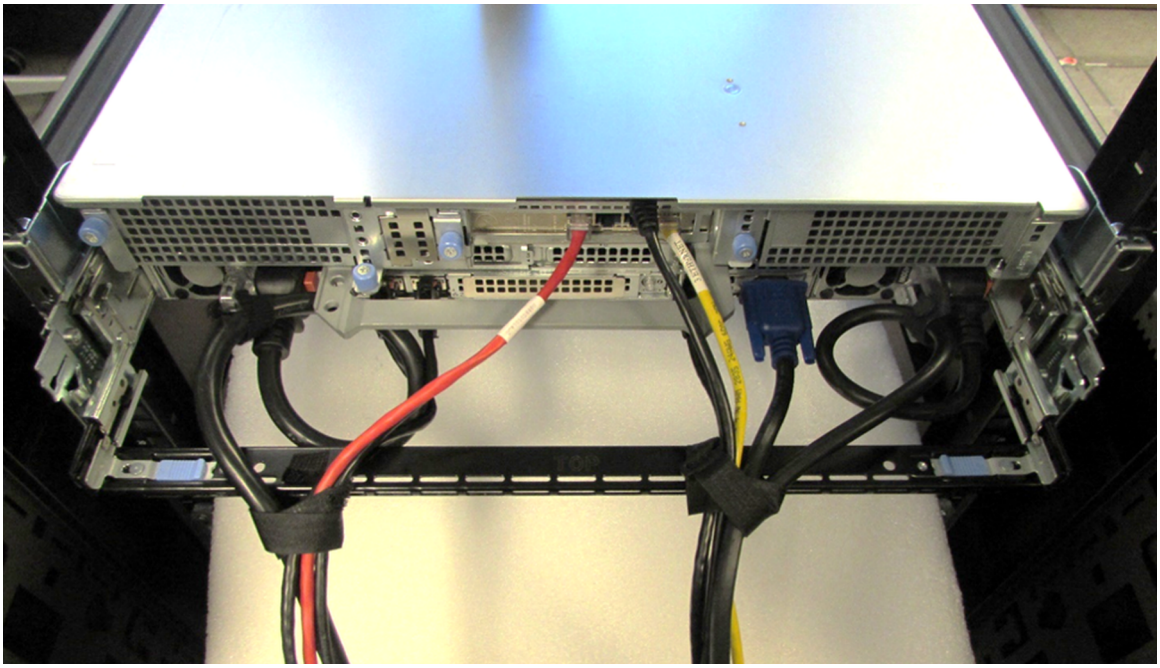

**Figure 39. Cabled strain relief bar**

- Tool-less attachment to the rails
- Two depth positions to accommodate various cable loads and rack depths
- Supports cable loads and controls stresses on server connectors
- Cables can be separated into discrete purpose-specific bundles

## Rack Installation

Drop-in design means that the system is installed vertically into the rails by inserting the standoffs on the sides of the system into the J-slots in the inner rail members with the rails in the fully extended position. The recommended method of installation is to first insert the rear standoffs on the system into the rear J-slots on the rails to free up a hand and then rotate the system down into the remaining J-slots while using the free hand to hold the rail against the side of the system.

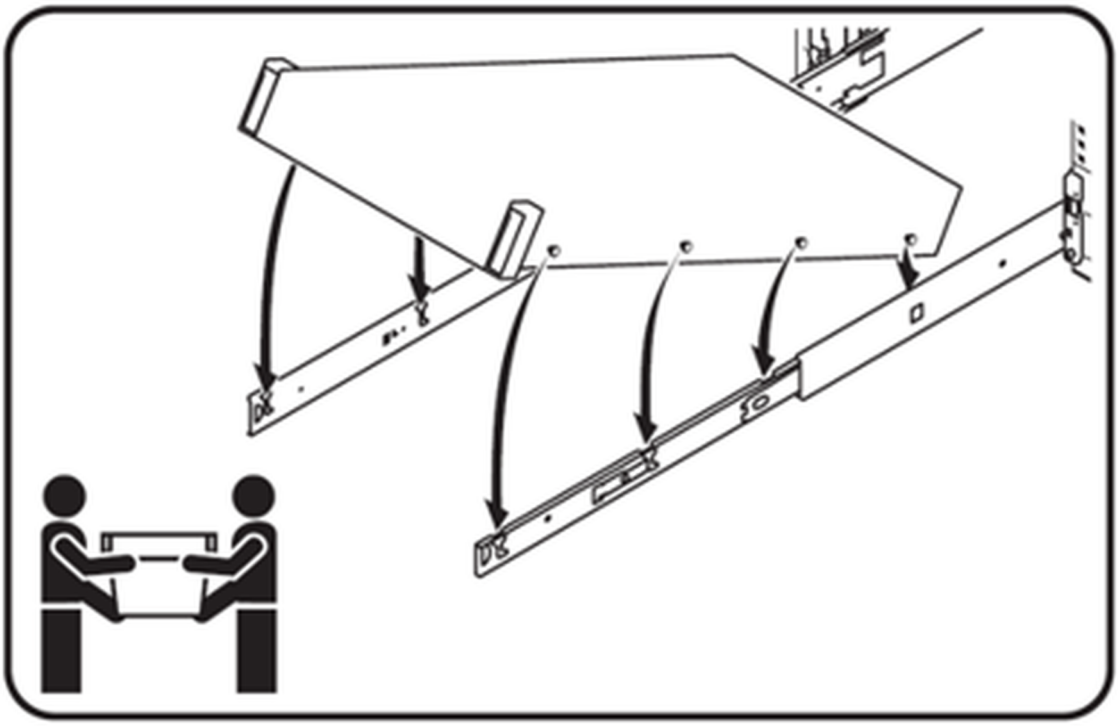

**Figure 40. Installing the system in Drop-in sliding rails**

Stab-in design means that the inner (chassis) rail members must first be attached to the sides of the system and then inserted into the outer (cabinet) members installed in the rack. For a 2U systems, this is a two person lift.

## Installing system into the rack (option A: Drop-In)

1. Pull the inner rails out of the rack until they lock into place.

**Figure 41. Pull out inner rail**

2. Locate the rear rail standoff on each side of the system and lower them into the rear J-slots on the slide assemblies.
3. Rotate the system downward until all the rail standoffs are seated in the J-slots.

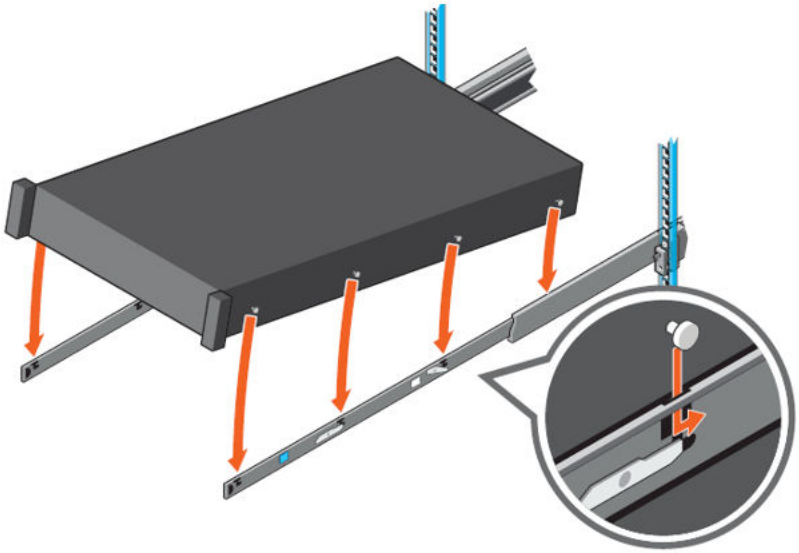

**Figure 42. Rail standoffs seated in J-slots**

4. Push the system inward until the lock levers click into place.
5. Pull the blue side release lock tabs forward or backward on both rails and slide the system into the rack until the system is in the rack.

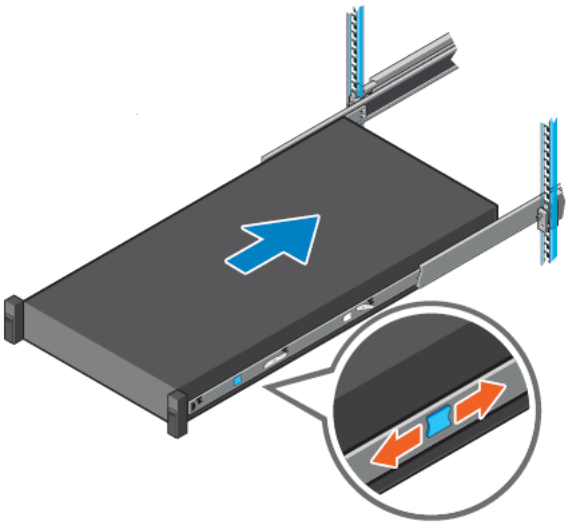

**Figure 43. Slide system into the rack**

## Installing the system into the rack (option B: Stab-In)

1. Pull the intermediate rails out of the rack until they lock into place.
2. Release the inner rail lock by pulling forward on the white tabs and sliding the inner rail out of the intermediate rails.

