

Dell PowerEdge XR4000

Technical Guide

Notes, cautions, and warnings

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

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

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

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System overview

The PowerEdge XR4000 is Dell's latest server offering that comes with two chassis options namely XR4000r and XR4000z, the chassis can be populated with XR4510c or XR4520c sleds and an optional XR4000w witness sled. The server sleds are designed to run complex workloads using highly scalable memory, I/O, and network options.

XR4000r

The Dell PowerEdge XR4000r system is a 2U multi-node rackmount chassis that supports:

- Up to four 1U, single-width compute sleds or up to two 2U, single-width compute sled or mix of up to two 1U and one 2U single-width compute sleds and an optional witness sled
- Compute sleds - XR4510c and XR4520c, witness sled - vSAN - XR4000w (4 x 1U sleds or 2 x 2U sleds or 2 x 1U+1 x 2U sleds)
- Up to two redundant AC or DC power supply units

XR4000z

The Dell PowerEdge XR4000z system is a 2U multi-node stackable chassis that supports:

- Up to two 1U single-width compute sleds or one 2U single-width compute sled and one optional witness sled
- Compute sleds - XR4510c and XR4520c, witness sled - vSAN - XR4000w
- Up to two redundant AC or DC power supply units

XR4510c


The Dell PowerEdge XR4510c system is a single-width 1U compute sled that supports:

- One 3rd Generation Intel Xeon D Scalable processor with up to 20 cores
- Four DDR4 DIMM slots
- Up to 4 x M.2 NVMe SSDs
- Up to 2x M.2 NVMe SSDs on BOSS N.1 card

XR4520c

The PowerEdge XR4520c system is a single-width 2U compute sled that supports:

- One 3rd Generation Intel Xeon D Scalable processor with up to 20 cores
- Four DDR4 DIMM slots
- Up to 2 x M.2 NVMe SSDs on BOSS N.1 card
- Up to 4 x M.2 NVMe SSDs on riser module
- Up to 8 x M.2 NVMe SSDs on PCIe Add-in card

 **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.**

XR4000w

The PowerEdge XR4000w is a witness sled (with a chassis fan) supports:

- One Intel Atom C3508 processor with 4 cores
- 16 GB ECC memory (soldered down)
- 1 x M.2 (2280) module

Topics:

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

Key workloads

PowerEdge XR4000

The key workloads for PowerEdge XR4510c and XR4520c are VDI, VM, and Machine vision, artificial intelligence/ machine learning, Video surveillance and data compression.

The key workloads for PowerEdge XR4000w are VDI, vSAN/VM

New technologies

Table 1. New technologies featured on XR4000r and XR4000z



Technology	Detailed description
Chassis Orientation	<p>The XR4000 have two chassis options:</p> <ol style="list-style-type: none"> 1. XR4000r is the "rackable" version of the XR4000 chassis options. The chassis itself has no compute capacity; it consists of power module assembly which consists of PDB, PIB, and a chassis manager, and a witness fan module. The chassis supports two AC or DC power supplies within both normal air flow (NAF) and reverse air flow (RAF). XR4000r can support four 1U sleds, or two 2U sleds, or two 1U sleds plus one 2U sled. All these configurations can be matched with one optional witness sled. 2. XR4000z is the "stackable" version of the XR4000 chassis options. The XR4000z is smaller in width than the XR4000r; intended to be mounted on walls and ceilings, or stacked on each other on the shelf or under a desk. The XR4000z has no compute capacity; it consists of a power module assembly which holds a PDB, PIB, a chassis manager, and a witness fan module. XR4000z supports both AC or DC power supplies with Reverse air flow (RAF) only. It supports two 1U sleds or one 2U sled. Both configurations can be matched with one optional witness sled.
Power Supplies	<ul style="list-style-type: none"> • 60 mm dimension (new PSU form factor for new generation of servers) • 1800W Titanium Mixed Mode 200 - 240 V AC or 240 V DC •  NOTE: Targeted availability March 2023 • 1400 W Platinum Mixed Mode 100 - 240 V AC or 240 V DC • 1100 W Titanium Mixed Mode 100 - 240 V AC or 240 V DC (applicable only for XR4000r) • 1100 W -48 -(-60) V DC •  NOTE: The PSUs are available in two types: <ul style="list-style-type: none"> • Reverse airflow (RAF) design is also called Reverse Airflow (RAF.) RAF pulls air into the I/O side and exhausts to the side of the chassis without I/O. This allows for cold-aisle serviceability. • Normal airflow (NAF) design is also called Normal Airflow (NAF.) NAF pulls air into the non- I/O side and exhausts to the side of the chassis with I/O. This is the 'standard' way most datacenter servers are configured for hot-aisle serviceability.

Table 2. New technologies featured on XR4510c and XR4520c

Technology	Detailed description
3 rd Generation Intel® Xeon D Scalable Processor	<ul style="list-style-type: none"> • 10nm process technology • Maximum of 20 cores

Table 2. New technologies featured on XR4510c and XR4520c (continued)

Technology	Detailed description
	<ul style="list-style-type: none"> ● Maximum of 2.1 GHz ● Up to 3 Intel UPI channels per Socket at 10.4GT/s or 11.2GT/s ● PCIe Gen4 at 16GT/s ● Maximum of 56 through combining 32 PCIe 4.0 + 24 HSIO PCIe 3.0 links capable of 16 GT/s ● Maximum TDP: 120 W <p>Consult the Processor section for specific SKU details.</p> <p>i NOTE: TDP support will vary based on the maximum operating temperature.</p>
3200 MT/s DDR4 Memory	<ul style="list-style-type: none"> ● Up to 4 DDR4 channels with 1 DPC, 4 DIMMs in total ● Speed up to 3200 MT/s (configuration-dependent) ● Supports DDR4 ECC RDIMM (max: 256 GB) and DDR4 ECC LRDIMM (max: 512 GB)
iDRAC9 w/ Lifecycle Controller	<p>The embedded systems management solution for Dell servers features hardware and firmware inventory and alerting, in-depth memory alerting, faster performance, a dedicated gigabit port and many more features. For details, see the iDRAC Section.</p>

Table 3. New technologies featured on XR4000w

Technology	Detailed description
Intel Atom® Processor C3508	<ul style="list-style-type: none"> ● 10nm process technology ● Maximum of 4 cores ● Maximum of 1.60 GHz ● Maximum TDP: 11.5 W <p>i NOTE: TDP support will vary based on the maximum operating temperature.</p>
1866MT/s DDR4 Memory	<ul style="list-style-type: none"> ● 16 GB DDR4 ● Speed up to 1866MT/s ● Supports DDR4 ECC RDIMM (max: 16 GB) with memory down design

System features

Table 4. Features of PowerEdge XR4000r

Feature	PowerEdge XR4000r
Power supply	1800W Mixed Mode/ 200 - 240 V AC / 240 V DC
	1400 W Mixed Mode / 100 - 240 V AC / 240 V DC
	1100 W Mixed Mode / 100 - 240 V AC / 240 V DC (applicable for XR4000r chassis only)
	1100 W DC / -48 -(-60) V
Form factor	2U rackable chassis
Dimensions and weight	
Height	87.05 mm (3.42 inches)
Width	482.6 mm (19 inches)
Depth	352.55 mm (13.87 inches)
Weight	7.96 kg (17.54 pound) without sleds
	17.81 kg (39.26 pound) with sleds

Table 5. Features of PowerEdge XR4000z

Feature	PowerEdge XR4000z
Power supply	1800W Mixed Mode/ 200 - 240 V AC / 240 V DC
	1400 W Mixed Mode / 100 - 240 V AC / 240 V DC
	1100 W DC / -48 -(-60) V
Form factor	2U stackable chassis
Dimensions and weight	
Height	87.05 mm (3.42 inches)
Width	266 mm (10.47 inches) without side panels and bezel
	307 mm (12.08 inches) with side panels and bezel
Depth	355 mm (13.97 inches)
Weight	5.59 kg (12.32 pound) weight of chassis without sleds and without bezel and side panels
	10.52 kg (23.19 pound) weight of chassis with sleds and without bezel and side panels
	12.16 kg (26.80 pound) weight of chassis with sleds, bezel and side panels

Table 6. Features of PowerEdge XR4510c

Feature	PowerEdge XR4510c
Processor	One 3rd Generation Intel Generation Xeon D Scalable processor with up to 20 cores per processor

Table 6. Features of PowerEdge XR4510c (continued)

Feature	PowerEdge XR4510c
Chipset	Intel C620 series chipset
Memory	
DIMM speed	Up to 3200 MT/s
Memory type	RDIMM and LRDIMM
Memory module slots	4 x DDR4 DIMM slots, 288-pin
Storage	4 x M.2 NVMe SSDs on M.2 riser
Storage controllers	
Internal boot	2 x M.2 NVMe SSDs on BOSS-N1
Software RAID	N/A
System management	LC 3.x, OpenManage, OMPC3, Digital License Key, iDRAC Direct (dedicated micro-USB port), Easy Restore, iDRAC9 RJ45 (dedicated port)
Ports	
Network port	4x 10GbE (max 50 Gb) / 4x 25GbE (max 100Gb)
Front port	2 x USB 3.0
	1 x Micro-AB USB 2.0-compliant port for iDRAC Direct
	1 x Micro-USB UART port
	1 x Mini-DisplayPort
	1 x RJ-45 iDRAC9 remote management (dedicated port only)
Internal port	1 x USB 3.0
Form factor	1U single-width sled
Dimensions and weight	
Height	41.25 mm (1.62 inches)
Width	167.2 mm (6.58 inches)
Depth	342.5 mm (13.48 inches)
Maximum Weight	2.46 kg (5.42 pounds)

Table 7. Features of PowerEdge XR4520c

Feature	PowerEdge XR4520c
Processor	One 3rd Generation Intel Generation Xeon D Scalable processor with up to 20 cores per processor
Chipset	Intel C620 series chipset
Accelerators	Up to 2 x 150W single-width / 1 x 250W double-width GPUs.
Memory	
DIMM speed	Up to 3200 MT/s
Memory type	RDIMM and LRDIMM
Memory module slots	4 x DDR4 DIMM slots, 288-pin
Storage	4x M.2 NVMe SSDs on M.2 riser
Storage controllers	

Table 7. Features of PowerEdge XR4520c (continued)

Feature	PowerEdge XR4520c
Internal boot	2x M.2 NVMe SSDs on BOSS-N1
Software RAID	N/A
System management	LC 3.x, OpenManage, QuickSync2.0, OMPC3, Digital License Key, iDRAC Direct (dedicated micro-USB port), Easy Restore, iDRAC9 RJ45 (dedicated port)
Ports	
Network port	4x 10GbE (max 50 Gb) / 4x 25GbE (max 100Gb)
Front port	2 x USB 3.0
	1 x Micro-AB USB 2.0-compliant port for iDRAC Direct
	1 x Micro-USB UART port
	1 x Mini-DisplayPort
	1 x RJ-45 iDRAC9 remote management (dedicated port only)
Internal port	1 x USB 3.0
Slots	
PCIe	Up to 2 x16 PCIe (Gen 4) Full-height, Full-length
Form factor	2U single-width sled
Dimensions and weight	
Height	83.25 mm (3.27 inches)
Width	167.2 mm (6.58 inches)
Depth	342.5 mm (13.48 inches)
Weight	4.69 kg (10.34 pounds)

Table 8. Features of PowerEdge XR4000w

Feature	PowerEdge XR4000w
Processor	One Intel Atom C3508 processor with 8Mb Cache, up to 1.60 GHz
Chipset	Intel C620 series chipset
Memory	
DIMM speed	Up to 1866 MT/s
Memory type	RDIMM and LRDIMM
Memory module slots	16 GB DDR4 1866MT/s memory down design (soldered on system board)
Storage	1 x M.2 2280 SSDs
Ports	
Network port	2x Intel I210 LAN Port
Front port	1 x USB 3.0
	1x Micro USB System console port
	1 x Micro-USB UART port
Form factor	Nano server sled

Table 8. Features of PowerEdge XR4000w (continued)

Feature	PowerEdge XR4000w
Dimensions and weight	
Height	83.25 mm (3.27 inches)
Width	21.60 mm (0.85 inches)
Depth	250.79 mm (9.87 inches)
Weight	0.44 kg (0.97 pound)

Chassis views and features

Topics:

