Dell EMC PowerEdge R450

Technical Specifications

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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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Technical specifications

The technical and environmental specifications of your system are outlined in this section.

Topics:

- Chassis dimensions
- System weight
- Processor specifications
- PSU specifications
- Supported operating systems
- Cooling fans specifications
- System battery specifications
- Expansion card riser specifications
- Memory specifications
- Storage controller specifications
- Drives
- Ports and connectors specifications
- Video specifications
- Environmental specifications

Chassis dimensions

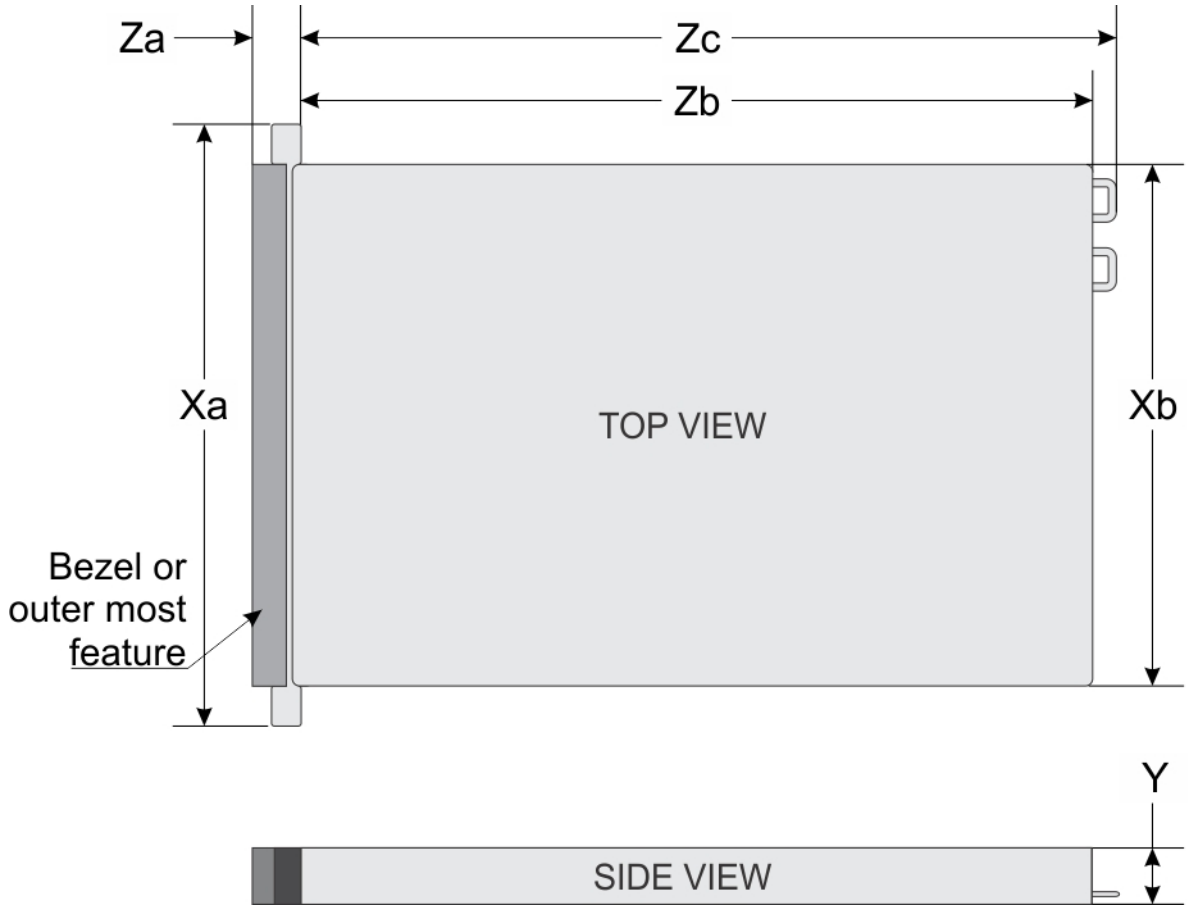


Figure 1. PowerEdge R450 Chassis dimensions

Table 1. Chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
4 x 3.5-inch	482 mm (18.976 inches)	434 mm (17.08 inches)	42.8 mm(1.685 inches)	22 mm (0.866 inches) without bezel 35.84 mm (1.41 inches) with bezel	677.8 mm (26.685 inches) (Ear to PSU surface) 691.07mm (27.207 inches) (Ear to butterfly L bracket housing)	712.95 mm (28.069 inches) (Ear to PSU handle without velcro strap)
8 x 2.5-inch	482 mm (18.976 inches)	434 mm (17.08 inches)	42.8 mm(1.685 inches)	22 mm (0.866 inches) without bezel 35.84 mm (1.41 inches) with bezel	627.03 mm (24.686 inches) (Ear to PSU surface) 640.3 mm (25.209 inches) (Ear to butterfly L bracket housing)	662.19 mm (26.070 inches) (Ear to PSU handle without velcro strap)