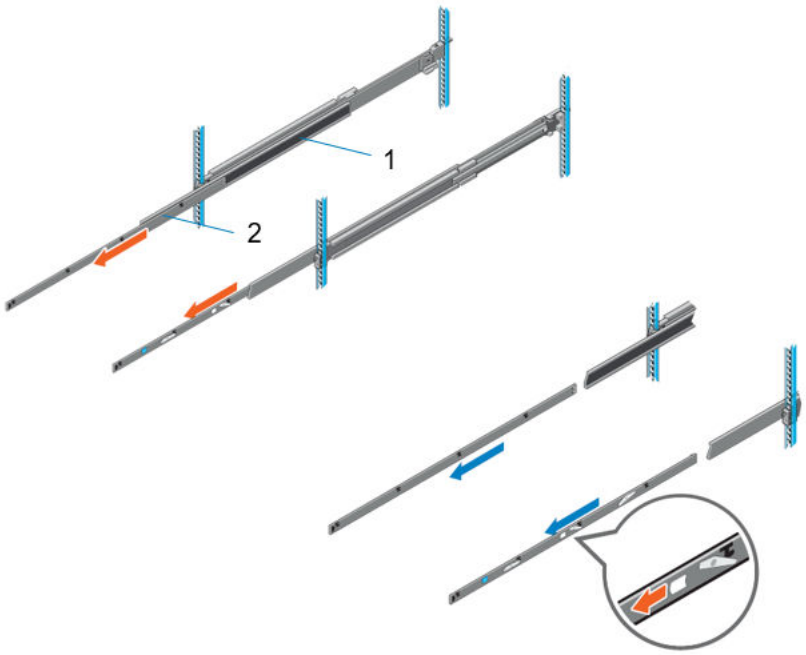


**Figure 44. Pull out the intermediate rail**

### Table 19. Rail component label

| Number | Component |
|---|---|
| 1 | Intermediate rail |
| 2 | Inner rail |

3. Attach the inner rails to the sides of the system by aligning the J-slots on the rail with the standoffs on the system and sliding forward on the system until they lock into place.

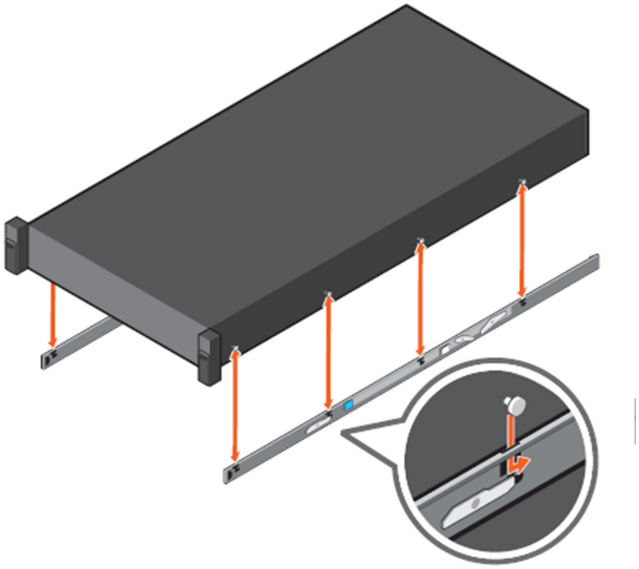

**Figure 45. Attach the inner rails to the system**

4. With the intermediate rails extended, install the system into the extended rails.

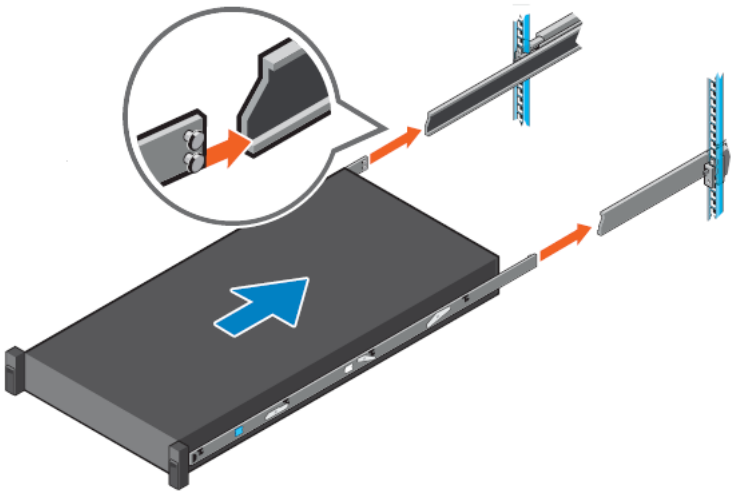

**Figure 46. Install system into the extended rails**

5. Pull blue slide release lock tabs forward or backward on both rails, and slide the system into the rack.

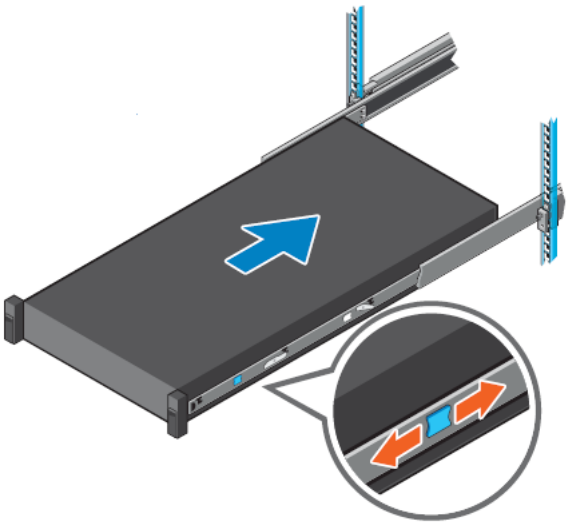

**Figure 47. Slide system into the rack**

# 11

# Supported Operating Systems

The PowerEdge system supports the following operating system:

- Canonical Ubuntu Server LTS
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware vSAN/ESXi
- Citrix XenServer

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

12

# Dell OpenManage Systems Management

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

The OpenManage portfolio includes:

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

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

For more information about the entire OpenManage portfolio, see:

- The OpenManage Consoles and Integrations page at PowerEdge Central.
- The latest Dell Systems Management Overview Guide.

**Topics:**



# Integrated Dell Remote Access Controller (iDRAC)

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

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

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

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

iDRAC9 offers following license tiers:

### Table 20. iDRAC9 license tiers

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

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

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

- iDRAC and embedded technologies at PowerEdge Central
- Support for Integrated Dell Remote Access Controller 9 (iDRAC9) on the Knowledge Base page at Dell.com

# Systems Management software support matrix

### Table 21. Systems Management software support matrix

| Categories | Features | PE mainstream |
|---|---|---|
| Embedded Management and In-band Services | iDRAC9 (Express, Enterprise, and Datacenter licenses) | Supported |
| | OpenManage Mobile and QuickSync2 | Supported |
| | OM Server Administrator (OMSA) | Supported |
| | iDRAC Service Module (iSM) | Supported |
| | Driver Pack | Supported |
| Change Management | Update Tools (Repository Manager, DSU, Catalogs) | Supported |
| | Server Update Utility | Supported |
| | Lifecycle Controller Driver Pack | Supported |
| | Bootable ISO | Supported |
| Console and Plug-ins | OpenManage Enterprise | Supported |
| | Power Manager Plug-in | Supported |
| | Update Manager Plug-in | Supported |
| | Services Plug-in | Supported |
| | CloudIQ | Supported |
| Integrations and connections | OM Integration with VMware Vcenter/vROps | Supported |
| | OM Integration with Microsoft System Center (OMIMSC) | Supported |
| | Integrations with Microsoft System Center and Windows Admin Center (WAC) | Supported |

**Table 21. Systems Management software support matrix (continued)**

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

For more information, see:

- OpenManage Consoles and Integrations at PowerEdge Central
- OpenManage Tools at PowerEdge Central