- Chassis views

Chassis views

Front view of the system



Figure 1. Front view of the chassis XR4000r



Figure 2. Front view of the chassis XR4000z

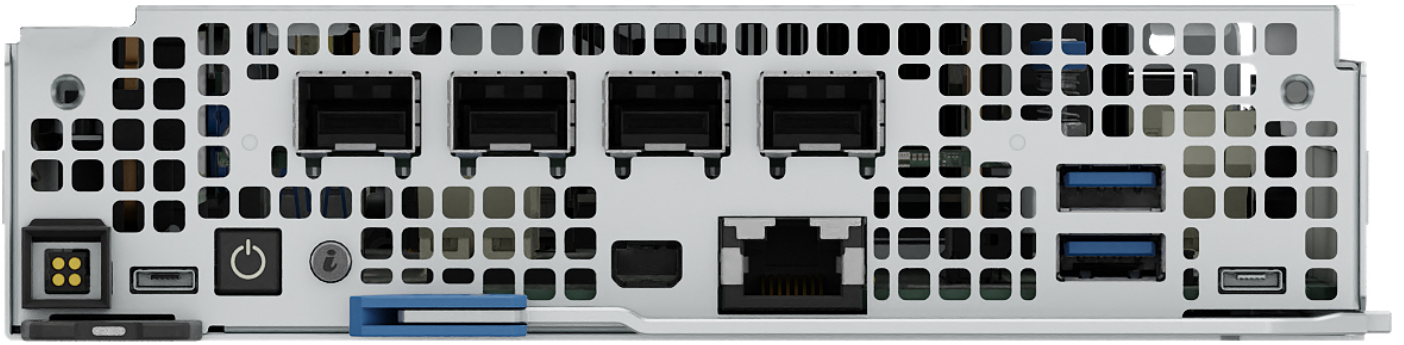


Figure 3. Front view of the system XR4510c

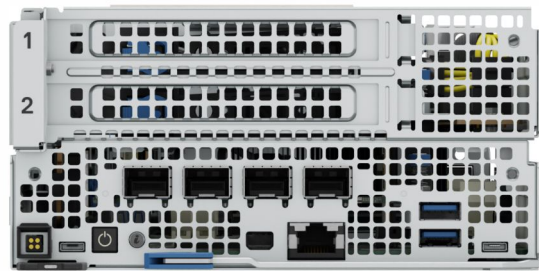


Figure 4. Front view of the system XR4520c



Figure 5. Front view of the sled XR4000w

Rear view of the system

Rear view of XR4000r

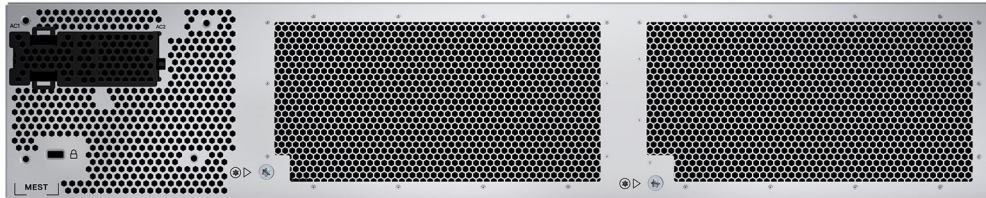


Figure 6. Rear view of the system

Rear view of XR4000z



Figure 7. Rear view of the system

Rear view of XR4510c

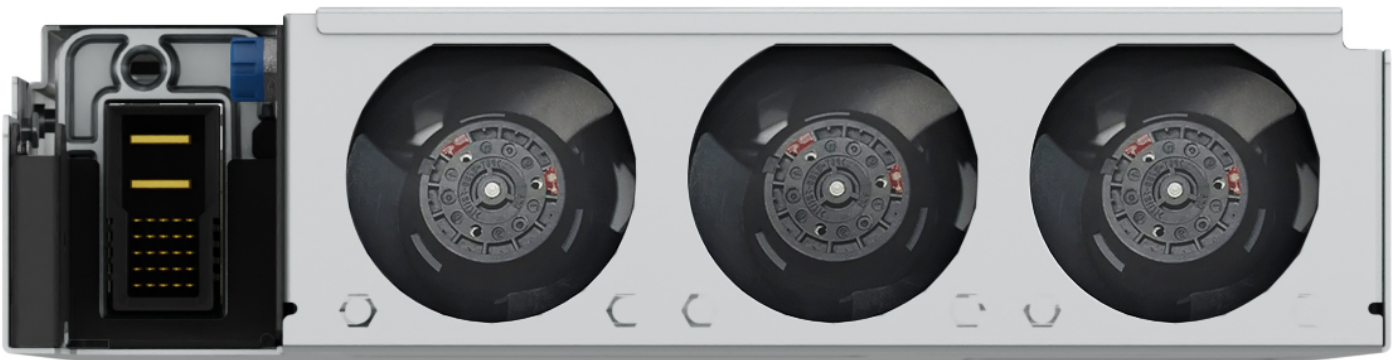


Figure 8. Rear view of the system

Rear view of XR4520c



Figure 9. Rear view of the system

Inside the sled

PowerEdge XR4510c

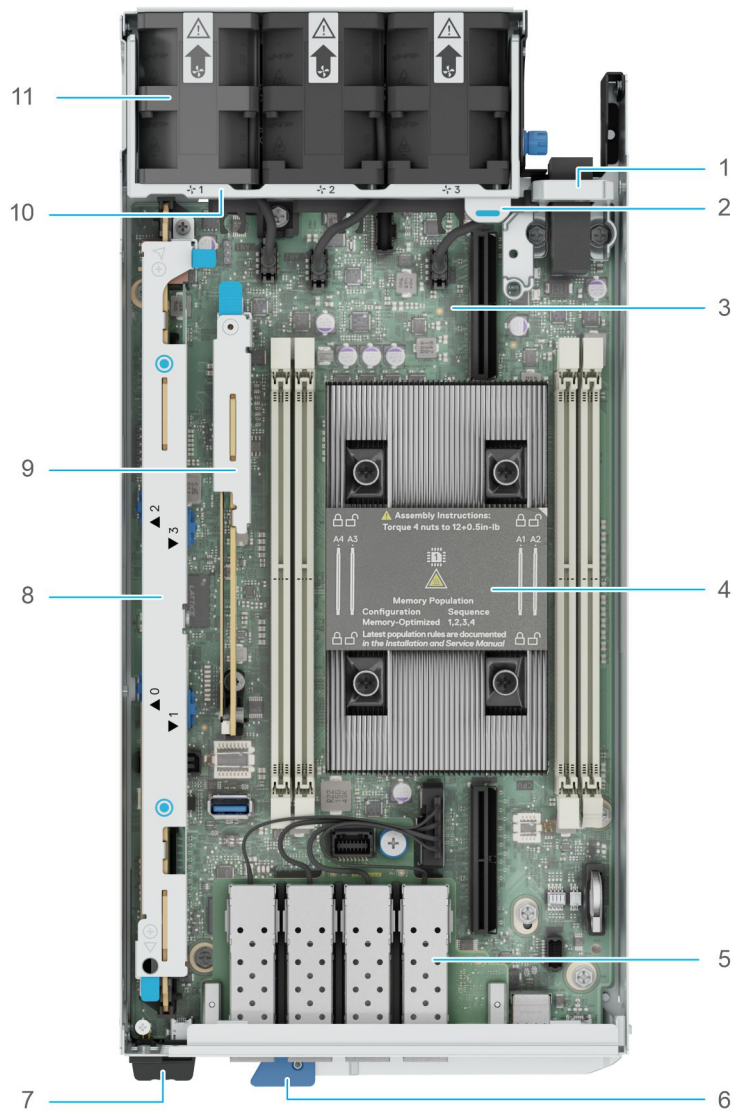


Figure 10. Inside view of the PowerEdge XR4510c sled

1. Connector cover

2. Fan bracket

- 3. System board
- 5. Network I/O ports
- 7. Information Tag
- 9. M.2 BOSS N1 Card
- 11. Fan

- 4. Processor
- 6. Sled handle
- 8. M.2 Riser Module
- 10. Fan guard

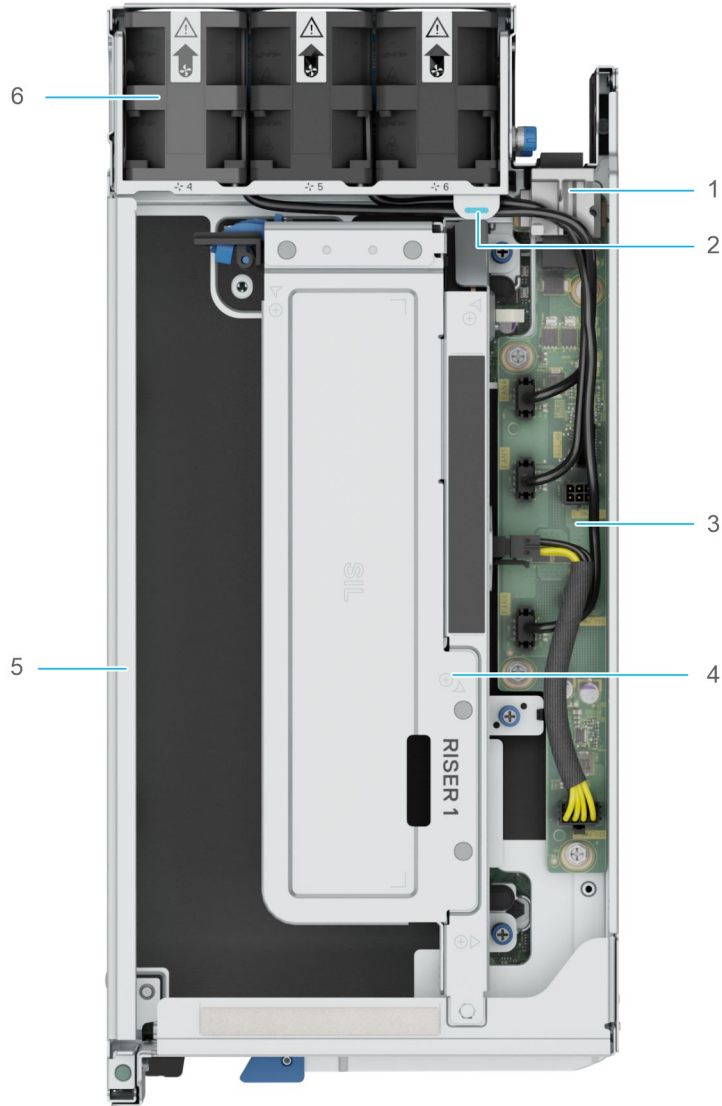


Figure 11. Inside view of the PowerEdge XR4520c sled

- 1. Connector cover
- 2. Fan handle
- 3. Power Interposer Board (PIB)
- 4. Riser R1C card
- 5. 2U sled side cover
- 6. 2U sled cooling fan

Quick Resource Locator for PowerEdge XR4000 system



Figure 12. Quick Resource Locator for PowerEdge XR4510c system



Figure 13. Quick Resource Locator for PowerEdge XR4520c system



Figure 14. Quick Resource Locator for PowerEdge XR4000 system



Figure 15. Quick Resource Locator for PowerEdge XR4000 system



Figure 16. Quick Resource Locator for PowerEdge XR4000 system



Figure 17. Quick Resource Locator for PowerEdge XR4000 system



Figure 18. Quick Resource Locator for PowerEdge XR4000 system



Figure 19. Quick Resource Locator for PowerEdge XR4000 system



Figure 20. Quick Resource Locator for PowerEdge XR4000 system

Processor



Topics:

- [Processor features](#)

Processor features

The Intel® Xeon® D Processor stack is introducing the 3rd generation of SoC CPU offering. Ice Lake D delivers improved performance, tuning and security for compute, network, IoT & storage. The following lists the features and functions included the Ice Lake D offer:

- 4 C to 20 C option including eTemp selections
- 1S SoC, FCBGA, new pinmap 52.5 mm x 45 mm; 65W - 120W
- 4 memory channels with DDR4 support and memory of 3200MT/s (1DPC)
- Intel® QAT v1.8: SSL (up to 100G), Compression (up to 70G)
- I/O options for throughput: 50Gbps and 100Gbps throughput options & connectivity: 1;2.5;10;25;40;50;100 GbE with RDMA (iWARP and RoCE V2)
- High-Speed Flexible I/O Lanes configured as PCIe/SATA/USB

Supported processors

Table 9. Supported processors

Process or	Clock Speed (GHz)	Cache (M)	Cores	Turbo	Memory Speed (MT/s)	NIC	NIC Speed (G)	QAT	TDP	XR4510 c	XR4520 c
D-2796 NT	2.1	30	20	Turbo	3200	X	100	X	120W	Post RTS	Post RTS
D-2776N T	2.1	25	16	Turbo	2933	X	100	X	117W	RTS	RTS
D-2753 NT	2	20	12	Turbo	2666	X	100	X	87W	Post RTS	Post RTS
D-2733N T	2.1	15	8	Turbo	2666	X	50	X	80W	RTS	RTS
D-2712T	1.9	15	4	Turbo	2666	X	50	X	65W	RTS	RTS

Memory subsystem

The PowerEdge XR4510c and XR4520c supports up to 4 DIMMs, with up to 512 GB of standard memory and speeds of up to 3200 MT/s.

Topics:

- [Supported memory](#)

Supported memory

The table below lists the memory technologies supported by the platforms XR4000.

Table 10. Supported DDR4 memory technologies

Feature	XR4000 (DDR4)
DIMM Type	RDIMM and LRDIMM
Transfer Speed	3200 MT/s
Voltage	1.2V (DDR4)


The table below lists the supported DDR4 DIMMs for the XR4000 system. For the latest information on supported memory and memory configurations, reference Agile PN: 294P1 for the Platform Memory Matrix document.

