


Dell EMC PowerEdge R450

Technical specifications

Notes, precautions and warnings

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

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


 **WARNING:** A WARNING message indicates the risk of property damage, personal injury, or death.

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Technical specifications

This describes the technical and environmental specifications of the system.

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Chassis dimensions

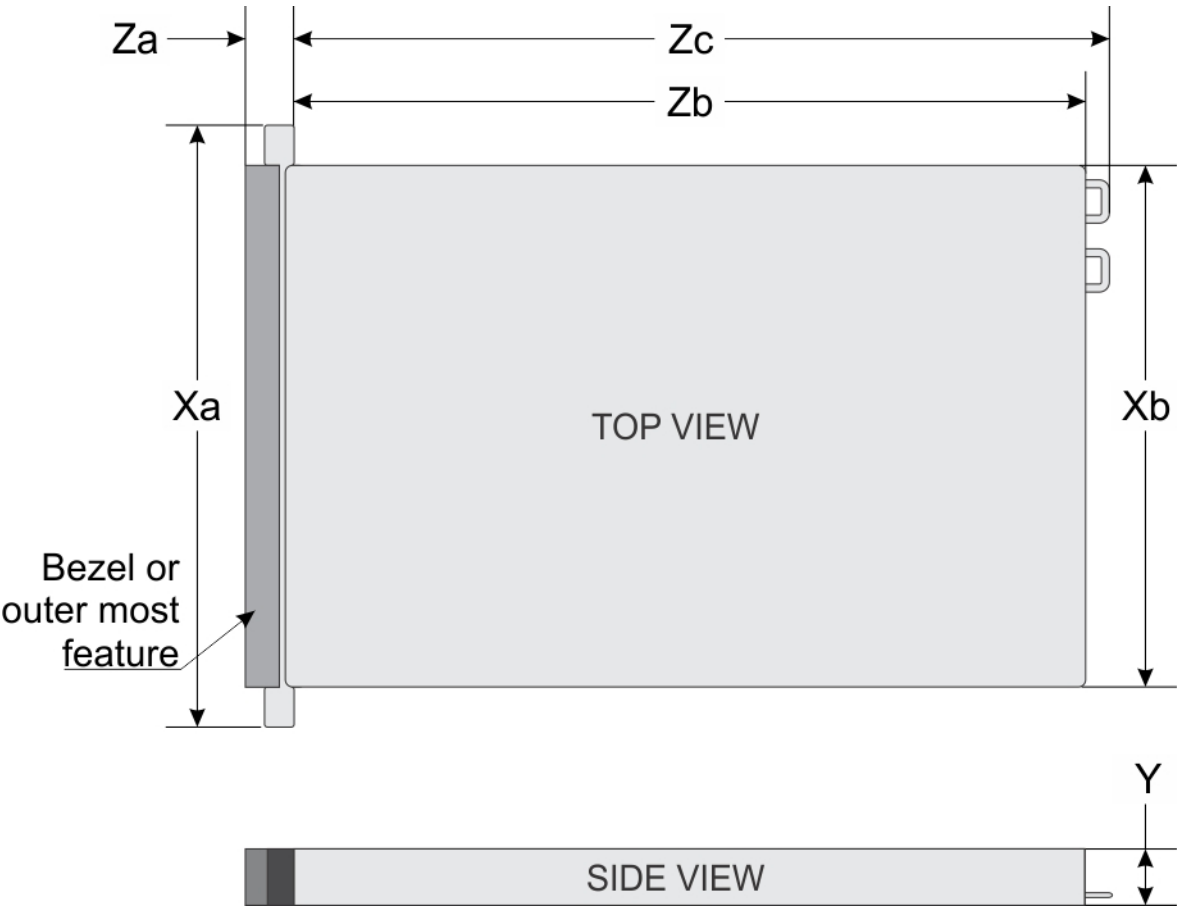


Figure 1. PowerEdge R450 Chassis Dimensions

Table 1. Chassis dimensions

Drives	For	Xb	AND	Za	Zb	Zc
4x 3.5 inches	482mm (18,976 inch ace)	434mm (17.08 in gadas)	42.8mm (1,685 inches)	22 mm (0.866 in) without bezel 35.84 mm (1.41 in) with bezel	677.8 mm (26.685 in) (Tab for PSU surface) 691.07 mm (27.207 in) (L-bracket box tab)	712.95mm (28.069 inches) (Tab for handle of PSU without velcro strap)
8x 2.5 inches	482mm (18,976 inch ace)	434mm (17.08 in gadas)	42.8mm (1,685 inches)	22 mm (0.866 in) without bezel 35.84 mm (1.41 in) with bezel	627.03 mm (24.686 in) (Tab for PSU surface) 640.3 mm (25.209 in) (L-bracket box tab)	662.19 mm (26.070 inches) (Tab for handle of PSU without velcro strap)

NOTE: Zb is the external surface of the nominal rear wall, where the system board I/O connectors are located.