13

# Appendix A. Additional specifications

**Topics:**



## Chassis dimensions

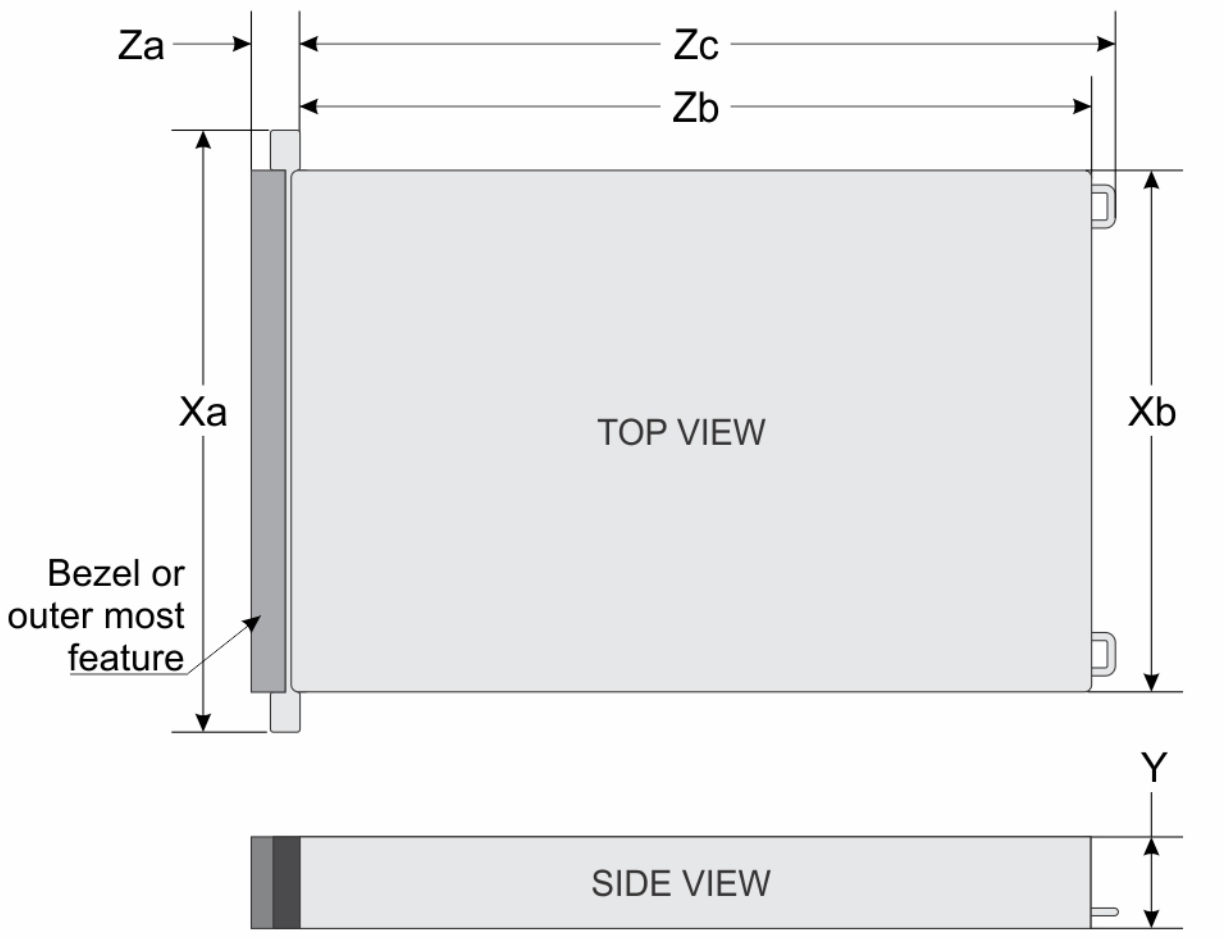


**Figure 48. Chassis dimensions**

### Table 22. PowerEdge R7625 chassis dimensions

| Xa | Xb | Y | Za | Zb | Zc |
|---|---|---|---|---|---|
| 482.0 mm (18.97 inches) | 434.0 mm (17.08 inches) | 86.8 mm (3.41 inches) | 35.84 mm (1.4 inches) With bezel<br>22.0 mm (0.87 inches) Without bezel | 700.7 mm (27.58 inches) Ear to Rear wall | 736.29 mm (28.98 inches) Ear to PSU handle |

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

# System weight

### Table 23. PowerEdge R7625 system weight

| System configuration | Maximum weight (with all drives/SSDs) |
|---|---|
| A server with fully populated drives | 34.4 kg (75.84 pound) |
| A server without drives and PSU installed | 23.3 kg (51.37 pound) |

# NIC port specifications

The PowerEdge R7625 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports embedded on the LAN on Motherboard (LOM) and integrated on the Open Compute Project (OCP) cards.

### Table 24. NIC port specification for the system

| Feature | Specifications |
|---|---|
| LOM card (optional) | 1 GbE x 2 |
| OCP card 3.0 (optional) | 1 GbE x 4, 10 GbE x 2, 10 GbE x 4, 25 GbE x 2, 25 GbE x 4 |
| Management Interface Card (MIC) to support Dell Data Processing Unit (DPU) card (optional) | 25 GbE x 2 or 100 GbE x 2 |

**NOTE:** The system allows either LOM card or an OCP card or both to be installed in the system.

**NOTE:** On the system board, the supported OCP PCIe width is x8; when x16 PCIe width is installed, it is downgraded to x8.

**NOTE:** The system allows either LOM card or MIC card to be installed in the system.

# Video specifications

The PowerEdge R7625 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

### Table 25. Supported video resolution options

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

### Table 25. Supported video resolution options (continued)

| Resolution | Refresh rate (Hz) | Color depth (bits) |
|---|---|---|
| 1600 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 specifications

### Table 26. PowerEdge R7625 USB specifications

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

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

# PSU rating

### Table 27. PSUs Highline and Lowline ratings

| Features | 800 W Platinum | 1100 W Titanium | 1100 W -48VDC | 1400 W Platinum | 1400 W Titanium | 1800 W Titanium | 2400 W Platinum | 2800 W Titanium | 3200 W Titanium |
|---|---|---|---|---|---|---|---|---|---|
| Peak Power (Highline/ -72 VDC) | 1360 W | 1870 W | 1870 W | 2380 W | 2380 W | 3060 W | 4080 W | 4760 W | 5400 W |
| Highline/-72 VDC | 800 W | 1100 W | 1100 W | 1400 W | 1400 W | 1800 W | 2400 W | 2800 W | 3200 W |
| Peak Power (Lowline/ -40 VDC) | 1360 W | 1785 W | N/A | 1785 W | 1785 W | N/A | 2380 W | N/A | N/A |
| Lowline/-40 VDC | 800 W | 1050 W | N/A | 1050 W | 1050 W | N/A | 1400 W | N/A | N/A |
| Highline 240 VDC | 800 W | 1100 W | N/A | 1400 W | 1400 W | 1800 W | 2400 W | 2800 W | 3200 W |
| DC-48-60 V | N/A | N/A | 1100 W | N/A | N/A | N/A | N/A | N/A | N/A |

The PowerEdge R7625 supports up to two AC or DC power supplies with 1+1 redundancy, autosensing, and autoswitching capability.

If two PSUs are present during POST, a comparison is made between the wattage capacities of the PSUs. If the PSU wattages do not match, the larger of the two PSUs is enabled. Also, there is a PSU mismatch warning that is displayed in the BIOS, iDRAC, or on the System LCD.

If a second PSU is added at run-time, in order for that particular PSU to be enabled, the wattage capacity of the first PSU must equal the second PSU. Otherwise, the PSU is identified as unmatched in iDRAC and the second PSU will not be enabled.

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

### Table 28. PSU Efficiency Levels

| Efficiency Targets by Load | | | | | | |
|---|---|---|---|---|---|---|
| **Form factor** | **Output** | **Class** | **10%** | **20%** | **50%** | **100%** |
| Redundant 60 mm | 800 W AC | Platinum | 89.00% | 93.00% | 94.00% | 91.50% |
| | 1100 W AC | Titanium | 90.00% | 94.00% | 96.00% | 91.50% |
| | 1100 W -48 VDC | N/A | 85.00% | 90.00% | 92.00% | 90.00% |
| | 1400 W AC | Platinum | 89.00% | 93.00% | 94.00% | 91.50% |
| | 1800 W AC | Titanium | 90.00% | 94.00% | 96.00% | 94.00% |
| Redundant 86 mm | 2400 W AC | Platinum | 89.00% | 93.00% | 94.00% | 91.50% |
| | 2800 W AC | Titanium | 90.00% | 94.00% | 96.00% | 94.00% |
| | 3200 W AC | Titanium | 90.00% | 94.00% | 96.00% | 91.00% |

# Environmental specifications

### Table 29. Continuous Operation Specifications for ASHRAE A2

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

### Table 30. Continuous Operation Specifications for ASHRAE A3

| Temperature | Specifications | |
|---|---|---|
| Allowable continuous operations | | |
| Temperature range for altitudes <= 900 m (<= 2953 ft) | 5–40°C (41–104°F) with no direct sunlight on the equipment | |
| | Excursion Limited Operation | 5-35°C (41-95°F) Continuous Operation |
| | | 35-40°C (95-104°F) 10% Annual Runtime |
| Humidity percent range (non-condensing at all times) | 8% RH with -12°C minimum dew point to 85% RH with 24°C (75.2°F) maximum dew point | |
| Operational altitude de-rating | Maximum temperature is reduced by 1°C/175 m (1.8°F/574 Ft) above 900 m (2953 Ft) | |

