Dell PowerEdge R770AP

Technical Guide

Regulatory Model: E126S
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DELL Technologies

Notes, cautions, and warnings

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

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

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

Contents

1

PowerEdge R770AP system configurations and features

NOTE: This document provides a comprehensive list of product features. However, features that are marked with an asterisk (*) may not be available at launch but introduced in future updates. Please note that this document does not confirm the availability or release timeline of any feature. For the most accurate and up-to-date information about feature availability, see the product configurator page on Dell Support page.

The PowerEdge R770AP system is a 2U server that supports:

- Two Intel ® Xeon® 6 6900-series P-core processors with up to 128 cores
- 24 DIMM slots
- No backplane configuration
- Up to 8 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x2 NVMe (SSD) drives
- Up to 32 x EDSFF E3.S NVMe (SSD) drives

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

CAUTION: Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

Topics:

Key workloads

The Dell PowerEdge R770AP offers powerful performance in a purpose-built, cyber resilient, mainstream server. Ideal for:

- High-Performance Computing
- Next-Level Virtualization
- Data-Intensive Analytics

New technologies

Table 1. New technologies

Technology	Detailed Description
Intel ® Xeon® 6 6900-series P-core processors	Core count: Up to 128 P-cores processor
	UPI speed: 24 GT/s
	Maximum number of PCIe lanes per CPU: Integrated 96 PCIe 5.0 lanes
	Maximum TDP: 500 W

Table 1. New technologies (continued)

Technology	Detailed Description
6400 MT/s DDR5 Memory	Max 12 DIMMs per processor and 24 DIMMs per system
	Supports RDIMM, DDR5 with ECC up to 6400 MT/s
PCIe Gen	Gen5 @32 GT/s
PCIe Slot	Up to 5x Gen5 PCIe slots with x16 width
	OCP NIC card 3.0 **NOTE:** A rear 2nd OCP FLOP slot is available with x16 width and x8 width
	Optional BOSS-N1 DCMHS
I/O	Front ports: • 1 x USB 2.0 Type C port
	Rear ports: • 2 x USB 3.1 Type A ports • 1 x Dedicated BMC Ethernet port • 1 x VGA
	Internal Port 1 x USB 3.1 Type A port
Data Center Secured Control Module (DC-SCM)	Dedicated Ethernet port for iDrac management
Dedicated PERC	PERC H975i DC-MHS front
Software RAID	N/A
Power Supplies	The 73 mm and 60 mm dimension is the new PSU form factor .
	1500 W Titanium
	3200 W Titanium
	1800 W Titanium
	2400 W Titanium
	3200 W 277Vac & HVDC Titanium*

NOTE: * Feature not available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

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Chassis views and features

Topics:

- Chassis views

Chassis views

System configurations - front view for PowerEdge R770AP system

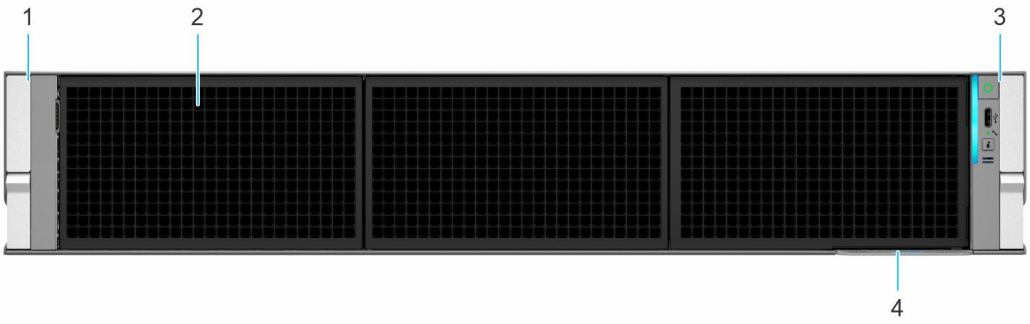

Figure 1. Front view of no BP configuration system

Table 2. Front view of no BP configuration system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) Blank	N/A	Left Control Panel (LCP) Blank
2	Drive blank	N/A	Drive blank is available in no BP configuration and should not be removed.
3	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
4	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

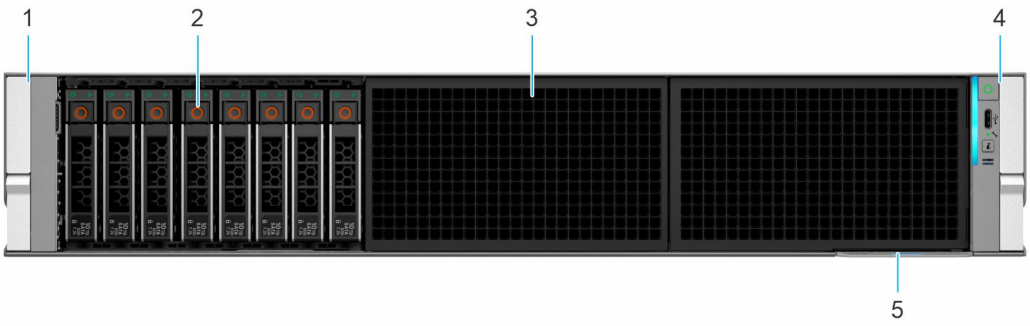

Figure 2. Front view of the 8 x 2.5-inch drive system

Table 3. Front view of the 8 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) Blank	N/A	Left Control Panel (LCP) Blank
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Drive blank	N/A	Drive blank is available in eight drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

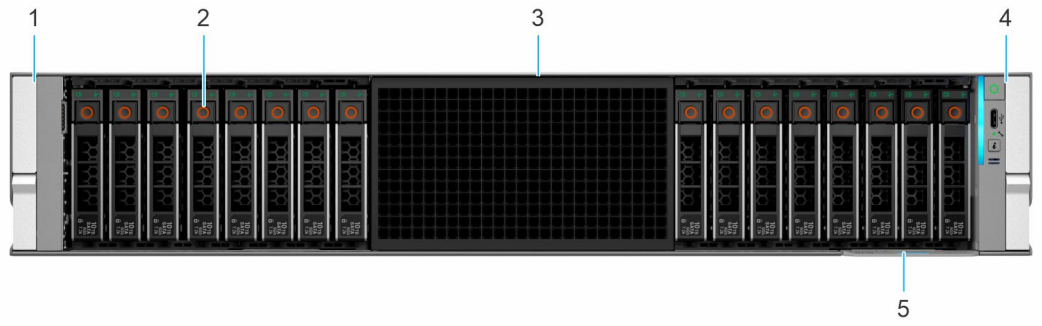

Figure 3. Front view of 16 x 2.5-inch drive system

Table 4. Front view of 16 x 2.5-inch drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) Blank	N/A	Left Control Panel (LCP) Blank
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Drive blank	N/A	Drive blank is available in 16 drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

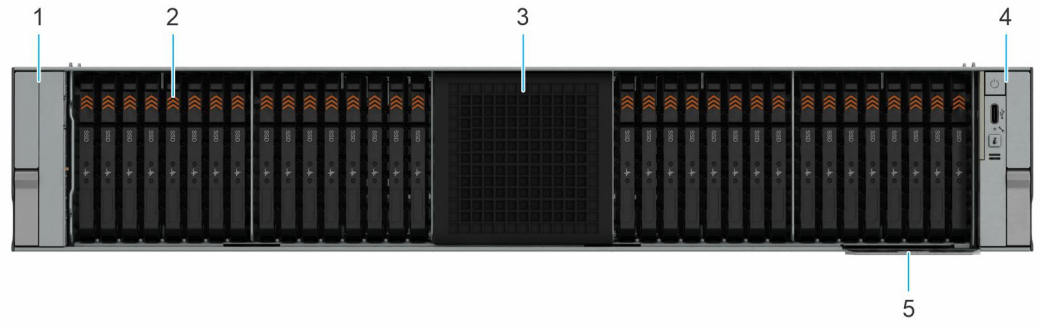

Figure 4. Front view of 32 x EDSFF E3.S drive system

Table 5. Front view of 32 x EDSFF E3.S drive system

Item	Ports, panels, and slots	Icon	Description
1	Left Control Panel (LCP) Blank	N/A	Left Control Panel (LCP) Blank
2	Drive	N/A	Enables you to install drives that are supported on your system.
3	Blank Panel	N/A	Blank panel is available in 32 drive configuration and should not be removed.
4	Right Control Panel (RCP) - Primary	N/A	Contains the system health LED, system ID, power button, Type-C USB port, and the host status LED.
5	Express Service Tag	N/A	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on.

System configurations - rear view for PowerEdge R770AP system

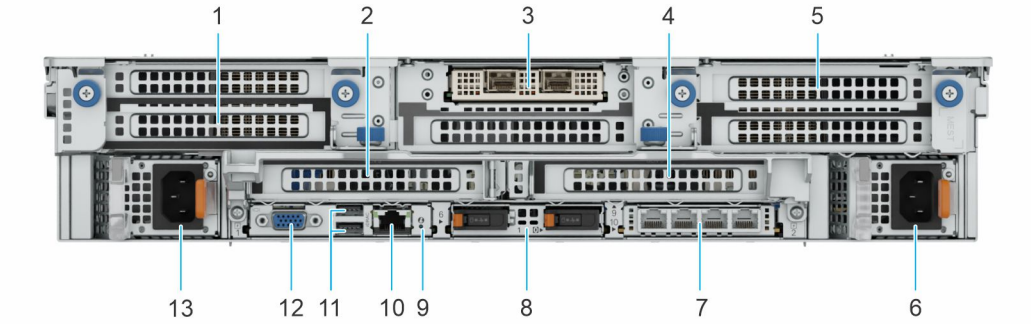

Figure 5. Rear view of the system

Table 6. Rear view of the system with rear I/O configuration

items	Ports, panels, or slots	Icon	Description
1	PCIe expansion card riser 1 (slot 2)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
2	PCIe expansion card riser 2 (slot 3)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
3	PCIe expansion card riser 3 (slot 4)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
4	PCIe expansion card riser 4 (slot 9)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
5	PCIe expansion card riser 5 (slot 7)	N/A	The expansion card riser enables you to connect PCI Express expansion cards.
6	Power supply unit (PSU2)	⚡2	PSU2 is the secondary PSU of the system.
7	OCP NIC card	N/A	The OCP NIC card supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to

Table 6. Rear view of the system with rear I/O configuration (continued)

items	Ports, panels, or slots	Icon	Description
			the system board and also supports the iDRAC shared NIC feature.
8	BOSS-N1 DC-MHS module	N/A	BOSS module for internal system boot.
9	SID LED		Rear system identification LED
10	iDRAC dedicated port		Enables you to remotely access iDRAC. When the front iDRAC port is connected to the network, the rear iDRAC port is automatically disabled.
11	USB 3.1 port		The USB port is 9-pin and 3.1-compliant. This port enables you to connect USB devices to the system.
12	VGA port		Enables you to connect a display device to the system.
13	Power supply unit (PSU1)	1	PSU1 is the primary PSU of the system.