System weight

Table 2. PowerEdge R450 system weight

System configuration	Maximum Weight (with all drives/SSD/bezel)
4 x 3.5 inch system	18.62 kg (41.05 lb)
8 x 2.5 inch system	16.58 kg (36.55 lb)

Processor specifications

Table 3. PowerEdge R450 processor specifications

Supported processor	Number of processors supported
3rd Generation Intel Xeon Scalable Processors with up to 24 cores	Until two

PSU Specifications

The PowerEdge R450 system supports up to two AC or DC power supply units (PSUs).

Table 4. PowerEdge R450 PSU specifications

PSU	Class	Dissipation of heat (maximum)	Frequency	Voltage	AC		DC	Current
					high line from 200 to 240V	Low line from 100 to 120V		
DC 1100 W	NA	4265 BTU/hr	NA	- 48 to (-60) V	NA	NA	1100W	27A
800W with mixed mode	Platinum	3000 BTU/hr	50/60Hz	100-240V AC, self-adjusting	800W	800W	NA	9.2A to 4.7A
	NA	3000 BTU/hr	NA	240V DC, self-adjusting	NA	NA	800W	3.8A
600W with mixed mode	Platinum	2250 BTU/hr	50/60Hz	100-240V AC, self-adjusting	600W	600W	NA	7.1A to 3.6A
	NA	2250 BTU/hr	NA	240V DC, self-adjusting	NA	NA	600W	2.9A

NOTE: This system has also been designed for connection to IT power systems with a phase-to-phase voltage not exceeding 240 V.

NOTE: Heat dissipation is calculated by the wattage of the power supply system.

NOTE: When selecting or updating system settings, to ensure optimal power consumption, check system power consumption with Dell Energy Smart Solution Advisor, available at [Dell.com/ESSA](https://www.dell.com/ESSA).

Supported operating systems

The PowerEdge R450 system supports the following operating systems:

- Canonical Ubuntu Server LTS
- Citrix Hypervisor
- Microsoft Windows Server with Hyper-V

- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi

For more information, visitwww.dell.com/ossupport.

Cooling Fans Specifications

The PowerEdge R450 system supports standard (STD) fans and high-performance SLVR fans.

NOTE:For more information about the matrix or fan support configuration, see Thermal Restriction Matrix.

Table 5. PowerEdgeR450 Cooling Fan Specifications

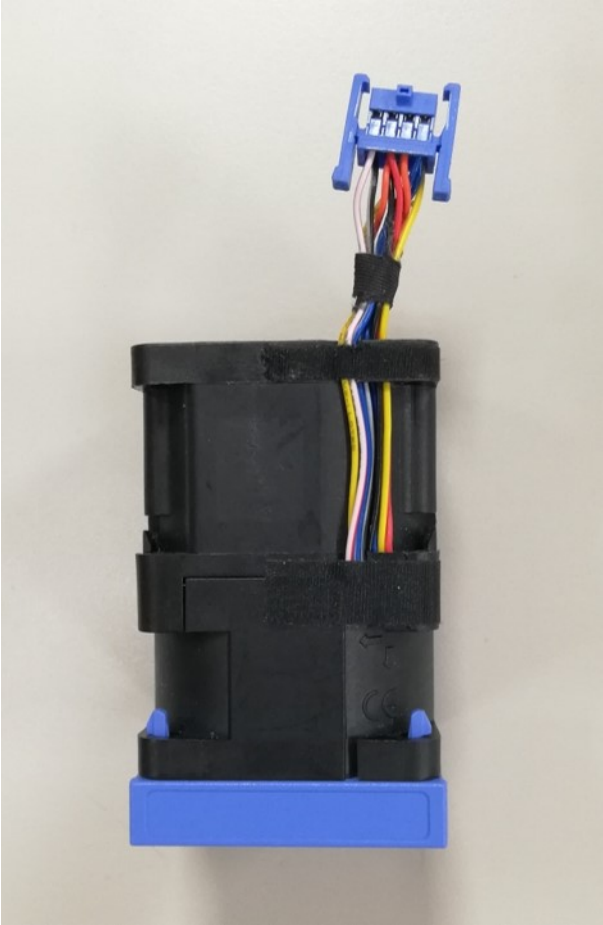
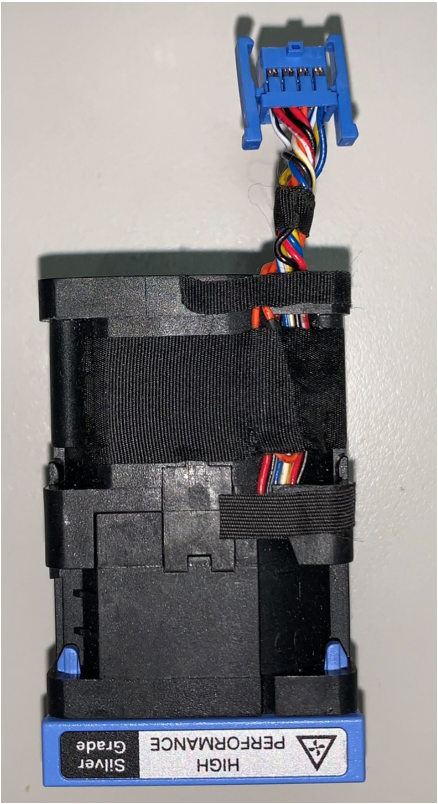
Kind of fan	Abbreviation	I also know know how	Color of the label	Label image
Fan standard	STD	STD	Without label	 <p>Illustration 2. Standard fan</p>
Fan High performance or (level Silver)	HPR (SLVR)	HPR	Silver	<p>NOTE:The new cooling fans come with the high-performance Silver level label. While older cooling fans are labeled high performance.</p>