### Table 31. Continuous Operation Specifications for ASHRAE A4

| Temperature | Specifications | |
|---|---|---|
| Allowable continuous operations | | |
| Temperature range for altitudes <= 900 m (<= 2953 ft) | 5–45°C (41–113°F) with no direct sunlight on the equipment | |
| | Excursion Limited Operation | 5-35°C (41-95°F) Continuous Operation |
| | | 35-40°C (95-104°F) 10% Annual Runtime |
| | | 40-45°C (104-113°F) 1% Annual Runtime |
| Humidity percent range (non-condensing at all times) | 8% RH with -12°C minimum dew point to 90% RH with 24°C (75.2°F) maximum dew point | |
| Operational altitude de-rating | Maximum temperature is reduced by 1°C/125 m (1.8°F/410 Ft) above 900 m (2953 Ft) | |

### Table 32. Common Environmental Specifications for ASHRAE A2, A3 and A4

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

### Table 33. Maximum vibration specifications

| Maximum vibration | Specifications |
|---|---|
| Operating | 0.21 $G_{rms}$ at 5 Hz to 500 Hz for 10 minutes (all operation orientations) |
| Storage | 1.88 $G_{rms}$ at 10 Hz to 500 Hz for 15 minutes (all six sides tested) |

### Table 34. Maximum shock pulse specifications

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

## 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 may need to rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

### Table 35. Particulate contamination specifications

| Particulate contamination | Specifications |
|---|---|
| Air filtration | Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit<br>**NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.<br>**NOTE:** Air entering the data center must have MERV11 or MERV13 filtration. |
| Conductive dust | Air must be free of conductive dust, zinc whiskers, or other conductive particles<br>**NOTE:** This condition applies to data center and non-data center environments. |
| Corrosive dust | • Air must be free of corrosive dust<br>• Residual dust present in the air must have a deliquescent point less than 60% relative humidity<br>**NOTE:** This condition applies to data center and non-data center environments. |

### Table 36. Gaseous contamination specifications

| Gaseous contamination | Specifications |
|---|---|
| Copper coupon corrosion rate | <300 Å/month per Class G1 as defined by ANSI/ISA71.04-2013 |
| Silver coupon corrosion rate | <200 Å/month as defined by ANSI/ISA71.04-2013 |

## 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 37. Particulate contamination specifications

| Particulate contamination | Specifications |
|---|---|
| Air filtration: Conventional Data Center only | Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit<br>**NOTE:** Filtering room air with a MERV8 filter, as specified in ANSI/ASHRAE Standard 127, is a recommended method for achieving the necessary environmental conditions.<br>**NOTE:** Air entering the data center must have MERV11 or MERV13 filtration.<br>**NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor. |
| Walk-Up Edge Data Center or Cabinet (sealed, closed loop environment) | Filtration is not required for cabinets that are anticipated to be opened six times or less per year. Class 8 per ISO 1466-1 filtration as defined above is required otherwise.<br>**NOTE:** In environments commonly above ISA-71 Class G1 or that may have known challenges, special filters may be required. |

**Table 37. Particulate contamination specifications (continued)**

| Particulate contamination | Specifications |
|---|---|
| Conductive dust: data center and non-data center environments | Air must be free of conductive dust, zinc whiskers, or other conductive particles.<br>**NOTE:** Conductive dust, which can interfere with equipment operation, can originate from various sources, including manufacturing processes and zinc whiskers that may develop on the plating of raised floor tiles.<br>**NOTE:** This condition applies to data center and non-data center environments. |
| Corrosive dust: data center and non-data center environments | • Air must be free of corrosive dust.<br>• Residual dust present in the air must have a deliquescent point less than 60% relative humidity.<br>**NOTE:** This condition applies to data center and non-data center environments. |

**Table 38. 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 air restrictions

## ASHRAE A3 environment

- Two PSUs are required in redundant mode, however single PSU failure is not supported.
- PCIe SSD is not supported.
- DIMMs greater than 32 GB are not supported.
- Both SW and DW GPGPU/FPGA are not supported.
- CPU TDP greater than 200W are not supported.
- Rear drives are not supported.
- PCIe card TDP more than 25 W is not supported.
- OCP is supported with 85C active optic cable.

## ASHRAE A4 environment

- Two PSUs are required in redundant mode, however single PSU failure is not supported.
- PCIe SSD is not supported.
- DIMMs greater than 32 GB are not supported.
- Both SW and DW GPGPU/FPGA are not supported.
- CPU TDP greater than 200W are not supported.
- Rear drives are not supported.
- PCIe card TDP more than 25 W is not supported.
- OCP is supported with 85C active cable and cards Tier<=4
- BOSS N1 is not supported.

## Liquid cooling: ASHRAE A3 environment

- Two PSUs are required in redundant mode, however single PSU failure is not supported.
- PCIe SSD is not supported.
- DIMMs greater than 32 GB are not supported.

- Both SW and DW GPGPU/FPGA are not supported.
- Rear drives are not supported.
- PCIe card TDP more than 25 W is not supported.
- OCP is supported with 85C active optic cable.

## Liquid cooling: ASHRAE A4 environment

- Two PSUs are required in redundant mode, however single PSU failure is not supported.
- PCIe SSD is not supported.
- DIMMs greater than 32 GB are not supported.
- Both SW and DW GPGPU/FPGA are not supported.
- Rear drives are not supported.
- PCIe card TDP more than 25 W is not supported.
- OCP is supported with 85C active cable and cards Tier<=5
- BOSS N1 is not supported.

## Other Restrictions

High temp spec(85C) active optics cable is required for cards,

- 25Gb and above PCIe/OCP cards require DAC or 85C active optics cable.

# Thermal restriction matrix

**Table 39. Air cooling: Thermal restriction matrix(non-GPU)**

| Configuration | | | No BP | 8 x 2.5" U.2 | 16 x 2.5" SAS (SmartFlow) | 16 x 2.5" U.2 (SmartFlow) | 24 x 2.5" SAS | | | 16x2.5" SAS + 8x2.5" U.2 | 8x3.5" | 12x3.5" | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rear storage | | | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan |
| CPU cTDP Max | | CPU TDP | | | | | | | | | | | | |
| CPU TDP / cTDP | 240 W | 210 W<br>200 W | HPR SILVER Fan<br>+ 2U STD HSK | | | | | | | | HPR SILVER Fan [75%]<br>+ 2U STD HSK | HPR GOLD Fan [70%]<br>+ 2U EXT HSK | | |
| | 300 W | 290 W<br>280 W | HPR SILVER Fan<br>+ 2U EXT HSK | | | | | | | | HPR SILVER Fan [75%]<br>+ 2U EXT HSK | HPR GOLD Fan [70%]<br>+ 2U EXT HSK<br>**(Note 1)** | | |
| | 400 W | 360 W<br>320 W<br>340 W | HPR SILVER Fan<br>+ 2U EXT HSK | | | | HPR GOLD Fan<br>+ 2U EXT HSK | | | | HPR GOLD Fan [75%] | Requires LC | | |

**Table 39. Air cooling: Thermal restriction matrix(non-GPU) (continued)**

| Configuration | | | No BP | 8 x 2.5" U.2 | 16 x 2.5" SAS (SmartFlow) | 16 x 2.5" U.2 (SmartFlow) | 24 x 2.5" SAS | | | 16x2.5" SAS + 8x2.5" U.2 | 8x3.5" | 12x3.5" | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rear storage | | | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan |
| CPU cTDP Max | | CPU TDP | | | | | | | | | | | | |
| | | | | | | | | | | | + 2U EXT HSK | | | |
| Memory | 16 GB RDIMM | | HPR SILVER Fan | | | | HPR GOLD Fan | | | | HPR SILVER Fan [75%] | HPR GOLD Fan [70%] | | |
| | 32 GB RDIMM | | | | | | | | | | | | | |
| | 64 GB RDIMM | | | | | | | | | | | | | |
| | 96 GB RDIMM | | | | | | | | | | | | | |
| | 128 GB RDIMM | | HPR GOLD Fan | | Not supported | | Not supported | | | | | | | |
| | 256 GB RDIMM **(Note 2)** | | | | HPR GOLD Fan **(Note 1)** | | | | | | | | | |

**Note 1:** Supported ambient temperature is 30°C.

**Note 2:** Support SKHYNIX RDIMM only

**Table 40. Air cooling: Thermal restriction matrix(GPU Configuration)**

| Configuration | | | No BP | 8 x 2.5" U.2 | 16 x 2.5" SAS (SmartFlow) | 16 x 2.5" U.2 (SmartFlow) | 24 x 2.5" SAS | 16x2.5" SAS + 8x2.5" U.2 | 8x3.5" |
|---|---|---|---|---|---|---|---|---|---|
| Rear storage | | | No Rear Drives | | | | | | |
| CPU cTDP Max | CPU TDP | Model | | | | | | | |
| CPU TDP/ cTDP | 240 W | 210 W | 9334 | HPR GOLD Fan + 1U EXT HSK | | | | | HPR GOLD Fan [75%] + 1U EXT HSK |
| | | 200 W | 9254 | | | | | | |
| | | | 9224 | | | | | | |
| | | | 9124 | | | | | | |
| | 300 W | 290 W | 9634 | | | | | | |
| | | 280 W | 9534 | | | | | | |
| | | 290 W | 9454 | | | | | | |
| | | 280 W | 9354 | | | | | | |
| | 400 W | 360 W | 9654 | HPR GOLD Fan + 1U EXT HSK | Not Supported | | | | Requires LC |
| | | | 9554 | HPR GOLD Fan | | | | | |
| | | | 9474F | | | | | | |