Inside the system

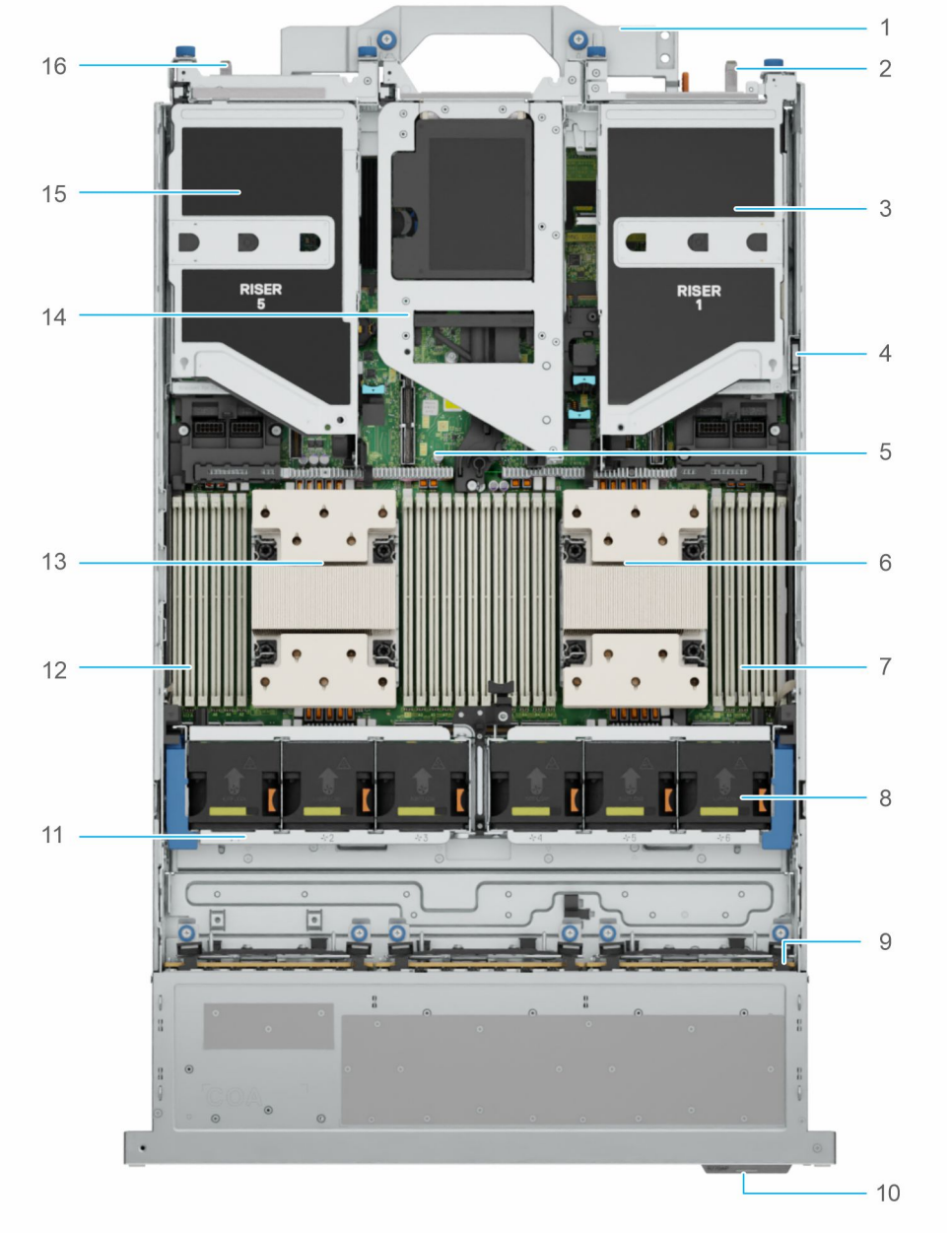

Figure 6. Inside the system

1. System handle
2. Power supply unit (PSU1)
3. Rear riser 1
4. Intrusion Switch
5. System board or Host Processor Module (HPM)
6. Processor heat sink module for processor 1
7. Memory module slots (DIMM)
8. Cooling fan
9. Backplane
10. Express Service Tag
11. Cooling fan cage
12. Memory module slots (DIMM)
13. Processor heat sink module for processor 0

14. Rear riser 3
15. Rear riser 5
16. Power supply unit (PSU2)

QR code for PowerEdge R770AP system resources

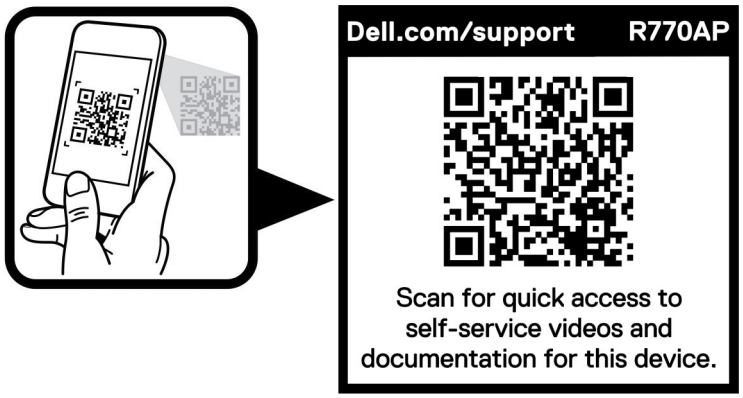

Figure 7. QR code for PowerEdge R770AP system

Chassis configurations

The PowerEdge™R770AP system supports:

- No backplane configuration
- Up to 8 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x2 NVMe (SSD) drives available with RAID
- Up to 32 x EDSFF E3.S NVMe (SSD) drives

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Processor

Topics:

- Processor features

Processor features

The Intel ® Xeon® 6 6900-series P-core processors.

The following lists the features and functions that are in the Intel ® Xeon® 6 6900-series P-core processors offering:

- 12 channels of DDR5
- Up to six Intel® UPI 2.0 links with speeds of 2.5 GT/s,16 GT/s,20 GT/s, 24 GT/s
- Flexible Memory Subsystem for Emerging Workloads
  - DDR5 - efficient bandwidth, lower latency
- Platform I/O bandwidth and RAS for storage
  - 32-GT/s PCIe 5.0 and CXL 2.0 on CPU via Intel® Flex Bus
  - x2 PCIe bifurcation capability
  - 58 GB/s local, 37 GB/s remote PCIe P2P
  - Share Virtual Memory support
  - Intel® Scalable I/O Virtualization (Intel® Scalable IOV)
- Intel socket BR1A:7529 pins Processor socket

Supported processors

The following table shows the SKUs that are supported on the R770AP .

Table 7. Intel® Xeon® 6 6900- series with P-cores processors

Processor	Clock Speed (GHz)	Cache (M)	UPI (GT/s)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	TDP
6952P	2.1GHz	480M	24GT/s	96	96	2.1/3.9 GHz	6400MT/s	4TB	400
6972P	2.4GHz	480M	24GT/s	96	96	2.4/3.9 GHz	6400MT/s	4TB	500
6960P	2.7GHz	432M	24GT/s	72	72	2.7/3.9 GHz	6400MT/s	4TB	500
6978P	2.1GHz	504M	24GT/s	120	120	2.1GHz	6400MT/s	4TB	500
6980P	2GHz	504M	24GT/s	128	128	2.0/3.9 GHz	6400MT/s	4TB	500

NOTE: Mixing the processors is not supported.

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Memory subsystem

Topics:

- Supported memory

Supported memory

Table 8. Memory technology

Feature	PowerEdge R770AP (DDR5)
DIMM type	RDIMM
Transfer speed	6400 MT/s(1DPC) **NOTE:** Maximum DIMM transfer speed support dependent on CPU SKU and DIMM population
Voltage	1.1 V

Table 9. Supported DIMMs

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

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Storage

Topics:

- Storage controllers
- Supported Drives
- Internal storage configuration

Storage controllers

The R770AP system supports Front PERC H975i.

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

Dell 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.

PERC Controller offerings are a heavy leverage of the predecessor PERC family. The Value and Value Performance levels carry over to the systems from the predecessor family.

Table 10. PERC Series controller offerings

Performance Level	Controller and Description
Premium Performance	H975i Avanger 2 Memory: 1 GB DDR4/2400 MT/s Cache memory: 192 MB x16 PCIe 5.0 at 32 Gbps

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.

Storage controller feature matrix

Table 11. Storage controller feature matrix

Model and Form Factors	Interface Support	PCI Support	SAS Connection	Cache Memory Size	Write Back Cache	RAID Levels	Max Drive Support	RAID Support
PowerEdge Server-Storage Controllers (PERC) Series 13								
H975i Front	Gen3 (8 GT/s) NVMe Gen5 (32 GT/s) NVMe Gen4 (16 GT/s) NVMe	PCIe Gen5	Not supported	192 MB (on chip)	Flash Backed Cache	0, 1, 5, 6, 10, 50, 60	16x PCIe SSD controller	Hardware RAID

This document is updated as changes happen, so for the latest version be sure to bookmark it rather than downloading an offline copy or see the Storage Controller Matrix on sales portal.

Server storage controllers User Guide

- Server-Storage Controllers User's Guides, click here

Supported Drives

The table that is shown below lists the internal drives that are supported in R770AP. See Agile for the latest SDL.

Table 12. Supported drives

Form Factor	Type	Speed	Rotational Speed	Capacities
2.5 inches U.2*	NVMe	Gen4	SSD	800 GB, 960 GB, 1.92 TB, 3.2 TB, 3.84 TB, 7.68 TB, 15.36 TB
2.5 inches U.2	NVMe	Gen5	SSD	800 GB*, 960 GB*, 1.6 TB*, 1.92 TB*, 3.2 TB*, 3.84 TB, 6.4 TB, 7.68 TB, 15.36 TB
EDSFF E3.S	NVMe	Gen5	SSD	1.6 TB, 1.92 TB, 3.2 TB, 3.84 TB, 6.4 TB, 7.68 TB, 15.36 TB

NOTE: * Feature not available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

Internal storage configuration

R770AP available internal storage configurations:

- No backplane configuration
- Up to 8 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x4 NVMe (SSD) drives
- Up to 16 x 2.5-inch G5 x2 NVMe (SSD) drives
- Up to 32 x EDSFF E3.S NVMe (SSD) drives

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Networking

Topics:

Overview

PowerEdge offers a wide variety of options to get information moving to and from our servers. Industry best technologies are chosen and these adapters are rigorously validated for worry-free, fully supported use in Dell servers.

OCP 3.0 support

Table 13. OCP 3.0 feature list

Feature	OCP 3.0
Form factor	SFF
PCIe Gen	Gen5
Max PCIe width	x8, x16
Max number of ports	4
Port type	SFP28/QSFP56
Max port speed	25 GbE, 100 GbE, 200 GbE, 400 GbE
NC-SI	Yes
SNAPI	Yes
WoL	Yes
Power consumption	15 W– 80 W

Supported OCP cards

Table 14. Supported OCP cards

Form factor	Vendor	Port type	Port speed	Port count
OCP 3.0	NVIDIA	SFP28	25 GbE	2
	Broadcom	BT	1 GbE	4
	NVIDIA	QSFP56	100 GbE	2
	Broadcom	SFP28	25 GbE	4
	Broadcom	QSFP56	100 GbE	2
	Broadcom	BT	10 GbE	4
	Broadcom	BT	10 GbE	2

Table 14. Supported OCP cards (continued)

Form factor	Vendor	Port type	Port speed	Port count
	Broadcom	SFP28	25 GbE	2
	Intel	BT	10 GbE	2
	Intel	BT	10 GbE	4
	Intel	BT	1 GbE	4
	Broadcom	QSFP112	200 GbE	2

OCP NIC 3.0 vs 2.0

Table 15. OCP 3.0 and 2.0 NIC comparison

Form Factor	OCP 2.0 (LOM Mezz)	OCP 3.0	Notes
PCIe Gen	Gen3	Gen5	Supported OCP3 is SFF (small form factor).
Max PCIe Lanes	Up to x16	Up to x16	See server slot priority matrix.
Shared LOM	Yes	Yes	Only OCP on slot 10 (rear IO) can support iDRAC port redirect as shared NIC.
Aux Power	Yes	Yes	Used for Shared LOM

NOTE: Support for OCP 2.0 is not available in 17G systems.