Table 11. Supported DDR4 DIMMs

DIMM Speed (MT/s)	DIMM DPN	DIMM Type	DIMM Capacity (GB)	Ranks per DIMM	Data width	DIMM Volts
3200	M04W6	RDIMM	16 GB	2R	x8	1.2 V
3200	HTPJ7	RDIMM	32 GB	2R	x8	1.2 V
3200	P2MYX	RDIMM	64 GB	2R	x4	1.2 V
3200	7JXF5	LRDIMM	128 GB	4R	x4	1.2 V
3200	5M8WD	DIMM Blank	NA	NA	NA	NA

Table 12. Memory speed

DIMM Type	DIMM Ranking	DIMM Capacity	DIMM Speed (MT/s)	Data width	DIMM Volts
RDIMM	2R	16 GB	3200	x8	1.2 V
RDIMM	2R	32 GB	3200	x8	1.2 V
RDIMM	2R	64 GB	3200	x4	1.2 V
LRDIMM	4R	128 GB	3200	x4	1.2 V

 **NOTE:** Memory DIMM slots are not hot pluggable.

Storage

Topics:

- [Supported drives](#)

Supported drives

The PowerEdge XR4000 system supports the following storage configurations:

- Up to 4 x M.2 NVMe storage for the XR4510c sled.
- Up to 12 x M.2 NVMe storage for the XR4520c sled (with 2x PCIe M.2 risers).
- Up to 2 x M.2 NVMe SSDs on BOSS N1 card on the operating system for both XR4510c and XR4520c sleds
- M.2 SSDs support both XR4000r and XR4000z form factors.
- SSDs support NVMe-MI and are not hot swappable.

The M.2 drives can be mounted on a secondary riser which supports up to four drives.

Table 13. Supported drive specifications for XR4510c

Form Factor	Type	Speed	Rotational Speed	Capacities
M.2 storage	NVMe	PCIe Gen3	N/A	Up to 3.84 TB capacity RI drives 800 GB capacity MU drives

Table 14. Supported drive specifications for XR4520c

Form Factor	Type	Speed	Rotational Speed	Capacities
M.2 storage	NVMe	PCIe Gen3	N/A	Up to 3.84 TB capacity RI drives 800 GB capacity MU drives

Networking

Topics:

- [Overview](#)

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.

The Server Adapter Matrix posted to our knowledge portal is the central repository for PowerEdge NIC, HBA and HCA information. The matrix covers:

- Part Numbers, Tied SKUs and Customer Kits
- Server Compatibility & Support
- Optics & Cable Support
- Systems Management
- Adapter Features
- Spec Sheet Links

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

[PowerEdge Server Adapter Matrix](#)

 **NOTE:** This is a direct download link to an .XLSX, and may not open in a tab as expected depending on your browser.

PCIe subsystem

Topics:

- PCIe subsystem overview
- PCIe risers
- PCIe slot power
- Slot priority matrix

PCIe subsystem overview

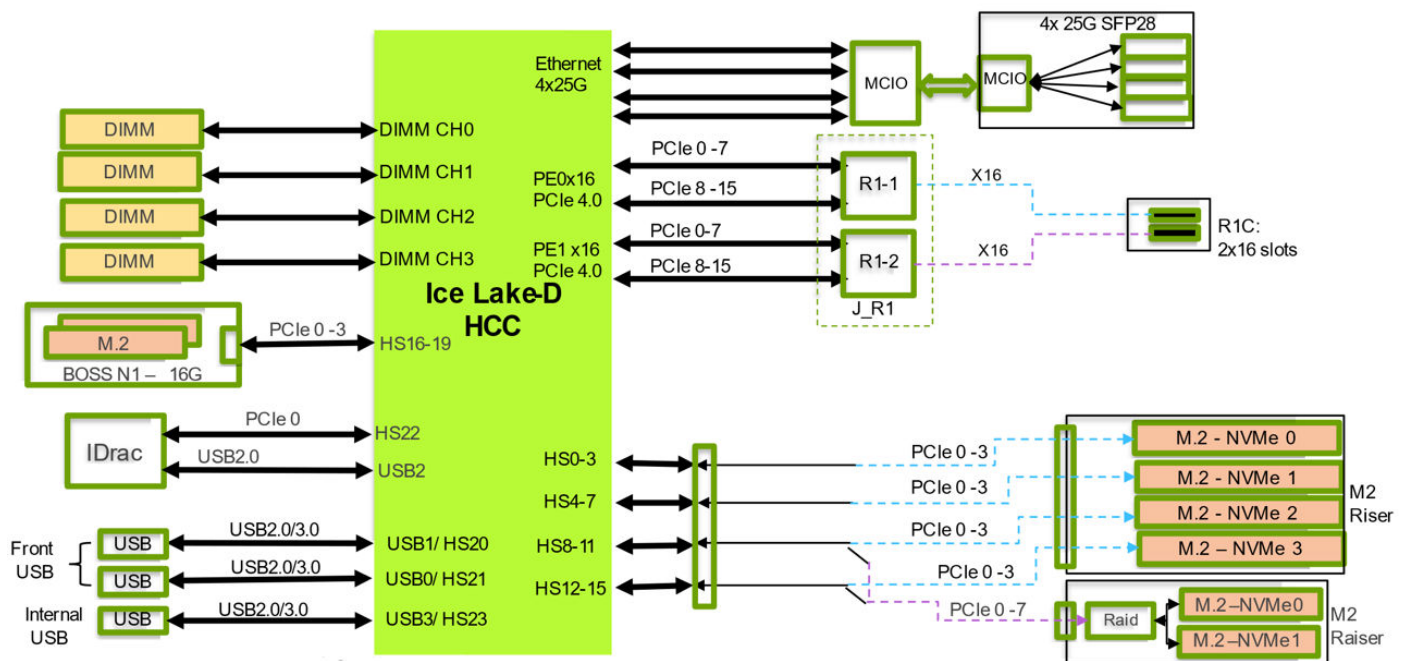


Figure 21. PCIe connection diagram

PCIe risers

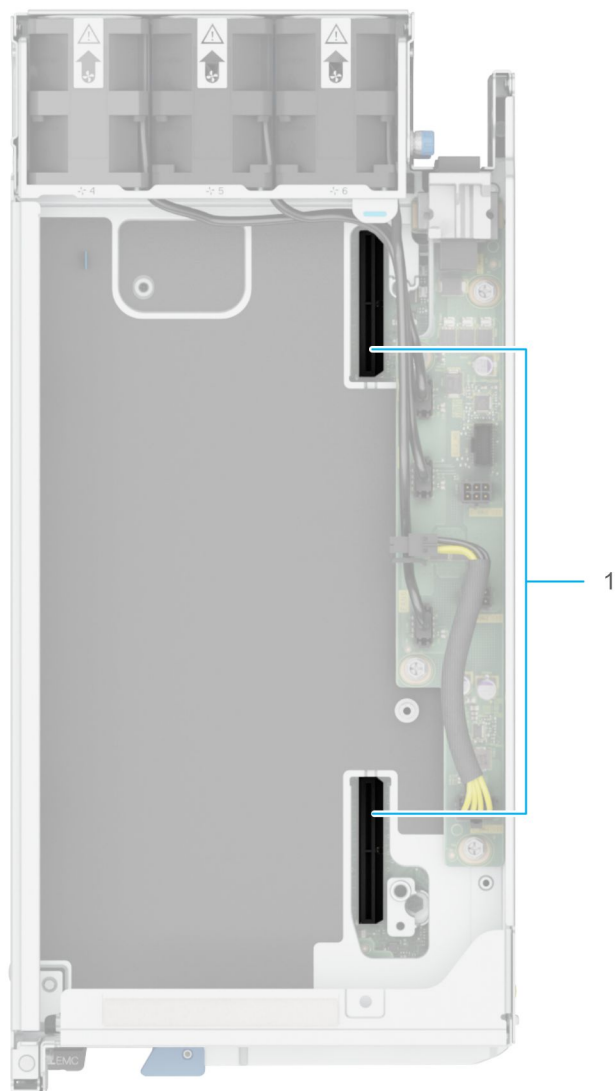


Figure 22. Expansion card slot connector

- 1. Riser 1C connector

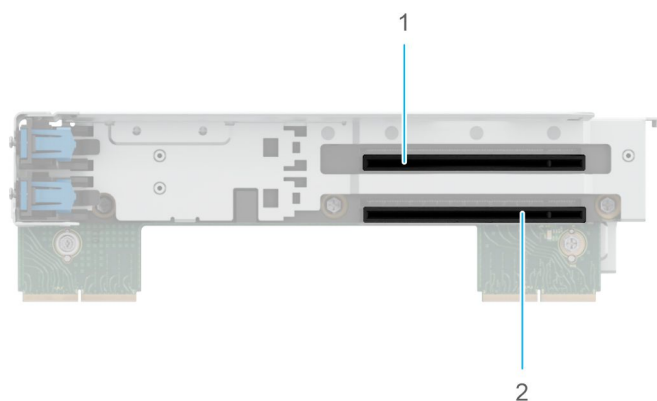


Figure 23. Riser 1C slots

- 1. Slot 1

2. Slot 2

The following table describes the expansion card riser configurations:

Table 15. Expansion card riser configurations

Configurations	Expansion card risers	PCIe Slots	Controlling processor	Height	Length	Slot width
Config1	Riser 1C	1 and 2	Processor 1	Full height	Three-quarter length	x16 PCIe (Gen 4)

PCIe slot power

Table 16. PCIe card slot 1 details

First Slot (J_PE_SLOT1)												
Width	Max Power	Double Wide	Exit Direction	Height(cm)	Low Profile	Segment1 Source	Segment2 Source	Segment3 Source	Segment4 Source	I2C Channel	I2C Mux	Mux I2C Channel
X16	75 W	No	Left	5.804	No	7	6	5	4	0	No	NA

Table 17. PCIe card slot 2 details

First Slot (J_PE_SLOT2)												
Width	Max Power	Double Wide	Exit Direction	Height(cm)	Low Profile	Segment1 Source	Segment2 Source	Segment3 Source	Segment4 Source	I2C Channel	I2C Mux	Mux I2C Channel
X16	75 W	Yes	Left	3.772	No	3	2	1	0	1	No	NA

Slot priority matrix

NOTE: The expansion-card slots are not hot-swappable.

The following table provides guidelines for installing expansion cards to ensure proper cooling and mechanical fit. The expansion cards with the highest priority should be installed first using the slot priority indicated. All the other expansion cards should be installed in the card priority and slot priority order.

Table 18. Configuration 1: R1C

Card type	Slot priority	Maximum number of cards
Foxconn BOSS N1	Integrated slot	1
M.2 NVMe Riser HW Non-RAID	Integrated slot	1
Foxconn M.2 Pcie carrier card	1,2	2
Intel (NIC: 2x100Gb)	1, 2	2
Intel (NIC: 4x25Gb)	1, 2	2
Intel (NIC: 25G, 2P)	1, 2	2
Intel (NIC: 10G, 4P)	1, 2	2
Intel (NIC: 1GB)	1, 2	2

Table 18. Configuration 1: RIC (continued)

Card type	Slot priority	Maximum number of cards
Intel (NIC: 10G)	1, 2	2
Broadcom (NIC: 4x10Gb)	1, 2	2
Broadcom(NIC: 2x100Gb)	1, 2	2
Broadcom (NIC: 4x25Gb)	1, 2	2
Broadcom (NIC: 1G)	1, 2	2
Broadcom (NIC: 25G)	1, 2	2
Broadcom (NIC: 10G)	1, 2	2
Mellanox (NIC: 25G)	1, 2	2
Mellanox (NIC: 100G)	1, 2	2
Mellanox (NIC: 2x25Gb or 50Gb)	2	1
Pensando (NIC: 2x100Gb or 200Gb)	2	1
Pensando (NIC: 2x25Gb or 50Gb)	2	1
Nvidia (GPU: A2)	1, 2	2
Nvidia (GPU: A30,24GB)	2	1

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](#)
- [Thermal](#)
- [Acoustical Experience](#)

Power

Table 19. 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 www.dell.com/calc .
Industry Compliance	Dell's servers are compliant with all relevant industry certifications and guide lines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: <ul style="list-style-type: none"> • Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% • More accurate reporting of power • Better performance under a power cap
Power capping	Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems Management	iDRAC Enterprise and Datacenter provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level. Dell OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies.
Active power management	Intel Node Manager is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC9 Datacenter and OpenManage Power Center that allows policy-based management of power and thermal at the individual server, rack, and data center level. Hot spare reduces power consumption of redundant power supplies. Thermal control off a speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption. Idle power enables Dell servers to run as efficiently when idle as when at full workload.
Fresh Air cooling	Refer to ASHRAE A3/A4 Thermal Restriction.