**Table 40. Air cooling: Thermal restriction matrix(GPU Configuration) (continued)**

<table>
<tr><th colspan="4">Configuration</th><th>No BP</th><th>8 x 2.5" U.2</th><th>16 x 2.5" SAS (SmartFlow)</th><th>16 x 2.5" U.2 (Smart Flow)</th><th>24 x 2.5" SAS</th><th>16x2.5" SAS + 8x2.5" U.2</th><th>8x3.5"</th></tr>
<tr><th colspan="4">Rear storage</th><td colspan="7" rowspan="2">No Rear Drives</td></tr>
<tr><th colspan="2">CPU cTDP Max</th><th>CPU TDP</th><th>Model</th></tr>
<tr><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">320 W</td><td>9374F</td><td>+ 1U EXT HSK (Note 1)</td><td colspan="4" rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>9274F</td><td rowspan="2">HPR GOLD Fan<br>+ 1U EXT HSK</td></tr>
<tr><td>9174F</td></tr>
<tr><td rowspan="6">Memory</td><td colspan="3">16 GB RDIMM</td><td colspan="5" rowspan="4">HPR GOLD Fan</td><td rowspan="4">HPR GOLD Fan [75%]</td></tr>
<tr><td colspan="3">32 GB RDIMM</td></tr>
<tr><td colspan="3">64 GB RDIMM</td></tr>
<tr><td colspan="3">96 GB RDIMM</td></tr>
<tr><td colspan="3">128 GB RDIMM</td><td colspan="2" rowspan="2">HPR GOLD Fan</td><td>Not Supported</td><td colspan="3" rowspan="2">Not Supported</td></tr>
<tr><td colspan="3">256 GB RDIMM (Note 3)</td><td>HPR GOLD Fan (Note 1)</td></tr>
<tr><td rowspan="7">GPU</td><td colspan="3">A2 16 GB</td><td colspan="5" rowspan="7">HPR GOLD Fan</td><td>HPR GOLD Fan [75%] (Note 1)</td></tr>
<tr><td colspan="3">A16 64GB</td><td rowspan="6">HPR GOLD Fan [75%]</td></tr>
<tr><td colspan="3">A30 24GB</td></tr>
<tr><td colspan="3">A40 48GB</td></tr>
<tr><td colspan="3">A100 80GB</td></tr>
<tr><td colspan="3">H100 80 GB</td></tr>
<tr><td colspan="3">MI210 64GB</td></tr>
</table>

**Note 1:** Supported ambient temperature is 30°C.

**Note 2:** Bergmano CPUs.

**Note 3:** Support SKHYNIX RDIMM only

**NOTE:** “High-Performance GOLD Fan” to be supported on all GPU configurations.

**NOTE:** GPU is not supported on 12x3.5-inch configurations and system configurations with rear module installed.

### Table 41. Air Cooling: Thermal Guidance(non GPU)

| Configuration | | | | No BP | 8 x 2.5" U.2 | 16 x 2.5" SAS (SmartFlow) | 16 x 2.5" U.2 (SmartFlow) | 24 x 2.5" SAS | | | 16x2.5" SAS + 8x2.5" U.2 | 8x3.5" | 12x3.5" | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rear storage | | | | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan | No Rear Drives | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan |
| CPU cTDP Max | | Model | Core Count # | | | | | | | | | | | | |
| CPU TDP / cTDP | 240 W | 9334 | 32 | 35°C | | | | | | | | 35°C | 35°C | | |
| | | 9254 | 24 | | | | | | | | | | | | |
| | | 9224 | 24 | | | | | | | | | | | | |
| | | 9124 | 16 | | | | | | | | | | | | |
| | 300 W | 9634 | 84 | 35°C | | | | | | | | 35°C | 30°C | | |
| | | 9534 | 64 | | | | | | | | | | | | |
| | | 9454 | 48 | | | | | | | | | | | | |
| | | 9354 | 32 | | | | | | | | | | | | |
| | 400 W | 9654 | 96 | 35°C | | | | | | | | 35°C | Requires LC | | |
| | | 9554 | 64 | | | | | | | | | | | | |
| | | 9474F | 48 | | | | | | | | | | | | |
| | | 9374F | 32 | | | | | | | | | | | | |
| | | 9274F | 24 | | | | | | | | | | | | |
| | | 9174F | 16 | | | | | | | | | | | | |
| | | 9734 | 112 | | | | | | | | | | | | |
| | | 9754 | 128 | | | | | | | | | | | | |
| | | 9684X | 96 | | | | | | | | | | | | |
| | | 9384X | 32 | | | | | | | | | | | | |
| | | 9184X | 16 | | | | | | | | | | | | |
| Memory | 16 GB RDIMM | | | 35°C | | | | | | | | 35°C | 35°C | | |
| | 32 GB RDIMM | | | | | | | | | | | | | | |
| | 64 GB RDIMM | | | | | | | | | | | | | | |
| | 96 GB RDIMM | | | | | | | | | | | | | | |
| | 128 GB RDIMM | | | 35°C | | Not Supported | | Not Supported | | | | | | | |
| | 256 GB RDIMM **(Note 1)** | | | | | 30°C | | | | | | | | | |

**Note 1:** Support SKHYNIX RDIMM only

**NOTE:** Not all backplanes/risers support liquid cooling; these are listed as "No Support."

**NOTE:** Inlet temperature is determined by lowest degree requirement.

### Table 42. Air Cooling: Thermal Guidance (GPU Configuration)

<table>
<tr><th colspan="4">Configuration</th><th>No BP</th><th>8 x 2.5" U.2</th><th>16 x 2.5" SAS (SmartFlow)</th><th>16 x 2.5" U.2 (Smart Flow)</th><th>24 x 2.5" SAS</th><th>16x2.5" SAS + 8x2.5" U.2</th><th>8x3.5"</th></tr>
<tr><td colspan="4">Rear storage</td><td colspan="7" rowspan="2">No Rear Drives</td></tr>
<tr><td colspan="2">CPU cTDP Max</td><td>Model</td><td>Core Count#</td></tr>
<tr><td rowspan="13">CPU TDP/ cTDP</td><td rowspan="4">240 W</td><td>9334</td><td>32</td><td colspan="5" rowspan="4">35°C</td><td rowspan="8">35°C</td></tr>
<tr><td>9254</td><td>24</td></tr>
<tr><td>9224</td><td>24</td></tr>
<tr><td>9124</td><td>16</td></tr>
<tr><td rowspan="4">300 W</td><td>9634</td><td>84</td><td colspan="5" rowspan="4">35°C</td></tr>
<tr><td>9534</td><td>64</td></tr>
<tr><td>9454</td><td>48</td></tr>
<tr><td>9354</td><td>32</td></tr>
<tr><td rowspan="6">400 W</td><td>9654</td><td>96</td><td colspan="2">35°C</td><td colspan="3" rowspan="6">Not Supported</td><td rowspan="6">Requires LC</td></tr>
<tr><td>9554</td><td>64</td><td colspan="2" rowspan="3">30°C</td></tr>
<tr><td>9474F</td><td>48</td></tr>
<tr><td>9374F</td><td>32</td></tr>
<tr><td>9274F</td><td>24</td><td colspan="2" rowspan="2">35°C</td></tr>
<tr><td>9174F</td><td>16</td></tr>
<tr><td rowspan="4">Memory</td><td colspan="3">16 GB RDIMM</td><td colspan="5" rowspan="3">35°C</td><td rowspan="3">35°C</td></tr>
<tr><td colspan="3">32 GB RDIMM</td></tr>
<tr><td colspan="3">64 GB RDIMM</td></tr>
<tr><td colspan="3">128 GB RDIMM</td><td colspan="2" rowspan="2">35°C</td><td>Not Supported</td><td colspan="2" rowspan="2">Not Supported</td><td rowspan="2">Not Supported</td></tr>
<tr><td colspan="3">256 GB RDIMM (Note 1)</td><td>30°C</td></tr>
<tr><td rowspan="8">GPU</td><td colspan="3">A2 16 GB</td><td colspan="5" rowspan="8">35°C</td><td>30°C</td></tr>
<tr><td colspan="3">A16 64 GB</td><td rowspan="7">35°C</td></tr>
<tr><td colspan="3">A30 24 GB</td></tr>
<tr><td colspan="3">A40 48 GB</td></tr>
<tr><td colspan="3">A100 80 GB</td></tr>
<tr><td colspan="3">H100 80 GB</td></tr>
<tr><td colspan="3">MI210 64 GB</td></tr>
</table>