OCP form factors

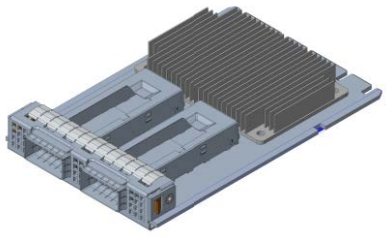

Figure 8. OCP 3.0 Small Card Form Factor (LS)

For information about installing and removing the OCP, see *Installation and Service manual* at Dell support site.

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PCIe subsystem

Topics:

- PCIe risers

PCIe risers

Shown below are the riser offerings for the platform.

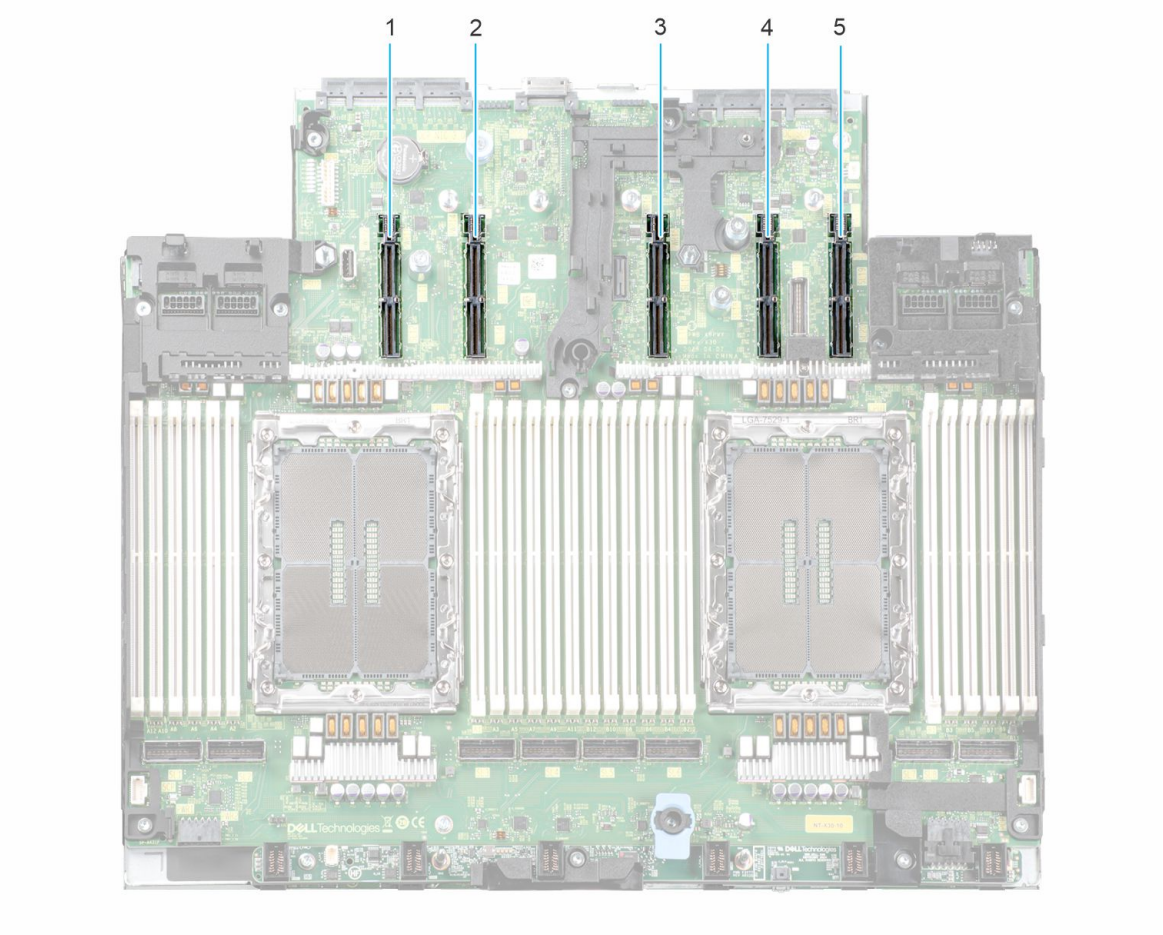

Figure 9. Riser connector location on system board

1. Riser Connector 5
2. Riser Connector 4
3. Riser Connector 3
4. Riser Connector 1
5. Riser Connector 2

NOTE: The riser numbers represent the riser module, not the connectors on the HPM.