Table 19. Power tools and technologies (continued)

Feature	Description
Rack infrastructure	<p>Dell offers some of the industry's highest-efficiency power infrastructure solutions, including:</p> <ul style="list-style-type: none"> • Power distribution units (PDUs) • Uninterruptible power supplies (UPSs) • Energy Smart containment rack enclosures <p>Find additional information at: https://www.delltechnologies.com/en-us/servers/power-and-cooling.htm.</p>

PSU specifications

PSU specifications for XR4000r

The PowerEdge XR4000r system supports up to two AC or DC power supply (NAF or RAF) units (PSUs).

Table 20. PSU specifications

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	Voltage	AC		DC	Current (A)
					High line 200–240 V	Low line 100–120 V		
1800W Mixed Mode	Titanium	6750 BTU/hr	50/60 Hz	200 - 240 V AC	1800W	NA	NA	10A
	NA	6750 BTU/hr	NA	240 V DC	NA	NA	1800W	8.2A
1400 W Mixed Mode	Platinum	5250 BTU/hr	50/60 Hz	100 - 240 V AC	1400 W	1050 W	NA	12 A - 8 A
	NA	5250 BTU/hr	NA	240 V DC	NA	NA	1400 W	6.6 A
1100 W Mixed Mode	Titanium	4100 BTU/hr	50/60 Hz	100 - 240 V AC	1100 W	1050 W	NA	12 A - 6.3 A
	NA	4100 BTU/hr	NA	240 V DC	NA	NA	1100 W	5.2 A
1100 W DC	NA	4265 BTU/hr	NA	-48 -(-60) V	NA	NA	1100 W	27 A

NOTE: The XR4000r supports both NAF and RAF power supply units (PSUs). Normal airflow design also called Normal Airflow (NAF.) NAF pulls air into the non- I/O side and exhausts to the side of the chassis with I/O. This is the 'standard' way most datacenter servers are configured for hot-aisle serviceability.

NOTE: This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 240 V.

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

NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at [Dell.com/ESSA](https://www.dell.com/ESSA).

PSU specifications for XR4000z

The PowerEdge XR4000z system supports up to two AC or DC power supply units (PSUs) (RAF) only.

Table 21. PSU specifications

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	Voltage	AC		DC	Current (A)
					High line 200–240 V	Low line 100–120 V		
1800W Mixed Mode	Titanium	6750 BTU/hr	50/60 Hz	200 - 240 V AC	1800W	NA	NA	10A
		6750 BTU/hr	NA	240 V DC	NA	NA	1800W	8.2A
1400 W Mixed Mode	Platinum	5250 BTU/hr	50/60 Hz	100 - 240 V AC	1400 W	1050 W	NA	12 A - 8 A
		5250 BTU/hr	NA	240 V DC	NA	NA	1400 W	6.6 A
1100 W DC	NA	4265 BTU/hr	NA	-48 -(-60) V	NA	NA	1100 W	27 A

- NOTE:** The XR4000z only supports RAF power supply units (PSUs). Reverse airflow (RAF) design is also called Reverse Airflow (RAF.) RAF pulls air into the I/O side and exhausts to the side of the chassis without I/O. This allows for cold-aisle serviceability.
- NOTE:** This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 240 V.
- NOTE:** Heat dissipation is calculated using the PSU wattage rating.
- NOTE:** When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at [Dell.com/ESSA](https://www.dell.com/ESSA).

Thermal

Thermal management of the platform helps delivers high performance for the right amount of cooling to components at the lowest fan speeds across a wide range of ambient temperatures from -5°C to 55°C (23°F to 131°F) and to extended ambient temperature ranges (see [Environmental Specifications](#)). It might be reflected in lower overall power consumption (fans, platform, cooling/heating, data center power consumption, etc.) and greater acoustical versatility. 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 -5°C to 55°C (23°F to 131°F) and to extended ambient temperature ranges.

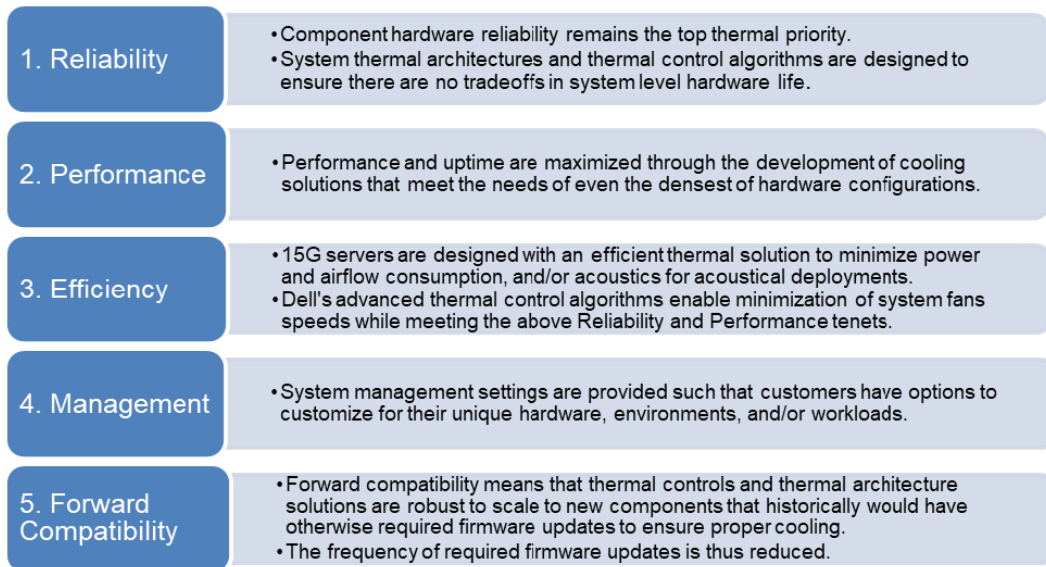


Figure 24. Thermal design characteristics

The thermal design of the PowerEdge XR4510c and XR4520c systems reflects the following:

- Optimized thermal design: The system layout is designed for optimum thermal design and provides 2 configurations: Reverse-Air-Flow (RAF) and Normal-Air-Flow (NAF)
- System component placement and layout are designed to provide maximum airflow coverage to critical components with minimum expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the fan speed based on several different responses from all system-component temperature sensors, as well as inventory for system configurations. Temperature monitoring includes components such as processors, DIMMs, chipset, the inlet air ambient, hard disk drives, and OCP.
- Open and closed loop thermal fan speed control: Open loop thermal control uses system configuration to determine fan speed based on inlet air ambient temperature. Closed loop thermal control method uses feedback temperatures to dynamically determine proper fan speeds.
- User-configurable settings: With the understanding and realization that every customer has unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user- configurable settings residing in the iDRAC BIOS setup screen. For more information, see the Dell PowerEdge XR4510c and XR4520c Installation and Service Manual at www.dell.com/poweredgemanuals and “Advanced Thermal Control: Optimizing across Environments and Power Goals” on Dell.com.
- Cooling redundancy: The XR4510c and XR4520c systems allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the XR4510c and XR4520c systems reliable under a wide range of operating environments.

Acoustical Experience

Dell PowerEdge XR4000 is a rack or stack server appropriate for attended data center environment.

Sound quality describes how disturbing or pleasing a person finds a sound, as a function of a variety of psycho-acoustical metrics and thresholds. Tone prominence is one such metric.

Transient response refers to how sound changes with time.

Sound power level, sound pressure level and loudness refer to amplitude of sound.

A reference for comparison to sound pressure levels and loudness for familiar noise sources is given in the table below.

Table 22. Acoustical Reference Points and Output Comparisons

Value measured at your ears		Equivalent familiar noise experience
LpA, dBA, re 20µPa	Loudness, sones	
90	80	Loud concert

Table 22. Acoustical Reference Points and Output Comparisons (continued)

Value measured at your ears		Equivalent familiar noise experience
LpA, dBA, re 20µPa	Loudness, sones	
75	40	Data center, vacuum cleaner, voice must be elevated to be heard
60	10	Conversation levels
45	4	Whispering, open office layout, normal living room
35	2	Quiet office
30	1	Quiet library
20	0	Recording studio

For more information about PowerEdge acoustical design and metrics, see [Understanding Acoustical Data and Causes of Sound in Dell Enterprise Products](#).

Acoustical output in the quietest performance of XR4510c and XR4520c will have low frequency prominent tones, e.g., hums, and will be similar to that of a quiet restaurant (e.g., several folks talking softly), running refrigerator, or moderate rainfall. M.2, used for booting, drives thermal requirements for minimum air mover speed thus quietest acoustical output.

Moreover, acoustical output varies significantly with type and operational state of accelerator, e.g., A2 GPU at full operation results in acoustical output similar to that of a data center, vacuum cleaner, etc., with mid frequency prominent tones, e.g., whistles.

Acoustical experience metrics and values for four configurations, three chassis options (in sub-bullets below), and multiple operational states of XR4510c and XR4520c are provided in the remainder of this document. Each has been tested as described in the footnotes below Tables 55, 57 & 59.

- Tables 53-54: XR4000r Rear Accessed chassis (also called Normal Airflow) chassis where power supplies and network cards are in the rear.
- Tables 55-56: XR4000r Front Accessed chassis (also called Reverse Airflow) chassis where power supplies and network cards are in the front.
- Tables 57-58: XR4000z Front Accessed chassis (and Reverse Airflow) chassis where power supplies and network cards are in the front.

Table 23. Acoustical configurations supported in XR4000r chassis with Normal Airflow (NAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	GPU-Quietest	Config 1	Config 2	Config 3	Config 4
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r
Platform ID	XR4510c_NAF	XR4520c_NAF	XR4510c_NAF	XR4510c_NAF	XR4520c_NAF	XR4520c_NAF
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height
Processor type	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor
Processor TDP	64W / 4C	116W / 20C	64W / 4C	83W/ 8C	111W / 16C	116W / 20C
Processor Quantity	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 4 Slots	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 2 Slots
RDIMM Memory	16 GB	64 GB	16 GB	32 GB	64 GB	64 GB
Memory Quantity	1 x 4 Slot	4 x 4 Slot	1 x 4 Slot	4 x 4 Slot	4 x 4 Slot	4 x 4 Slot
SSD Type	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	960 GB M.2 NVME Drives	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	1.92 TB M.2 NVME Drives
SSD Quantity	1 x 4 Slot	4 x 4 Slot	1 x 4 Slot	2 x 4 Slot	4 x 4 Slot	4 x 4 Slot
PSU Type	1400W	1400W	1400W	1400W	1400W	1400W

Table 23. Acoustical configurations supported in XR4000r chassis with Normal Airflow (NAF) on XR4510c and XR4520c sleds (continued)

Configuration	Non-GPU Quietest	GPU-Quietest	Config 1	Config 2	Config 3	Config 4
PSU Quantity	2	2	2	2	2	2
PCIe 1	-	-	-	-	1GbE BaseT	-
PCIe 2	-	Nvidia A30	-	-	Nvidia A2	Nvidia A30
BOSS Card	-	ET 2 x 960 GB M.2	-	ET 2 x 480 GB M.2	ET 2 x 960 GB M.2	ET 2 x 960 GB M.2

Table 24. Acoustical configurations supported in XR4000r chassis with Normal Airflow (NAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	Minimum	Basic	Mainstream	Feature Rich	Hilltop	
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	
Platform ID	XR4510c_NAF	XR4520c_NAF	XR4510c_NAF	XR4510c_NAF	XR4520c_NAF	XR4520c_NAF	
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height	
Acoustical Performance: Idle/ Operating @ 25 °C Ambient							
L _{WA,m} (B)	Idle	6.7	6.7	6.7	6.8	6.7	6.7
	Operating	6.8	7.0 (GPU 100%)	6.8	6.8	8.5 (GPU 100%)	7.0 (GPU 100%)
K _v (B)	Idle	0.4	0.4	0.4	0.4	0.4	0.4
	Operating	0.4	0.4	0.4	0.4	0.4	0.4
L _{pA,m} (dB)	Idle	51	51	51	51	51	51
	Operating	52	55 (GPU 100%)	52	52	72 (GPU 100%)	55 (GPU 100%)
Prominent tones	15 < Prominence ratio < 20 dB, i.e., prominent hums and whistles						
Acoustical Performance: Idle @ 28 °C Ambient							
L _{WA,m} (B)	6.9	6.9	6.9	6.9	6.9	6.9	
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	54	54	54	54	54	54	
Acoustical Performance: Max. Loading @ 35 °C Ambient							
L _{WA,m} (B)	7.3	7.9	7.3	7.4	9.6	7.9	
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	58	64	58	58	83	64	

L_{WA,m}: The declared mean A-weighted sound power level (L_{WA}) is calculated per section 5.2 of ISO 9296 (2017) with data collected using the methods described in ISO 7779 (2010). Data presented here may not be fully compliant with ISO 7779.

L_{pA,m}: The declared mean A-weighted emission sound pressure level is at the bystander position per section 5.3 of ISO 9296 (2017) and measured using methods described in ISO 7779 (2010). The system is placed on standard test table and in a 24U rack enclosure, 25cm above a reflective floor. Data presented here may not be fully compliant with ISO 7779.