**Note 1:** Support SKHYNIX RDIMM only

**NOTE:** Not all backplanes/risers support liquid cooling; these are listed as "No Support."

**NOTE:** Inlet temperature is determined by lowest degree requirement.

### Table 43. Liquid cooling: Thermal restriction matrix(non-GPU)

| Configuration | | No BP | 8 x 2.5" U.2 | 24 x 2.5" SAS | | 8x3.5" | 12x3.5" | | |
|---|---|---|---|---|---|---|---|---|---|
| Rear storage | | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan | No Rear Drives | No Rear Drives | 2x Rear 2.5" w/ 2x Rear-Fan | 4x Rear 2.5 w/ 3x Rear-Fan |
| CPU | All CPU TDP SKUs | HPR SILVER Fan | | | | HPR SILVER Fan [75%] | HPR GOLD Fan [70%] | | |
| Memory | 16 GB RDIMM | HPR SILVER Fan | | | | HPR SILVER Fan [75%] | HPR GOLD Fan [70%] | | |
| | 32 GB RDIMM | | | | | | | | |
| | 64 GB RDIMM | | | | | | | | |
| | 96 GB RDIMM | | | | | | | | |
| | 128 GB RDIMM | HPR GOLD Fan | Not supported | | | | | | |
| | 256 GB RDIMM **(Note 1)** | | | | | | | | |

**Note 1:** Support SKHYNIX RDIMM only

**NOTE:** Use “High-Performance Silver” fan for all 2.5” and 8x3.5” configurations.

**NOTE:** Use “High-Performance GOLD” fan for all 12x3.5” configurations.

### Table 44. Liquid cooling: Thermal restriction matrix(GPU Configuration)

| Configuration | | No BP | 8 x 2.5" U.2 | 8x3.5" |
|---|---|---|---|---|
| Rear storage | | No Rear Drives | No Rear Drives | No Rear Drives |
| CPU | All CPU TDP SKUs | HPR GOLD Fan | | HPR GOLD Fan [75%] |
| Memory | 16 GB RDIMM | HPR GOLD Fan | | HPR GOLD Fan [75%] |
| | 32 GB RDIMM | | | |
| | 64 GB RDIMM | | | |
| | 96 GB RDIMM | | | |
| | 128 GB RDIMM | HPR GOLD Fan | | Not supported |
| | 256 GB RDIMM **(Note 2)** | | | |
| GPU | A2 16 GB | HPR GOLD Fan | | HPR GOLD Fan [75%] **Note 1** |
| | A16 64 GB | | | HPR GOLD Fan [75%] |
| | A30 24 GB | | | |
| | A40 48 GB | | | |
| | A100 80 GB | | | |
| | H100 80 GB | | | |
| | MI210 64 GB | | | |

**Note 1:** Supported ambient temperature is 30°C.

**Note 2:** Support SKHYNIX RDIMM only

**NOTE:** “High-Performance GOLD Fan” to be supported on all GPU configurations.

**NOTE:** GPU is not supported on 12x3.5” configurations and system configurations with rear module installed.

### Table 45. Label reference

| Label | Description |
|---|---|
| HPR SILVER (Silver) | High performance (silver grade) |
| HPR GOLD (Gold) | High performance (gold grade) |
| HSK | Heat sink |
| LP | Low profile |
| FH | Full height |

14

# Appendix B. Standards compliance

The system conforms to the following industry standards.

**Table 46. Industry standard documents**

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

15

# Appendix C Additional resources

**Table 47. Additional resources**

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

16

# Appendix D: Service and support

**Topics:**



## Why attach service contracts

Dell PowerEdge servers include a standard hardware warranty that highlights our commitment to product quality by guaranteeing repair or replacement of defective components. While industry-leading, our warranties are limited to 1 or 3 years, depending on model, and do not cover software assistance. Call records show that failure rates for servers are roughly 1% and more commonly, customers seek Dell technical support for software-related issues like configuration guidance, troubleshooting, upgrade assistance, or performance tuning. Encourage customers to purchase ProSupport service contracts to supplement warranty coverage and ensure optimal support for both hardware and software. ProSupport provides a complete hardware guarantee beyond the original warranty period (up to 12 years: including seven years standard support and an additional five years of Post-Standard Support). Details of the ProSupport Suite and benefits are listed below.

## ProSupport Infrastructure Suite

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

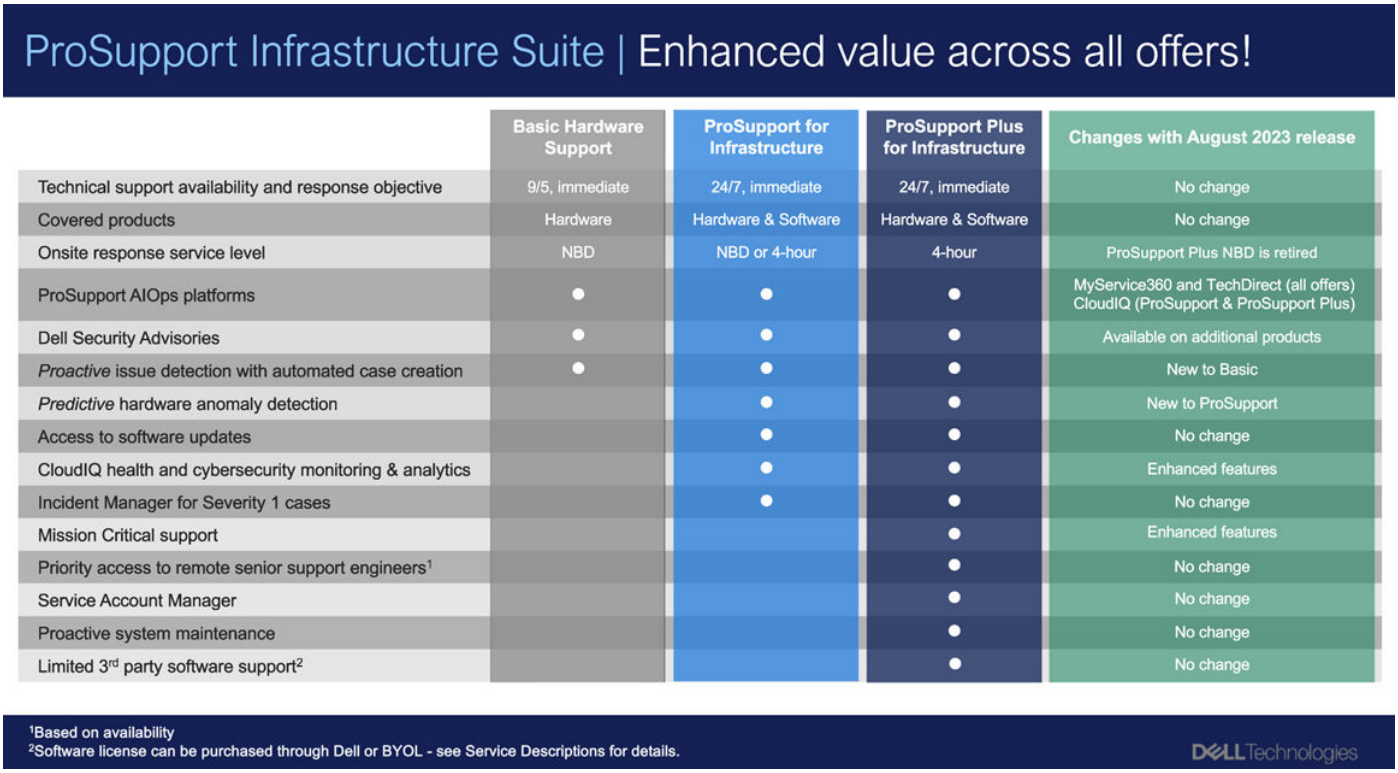


**Figure 49. ProSupport Enterprise Suite**

## ProSupport Plus for Infrastructure

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

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

## ProSupport for Infrastructure

Comprehensive 24x7 support for hardware and software – best for production, but not critical, workloads and applications. The ProSupport service offers highly trained experts around the clock and around the globe to address IT needs. We help minimize disruptions and maximize availability of PowerEdge server workloads with:

- 24x7 support through phone, chat and online
- A central point of accountability for all hardware and software issues
- Hypervisor, operating system and application support
- Dell security advisories
- Onsite response service levels 4 hour or Next Business Day options
- Proactive issue detection with automated case creation

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

## Basic Hardware Support

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

# Specialty Support Services

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

## Hardware coverage add-ons to ProSupport

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

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

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

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

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

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

## Personalized Support and Supplemental Site-wide Expertise

- **Technical Account Manager:**

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

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

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

## Services for large enterprises

- **ProSupport One for Data Center:**

  ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets (combined total of server, storage, networking, so forth). This offering is built on standard ProSupport features that leverage our global scale and are tailored to specific customer needs. While not for everyone, this service option offers a truly unique solution for our largest customers with the most complex environments.