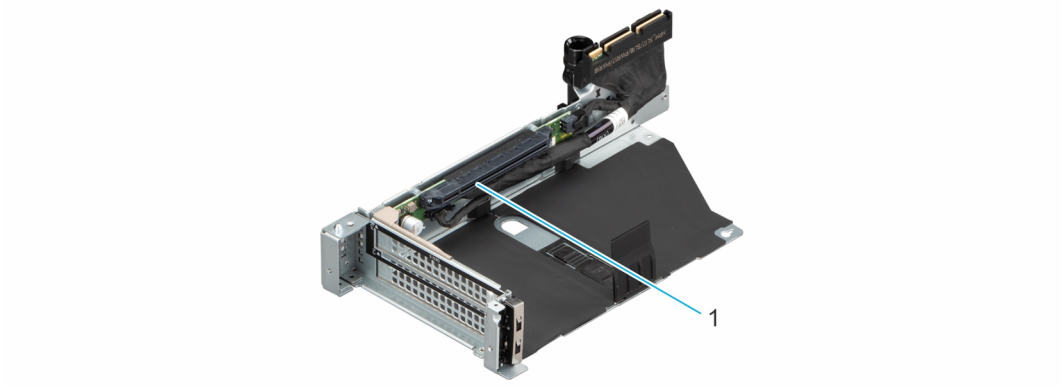

Figure 10. Riser 1B

1. Slot 2

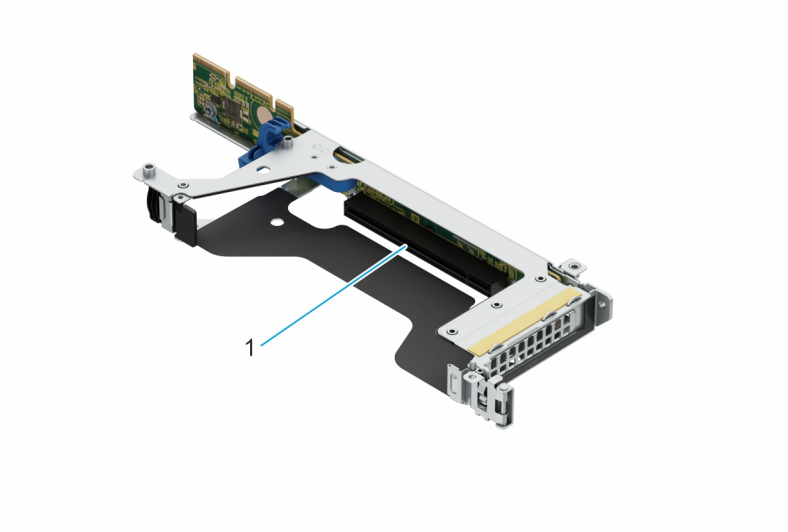

Figure 11. Riser R2A

1. Slot 3

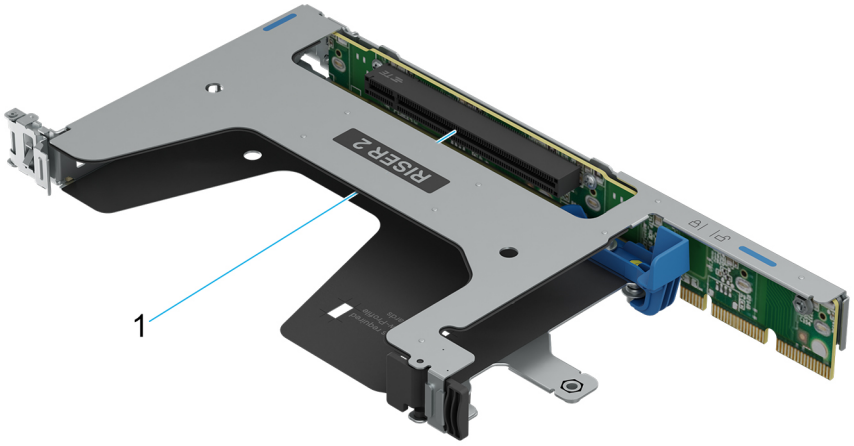

Figure 12. Riser 2B

1. Slot 3

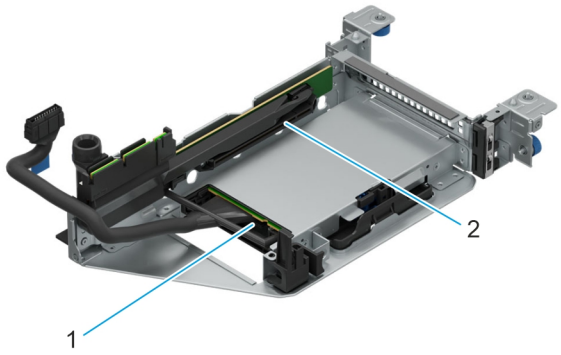

Figure 13. Riser 3G

1. Slot 4
2. Slot 5

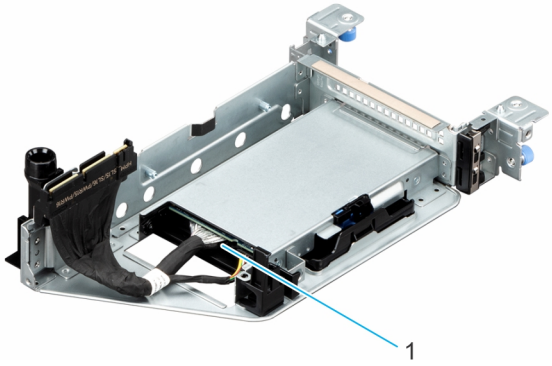

Figure 14. Riser 3E

1. Slot 4

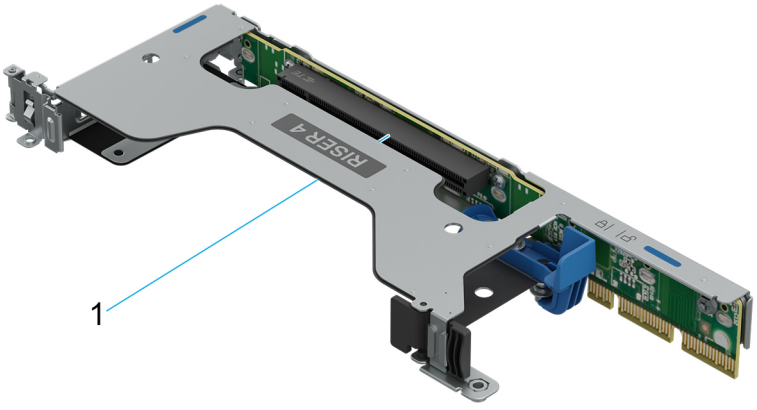

Figure 15. Riser 4A

1. Slot 9

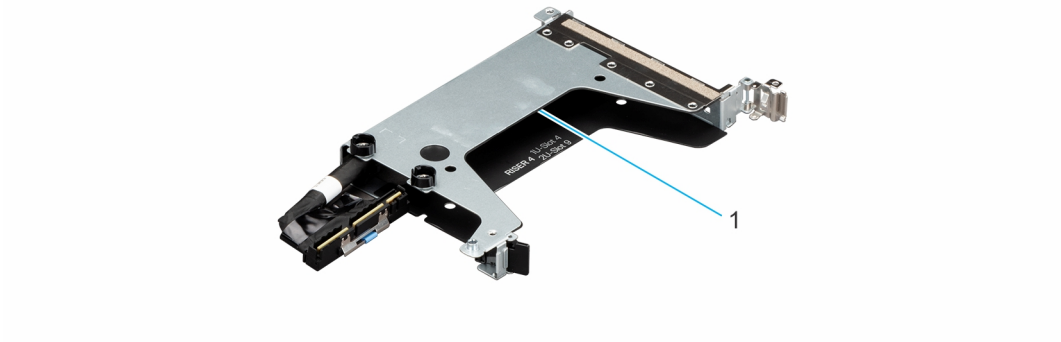

Figure 16. Riser 4B

1. Slot 9

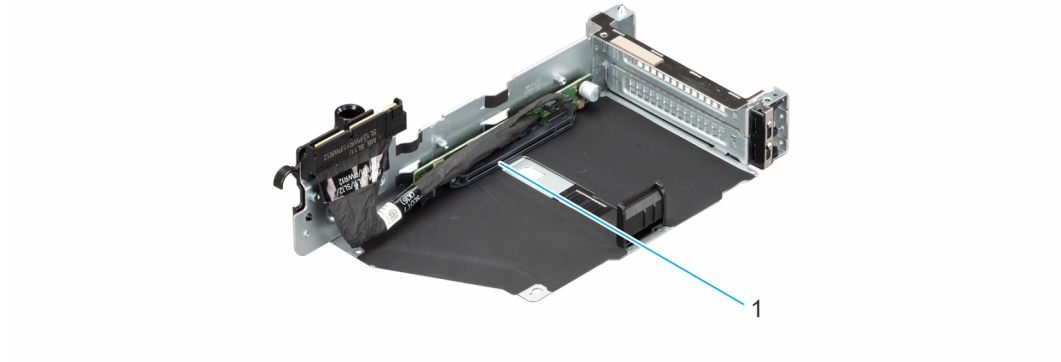

Figure 17. Riser R5B

1. Slot 7

Table 16. PCIe Riser Configurations

Configuration No.	Riser configuration	No. of Processors	PERC type supported	Rear storage possible
0	R1b+R2b+R3e+R4b+R5b	2	N/A	No
1	R1b+R2a+R3g+R4a+R5b	2	N/A	No

8

Power, thermal, and acoustics

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

Topics:

Power

Table 17. Power tools and technologies

Feature	Description
Power Supply Units(PSU) portfolio	Dell's PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. Find additional information in the Power supply units section.
Tools for right sizing	Enterprise Infrastructure Planning Tool (EIPT) is a tool that can help you determine the most efficient configuration possible. With Dell's EIPT, you can calculate the power consumption of your hardware, power infrastructure, and storage at a given workload. Learn more at Dell EIPT.
Industry Compliance	Dell's servers are compliant with all relevant industry certifications and guide lines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: ● Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% ● More accurate reporting of power
Rack infrastructure	Dell offers some of the industry's highest-efficiency power infrastructure solutions, including: ● Power distribution units (PDUs) ● Uninterruptible power supplies (UPSs) ● Energy Smart containment rack enclosures ● AC Blind Mate Find additional information at: Power and Cooling

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 R770AP.

Table 18. PSU specifications

PSU	Frequency	Voltage	Heat dissipation	Class	Current
1500W AC	50/60Hz	100-240 Vac	5625 BTU/hr	Titanium	12-8.2A

Table 18. PSU specifications (continued)

PSU	Frequency	Voltage	Heat dissipation	Class	Current
1500W HVDC (China Only)	N/A	240 Vdc	5625 BTU/hr	N/A	6.8A
1800W AC	50/60Hz	200–240 Vac	6750 BTU/hr	Titanium	9.8-8.2A
1800W HVDC (China Only)	N/A	240 Vdc	6750 BTU/hr	N/A	8.2A
2400W AC	50/60Hz	100–240 Vac	9000 BTU/hr	Titanium	16-13.2A
2400W HVDC (China Only)	N/A	240 Vdc	9000 BTU/hr	N/A	10.9A
3200W AC	50/60Hz	200-240 Vac	12,000 BTU/hr	Titanium	16A
3200W HVDC (China Only)	N/A	240 Vdc	12,000 BTU/hr	N/A	14.5A
3200 W 277Vac & HVDC*	50/60Hz	277 Vac	12,000 BTU/hr	Titanium	12.9 A
	N/A	336 Vdc	12,000 BTU/hr	N/A	10.47 A

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

Figure 18. PSU power cords

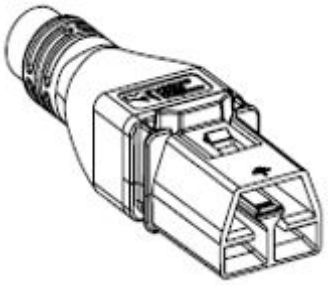

Figure 19. APP 2006G1 power cord

Table 19. PSU power cables

Form factor	Output	Power cable
60 mm	1500 W mixed mode	C13
	1800 W mixed mode	C15
73.5 mm	2400 W mixed mode	C19
	3200 W mixed mode	C19
	3200 W 277Vac & HVDC*	APP/Saf-D-Grid

NOTE: * Feature not available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

NOTE: If a system with AC 1500 W PSUs operates at low line 100-120 Vac, then the power rating per PSU is derated to 1050 W.

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

NOTE: If a system with AC 3200 W PSUs operates at high line 200-220 Vac, then the power rating per PSU is derated to 2900 W.

NOTE: If a system with AC 3200 W PSUs operates at high line 220-240 Vac, then the power rating per PSU is 3200 W.

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.

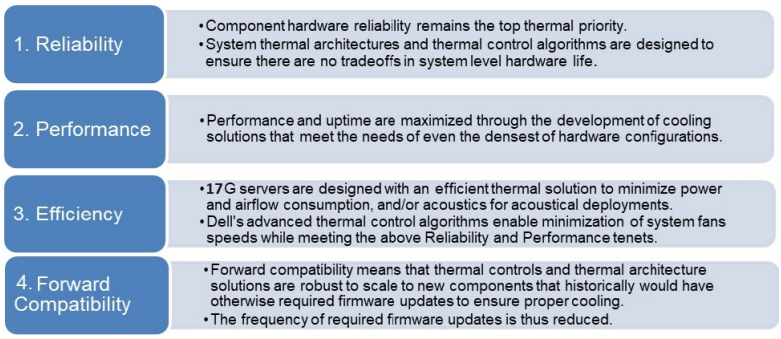

Figure 20. Thermal design characteristics

The thermal design of the PowerEdge R770AP reflects the following:

- Optimized thermal design: The system layout is architected for optimum thermal design.
- System component placement and layout are designed to provide maximum airflow coverage to critical components with minimum expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the fan speed based on several different responses from all system-component temperature sensors, and inventory for system configurations. Temperature monitoring includes components such as processors, DIMMs, chipset, the inlet air ambient, hard disk drives, and OCP.
- Open and closed loop thermal fan speed control: Open loop thermal control uses system configuration to determine fan speed based on inlet air ambient temperature. Closed loop thermal control method uses feedback temperatures to dynamically determine proper fan speeds.
- User-configurable settings: With the understanding and realization that every customer has unique set of circumstances or expectations from the system. For more information, see the Dell PowerEdge R770AP Installation and Service Manual at PowerEdge Manuals and “Advanced Thermal Control: Optimizing across Environments and Power Goals” on Dell.com.
- Cooling redundancy: The R770AP allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the R770AP reliable under a wide range of operating environments.

Acoustics

Acoustical configurations of R770AP

The Dell PowerEdge R770AP is a rackmount server for unattended data center environment. Acoustical performance is provided in terms of Four configurations: Quietest Configuration, Entry, Volume, and IMDB. Detailed information about these configurations can be found in 'Configurations that are tested for acoustical experience' table, while acoustical performance data for each configuration is included in 'Acoustical experience of R770AP edition configurations' table. R770AP is designed for use in data centers, but some users may prefer to use it in a quieter setting. However usually, the idle air mover speed of the system cannot be lowered without changing the configuration of the system, and in some cases, even a configuration change may not reduce idle air mover speeds.

Table 20. Configurations tested for acoustical experience

Configurations	Quietest Acoustical	Entry	Volume	IMDB
System fan type	High-Performance Gold	High-Performance Gold	High-Performance Gold	High-Performance Platinum
CPU	2 x 400 W	2 X 400 W	2 x 400 W	2 x 500 W
Memory	2 x 32GB RDIMM DDR5	24 x 32GB RDIMM DDR5	24 x 32GB RDIMM DDR5	24 x 32GB RDIMM DDR5
SSD	1 x 2.5“ NVMe	8 x 2.5“ NVMe	16 x E3	16 x E3
BP	8x 2.5" Universal BP	10x 2.5" Universal BP	2 x 8 x E3 BP	2 x 8 x E3 BP
PERC	N/A	N/A	N/A	N/A
BOSS	None	17G BOSS	17G BOSS	17G BOSS
OCP	N/A	4x1Gbe	2-port 100G	2-port 200G
PSU	2x 1500 W	2x 1500 W	2x 3200 W	2x 3200 W
PCIe	N/A	2-port 200 Gb	2-port 100 Gb LP	2-port 200 Gb

Table 21. Acoustical experience of R770AP edition configurations

Configuration		Quietest Acoustical	Entry	Volume	IMDB
Acoustical Performance: Idle/ Operating @ 25 °C Ambient					
$L_{wA,m}$(B)	Idle[4]	6.7	6.7	N/A	N/A
	Operating / Customer Usage Operating [5][6]	6.7	6.7	N/A	N/A
K_v(B)	Idle[4]	0.4	0.4	0.4	0.4
	Operating / Customer Usage Operating [5][6]	0.4	0.4	0.4	0.4
$L_{pA,m}$(dB)	Idle[4]	52	52	N/A	N/A
	Operating / Customer Usage Operating [5][6]	52	52	N/A	N/A
Prominent discrete tones [3]		Prominence ratio < 15 dB			
Acoustical Performance: Idle @ 28 °C Ambient					
$L_{wA,m}$[1](B)		6.8	6.8	N/A	N/A
K_v (B)		0.4	0.4	0.4	0.4

Table 21. Acoustical experience of R770AP edition configurations (continued)

Configuration	Quietest Acoustical	Entry	Volume	IMDB
$L_{pA,m}$[2](dB)	53	53	N/A	N/A
Acoustical Performance: Max. Loading @ 35 °C Ambient				
$L_{wA,m}$[1](B)	7.7	8.4	N/A	N/A
K_v (B)	0.4	0.4	0.4	0.4
$L_{pA,m}$[2](dB)	62	69	N/A	N/A

[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 that are 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 that 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, 25 cm 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: 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.