Prominent tones: Criteria of D.6 and D.11 of ECMA-74 (17th ed., Dec. 2019) are followed to determine if discrete tones are prominent and to report them, if so.

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

Operating mode: The maximum of the steady state acoustical output at 50% of CPU TDP or active HDDs or 100% of GPUper C.9.3.2 in ECMA-74 (17th ed., Dec. 2019).

Table 25. Acoustical configurations supported in XR4000r chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	GPU-Quietest	Config 1	Config 2	Config 3	Config 4
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r
Platform ID	XR4510c_RAF	XR4520c_RAF	XR4510c_RAF	XR4510c_RAF	XR4520c_RAF	XR4520c_RAF
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height
Processor type	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor
Processor TDP	83W / 8C	116W / 20C	64W / 4C	83W/ 8C	111W / 16C	116W / 20C
Processor Quantity	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 4 Slots	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 2 Slots
RDIMM Memory	32 GB	64 GB	16 GB	32 GB	64 GB	64 GB
Memory Quantity	4 x 4 Slot	4 x 4 Slot	1 x 4 Slot	4 x 4 Slot	4 x 4 Slot	4 x 4 Slot
SSD Type	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	960 GB M.2 NVME Drives	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	1.92 TB M.2 NVME Drives
SSD Quantity	2 x 4 Slot	4 x 4 Slot	1 x 4 Slot	2 x 4 Slot	4 x 4 Slot	4 x 4 Slot
PSU Type	1400W	1400W	1400W	1400W	1400W	1400W
PSU Quantity	2	2	2	2	2	2
PCIe 1	-	-	-	-	1GbE BaseT	-
PCIe 2	-	Nvidia A30	-	-	Nvidia A2	Nvidia A30
BOSS Card	ET 2 x 480 GB M.2	ET 2 x 960 GB M.2	-	ET 2 x 480 GB M.2	ET 2x 960 GB M.2	ET 2 x 960 GB M.2

Table 26. Acoustical configurations supported in XR4000r chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	Minimum	Basic	Mainstream	Feature Rich	Hilltop
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r
Platform ID	XR4510c_RAF	XR4520c_RAF	XR4510c_RAF	XR4510c_RAF	XR4520c_RAF	XR4520c_RAF
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height
Acoustical Performance: Idle/ Operating @ 25 °C Ambient						
L _{WA,m} (B)	Idle	6.7	6.7	6.7	6.7	6.6
	Operating	6.7	6.7 (GPU 100%)	6.7	6.7	8.2 (GPU 100%)
K _v (B)	Idle	0.4	0.4	0.4	0.4	0.4
	Operating	0.4	0.4	0.4	0.4	0.4
L _{pA,m} (dB)	Idle	52	52	52	52	52
	Operating	52	53 (GPU 100%)	52	52	66 (GPU 100%)
Prominent tones	15 < Prominence ratio < 20 dB, i.e., prominent hums and whistles					

Table 26. Acoustical configurations supported in XR4000r chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds (continued)

Configuration	Non-GPU Quietest	Minimum	Basic	Mainstream	Feature Rich	Hilltop
Acoustical Performance: Idle @ 28 °C Ambient						
L _{wA,m} (B)	7.0	6.9	7.0	7.0	6.9	6.9
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4
L _{pA,m} (dB)	54	55	55	54	55	55
Acoustical Performance: Max. Loading @ 35 °C Ambient						
L _{wA,m} (B)	7.5	7.8	7.5	7.5	9.4	7.8
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4
L _{pA,m} (dB)	60	63	60	60	80	63

L_{wA,m}: The declared mean A-weighted sound power level (L_{wA}) is calculated per section 5.2 of ISO 9296 (2017) with data collected using the methods described in ISO 7779 (2010). Data presented here may not be fully compliant with ISO 7779.

L_{pA,m}: The declared mean A-weighted emission sound pressure level is at the bystander position per section 5.3 of ISO 9296 (2017) and measured using methods described in ISO 7779 (2010). The system is placed on standard test table and in a 24U rack enclosure, 25cm above a reflective floor. Data presented here may not be fully compliant with ISO 7779.

Prominent tones: Criteria of D.6 and D.11 of ECMA-74 (17th ed., Dec. 2019) are followed to determine if discrete tones are prominent and to report them, if so.

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

Operating mode: The maximum of the steady state acoustical output at 50% of CPU TDP or active HDDs or 100% of GPU per C.9.3.2 in ECMA-74 (17th ed., Dec. 2019).

Table 27. Acoustical configurations supported in XR4000z chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	GPU-Quietest	Config 1	Config 2	Config 3	Config 4
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r
Platform ID	XR4510c_RAF	XR4520c_RAF	XR4510c_RAF	XR4510c_RAF	XR4520c_RAF	XR4520c_RAF
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height
Processor type	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor	Intel Ice Lake processor
Processor TDP	83W / 8C	116W / 20C	64W / 4C	83W / 8C	111W / 16C	116W / 20C
Processor Quantity	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 4 Slots	1 CPU x 4 Slots	1 CPU x 2 Slots	1 CPU x 2 Slots
RDIMM Memory	32 GB	64 GB	16 GB	32 GB	64 GB	64 GB
Memory Quantity	4 x 4 Slot	4 x 4 Slot	1 x 4 Slot	4 x 4 Slot	4 x 4 Slot	4 x 4 Slot
SSD Type	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	960 GB M.2 NVME Drives	960 GB M.2 NVME Drives	1.92 TB M.2 NVME Drives	1.92 TB M.2 NVME Drives
SSD Quantity	2 x 4 Slot	4 x 4 Slot	1 x 4 Slot	2 x 4 Slot	4 x 4 Slot	4 x 4 Slot
PSU Type	1400W	1400W	1400W	1400W	1400W	1400W
PSU Quantity	2	2	2	2	2	2
PCIe 1	-	-	-	-	1GbE BaseT	-
PCIe 2	-	Nvidia A30	-	-	Nvidia A2	Nvidia A30

Table 27. Acoustical configurations supported in XR4000z chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds (continued)

Configuration	Non-GPU Quietest	GPU-Quietest	Config 1	Config 2	Config 3	Config 4
BOSS Card	ET 2x 480 GB M.2	ET 2 x 960 GB M.2	-	ET 2 x 480 GB M.2	ET 2 x 960 GB M.2	ET 2 x 960 GB M.2

Table 28. Acoustical configurations supported in XR4000z chassis with Reverse Airflow (RAF) on XR4510c and XR4520c sleds

Configuration	Non-GPU Quietest	Minimum	Basic	Mainstream	Feature Rich	Hilltop	
Chassis	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	XR4000r	
Platform ID	XR4510c_NAF	XR4520c_NAF	XR4510c_NAF	XR4510c_NAF	XR4520c_NAF	XR4520c_NAF	
Form Factor	Half Height	Full Height	Half Height	Half Height	Full Height	Full Height	
Acoustical Performance: Idle/ Operating @ 25 °C Ambient							
L _{wA,m} (B)	Idle	6.4	6.4	6.4	6.4	6.4	
	Operating	6.4	6.5 (GPU 100%)	6.4	6.4	7.8 (GPU 100%)	6.5 (GPU 100%)
K _v (B)	Idle	0.4	0.4	0.4	0.4	0.4	
	Operating	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	Idle	53	54	54	53	53	54
	Operating	53	55 (GPU 100%)	54	53	67 (GPU 100%)	55 (GPU 100%)
Prominent tones	Prominence ratio < 15 dB, i.e., prominent hums						
Acoustical Performance: Idle @ 28 °C Ambient							
L _{wA,m} (B)	6.6	6.6	6.6	6.6	6.6	6.6	
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	56	56	56	56	56	56	
Acoustical Performance: Max. Loading @ 35 °C Ambient							
L _{wA,m} (B)	7.3	7.5	7.3	7.3	9.1	7.5	
K _v (B)	0.4	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	62	64	62	62	80	64	

L_{wA,m}: The declared mean A-weighted sound power level (L_{wA}) is calculated per section 5.2 of ISO 9296 (2017) with data collected using the methods described in ISO 7779 (2010). Data presented here may not be fully compliant with ISO 7779.

L_{pA,m}: The declared mean A-weighted emission sound pressure level is at the bystander position per section 5.3 of ISO 9296 (2017) and measured using methods described in ISO 7779 (2010). The system is placed on standard test table and in a 24U rack enclosure, 25cm above a reflective floor. Data presented here may not be fully compliant with ISO 7779.

Prominent tones: Criteria of D.6 and D.11 of ECMA-74 (17th ed., Dec. 2019) are followed to determine if discrete tones are prominent and to report them, if so.

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

Operating mode: The maximum of the steady state acoustical output at 50% of CPU TDP or active HDDs or 100% of GPU per C.9.3.2 in ECMA-74 (17th ed., Dec. 2019).

Rails and mounting options

The rail offerings for the PowerEdge XR4000r supports only sliding rails.

See the *Enterprise Systems Rail Sizing and Rack Compatibility Matrix* available at https://i.dell.com/sites/csdocuments/Business_solutions_engineering-Docs_Documents/en/rail-rack-matrix.pdf for information regarding:

- Specific details about rail types.
- Rail adjustability ranges for various rack mounting flange types.
- 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. The system supports only stab-in sliding rails.

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



Figure 25. Quick resource locator for combo rails

Rack Installation

Options	Links to document on Dell support site	Document titles
A23 Rails	https://www.dell.com/poweredgemanuals > XR Servers> PowerEdge XR4000r	A23 Rack Installation Guide
A24 Rails		A24 Rack Installation Guide
A25 Rails		A25 Rack Installation Guide

Table 29. XR4000r mounting options

Options	Links to document on Dell support site	Document titles
2-post racks	https://www.dell.com/poweredgemanuals > XR Servers> PowerEdge XR4000r	XR4000r wall mounting - Installation Tech sheet
Wall mounting options		PowerEdge XR4000r Network Equipment Air Filter Service Guide

Topics:

- [XR4000z mounting options](#)

XR4000z mounting options

The XR4000z supports the below mounting options.

Mounting options

Options	Links to document on Dell support site	Document titles
Stand on table without bracket	https://www.dell.com/poweredgemanuals > XR Servers> PowerEdge XR4000z	XR4000z Table Mount without Bracket (optional Bezel) – Installation Tech Sheet
Stand on table with stackable mounting bracket		XR4000z Table Mount with bracket (optional Bezel) - Installation Tech sheet
Ceiling mount with stackable mounting bracket		XR4000z Ceiling Mount - Installation Tech Sheet
Wall mounting options		XR4000z Wall Mount – Installation Tech Sheet
DIN mount		XR4000z DIN Mount – Installation Tech Sheet
Mount into Pelican transit case		XR4000z Pelican transit with bracket

Supported operating systems

Operating system for XR4000r, XR4000z, XR4510c and XR4520c

The PowerEdge XR4000r, XR4000z, XR4510c and XR4520c systems support the following operating systems:

- Azure Stack HCI
- Canonical Ubuntu Server LTS
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi

For more information, go to www.dell.com/ossupport.

Operating system for XR4000w

The PowerEdge XR4000w system supports the following operating systems:

- Azure Stack HCI
- VMware ESXi

For more information, go to www.dell.com/ossupport.

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 \(iDRAC\)](#)
- [Systems Management software support matrix](#)

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 30. iDRAC9 license tiers

License	Description
iDRAC9 Basic	<ul style="list-style-type: none"> • Available only on 100-500 series rack/tower • Basic instrumentation with iDRAC web UI • For cost conscious customers that see limited value in management
iDRAC9 Express	<ul style="list-style-type: none"> • Default on 600+ series rack/tower, modular, and XR series • Includes all features of Basic • Expanded remote management and server life-cycle features
iDRAC9 Enterprise	<ul style="list-style-type: none"> • Available as an upsell on all servers • Includes all features of Basic and Express. Includes key features such as virtual console, AD/LDAP support, and more • Remote presence features with advanced, Enterprise-class, management capabilities
iDRAC9 Datacenter	<ul style="list-style-type: none"> • Available as an upsell on all servers • Includes all features of Basic, Express, and Enterprise. Includes key features such as telemetry streaming, Thermal Manage, automated certificate management, and more • Extended remote insight into server details, focused on high end server options, granular power, and thermal management

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

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

- [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 31. Systems Management software support matrix

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

Table 31. Systems Management software support matrix (continued)

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

For more information, see:

- [OpenManage Consoles and Integrations at PowerEdge Central](#)
- [OpenManage Tools at PowerEdge Central](#)

Appendix D: Service and support

Topics:

- Default support levels
- Other services and support information

Default support levels

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

Default deployment levels

This system offers Dell Basic Deployment, including onsite hardware installation during business hours with packaging materials disposal.