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

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

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

## End-of-Life Services

- **Post Standard Support (PSS)**

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

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

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

# ProDeploy Infrastructure Suite

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

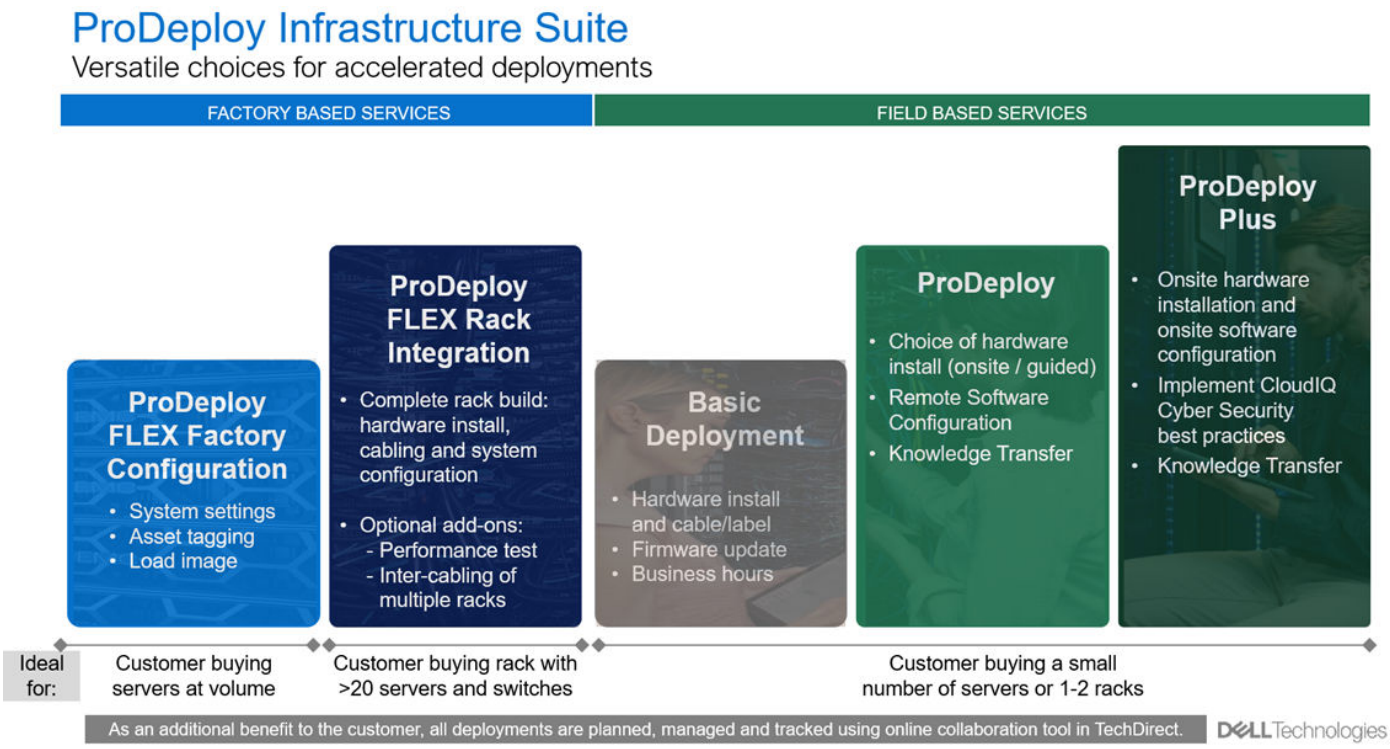


**Figure 50. ProDeploy Infrastructure Suite**

# Factory-based Services

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

**ProDeploy FLEX FactoryConfiguration**

Ideal for Customers buying servers in volume and seeking pre-configuration prior to shipping such as: custom image, system settings, and asset tagging so it arrives ready to use out of the box. Furthermore, servers are packaged and bundled to meet specific shipping and distribution requirements for each customer location to facilitate the rollout process. Once the server is onsite , Dell can install and configure the server to the environment using any of the field-based deployment services outlined in the next section.

**ProDeploy FLEX Rack Integration**

Ideal for customers seeking to build out fully integrated racks prior to shipping. These rack builds include hardware install, cabling, and full system configuration. You can also add-on a factory stress test and optional on-site final rack configuration to complete the rack installation.

- STANDARD SKUs for Rack Integration is available in USA only and requires:
  - 20 or more devices (R and C series servers, VxRail, and all Dell or non-Dell switches.
  - Shipping to contiguous USA.
- USE CUSTOM QUOTE for Rack Integration scenarios that require:
  - Shipment to any country or region outside USA or shipping outside contiguous USA
  - Shipping to multiple locations
  - Racks containing fewer than 20 servers
  - Any rack that includes Storage.

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

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

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

**Figure 51. ProDeploy Flex modular services**

# Field-based services

- **ProDeploy Plus:**

  Elevate Infrastructure deployments with our most complete service from planning through onsite hardware installation and software configuration including the implementation of cybersecurity best practices. ProDeploy Plus provides the skill and scale that is needed to successfully perform demanding deployments in today's complex IT environments. The deployment starts with a site readiness review and implementation plan. Certified deployment experts perform the software configuration to include setup of leading operating systems and hypervisors. Dell will also configure PowerEdge software tools to include iDRAC and OpenManage system utilities and support AIOps platforms: MyService360, TechDirect, and CloudIQ. Unique to ProDeploy Plus, the cybersecurity implementation helps customers understand potential security risks and make recommendations for reducing product attack surfaces. The system is tested, validated prior to completion. The customer will also receive full project documentation and knowledge transfer to complete the process.

- **ProDeploy:**

  ProDeploy provides remote software configuration and choice of hardware installation (onsite or guided). ProDeploy is great for customers who are price sensitive or willing to participate in some portion of the deployment to include providing remote access to their network. The ProDeploy remote software implementation includes everything that is mentioned in ProDeploy Plus except it does not include the added value, cybersecurity implementation and best practices.

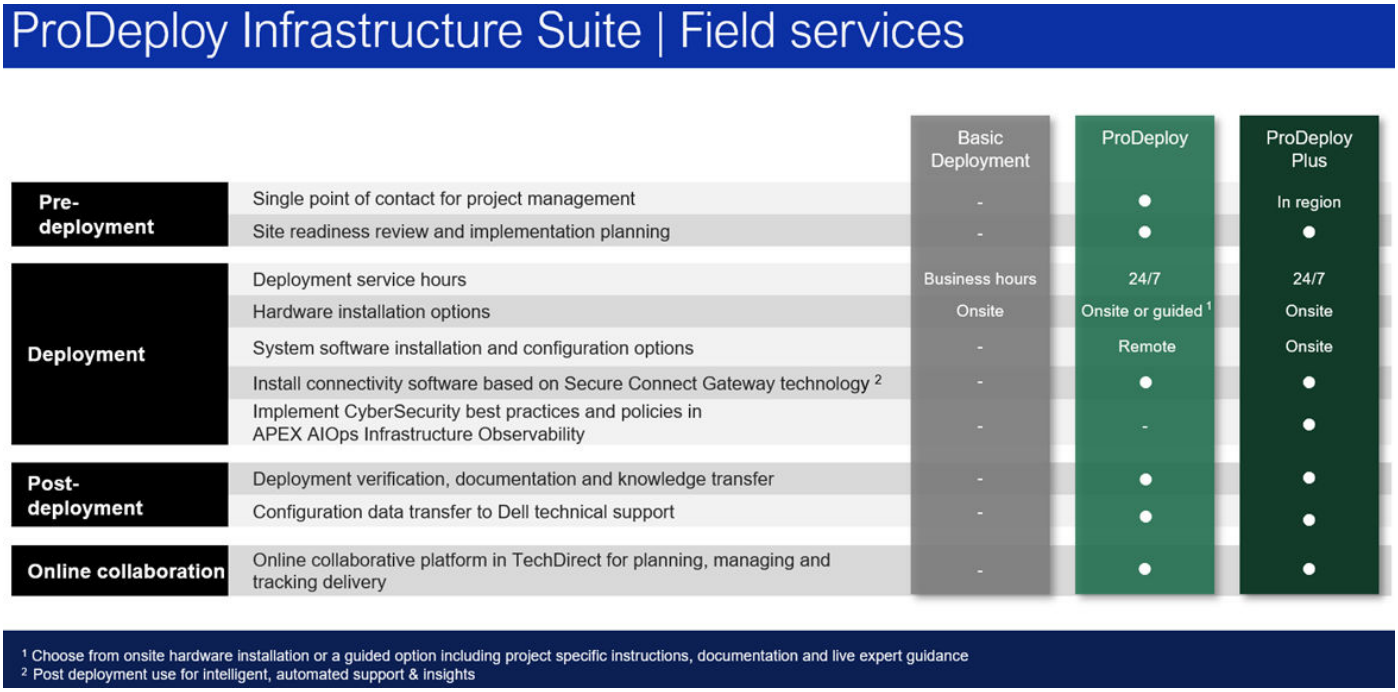


**Figure 52. ProDeploy Infrastructure Suite - Field services**

# Supplemental Deployment Services

Additional ways to expand scope or deploy for unique scenarios.