9

Rack, rails, and cable management

Topics:

Rails and cable management information

The rail offerings for the PowerEdge R770AP 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 *Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at rail-rack matrix for information regarding:

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

Key factors governing proper rail selection include the following:

- 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 unthreaded 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 an 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 interference with rear-mounted PDUs or the rear rack door.

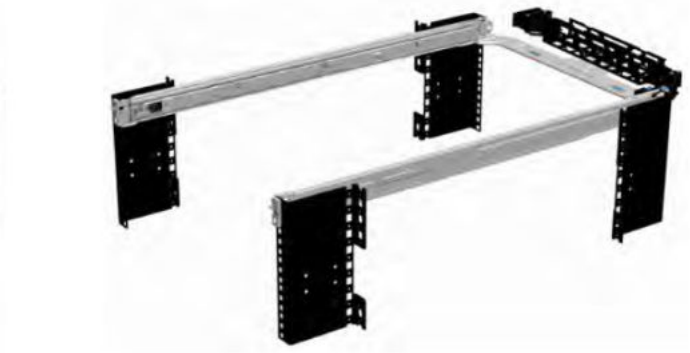

Figure 21. Sliding rails with optional CMA

Figure 22. 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, unthreaded 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 EMC Titan or Titan-D racks.
- Support full extension of the system out of the rack to allow serviceability of key internal components.
- Support for an 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 interference 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 23. Static rails

Static rails features summary

Static rails for 4-post and 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 unthreaded 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 II static rails (B4) must be used. Sliding rails support mounting in 4-post racks only.

Figure 24. Static rails in 2-post center mount configuration

Installation in the Dell EMC 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.

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.

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.

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

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

Figure 25. 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.

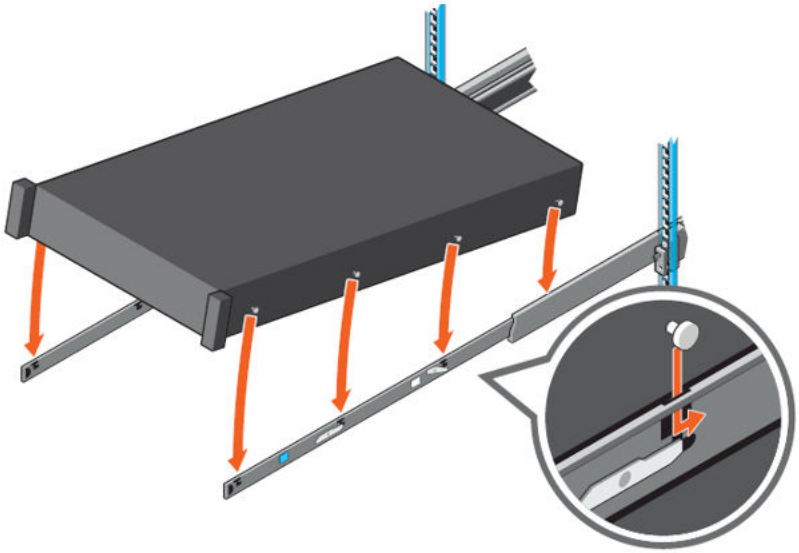

Figure 26. Rail standoffs seated in J-slots

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.

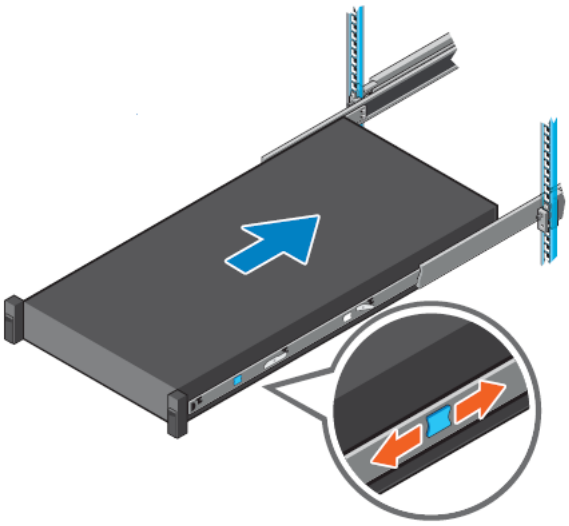

Figure 27. Slide system into the rack

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.

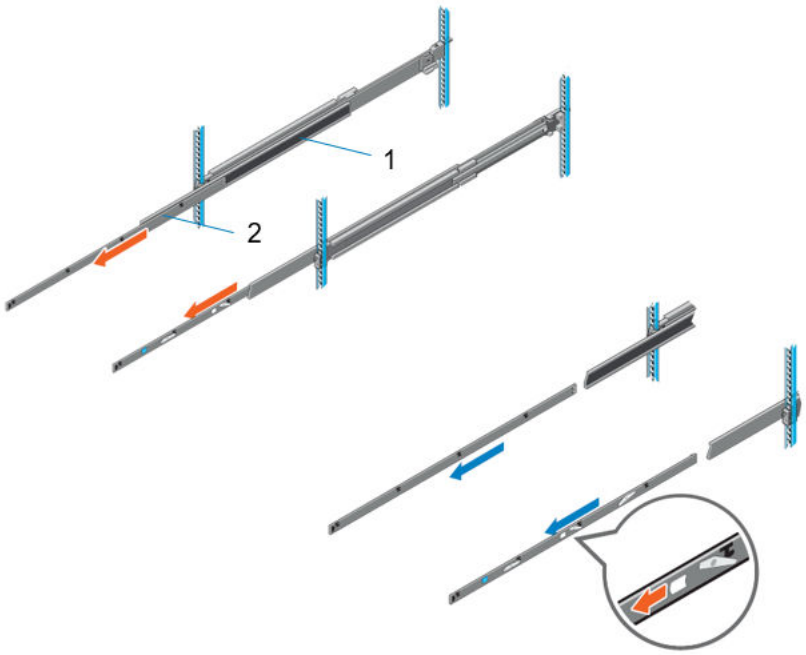

Figure 28. Pull out the intermediate rail

Table 22. 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.

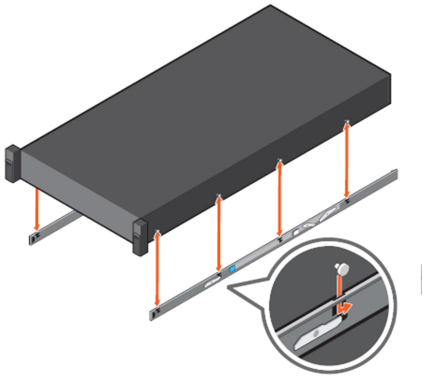

Figure 29. Attach the inner rails to the system

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

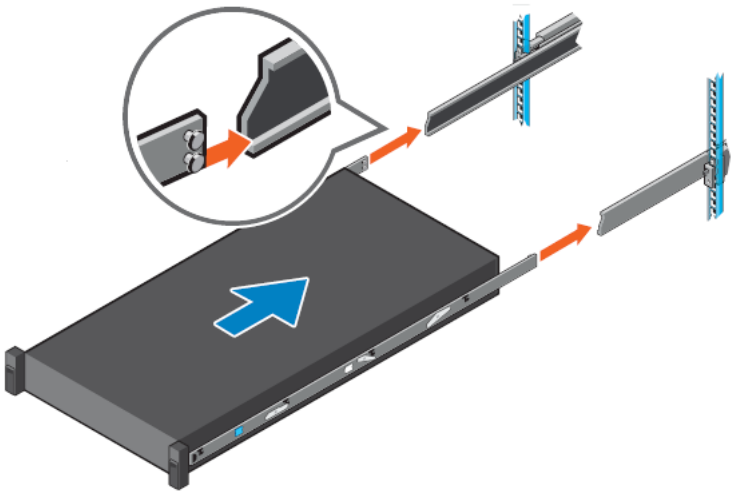

Figure 30. Install system into the extended rails

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

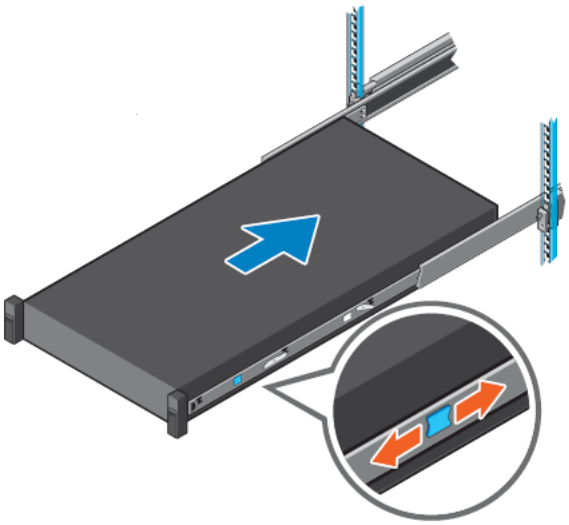

Figure 31. Slide system into the rack

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.

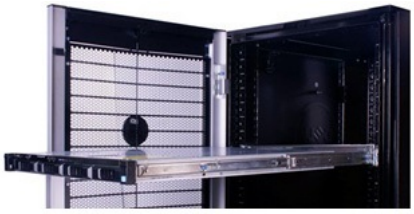

Figure 32. Sliding rails with CMA

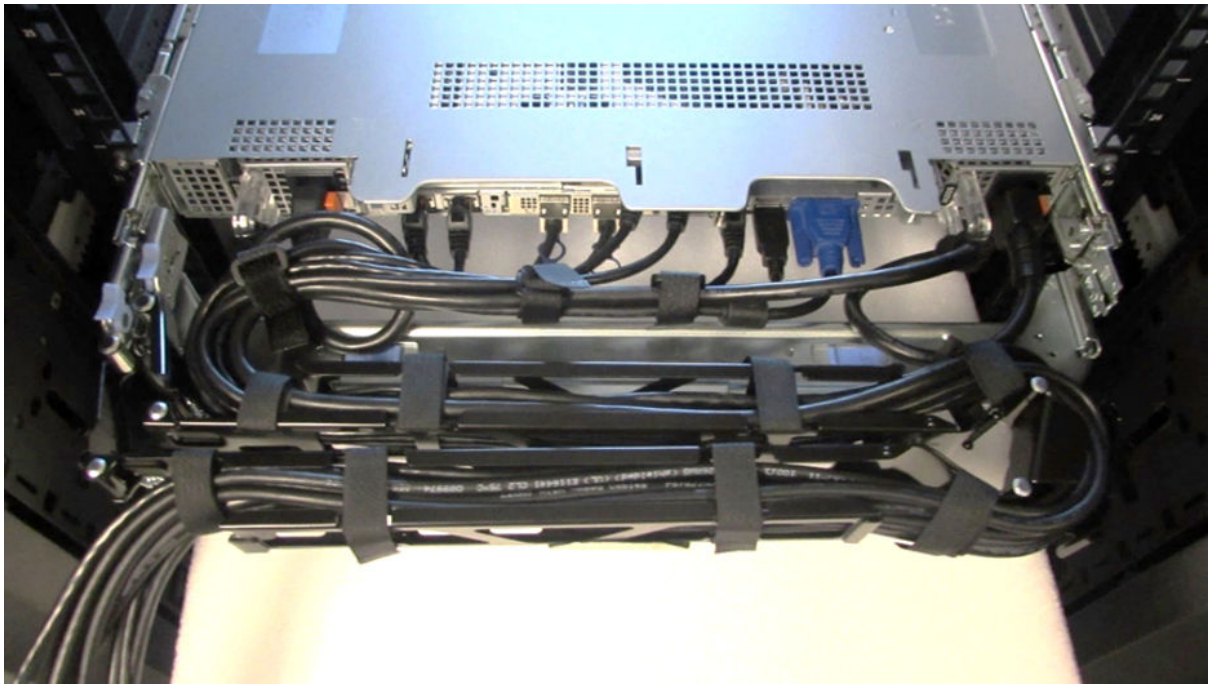

Figure 33. CMA Cabling

Strain Relief Bar (SRB)

The optional strain relief bar (SRB) for the PowerEdge R770AP organizes and supports cable connections at the rear end of the server to avoid damage from bending.