Other services and support information

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

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

Dell deployment services


Dell ProDeploy Infrastructure Suite

ProDeploy Infrastructure Suite helps get servers out of the box and into optimized production fast. Elite deployment engineers of Dell with broad and deep experience using best-in-class processes along with our established global scale can help around the clock and around the globe. From simple to the most complex server installations and software integration, we take the guess work and risk out of deploying new server technology.

Table 32. ProDeploy Infrastructure Suite capabilities

Stage	Features	Basic Deployment	ProDeploy	ProDeploy Plus
Pre-deployment	Single point of contact for project management	Not supported	Supported	In region
	Site readiness review	Not supported	Supported	Supported
	Implementation planning	Not supported	Supported	Supported
	Technology Services Manager (TSM) engagement for ProSupport Plus entitled devices	Not supported	Not supported	Supported
Deployment	Deployment service hours	Business hours	24 x 7	24 x 7
	Onsite hardware installation	Supported	Supported	Supported

Table 32. ProDeploy Infrastructure Suite capabilities (continued)

Stage	Features	Basic Deployment	ProDeploy	ProDeploy Plus
	 NOTE: Hardware installation not applicable on select software products.			
	Packaging materials disposal	Supported	Supported	Supported
	Install and configure system software	Not supported	Supported	Onsite
	Project documentation with knowledge transfer	Not supported	Supported	Supported
Post-deployment	Deployment verification	Not supported	Supported	Supported
	Configuration data transfer to Dell technical support	Not supported	Supported	Supported
	30 days of post deployment configuration assistance	Not supported	Not supported	Supported
	Training credits for Dell Education Services	Not supported	Not supported	Supported

Dell ProDeploy Plus for Infrastructure

From beginning to end, ProDeploy Plus provides the skill and scale that is must successfully perform demanding deployments in today's complex IT environments. Certified Dell experts start with extensive environmental assessments and detailed migration planning and recommendations. Software installation includes set up of most versions of Dell secure connect gateway and OpenManage system management utilities.

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

Dell ProDeploy for Infrastructure

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

Dell ProDeploy for HPC

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

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

Learn more at Dell.com/HPC-Services.

ProDeploy for HPC

Get more out of your cluster starting Day One

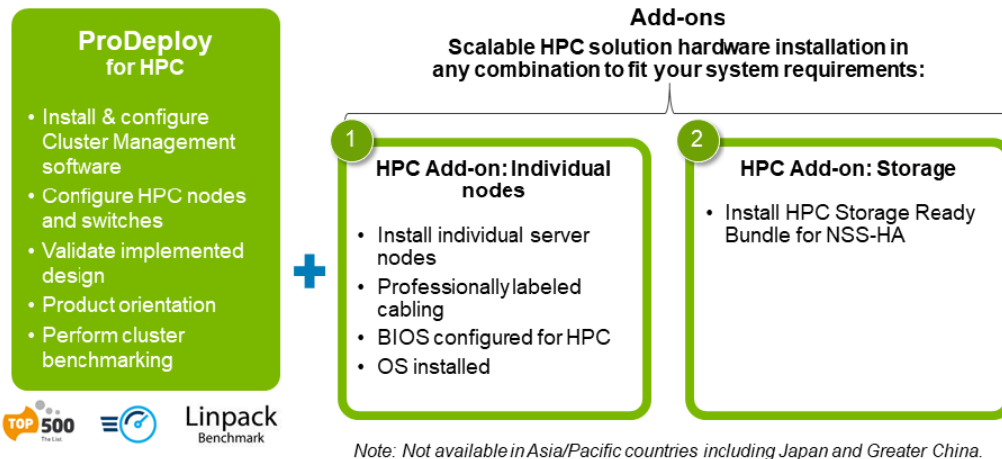


Figure 26. ProDeploy for HPC

Dell Basic Deployment

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

Dell Configuration Services

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

For more information, see [Server Configuration Services](#).

Dell Residency Services

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

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

Dell Data Migration Services

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

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

Dell Enterprise Support Services

Dell ProSupport Enterprise Suite

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

Table 33. ProSupport Enterprise Suite

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

Dell ProSupport Plus for Enterprise

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

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

Dell ProSupport for Enterprise

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

- 24x7 support through phone, chat and online
- Predictive, automated tools and innovative technology
- A central point of accountability for all hardware and software issues
- Collaborative third-party support
- Hypervisor, operating system and application support
- Consistent experience regardless of where customers are located or what language they speak

(i) NOTE: Subject to service offer country or region availability.

- Optional onsite parts and labor response options including next business day or four-hour mission critical

Table 34. Dell Enterprise Support model

Enterprise Support Services Feature Comparison	Basic	ProSupport	ProSupport Plus
Remote technical support	9 x 5	24 x 7	24 x 7
Covered Products	Hardware	Hardware and Software	Hardware and Software
Onsite hardware support	Next business day	Next business day or 4 hr mission critical	Next business day or 4 hr mission critical
Third-party collaborative assistance	Not supported	Supported	Supported
Automated issue detection and proactive case creation	Not supported	Supported	Supported
Self-service case initiation and management	Not supported	Supported	Supported
Access to software updates	Not supported	Supported	Supported
Priority access to specialized support experts	Not supported	Not supported	Supported
Third-party software support	Not supported	Not supported	Supported
Assigned Services Account Manager	Not supported	Not supported	Supported
Personalized assessments and recommendations	Not supported	Not supported	Supported
Semiannual systems maintenance	Not supported	Not supported	Supported

Dell ProSupport One for Data Center

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

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

Dell ProSupport Add-on for HPC

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

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

Learn more at Dell.com/HPC-Services.

ProSupport Add-on for HPC

Delivering a true end-to-end support experience across your HPC environment

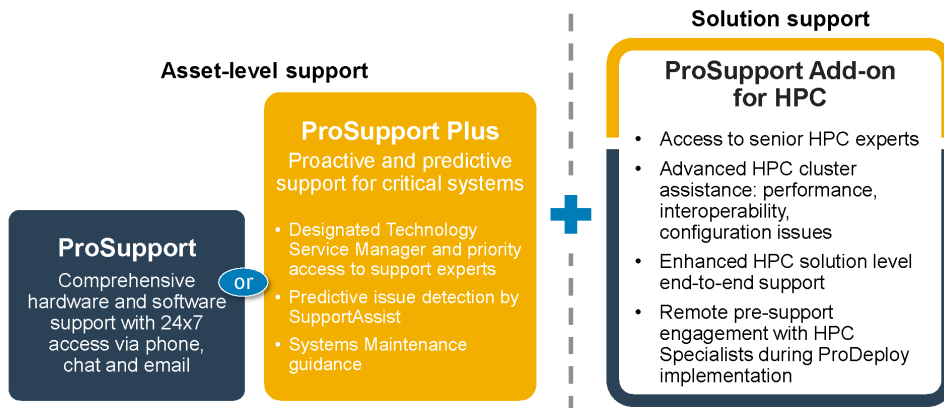


Figure 27. ProSupport Add-on for HPC

Support Technologies

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

Dell secure connect gateway

The best time to solve a problem is before it happens. The automated proactive and predictive technology secure connect gateway helps reduce steps and time to resolution, often detecting issues before they become a crisis.

Benefits include:

- Value: Secure connect gateway is available to all customers at no additional charge
- Improve productivity: Replace manual, high-effort routines with automated support
- Accelerate time to resolution: Receive issue alerts, automatic case creation, and proactive contact from Dell experts
- Gain insight and control: Optimize enterprise devices with on-demand ProSupport Plus reporting in TechDirect, and get predictive issue detection before the problem starts

NOTE: Secure connect gateway is included with all support plans, but features vary based on the service level agreement.

Table 35. Secure connect gateway model

	Basic hardware warranty	ProSupport	ProSupport Plus
Automated issue detection and system state information collection	Supported	Supported	Supported
Proactive, automated case creation and notification	Not supported	Supported	Supported
Predictive issue detection for failure prevention	Not supported	Not supported	Supported
Recommendation reporting available on-demand in Tech Direct	Not supported	Not supported	Supported

Get started at DellTechnologies.com/secureconnectgateway.

Dell TechDirect

TechDirect helps boost IT team productivity when supporting Dell systems.

With over 1.4 million self-dispatches processed each year, TechDirect has proven its effectiveness as a support tool. Customers can:

- Self-dispatch replacement parts
- Request technical support
- Integrate APIs into their help desk

Or, customers can access all Dell certification and authorization requirements. They can train their staff on Dell products, as TechDirect allows them to:

- Download study guides
- Schedule certification and authorization exams
- View transcripts of completed courses and exams

Register at TechDirect.Dell.com.

Dell Technologies Consulting Services

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

Dell Remote Consulting Services

When customers are in the final stages of PowerEdge server implementation, they can rely on Dell Remote Consulting Services and our certified technical experts to help optimize their configuration with best practices for software, virtualization, server, storage, networking, and systems management.

Dell Managed Services

Reduce the cost, complexity, and risk of managing IT. Focus customer resources on digital innovation and transformation while our experts help optimize their IT operations and investment with managed services backed by guaranteed service levels.

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.

Appendix A. Additional specifications

Topics:

- Chassis dimensions
- Chassis weight
- Video specifications
- PSU specifications
- Environmental specifications

Chassis dimensions

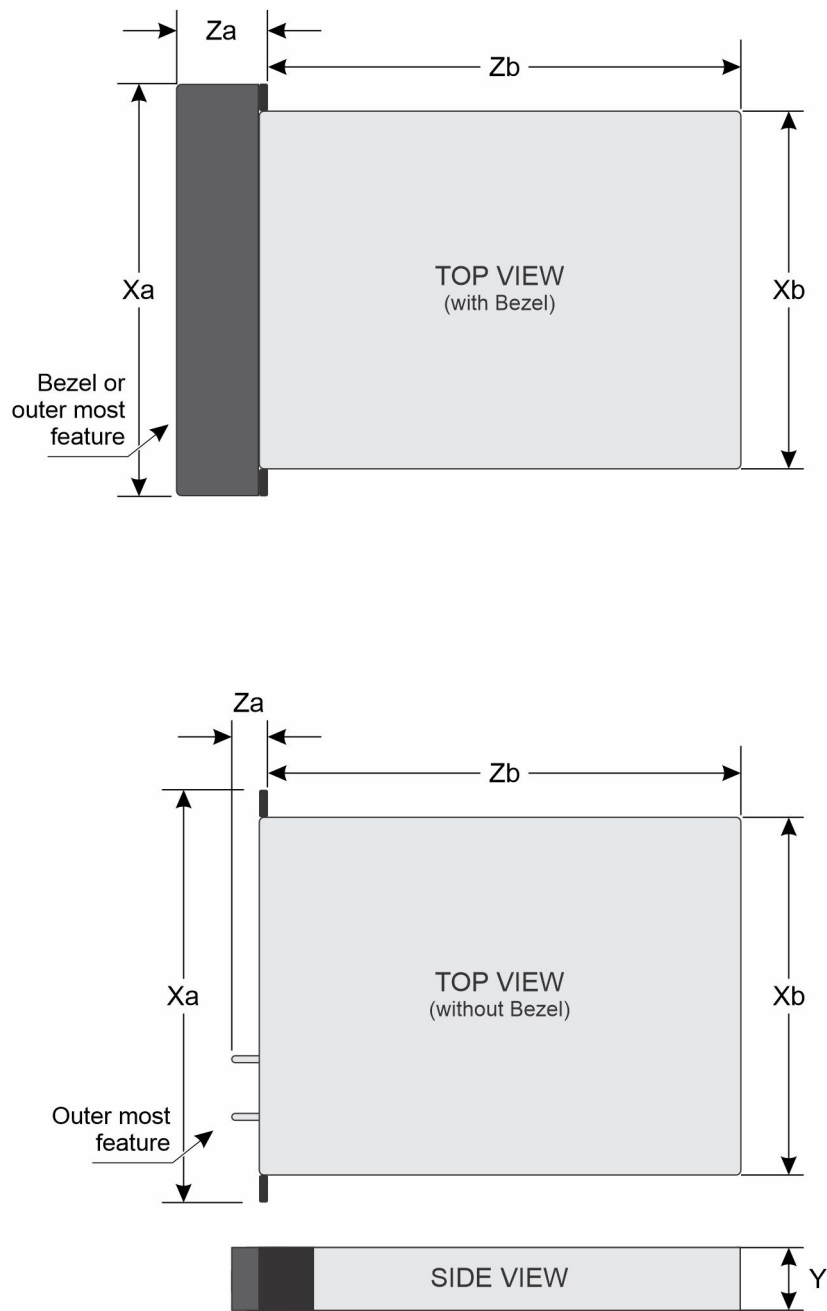


Figure 28. PowerEdge XR4000r chassis dimensions

Table 36. PowerEdge XR4000 chassis dimensions

Xa	Xb	Y	Za	Zb
482.6 mm (19 inches)	434 mm (17.08 inches)	87.05 mm (3.42 inches)	102.5 mm (4.03 inches) With bezel 22.73 mm (0.89 inches) Without bezel	352.55 mm (13.87 inches) Ear to rear wall