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

System weight

Table 2. PowerEdge R450 system weight

System configuration	Maximum weight (with all drives/SSDs/bezel)
4 x 3.5-inch system	18.62 kg (41.05 pound)
8 x 2.5-inch system	16.58 kg (36.55 pound)

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	Up to 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	Heat dissipation (maximum)	Frequency	Voltage	AC		DC	Current
					High line 200–240 V	Low line 100–120 V		
1100 W DC	NA	4265 BTU/hr	NA	-48–(-60) V	NA	NA	1100 W	27 A
800 W Mixed Mode	Platinum	3000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	800 W	800 W	NA	9.2 A-4.7 A
	NA	3000 BTU/hr	NA	240 V DC, autoranging	NA	NA	800 W	3.8 A
600 W Mixed Mode	Platinum	2250 BTU/hr	50/60 Hz	100–240 V AC, autoranging	600 W	600 W	NA	7.1 A-3.6 A
	NA	2250 BTU/hr	NA	240 V DC, autoranging	NA	NA	600 W	2.9 A

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**.

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, go to www.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 fan support configuration or matrix, see Thermal restriction matrix.

Table 5. PowerEdge R450 cooling fan specifications

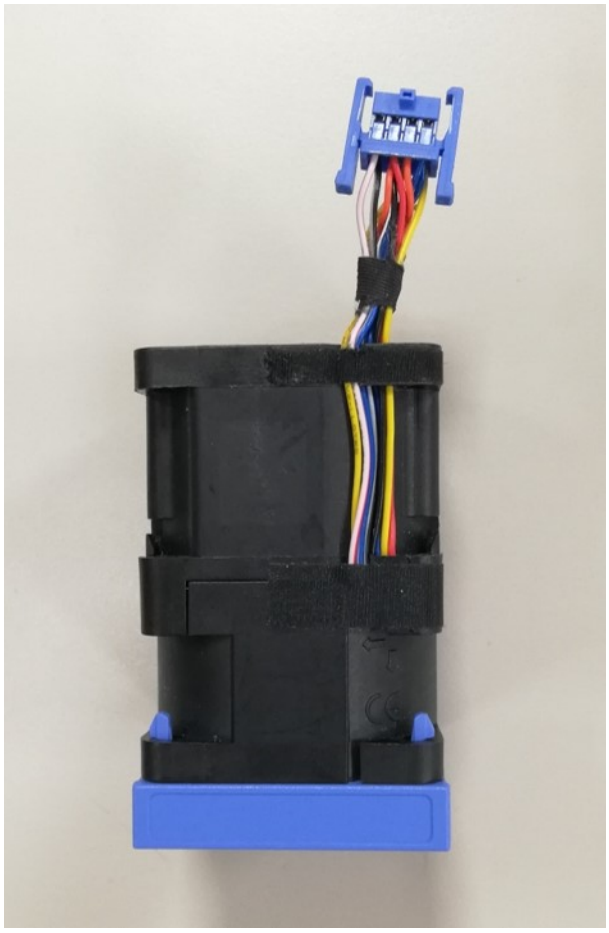
Fan type	Abbreviation	Also known as	Label color	Label image
Standard fan	STD	STD	No label	 **Figure 2. Standard fan**
High performance (Silver grade) fan	HPR (SLVR)	HPR	Silver	**NOTE:** New cooling fans comes with the High Performance Silver Grade label. While the older cooling fans has the High Performance label.