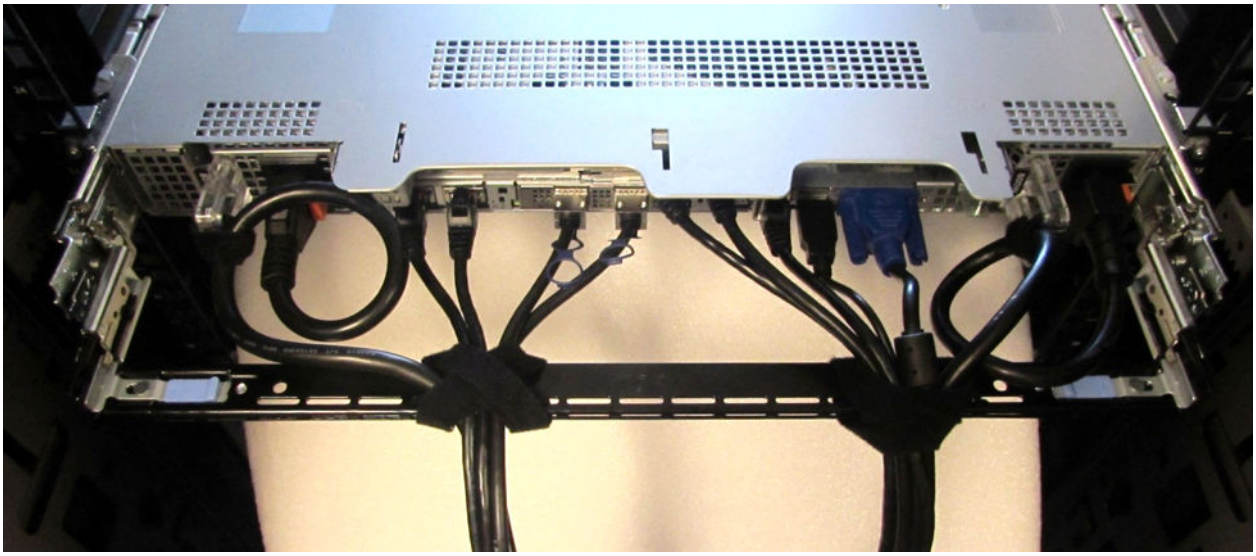

Figure 34. Cabled strain relief bar

- 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 segregated into discrete purpose-specific bundles

10

Operating Systems and Virtualization

Topics:

- Supported operating system

Supported operating system

The PowerEdge R770AP system supports the following operating systems:

- Canonical Ubuntu Server LTS
- Windows Server
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware vSAN/ ESXi*
- Microsoft Windows 2025

For specifications and interoperability details, see OS support.

NOTE: * Feature not available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

11

Dell Systems Management

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

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

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

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

- The latest Dell Systems Management Overview Guide.

Topics:

Integrated Dell Remote Access Controller (iDRAC)

iDRAC10 delivers advanced, agent-free, local and remote server administration. Embedded in every PowerEdge server, iDRAC10 provides a secure means to automate a multitude of common management tasks. Because iDRAC is embedded within every PowerEdge server, there is no additional software to install; plug in power and network cables, and iDRAC is ready to go. Even before installing an operating system (operating system) or hypervisor, IT administrators have a complete set of server management features at their fingertips.

With iDRAC10 in-place across the Dell PowerEdge portfolio, the same IT administration techniques and tools can be applied throughout. This consistent management platform allows scaling of PowerEdge servers as an organization's infrastructure grows. Customers can use the iDRAC RESTful API for the latest in scalable administration methods of PowerEdge servers. With this API, iDRAC enables support for the Redfish standard and enhances it with Dell extensions to optimize at-scale management of PowerEdge servers.

Zero-Touch Provisioning (ZTP) is embedded in iDRAC. ZTP is an Intelligent Automation Dell's agent-free management. Once a PowerEdge server is connected to power and networking that system can be monitored and fully managed, whether you are standing in front of the server or remotely over a network. With no need for software agents, an IT administrator can:

- Monitor
- Manage
- Update
- Troubleshoot, and remediate Dell servers.

With features like zero-touch deployment and provisioning, and System Lockdown, iDRAC10 is purpose-built to simplify server administration. For those customers whose existing management platform uses in-band management, Dell does provide iDRAC Service Module, a lightweight service that can interact with both iDRAC10 and the host operating system to support legacy management platforms.

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

iDRAC10 offers the following license tiers:

Table 23. iDRAC10 license tiers

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

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

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

- Support for Integrated Dell Remote Access Controller 10 (iDRAC10) is on the Knowledge Base page at Dell.com

Systems Management software support matrix

12

Appendix A: Additional specifications

Topics:

Chassis dimensions

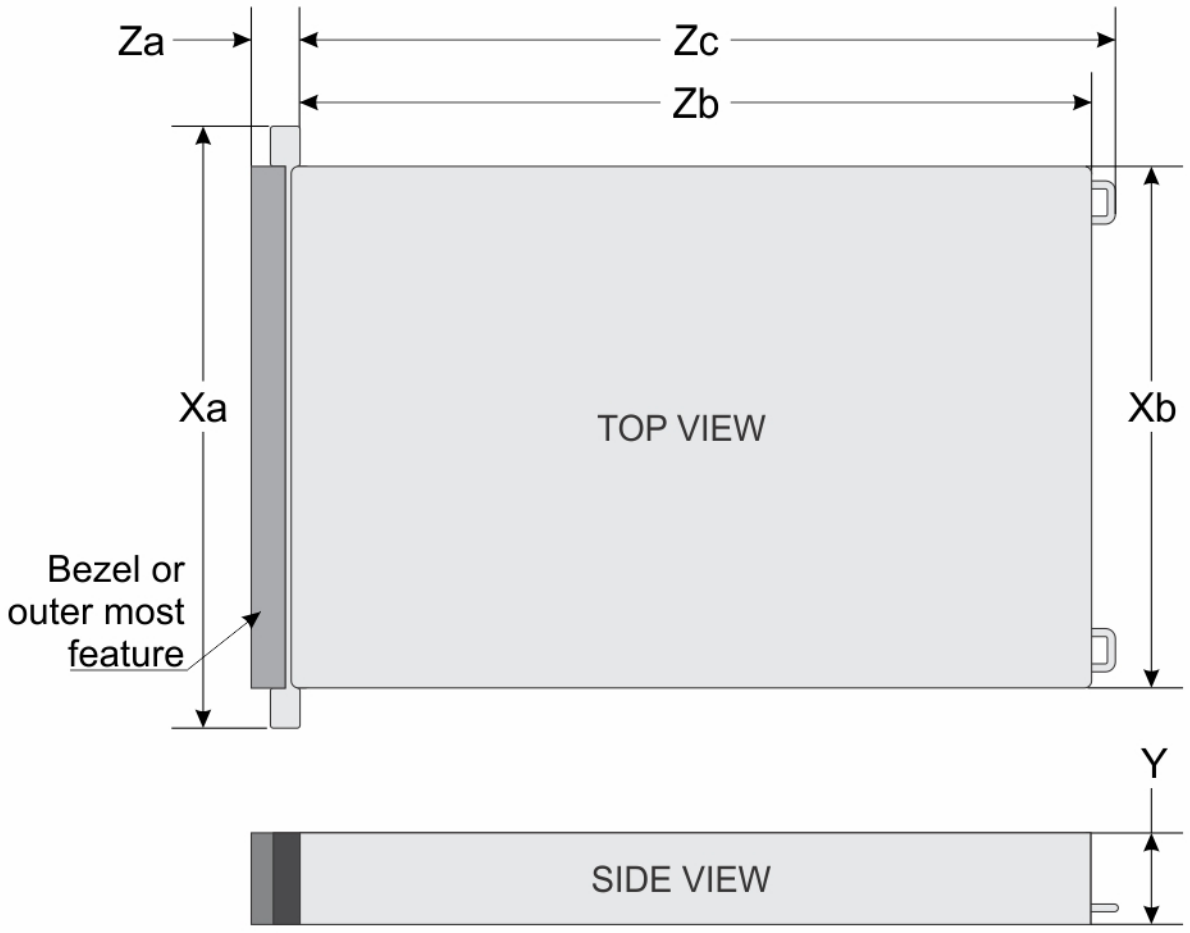

Figure 35. Chassis dimensions

Table 24. PowerEdge R770AP chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
• 8 x 2.5-inch NVMe (SSD) drives • 16 x 2.5-inch NVMe (SSD) drives • 32 x EDSFF E3.S	482.0 mm (18.98inches)	434.0mm (17.09 inches)	86.80 mm (3.42 inches)	30.78 mm (1.21 inches) With bezel 29.89 mm (1.18 inches) Without bezel	700.7mm (27.59 inches Ear to rear wall)	771.62 mm (30.38 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 25. PowerEdge R770AP system weight

System configuration	Maximum weight (with all drives/SSDs)
8 x 2.5-inch NVMe (SSD)	24.74 kg (54.54 lbs)
16 x 2.5-inch NVMe (SSD)	27.34 kg (60.27 lbs)
32 x EDSFF E3.S	29.30 kg (64.59 lbs)

Table 26. PowerEdge R770AP weight handling recommendations

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

NIC port specifications

The PowerEdge R770AP system supports Network Interface Controller (NIC) ports that are embedded on the Open Compute Project (OCP) NIC cards.

Table 27. NIC port specification for the system

Feature	Specifications
OCP NIC 3.0 card	1 GbE x4, 10 GbE x2, 10 GbE x4,
	25 GbE x2, 25 GbE x4, 100 GbE x2, 200 GbE x2

NOTE: The OCP NIC card can be installed in front or rear of the system, depending on the system I/O configuration.

Video specifications

The PowerEdge R770AP system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 28. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32

Table 28. Supported video resolution options (continued)

Resolution	Refresh rate (Hz)	Color depth (bits)
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
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 29. PowerEdge R770AP USB specifications

Front		Rear		Internal	
USB port type	No. of ports	USB port type	No. of ports	USB port type	No. of ports
USB 2.0 compliant. Type - C port	One	USB 3.1 compliant ports	Two	Internal USB 3.1 compliant port.	One

PSU rating

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

Table 30. PSUs highline and lowline ratings

PSU	Highline 200-240V	Lowline 100-120V	Highline 240 VDC	Highline 200-380VDC	DC -48 - -60V
1500 W Titanium	1500 W	1050 W	1500 W	N/A	N/A
1800 W Titanium	1800 W	N/A	1800 W	N/A	N/A
2400 W Titanium	2400 W	1400 W	2400 W	N/A	N/A
3200 W Titanium	2900 W 3200 W	N/A	3200 W	N/A	N/A
3200 W 277Vac & HVDC*	N/A	N/A	N/A	3200 W	N/A

The PowerEdge R770AP supports up to two AC power supplies with 1+0 or 2+0 non-redundancy, 1+1 redundancy, autosensing, and auto switching capability.