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

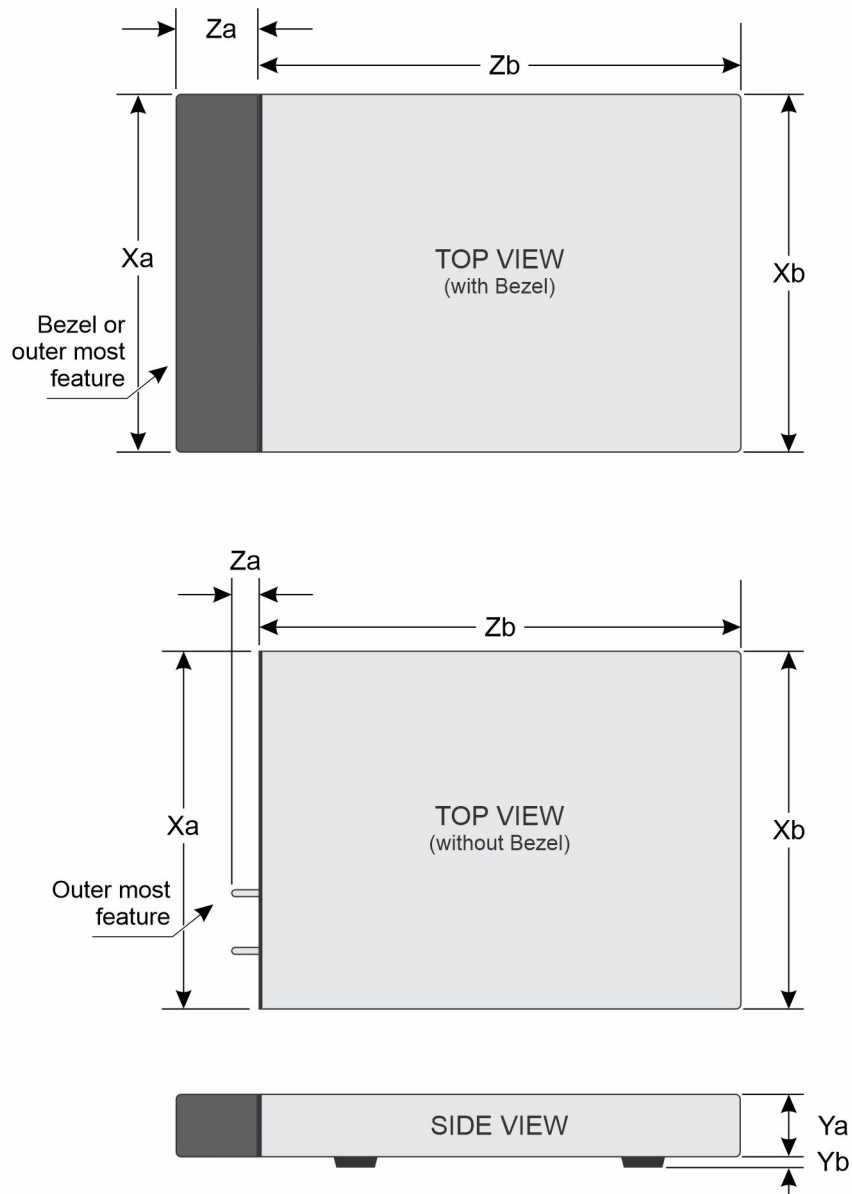


Figure 29. PowerEdge XR4000z chassis dimensions

Table 37. PowerEdge XR4000z chassis dimensions without side panels and bezel

Xa	Xb	Ya	Yb	Za	Zb
266 mm (10.47 inches)	266 mm (10.47 inches)	87.05 mm (3.42 inches)	10 mm (0.39 inches)	20.20 mm (0.79 inches) Without bezel	355 mm (13.97 inches) Ear to rear wall

Table 38. PowerEdge XR4000z chassis dimensions with side panels and bezel

Xa	Xb	Ya	Yb	Za	Zb
307 mm (12.08 inches)	307 mm (12.08 inches)	87.05 mm (3.42 inches)	10 mm (0.39 inches)	100 mm (3.93 inches) With bezel	355 mm (13.97 inches) Ear to rear wall

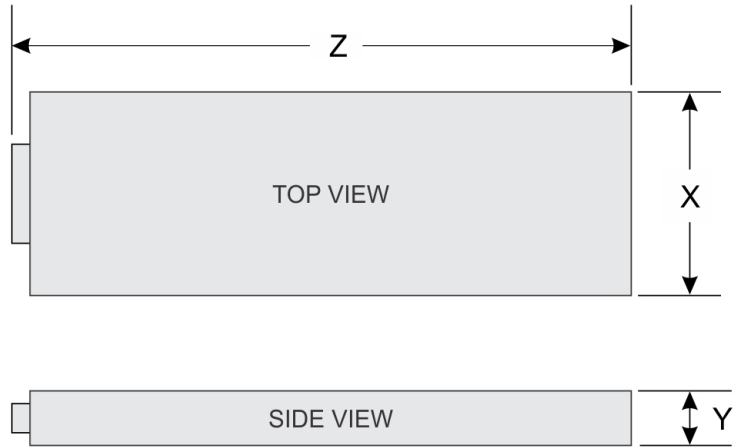


Figure 30. PowerEdge XR4510c sled dimensions

Table 39. PowerEdge XR4510c sled dimensions

X	Y	Z (handle closed)
167.2 mm (6.58 inches)	41.25 mm (1.62 inches)	342.5 mm (13.48 inches)

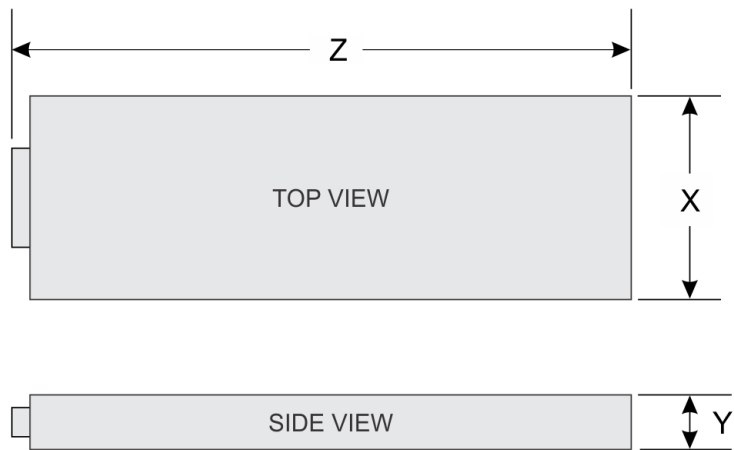


Figure 31. PowerEdge XR4520c sled dimensions

Table 40. PowerEdge XR4520c sled dimensions

X	Y	Z (handle closed)
167.2 mm (6.58 inches)	83.25 mm (3.27 inches)	342.5 mm (13.48 inches)

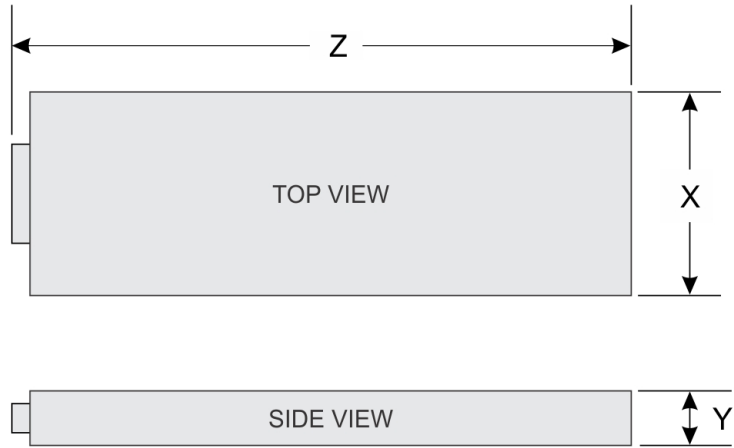


Figure 32. PowerEdge XR4000w sled dimensions

Table 41. PowerEdge XR4000w sled dimensions

X	Y	Z
83.25 mm (3.27 inches)	21.60 mm (0.85 inches)	250.79 mm (9.87 inches)

Chassis weight

Chassis weight XR4000r

Table 42. PowerEdge XR4000r system weight

System configuration	Maximum weight (with all drives/SSDs)
Weight of chassis without sleds	7.96 kg (17.54 pound)
Weight of chassis with sleds	17.81 kg (39.26 pound)

Chassis weight XR4000z

Table 43. PowerEdge XR4000z system weight

System configuration	Maximum weight
Weight of chassis without sleds and without bezel and side panels	5.59 kg (12.32 pound)
Weight of chassis with sleds and without bezel and side panels	10.52 kg (23.19 pound)
Weight of chassis with sleds, bezel and side panels	12.16 kg (26.80 pound)

Sled weight XR4510c

Table 44. PowerEdge XR4510c system weight

System configuration	Maximum weight (with all SSDs)
4 x DIMMS, 4 x M.2 NVMe SSDs on M.2 Riser	2.46 kg (5.42 pound)
2 x M.2 NVMe SSDs on BOSS N1	
1 x DIMM, 1 x M.2 NVMe SSD on M.2 Riser	2.35 kg (5.18 pound)
1 x M.2 NVMe SSD on BOSS N1	

Sled weight XR4520c

Table 45. PowerEdge XR4520c system weight

System configuration	Maximum weight (with all SSDs)
1x DIMM, 1x M.2 NVMe SSDs on M.2 riser	3.15 kg (6.94 pound)
1x M.2 NVMe SSD on BOSS-N1	
4x DIMMS, 4x M.2 NVMe SSDs on M.2 riser	4.69 kg (10.34 pound)
2x M.2 NVMe SSDs on BOSS-N1, 1x DW	

Chassis weight XR4000w

Table 46. PowerEdge XR4000w system weight

System configuration	Maximum weight
1 x 2280 M.2 SSD	0.44 kg (0.97 pound)

Video specifications

The PowerEdge XR4510c and XR4520c systems support integrated Matrox G200 graphics controller embedded in the iDRAC (BMC) chip, with 16 MB of video frame buffer.

Table 47. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
640 x 480	60	8, 16, 32
800 x 600	60	8, 16, 32
1024 x 768	60	8, 16, 32
1152 x 864	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1400 x 1050	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32

Table 47. Supported video resolution options (continued)

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

PSU specifications

PSU specifications for XR4000r

The PowerEdge XR4000r system supports up to two AC or DC power supply (NAF or RAF) units (PSUs).

Table 48. PSU specifications

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	Voltage	AC		DC	Current (A)
					High line 200–240 V	Low line 100–120 V		
1800W Mixed Mode	Titanium	6750 BTU/hr	50/60 Hz	200 - 240 V AC	1800W	NA	NA	10A
	NA	6750 BTU/hr	NA	240 V DC	NA	NA	1800W	8.2A
1400 W Mixed Mode	Platinum	5250 BTU/hr	50/60 Hz	100 - 240 V AC	1400 W	1050 W	NA	12 A - 8 A
	NA	5250 BTU/hr	NA	240 V DC	NA	NA	1400 W	6.6 A
1100 W Mixed Mode	Titanium	4100 BTU/hr	50/60 Hz	100 - 240 V AC	1100 W	1050 W	NA	12 A - 6.3 A
	NA	4100 BTU/hr	NA	240 V DC	NA	NA	1100 W	5.2 A
1100 W DC	NA	4265 BTU/hr	NA	-48 -(-60) V	NA	NA	1100 W	27 A

NOTE: The XR4000r supports both NAF and RAF power supply units (PSUs). Normal airflow design also called Normal Airflow (NAF.) NAF pulls air into the non- I/O side and exhausts to the side of the chassis with I/O. This is the 'standard' way most datacenter servers are configured for hot-aisle serviceability.

NOTE: This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 240 V.

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

NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at Dell.com/ESSA.

PSU specifications for XR4000z

The PowerEdge XR4000z system supports up to two AC or DC power supply units (PSUs) (RAF) only.

Table 49. PSU specifications

PSU	Class	Heat dissipation (maximum) (BTU/hr)	Frequency (Hz)	Voltage	AC		DC	Current (A)
					High line 200–240 V	Low line 100–120 V		
1800W Mixed Mode	Titanium	6750 BTU/hr	50/60 Hz	200 - 240 V AC	1800W	NA	NA	10A
		6750 BTU/hr	NA	240 V DC	NA	NA	1800W	8.2A
1400 W Mixed Mode	Platinum	5250 BTU/hr	50/60 Hz	100 - 240 V AC	1400 W	1050 W	NA	12 A - 8 A
		5250 BTU/hr	NA	240 V DC	NA	NA	1400 W	6.6 A
1100 W DC	NA	4265 BTU/hr	NA	-48 -(-60) V	NA	NA	1100 W	27 A

- NOTE:** The XR4000z only supports RAF power supply units (PSUs). Reverse airflow (RAF) design is also called Reverse Airflow (RAF.) RAF pulls air into the I/O side and exhausts to the side of the chassis without I/O. This allows for cold-aisle serviceability.
- NOTE:** This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 240 V.
- NOTE:** Heat dissipation is calculated using the PSU wattage rating.
- NOTE:** When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at Dell.com/ESSA.