Table 5. PowerEdgeR450 Cooling Fan Specifications (continued)

Kind of fan	Abbreviation	I also know know how	Color of the label	Label image
				<div><p>Illustration 3. High performance fan (Silver level)</p></div>

System Battery Specifications

The PowerEdge R450 system accepts a CR 2032 3V lithium coin cell battery.

Expansion Card Riser Specifications

The PowerEdge R450 system supports up to two PCI express (PCIe) Gen 4 expansion cards.

Table 6. Expansion card slots supported by the system board

PCIe slot	Vertical support	PCIe slot height	slot length PCIe	PCIe slot width
Slot 1	Vertical support 1	Low profile	Half length	x16
Slot 3	Vertical support 2c	Low profile	Half length	x16

NOTE:For information on expansion card installation guidelines, see the specific system*Installation and service manual* available in<https://www.dell.com/poweredgemanuals>

Memory specifications

The PowerEdge R450 system supports the following memory specifications for optimized operation.

Table 7. Memory specifications

Kind of DIMM module	DIMM Range	Ability DIMM	a processor		Dual processors	
			Minimum capacity DIMM	Ability DIMM maximum	Ability minimum of DIMM	Ability maximum of DIMM
RDIMM	single bank	8GB	8GB	64GB	16 GB	128GB
	dual bench	16 GB	16 GB	128GB	32GB	256GB
		32GB	32GB	256GB	64GB	512GB
		64GB	64GB	512GB	128GB	1TB

Table 8. Memory module sockets

Memory module sockets	Speed
16, 288-pin	2933 MT/s, 2666 MT/s

Storage controller specifications

The PowerEdge R450 system supports the following controller cards:

Table 9. PowerEdge R450 storage controller cards

Internal controllers	External controllers
<ul style="list-style-type: none"> ● PERC H345 ● PERC H355 ● PERC H745 ● PERC H755 ● HBA355i ● S150 ● Boot Optimized Storage Subsystem (BOSS-S1): HWRAID 2 x M.2 SSD 	<ul style="list-style-type: none"> ● HBA355e ● PERC H840

Drives

The PowerEdge R450 system supports:


- 4 x 3.5-inch SATA Chip drives (HDD/SSD).
- 4 x 3.5-inch hot-swappable SAS, SATA (HDD/SSD) drives.
- 8 x 2.5-inch SAS, SATA (HDD/SSD) drives.

Port and connector specifications

USB port specifications

Table 10. PowerEdge R450 USB Port Specifications

Front part		Back		Internal part (optional)	
Port type USB	No. of ports	Port type USB	No. of ports	Port type USB	No. of ports
Port that meets with the requirements USB 3.0	One	Port that meets with the requirements USB 2.0	One	Port that meets with the requirements internal USB 3.0	One
Port that meets with the requirements micro-USB 2.0 for iDRAC Direct	One	Port that meets with the requirements USB 3.0	One		

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

NIC port specifications

The PowerEdge R450 system supports up to two 10/100/1000 Mbps network interface controller (NIC) ports integrated into the LAN on Motherboard (LOM) and integrated into optional Open Computing Project (OCP) cards. .