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

Table 31. PSU efficiency levels

Efficiency Targets by Load						
Form factor	**Output**	**Class**	**10%**	**20%**	**50%**	**100%**
Redundant 60 mm	1500 W Mixed mode	Titanium	90.00%	94.00%	96.00%	91.00%
	1800 W HLAC mixed mode	Titanium	90.00%	94.00%	96.00%	91.00%
Redundant 73.5 mm	2400 W Titanium	Titanium	90.00%	94.00%	96.00%	91.00%
	3200 W mixed mode	Titanium	90.00%	94.00%	96.00%	91.00%
	3200 W 277Vac & HVDC*	Titanium	90.00%	94.00%	96.00%	91.00%

NOTE: * Feature not available at product launch. Please refer to the product configurator page on Dell.com to confirm feature availability.

Environmental specifications

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

Table 32. Continuous Operation Specifications for ASHRAE A2

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 33. Continuous Operation Specifications for ASHRAE A3

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
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 34. Continuous Operation Specifications for ASHRAE A4

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
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 35. Continuous Operation Specifications for Rugged Environment

Specifications	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–55°C (41–131°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 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 36. Common Environmental Specifications for ASHRAE A2, A3, A4, and Rugged

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 **NOTE:** * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change.
Non-operational temperature limits	-40 to 65°C (-104°F to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,048 meters (10,000 feet)

Table 37. Maximum vibration specifications

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

Table 38. 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 must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 39. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration: Conventional Data Center only	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit **NOTE:** Filtering room air with a MERV8 filter, as specified in ANSI/ASHRAE Standard 127, is a recommended method for achieving the necessary environmental conditions. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration.

Table 39. Particulate contamination specifications (continued)

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

Table 40. Gaseous contamination specifications

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

Thermal restriction Air cooling

Table 41. Label reference

Label	Description
STD	Standard
HPR (Gold)	High-performance Gold (HPR GOLD) fan
HPR (Platinum)	High performance (HPR Platinum) fan
HSK	Heat sink
LP	Low profile
FH	Full height
EXT	Extend
L-type	L-shaped

Table 42. Air cooling configuration

Label	Air Cooling Configurations			
Storage Configuration	No BP	8 x 2.5-inch NVMe	16 x 2.5-inch NVMe	32 x E3.S

Table 42. Air cooling configuration (continued)

Label	Air Cooling Configurations			
	C00-01	C01-01,C02-01	C04-01,C04-02	C05-01
Riser Configuration	RC1	RC0	RC0, RC1	RC0, RC1
Air Shroud Type	Regular shroud	Regular shroud	Regular shroud	Regular shroud

Table 43. Processors

Processor	TDP	Core Count	No BP C00-01	8 x 2.5-inch NVMe C01-01,C02-01	16 x 2.5-inch NVMe C04-01,C04-02	32 x E3.S C05-01
6952P	400 W	96	HPR Gold Fan	HPR Gold Fan	HPR Gold Fan	HPR Gold Fan
6960P	500 W	72	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan
6972P	500 W	96	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan
6978P	500 W	120	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan
6980P	500 W	128	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan	HPR Platinum Fan

Other Restrictions

For rear I/O configurations, 25Gb and above 25Gb PCIe/OCP cards require DAC or 85° C active optics.

–85° C active optics: 4WGYD(QSFP+)

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Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 44. Industry standard documents

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

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Appendix C: Additional resources

Table 45. Additional resources

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

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Appendix D: Service and support

Topics:

Why attach service contracts

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

ProSupport Infrastructure Suite

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

Figure 36. ProSupport Enterprise Suite

	Basic Hardware Support[1]	ProSupport	BEST ProSupport Plus
Outcome Assistance and Advocacy *via assigned Technical Customer Success Manager* ⓘ			
Enjoy a frictionless customer experience with cross-functional lifecycle management aligned to your goals			✓
Accelerate time-to-value through onboarding assistance, education and success planning			✓
Turn challenges into opportunities with actionable strategies powered by data and AI-driven analytics			✓
Ensure coverage continuity while preparing to scale for future success			✓
Proactive Monitoring & Actionable Insights *via Dell's connectivity solutions and tools*			
Quickly visualize performance through a current system health score		✓	✓
Cybersecurity monitoring and mitigation recommendations provide another layer of protection		✓	✓
Predictive performance and capacity analysis address bottlenecks		✓	✓
Prevent or plan for downtime with predictive hardware anomaly detection		✓	✓
Energy consumption and carbon footprint forecasting support sustainability and stewardship initiatives		✓	✓
Get ahead of problems with proactive issue detection with automated case creation	✓	✓	✓
Streamline internal IT efforts with efficient service request and escalation management tools	✓	✓	✓
Minimize disruptions by self-dispatching eligible parts	✓	✓	✓
Support Essentials			
Receive an assigned incident manager for Sev 1 issues who will work your issue through to resolution		✓	✓
Count on Mission Critical Support during Sev 1 incidents and natural disasters ⓘ			✓
Keep systems code current and performing at peak through Proactive System Maintenance			✓
Get priority access to senior technical support engineers—skip the queues and callbacks			✓
Bringing your own software? We provide limited 3rd party software support ⓘ			✓
Choose onsite parts delivery and labor response that meets your needs	Next Business Day	NBD or 4-hour	4-hour
Select product coverage that best augments your internal resources	Hardware	Hardware & Software	Hardware & Software
Have an issue? We are here for you by phone, chat and online	Local business hours	24/7/365	24/7/365

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. **Technical Customer Success Manager:** A customer's #1 support advocate, ensuring they get the best possible proactive and predictive support experience.
4. **Systems maintenance:** On a semiannual basis, we will keep a customer's ProSupport Plus system(s) up to date by installing the latest firmware, BIOS, and driver updates to improve performance and availability.
5. **Third-party software support:** Dell is a customer's single point of accountability for any eligible third-party software that is installed on their ProSupport Plus system, whether they purchased the software from us or not.

ProSupport for Infrastructure

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

- 24x7 support through phone, chat and online
- A central point of accountability for all hardware and software issues
- Hypervisor, operating system, and application support
- Dell security advisories

- Onsite response service levels 4 hour or Next Business Day options
- Proactive issue detection with automated case creation
- Predictive hardware anomaly detection
- Incident Manager assigned for Severity 1 cases
- Collaborative third-party support
- Access to AIOps Platforms - (MyService360, TechDirect, and CloudIQ)
- Consistent experience regardless of where customers are located or what language that they speak.

Basic Hardware Support

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

Specialty Support Services

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

Hardware coverage add-ons to ProSupport or ProSupport Plus

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

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

  Ideal for sites with non-technical staff. 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 Data Center – CSP (Cloud Serviced Provider) and AI Solution**

  ProSupport One for Data Center – CSP and AI Solution is a unique offer that is designed for a limited set of Dell accounts purchasing AI computing solutions greater than 1,000 servers and $250M in sales. PS1DC - CSP and AI improves the entire services experience combining support, deployment (rack integration), residency services, a designated support engineer, an onsite service engineer, and an onsite parts service as one holistic offer. Special pricing has been determined to compete effectively against competitors and provide the best customer experience. PS1DC for CSP and AI 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 unique offer. More details on PS1DC for CSP and AI here.
- **Onsite Parts Service (OPS)**

  Ideal for large organizations that have their own staff to support their data center. Dell offers a service that is called Onsite Parts Service (OPS) from Dell Services. OPS manages parts inventory located at the customer's designated facility. The Logistics Online Inventory Solution (LOIS) program will use software to support the monitoring and automatic replenishment of inventory stored on the customer site. . Each replacement part would automatically initiate a replenishment of the parts inventory that is shipped the next day or delivered onsite by Dell during a regular scheduled visit (called Scheduled Onsite Service). As part of the LOIS system, customers can integrate their systems directly to Dell TechDirect using APIs to help streamline the support management process.

End-of-Life Services

- **Post Standard Support (PSS)**

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

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

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

ProDeploy Infrastructure Suite

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

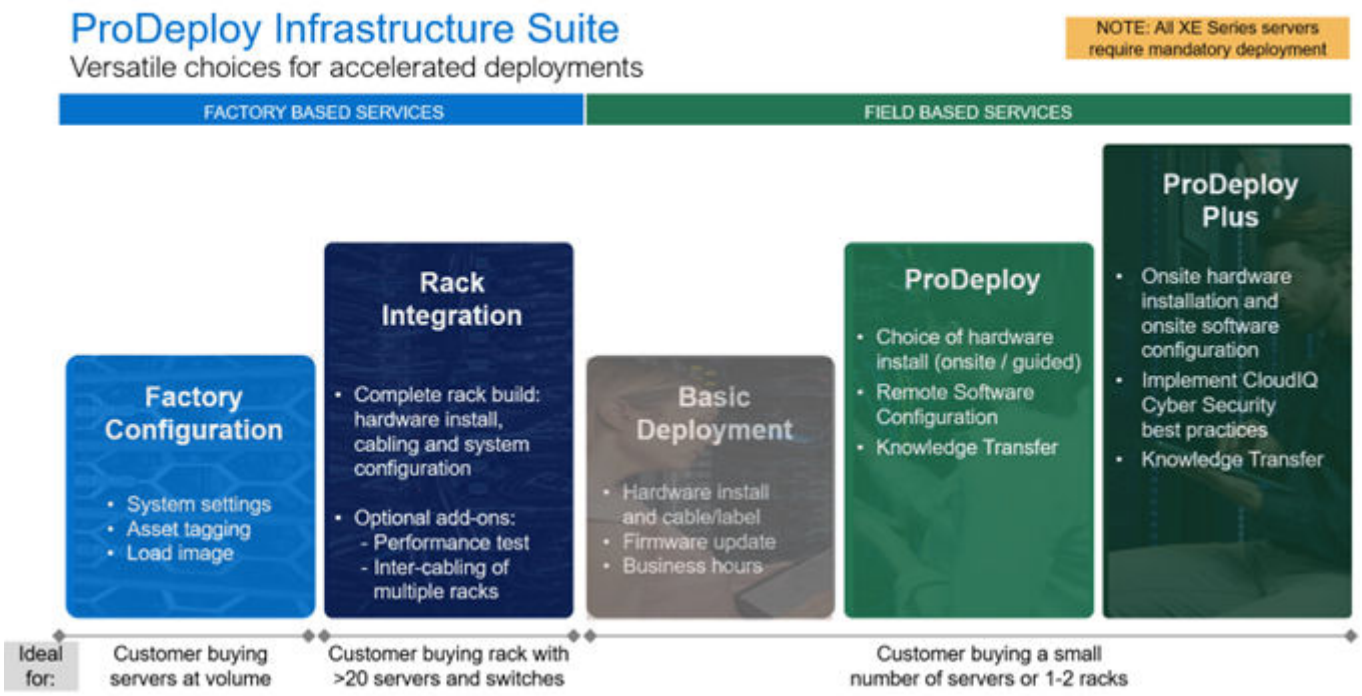

Figure 37. ProDeploy Infrastructure Suite

Factory-based Services

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

Customer Rack Integration or ProDeploy FLEX Rack Integration

Dell offers robust custom rack integration services through two main programs: Enterprise Rack Integration Services and Integrated Rack Scalable Systems (IRSS). These services are designed to streamline deployment, reduce complexity, and optimize performance for data centers, edge environments, and AI workloads. These factory services are purchased as a custom engagement or as ProDeploy Flex Rack Integration SKUs.