## Two Host Adder (requires PD/PDP)

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

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

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

## Data Migration Services

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

## Residency Services

Certified technical professionals act like an extension of your IT staff to enhance internal capabilities and resources and help you realize faster adoption and maximized ROI of new technology. Residency Services help customers transition to new capabilities quickly by leveraging specific technology skill sets. Residency experts can provide post implementation management and knowledge transfer that is related to a new technology acquisition or day-to-day operational management of the IT infrastructure.

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

# Unique Deployment Scenarios

## Custom Deployment Services

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

## ProDeploy FLEX

ProDeploy Flex is a modular service and a powerful tool for you to attach more services and improve revenue and margins. The ProDeploy Flex modular offer allows sales teams to build and better tailor services by mixing factory and field delivery options. You can also select special deployment scenarios without going to the custom order desk. FLEX is ideal for unique deployments where ProDeploy or ProDeploy Plus are not an adequate answer to the customer needs. Key features of ProDeploy FLEX :

- Build deployment quotes using modular, selectable features for both hardware and software.
- The system automatically scales pricing based on volume.
- Ideal for customers who require NativeEdge Orchestrator or edge deployments.
- Ability to add deployment services to third-party networking devices.

## Deployment of HPC

High-Performance Computing (HPC) implementations require specialists that understand advanced feature sets. Dell deploys the world 's fastest systems and understands the nuances that make them perform. HPC deployments are most often scoped as custom service engagements, however we can do smaller HPC clusters under 300 nodes using a standard ProDeploy SKU. Any standard SKU for HPC deployment will be sold as one base SKU per cluster (ProDeploy for HPC Base) along with one ProDeploy for HPC Add-on for each device in the cluster (server nodes and switches).

Scope of ProDeploy for HPC:

**NOTE:** Available as standard SKUs in US and Canada. Custom Service would be required for all other regions.

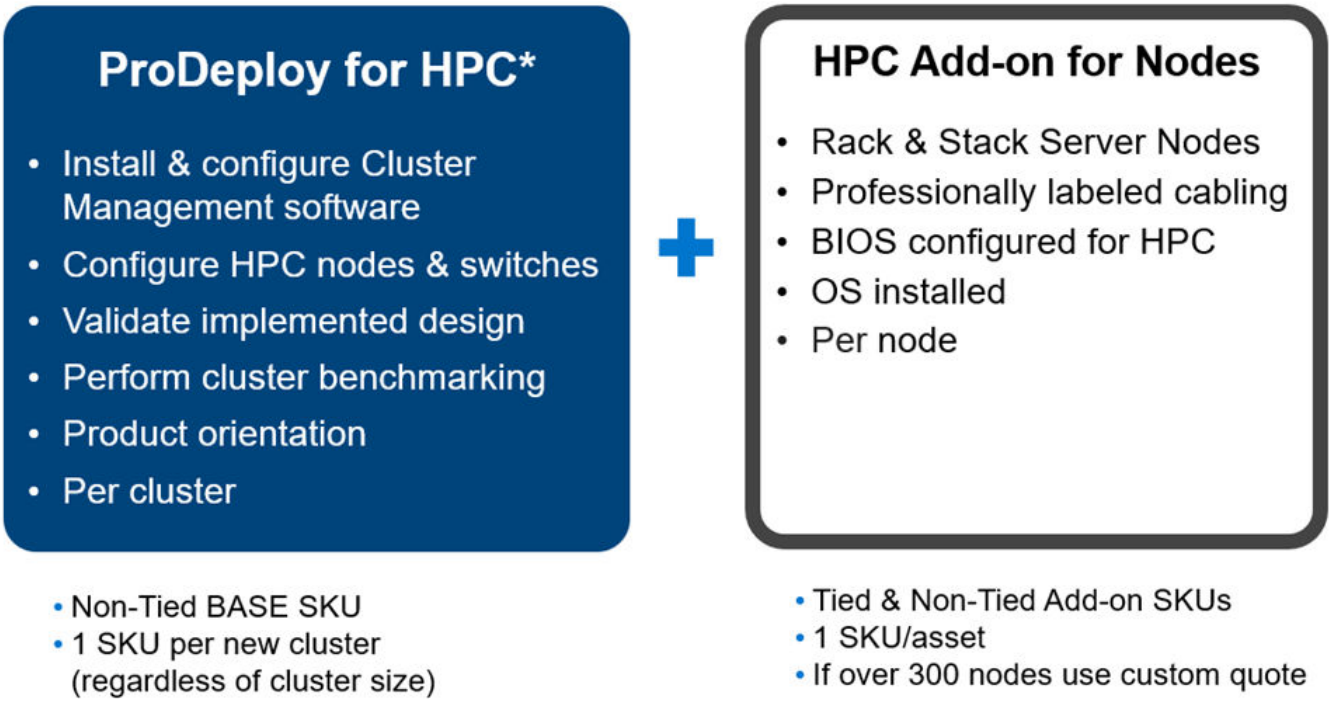


**Figure 53. Standard deliverables of ProDeploy for HPC**

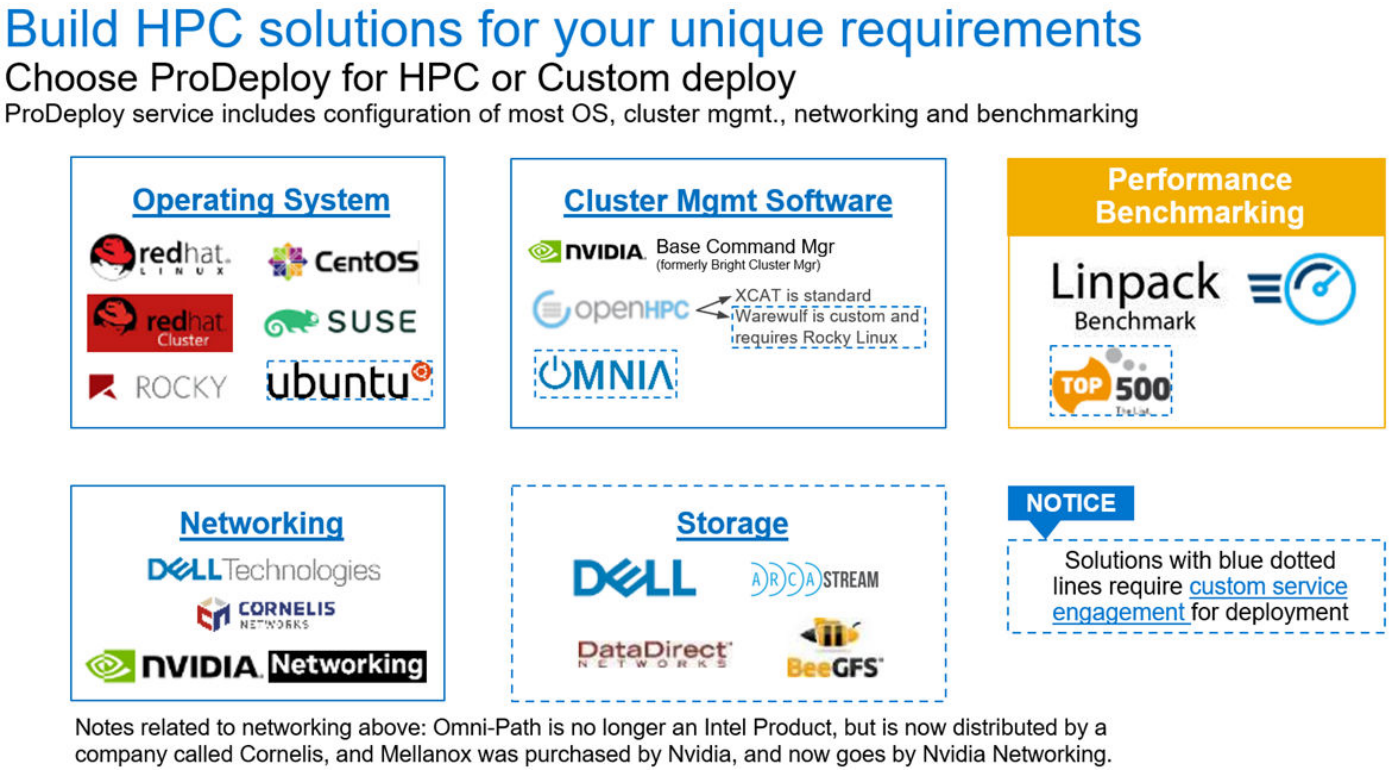


**Figure 54. Visual view of HPC deployment options to include hardware and software**

# DAY 2 – Automation Services with Ansible

Dell solutions are built as "automation ready" with integrated APIs (Application Programming Interfaces) to allow customers to programmatically call actions on the product through code. Although Dell has published Anisble automation use cases, some customers need additional assistance with GitOps. By the end of the service, the customer will have the foundational

components required to accelerate automation and understand how the programming works together: Day 1 and Day 2 use case automation scripts (ansible modules), CI/CD tool (Jenkins), and Version control (Git).

# Dell Technologies Consulting Services

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

## Dell Managed Services

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


**Figure 55. Dell Managed Services**

## Managed Detection and Response (MDR)

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

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

## Dell Technologies Education Services

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

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

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