Table 11. NIC port specification for the system

Function	Specifications
LOM card	1GbE x 2
OCP Card (OCP 3.0)	1GbE x 4, 10GbE x 2, 25GbE x 2, 25GbE x 4

Serial Connector Specifications

The PowerEdge R450 system supports an optional card-type serial connector, which is a 9-pin connector that supports 16550 Data Terminal Equipment (DTE) on the back of the system.

The installation process for the optional serial connector card is similar to an expansion card filler bracket.

VGA port specifications

The PowerEdge R450 system supports two DB-15 VGA ports, each on the front and rear panels of the system.


IDSDM


The PowerEdge R450 system supports Internal Dual SD Module (IDSDM).

IDSDM supports two SD cards and is available in the following configurations:

Table 12. Supported SD card storage capacity

IDSDM card
<ul style="list-style-type: none">● 16 GB● 32GB● 64GB

 **NOTE:** There is a dedicated IDSMD card slot for redundancy.

 **NOTE:** Use Dell EMC branded SD cards that are associated with systems configured with IDSMD.

Video specifications

The PowerEdge R450 system supports the built-in Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 13. Supported front video resolution options for your system

Solution	Refresh rate (Hz)	Color depth (bits)
1024x768	60	8, 16, 32
1280x800	60	8, 16, 32
1280x1024	60	8, 16, 32
1360x768	60	8, 16, 32
1440x900	60	8, 16, 32
1600x900	60	8, 16, 32
1600x1200	60	8, 16, 32
1680x1050	60	8, 16, 32
1920x1080	60	8, 16, 32
1920x1200	60	8, 16, 32

Environmental specifications


 **NOTE:** For more information on environmental certifications, see the *Product Environmental Data Sheet* located in Documentation > Regulatory information in www.dell.com/support/home.

Table 14. Climatic and operational range category A2

Temperature	Specifications
Continuous operations allowed	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	-10°C to 35°C (50°F to 95°F) without direct sunlight on the computer
Humidity percentage ranges (no condensation at all times)	8% RH with a minimum dew point of -12°C to 80% RH with a maximum dew point of 21°C (69.8°F)
Reduction of altitude ratings in operation	Maximum temperature is reduced by 1°C/300 m (1.8°F/984 ft) above 900 m (2953 ft)

Table 15. Shared requirements in all categories


Temperature	Specifications
Continuous operations allowed	
Maximum temperature gradient (applies in operation and when not in operation)	20°C in one hour* (36°F in one hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in one hour* (9°F in one hour) for tape  NOTE: *According to ASHRAE thermal rules for ribbon hardware, these are not instantaneous rates of temperature change.
Temperature limits when the system is not operating	- 40 to 65°C (-40 to 149°F)

Table 15. Shared requirements across categories (continued)

Temperature	Specifications
Humidity limits when the system is not in operation	5% to 95% RH with a maximum dew point of 27°C (80.6°F)
Maximum altitude in non-operational state	12,000 meters (39,370 feet)
Maximum operating altitude	3,048 meters (10,000 feet)

Table 16. Maximum vibration specifications

Maximum vibration	Specifications
Working	0.26Grms 5 Hz to 350 Hz (all operating orientations)
Storage	1.88Grms from 10 Hz to 500 Hz for 15 minutes (all six sides evaluated).

Table 17. Maximum Impact Impulse Specifications

Maximum impact impulse	Specifications
Working	Six discharge pulses executed consecutively in the positive and negative direction of the "x", "y" and "z" axes, of 6 G for a maximum of 11 ms.
Storage	Six consecutively executed shock pulses in the positive and negative x, y and z axes (one pulse on each side of the system) of 71 G for a maximum of 2 ms

Gaseous and particle pollution specifications


The table below defines limitations that prevent damage to IT equipment or failure from gaseous or particulate contamination. If gaseous or particulate contamination levels are above specified limits and causing equipment damage or failure, you may need to correct environmental conditions. The solution of environmental conditions will be the responsibility of the client.