Environmental specifications

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

Table 50. Operating and non-operating temperature considerations

Configuration	Temperature range
Operating temperature range	-5 to 55°C with a startup temperature of 0°C
Non-operating temperature range	-40 to 85°C

Environmental considerations

The PowerEdge system is targeted for edge deployments and it meets all the additional standards for thermal, shock, vibration parameters.

Table 51. Environmental considerations

Industry	Configuration	Description
Telco	GR-1089-CORE	Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment
	GR-63-CORE	NEBS Requirements: Physical Protection
	SR-3580 (NEBS Level 3)	NEBS Criteria Levels

Table 51. Environmental considerations (continued)

Industry	Configuration	Description
	GR-3108-CORE (Class 1)	Network Equipment in the Outside Plant (OSP). An exception is made for cold boot at 0C instead of -5C
Military	MILSTD 810H	Environmental engineering considerations and laboratory test
	MILSTD 461G///	Requirements for the control of electromagnetic interference characteristic of subsystems and equipment
	MILSTD 901E	High impact shock test – Shipboard
	MILSTD 1474E	Department of Defense Design Criteria Standard Noise Limits
Marine	IEC-60945	Maritime navigation and radiocommunication equipment and systems – General requirements
	DNV-GL	Environmental Test Specification for Instrumentation and Automation Equipment
Power Industry	IEEE 1613	Environmental and testing requirements for communications networking devices in electric power substations
	IEC – 61850-3	Communication networks and systems for power utility automation
Safety	NA	LDV, IEC/EN, CFR, CSA
EMC	NA	EN, CISPR, ES, DTAG, CFR, ICES, VCCI
EMV	NA	RoHS, WEEE, EN, ECE

Thermal restriction matrix

Table 52. XR4000r chassis - RAF Configuration Matrix

CPU Type	HSK type	Fan type	RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel® Xeon® D - 2796NT, 120C,120W	Vaper Chamber (VC) HSK	Standard (STD) fan	Yes	Yes	Yes
Intel® Xeon® D - 2776NT,16C,117W			Yes	Yes	Yes
Intel® Xeon® D - 2753NT,12C,87W			Yes	Yes	Yes
Intel® Xeon® D - 2733NT,8C,80W			Yes	Yes	Yes
Intel® Xeon® D - 2712T,4C,65W			Yes	Yes	Yes

Table 53. XR4000z chassis - RAF Configuration Matrix

CPU Type	HSK type	Fan type	RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel® Xeon® D - 2796NT, 120C,120W	Vaper Chamber (VC) HSK	Standard (STD) fan	Yes	Yes	Yes
Intel® Xeon® D - 2776NT,16C,117W			Yes	Yes	Yes
Intel® Xeon® D - 2753NT,12C,87W			Yes	Yes	Yes
Intel® Xeon® D - 2733NT,8C,80W			Yes	Yes	Yes

Table 53. XR4000z chassis - RAF Configuration Matrix (continued)

CPU Type	HSK type	Fan type	RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel® Xeon® D - 2712T,4C,65W			Yes	Yes	Yes

PCI-E Card Support

Table 54. XR4000r PCI-E Card Support Thermal Limitation (RAF Configurations)

PCI-E Type	RAF Configurations		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
nvidia GPGPU A2	Not Supported		Yes
nvidia GPGPU A30			Yes

Table 55. XR4000z PCI-E Card Support Thermal Limitation (RAF Configurations)

PCI-E Type	RAF Configurations		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
nvidia GPGPU A2	Not Supported		Yes
nvidia GPGPU A30			Yes

Table 56. M.2 Support Thermal Limitation for XR4000r chassis (RAF Configurations)

M.2 Type	Riser Module			Mancini Module			AIC Card			M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micro n 480G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Micro n 800G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Micro n 960G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Micro n 1.92T B	Throttling Active	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Micro n 3.84T B	Throttling Active	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Hynix 480G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

Table 56. M.2 Support Thermal Limitation for XR4000r chassis (RAF Configurations) (continued)

M.2 Type	Riser Module			Mancini Module			AIC Card			M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Hynix 800G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Hynix 960G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hynix 1.92T B	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Hynix 3.84B T	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No

Table 57. M.2 Support Thermal Limitation for XR4000z chassis (RAF Configurations)

M.2 Type	Riser Module			Mancini Module			AIC Card			M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micro n 480G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Micro n 800G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Micro n 960G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Micro n 1.92T B	Throttling Active	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Micro n 3.84T B	Throttling Active	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Hynix 480G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Hynix 800G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

Table 57. M.2 Support Thermal Limitation for XR4000z chassis (RAF Configurations) (continued)

M.2 Type	Riser Module			Mancini Module			AIC Card			M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Hynix 960G B	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hynix 1.92T B	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No
Hynix 3.84B T	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	No	No	No

Table 58. XR4000w Processor Support Thermal Limitation for XR4000r chassis (RAF Configurations)

CPU Type	HSK type	Fan type	RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Yes	Yes	Yes

Table 59. XR4000w Processor Support Thermal Limitation for XR4000z chassis (RAF Configurations)

CPU Type	HSK type	Fan type	RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Yes	Yes	Yes

Table 60. XR4000r chassis - NAF Configuration Matrix

CPU Type	HSK type	Fan type	NAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel® Xeon® D - 2796NT, 12C,120W	Vaper Chamber (VC) HSK	XR4000 Fan	No	No	Yes
Intel® Xeon® D - 2776NT,16C,117W			No	No	Yes
Intel® Xeon® D - 2753NT,12C,87W			No	No	Yes
Intel® Xeon® D - 2733NT,8C,80W			No	No	Yes
Intel® Xeon® D - 2712T,4C,65W			No	No	Yes

PCI-E Card Support

Table 61. PCI-E Card Support Thermal Limitation on XR4000r chassis (NAF Configurations)

TDP (W)	NAF Configurations		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
nvidia GPGPU A2	Not Supported		Yes
nvidia GPGPU A30			Yes

Table 62. M.2 Support Thermal Limitation for XR4000r chassis (NAF Configurations)

M.2 Type	Riser Module			Mancini Module			AIC Card			M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micro n 480G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	No	No	No
Micro n 800G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	No	No	No
Micro n 960G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes
Micro n 1.92T B	Not Supported	Not Supported	Yes	No	No	No	Not Supported	Not Supported	Yes	No	No	No
Micro n 3.84T B	Not Supported	Not Supported	Yes	No	No	No	Not Supported	Not Supported	Yes	No	No	No
Hynix 480G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	No	No	No
Hynix 800G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	No	No	No
Hynix 960G B	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes	Not Supported	Not Supported	Yes
Hynix 1.92T B	Not Supported	Not Supported	Yes	No	No	No	Not Supported	Not Supported	Yes	No	No	No
Hynix 3.84B T	Not Supported	Not Supported	Yes	No	No	No	Not Supported	Not Supported	Yes	No	No	No

Table 63. XR4000w Processor Support Thermal Limitation for XR4000r chassis (NAF Configurations)

Processor Type	HSK type	Fan type	NAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Not Supported		Yes

Thermal Restrictions

ASHRAE A4 Support Restriction for RAF (Reverse Air Flow Direction) Configurations

- CPU TDP greater than 120W are not supported within A3/A4.
- Nvidia A30 card is not supported above 45°C ambient temperature.
- Nvidia A2 GPU card is not supported above 45°C ambient temperature.
- In redundant mode, two power supplies are required. A single power supply failure is not supported.
- If memory slots are not fully populated, dummy DIMMs are required.

Edge1 Support Restriction for RAF (Reverse Air Flow Direction) Configurations

- CPU TDP greater than 120W are not supported within A3/A4.
- Nvidia A30 card is not supported above 45°C ambient temperature.
- Nvidia A2 GPU card is not supported above 45°C ambient temperature.
- In redundant mode, two power supplies are required. A single power supply failure is not supported.
- If memory slots are not fully populated, dummy DIMMs are required.

Edge2 Support Restriction for RAF (Reverse Air Flow Direction) Configurations

- CPU TDP greater than 120W are not supported within A3/A4.
- Nvidia A30 card is not supported above 45°C ambient temperature.
- Nvidia A2 GPU card is not supported above 45°C ambient temperature.
- Micron M.2 with 1.92TB and 3.84BT on Riser Module has active throttling for thermal protection when fully loaded and at 55 °C environment temperature.
- Micron M.2 with 3.84BT on AIC card has active throttling for thermal protection when fully loaded and at 55°C environment temperature.
- In redundant mode, two power supplies are required. A single power supply failure is not supported.
- If memory slots are not fully populated, dummy DIMMs are required.

ASHRAE A4 Support Restriction for NAF (Normal Air Flow Direction) Configurations

- CPU TDP greater than 120W are not supported within A4.
- Nvidia A30 card is not supported above 45°C environment temperature.
- Nvidia A2 GPU card is not supported above 45°C environment temperature.
- In redundant mode, two power supplies are required. A single power supply failure is not supported.
- If memory slots are not fully populated, dummy DIMMs are required.

Thermal restriction matrix

Table 64. M.2 Support Thermal Limitation for XR4000r Chassis (RAF Configurations)

M.2 Type	M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micron 480GB	No	No	No
Micron 800GB	No	No	No
Micron 960GB	Yes	Yes	Yes
Micron 1.92TB	No	No	No
Micron 3.84TB	No	No	No
Hynix 480GB	No	No	No
Hynix 800GB	No	No	No

Table 64. M.2 Support Thermal Limitation for XR4000r Chassis (RAF Configurations) (continued)

M.2 Type	M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Hynix 960GB	Yes	Yes	Yes
Hynix 1.92TB	No	No	No
Hynix 3.84BT	No	No	No

Table 65. M.2 Support Thermal Limitation for XR4000z Chassis (RAF Configurations)

M.2 Type	M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micron 480GB	No	No	No
Micron 800GB	No	No	No
Micron 960GB	Yes	Yes	Yes
Micron 1.92TB	No	No	No
Micron 3.84TB	No	No	No
Hynix 480GB	No	No	No
Hynix 800GB	No	No	No
Hynix 960GB	Yes	Yes	Yes
Hynix 1.92TB	No	No	No
Hynix 3.84BT	No	No	No

Table 66. XR4000w Processor Support Thermal Limitation for XR4000r chassis (RAF Configurations)

Processor Type	HSK type	Fan type	XR4000 RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Yes	Yes	Yes

Table 67. XR4000w Processor Support Thermal Limitation for XR4000z chassis (RAF Configurations)

Processor Type	HSK type	Fan type	XR4000 RAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Yes	Yes	Yes

Table 68. M.2 Support Thermal Limitation for XR4000z Chassis (NAF Configurations)

M.2 Type	M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Micron 480GB	No	No	No
Micron 800GB	No	No	No
Micron 960GB	Not Supported	Not Supported	Yes
Micron 1.92TB	No	No	No
Micron 3.84TB	No	No	No
Hynix 480GB	No	No	No

Table 68. M.2 Support Thermal Limitation for XR4000z Chassis (NAF Configurations) (continued)

M.2 Type	M.2 Module (Witness Sled)		
	Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Hynix 800GB	No	No	No
Hynix 960GB	Not Supported	Not Supported	Yes
Hynix 1.92TB	No	No	No
Hynix 3.84BT	No	No	No

Table 69. XR4000w Processor Support Thermal Limitation for XR4000r chassis (NAF Configurations)

Processor Type	HSK type	Fan type	NAF Configurations		
			Edge 2 (Max 55°C)	Edge 1 (Max 50°C)	ASHRAE A4 (Max 45°C)
Intel Atom C3508, 4 cores, 11.5W	Aluminum extrusion	Fan	Not Supported		Yes

Thermal Restrictions

ASHRAE A4 Support Restriction for RAF (Reverse Air Flow Direction) Configurations

- In redundant mode, two power supplies are required. A single power supply failure is not supported.

Edge1 Support Restriction RAF (Reverse Air Flow Direction) Configurations

- In redundant mode, two power supplies are required. A single power supply failure is not supported.

Edge2 Support Restriction RAF (Reverse Air Flow Direction) Configurations

- In redundant mode, two power supplies are required. A single power supply failure is not supported.

ASHRAE A4 Support Restriction NAF (Normal Air Flow Direction) Configurations

- In redundant mode, two power supplies are required. A single power supply failure is not supported.

Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 70. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.mspx
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	http://pmbus.org/Assets/PDFS/Public/PMBus_Specification_Part_1_Rev_1-1_20070205.pdf
SAS Serial Attached SCSI, v1.1	http://www.t10.org/
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.7	usb.org/developers/docs

Appendix C Additional resources

Table 71. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Initial setup steps 	Dell.com/Support/Manuals
Rack Installation Guide	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell contact information.	Inside the system chassis cover
Enterprise Infrastructure Planning Tool (EIPT)	The Dell online EIPT enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use EIPT to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc

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