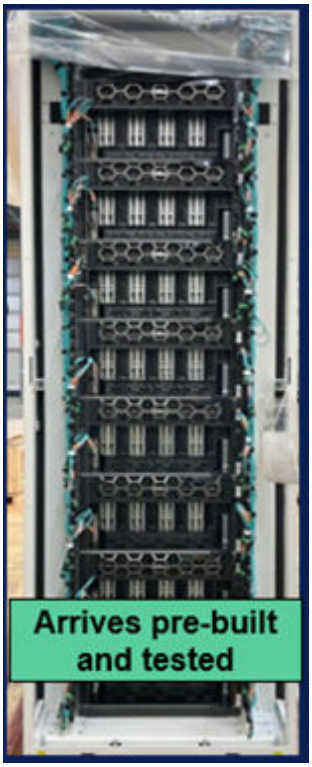

Figure 38. Pre-configured system

Figure 39. Pre-configured system

Factory Configuration

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

Field-based services

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

- **ProDeploy Plus:** Elevate Infrastructure deployments with our most complete service from planning through onsite hardware installation and software configuration including the implementation of cybersecurity best practices. ProDeploy Plus provides the skill and scale that is needed to successfully execute demanding deployments in today's complex IT environments. The deployment starts with a site readiness review and implementation plan. Certified deployment experts perform the software configuration to include setup of leading operating systems and hypervisors. Dell will also configure PowerEdge software tools to include iDRAC and OpenManage system utilities as well as support AIOps platforms: MyService360, TechDirect, and

CloudIQ. Unique to ProDeploy Plus, the cybersecurity implementation helps customers understand potential security risks and make recommendations for reducing product attack surfaces. The system is tested, validated prior to completion. The customer will also receive full project documentation and knowledge transfer to complete the process.

- **ProDeploy:** ProDeploy provides remote software configuration and choice of hardware installation (onsite or guided). ProDeploy is great for customers who are price sensitive or willing to participate in some portion of the deployment to include providing remote access to their network. The ProDeploy remote software includes everything mentioned in ProDeploy Plus except it does not include the added value, cybersecurity implementation, and implementatiod best practices.
- **Basic Deployment:** Basic Deployment delivers worry-free professional installation by experienced technicians. This service is often sold to Competency Enabled Partners who will have Dell do the hardware installation while they complete the software configuration. Furthermore, Basic Deployment tends to be purchased by large enterprises who have smart technical staff. These companies just need Dell to install the hardware, and they will perform the software configuration. The last use case for Basic Deployment is when paired with Factory Configuration services. The servers are preconfigured in the factory, and the basic deployment service will install the system into the rack to finalize the deployment.

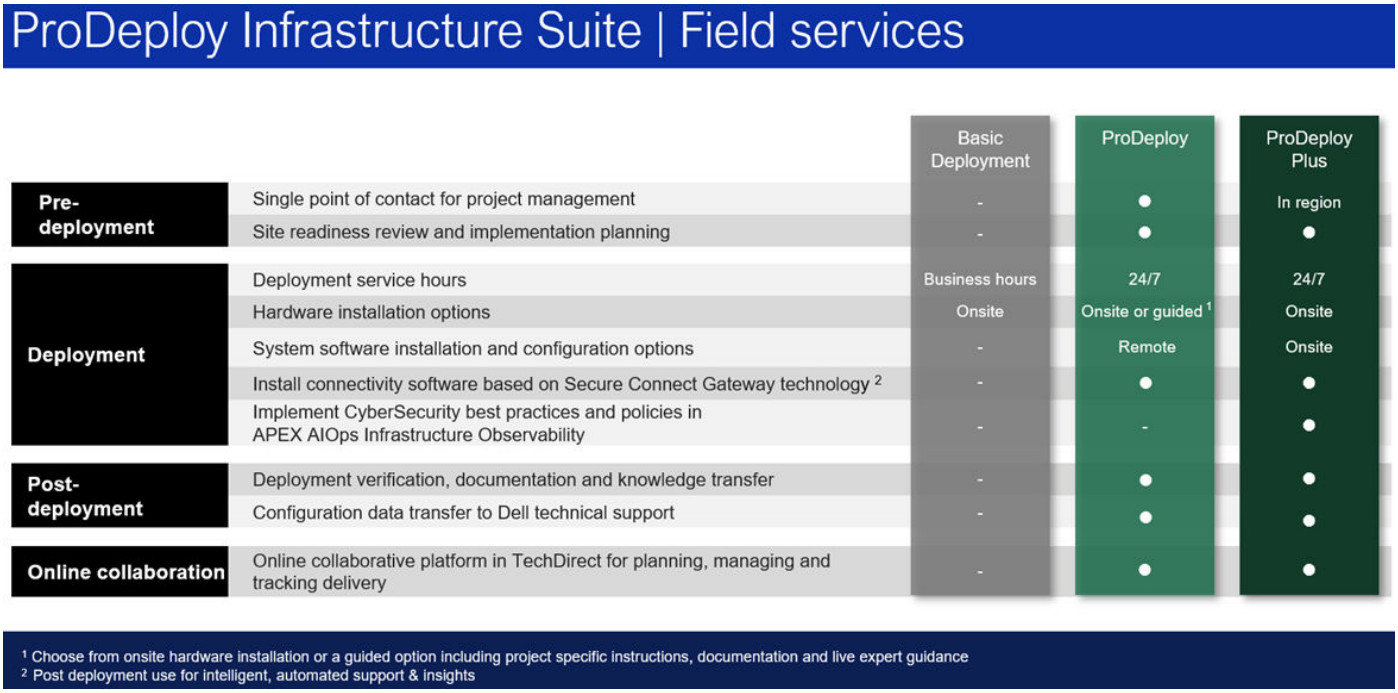

Figure 40. ProDeploy Infrastructure Suite - Field services

Supplemental Deployment Services

Additional ways to expand scope or deploy for unique scenarios.

Two Host Adder (requires PD/PDP)

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

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

You can expand the scope of a ProDeploy engagement leveraging Additional Deployment Time (ADT). ADT covers additional tasks above the normal deliverables of the ProDeploy offers. ADT can also be used as a standalone service without ProDeploy.

SKUs are available for both Project Management and Technical Resource Expertise. SKUs are sold as blocks of four hours remote or eight hours onsite. The delivery team can help in scoping the number of hours required for additional tasks.

Data Migration Services

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

Residency Services

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

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

Unique Deployment Scenarios

Custom Deployment Services

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

Deployment of AI or HPC using Cluster Build Services

Once the integrated rack arrives the data center or is built onsite, Dell can also convert the racks into a large computing cluster. Dell provides several deploy options for Artificial Intelligence (AI) or High-Performance Computing (HPC) implementations. These complex environments require specialists that understand advanced feature sets to create a unified computing cluster for the most demanding workloads. Choose one of the cluster build add-ons below.

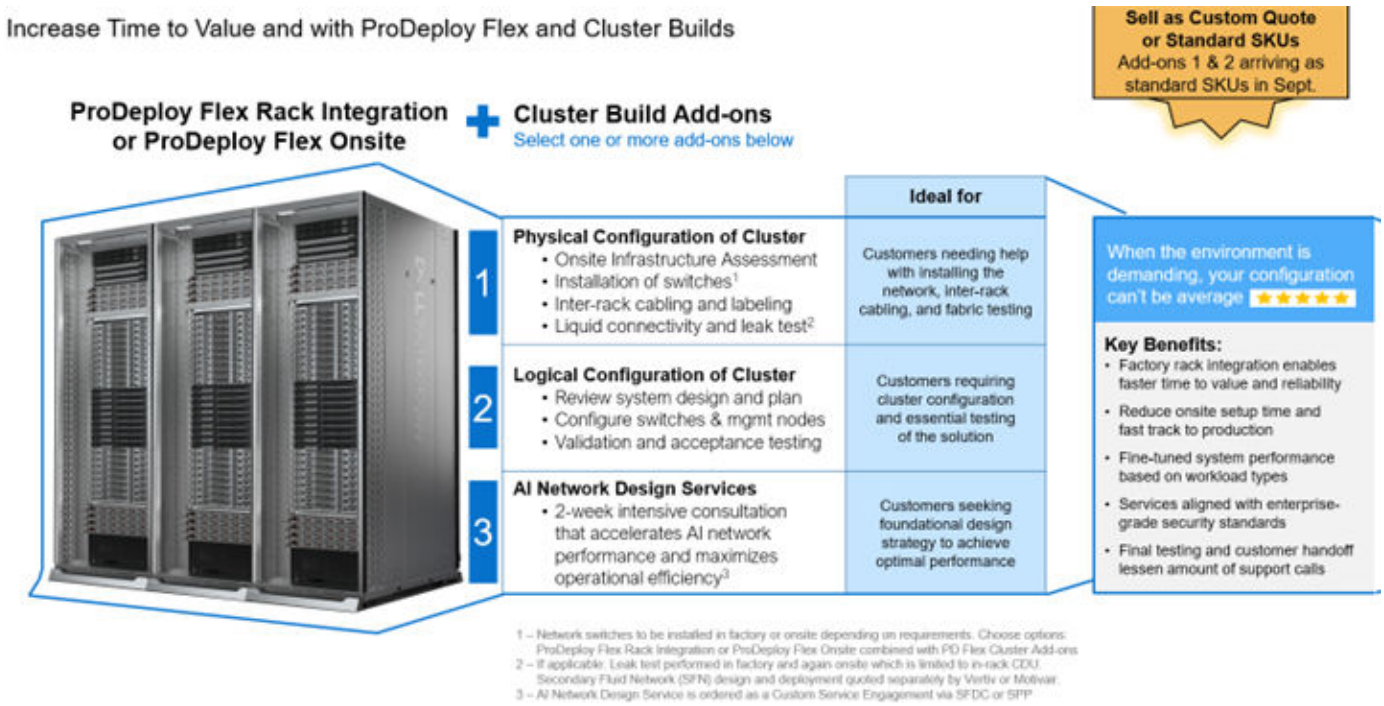

Figure 41. Deployment choices for cluster implementation

DAY 2 – Automation Services with Ansible

Dell solutions are built as "automation ready" with integrated APIs (Application Programming Interfaces) to allow customers to programmatically call actions on the product through code. Although Dell has published Anisble automation use cases, some customers need additional assistance with GitOps. By the end of the service, the customer will have the foundational components required to accelerate automation and understand how the programming works together: Day 1 and Day 2 use case automation scripts (ansible modules), CI/CD tool (Jenkins), and Version control (Git).

Dell Technologies Consulting Services

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

Dell Managed Services

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

Figure 42. Dell Managed Services

Cyber-Security Services

Managed Detection and Response (MDR)

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

Dell Technologies Education Services

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

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

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

Resources

Service for powerEdge