Table 18. Particle contamination specifications

Particulate pollution	Specifications
Air filtration	<p>ISO class 8 per ISO 14644-1 defines data center air filtration with an upper confidence limit of 95%.</p> <p>i NOTE: This condition only applies to center environments of data. Air filtration requirements do not apply to IT equipment designated for use outside the data center, in environments such as an office or factory.</p> <p>i NOTE: The air entering the data center must have MERV11 or MERV13 filtration.</p>
conductive dust	<p>The air must be free of conductive dust, zinc filaments or other conductive particles.</p> <p>i NOTE: Applies to data center environments and center without data.</p>
corrosive dust	<ul style="list-style-type: none"> ● The air must be free of corrosive dust. ● Residual dust in the air must have a deliquescent point lower than 60% relative humidity. <p>i NOTE: Applies to data center environments and non-data center environments.</p>

Table 19. Gaseous contamination specifications

Gas pollution	Specifications
Corrosion rate of copper plate	<300 Å/month per Class G1 in accordance with ANSI/ISA71.04-2013
Corrosion rate of silver plate	<200 Å/month, as defined by ANSI/ISA71.04-2013.

 **NOTE:** Maximum levels of corrosive contamination measured at ≤50% relative humidity

Thermal restrictions

Table 20. Thermal restriction matrix for the processor and fans

Configuration/TDP processor	4 x 3.5 inch configuration	8 x 2.5-inch SAS/SATA configuration	Temperature maximum environmental
Later storage	3 later LPs	3 later LPs	N/A
105W	STD fan STD HSK	STD fan STD HSK	40°C
120W	STD fan STD HSK	STD fan STD HSK	40°C
135W	STD fan STD HSK	STD fan STD HSK	40°C
150W	STD fan STD HSK	STD fan STD HSK	40°C
165W	STD fan STD HSK	STD fan STD HSK	35°C
8 cores of 165 W and 3.6 GHz	HPR Ventilator (SLVR) HPR HSK	HPR Ventilator (SLVR) HPR HSK	35°C
185W/190W	HPR Ventilator (SLVR) HPR HSK	HPR Ventilator (SLVR) HPR HSK	35°C

- A filler processor is required for a simple processor configuration.
- Two blank fans must be installed in fan slot 1 and fan slot 2 for the 5-fan configuration.

Table 21. Label reference

Label	Description
LP	Low profile
HPR (SLVR)	High performance (Silver level)
HPR	High performance
HSK	Heat sink



 **NOTE:** A DIMM blank is not required.

Table 22. Thermal constraint matrix for ASHRAE A2, A3 and A4

Standard operating support for Dell EMC PowerEdge servers (ASHRAE A2 compliant)  NOTE: All options are supported unless otherwise noted.	40°C extended operating temperature support for Dell EMC PowerEdge servers (ASHRAE A3 compliant)	Compatibility with the temperature of expanded operation of 45°C for Dell EMC PowerEdge servers (meets ASHRAE A4 standard)
<ul style="list-style-type: none"> ● HPR Silver fan required for CPU > 165W ● The following OCP 3.0 NICs only support optical cables with 85°C thermal specifications and <= 1.2W power <ul style="list-style-type: none"> Intel Columbiaville DP 25GbE SFP28 only in an 8 x 2.5-inch SAS/SATA configuration Broadcom Thor QP 25G SFP28 in both configurations. SFP28 Mellanox CX5 DP 25 GbE in both configurations. Solarflare Medford2 DP 25GbE SFP28 in both configurations. ● The following PCIe NICs only support an optical cable with 85°C thermal specifications and <= 1.2W power: <ul style="list-style-type: none"> ○ Solarflare Medford2 DP 25GbE SFP28 in an 8-drive 2.5-inch SAS/SATA configuration. ○ Broadcom 100 G 2P QSF in both configurations. ○ Mellanox CX6 DP 25 G SFP28 in both configurations. ● The following PCIe NICs only support an optical cable with 85°C thermal specifications and <= 2.5W power <ul style="list-style-type: none"> ○ Mellanox CX6 DP 100 GbE in both configurations. ○ DPN Intel Columbiaville 100 G 2P Q28: in both configurations. ● PCIe SSD: Intel P4800X 750G and 375G are only supported in PCIe slot 2 and PCIe slot 3 in a 4 x 3.5-inch configuration. There is no restriction on 8 x 2.5 SAS/SATA configuration. 	<ul style="list-style-type: none"> ● Processors with TDP values greater than 150 W are not supported. ● Boot Optimized Storage Subsystem (BOSS) M.2 is not supported. ● Non-Dell certified peripheral cards are not supported. ● NIC power consumption >= 25W. Example: CX6 card is not supported. ● Configuration with RM is not supported. ● OCP transfer rate of > 25G or cooling level of > 10 is not supported. ● An optical cable with 85°C specifications of < 1.2 W is required. ● Two PSUs required. System performance may be reduced in the event of a fault in the PSU. 	<ul style="list-style-type: none"> ● It is not compatible with the A4 environment.