Table 5. PowerEdge R450 cooling fan specifications (continued)

Fan type	Abbreviation	Also known as	Label color	Label image
				Figure 3. High performance (Silver grade) fan

System battery specifications

The PowerEdge R450 system supports CR 2032 3.0-V lithium coin cell system 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 on the system board

PCIe slot	Riser	PCIe slot height	PCIe slot length	PCIe slot width
Slot 1	Riser 1	Low Profile	Half length	x16
Slot 3	Riser 2c	Low Profile	Half length	x16

NOTE: For information on the expansion card installation guidelines, see the system specific *Installation and Service Manual* available at https://www.dell.com/poweredgemanuals.

Memory specifications

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

Table 7. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum DIMM capacity	Maximum DIMM capacity	Minimum DIMM capacity	Maximum DIMM capacity
RDIMM	Single rank	8 GB	8 GB	64 GB	16 GB	128 GB
	Dual rank	16 GB	16 GB	128 GB	32 GB	256 GB
		32 GB	32 GB	256 GB	64 GB	512 GB
		64 GB	64 GB	512 GB	128 GB	1 TB

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
• PERC H345 • PERC H355 • PERC H745 • PERC H755 • HBA355i • S150 • Boot Optimized Storage Subsystem (BOSS-S1): HWRAID 2 x M.2 SSDs	• HBA355e • PERC H840

Drives

The PowerEdge R450 system supports:

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

Ports and connectors specifications

USB ports specifications

Table 10. PowerEdge R450 USB ports specifications

Front		Rear		Internal (Optional)	
USB port type	No. of ports	USB port type	No. of ports	USB port type	No. of ports
USB 3.0-compliant port	One	USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One

Table 10. PowerEdge R450 USB ports specifications (continued)

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

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

NIC port specifications

The PowerEdge R450 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports embedded on the LAN on Motherboard (LOM) and integrated on the optional Open Compute Project (OCP) cards.

Table 11. NIC port specification for the system

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

Serial connector specifications

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

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

VGA ports specifications

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

IDSDM

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

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

Table 12. Supported SD card storage capacity

IDSDM card
• 16 GB • 32 GB • 64 GB

NOTE: One IDSDM card slot is dedicated for redundancy.

NOTE: Use Dell EMC branded SD cards that are associated with the IDSDM configured systems.

Video specifications

The PowerEdge R450 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 13. Supported video resolution options for the system

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Environmental specifications

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

Table 14. Operational climatic range category A2

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

Table 15. Shared requirements across all categories

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

Table 16. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 G_{rms} at 5 Hz to 350 Hz (all operation orientations)
Storage	1.88 G_{rms} at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 17. Maximum shock pulse specifications

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

Particulate and gaseous contamination specifications

The following table defines the limitations that prevent the damage to the IT equipment and/or, or both failure from particulate and gaseous contamination. If the levels of particulate or gaseous pollution exceed the specified limitations and results in equipment damage or failure, you must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 18. Particulate contamination specifications

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

Table 19. Gaseous contamination specifications

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

NOTE: Maximum corrosive contaminant levels measured at ≤50% relative humidity.

Thermal restrictions

Table 20. Thermal restriction matrix for processor and fans

Configuration / Processor TDP	4 x 3.5-inch configuration	8 x 2.5-inch SAS/SATA configuration	Maximum Ambient Temperature
Rear Storage	Rear 3 LP	Rear 3 LP	N/A
105 W	STD fan	STD fan	40°C

Table 20. Thermal restriction matrix for processor and fans (continued)

Configuration / Processor TDP	4 x 3.5-inch configuration	8 x 2.5-inch SAS/SATA configuration	Maximum Ambient Temperature
	STD HSK	STD HSK	
120 W	STD fan STD HSK	STD fan STD HSK	40°C
135 W	STD fan STD HSK	STD fan STD HSK	40°C
150 W	STD fan STD HSK	STD fan STD HSK	40°C
165 W	STD fan STD HSK	STD fan STD HSK	35°C
165 W 8 cores, 3.6 GHz	HPR (SLVR) fan HPR HSK	HPR (SLVR) fan HPR HSK	35°C
185 W / 190 W	HPR (SLVR) fan HPR HSK	HPR (SLVR) fan HPR HSK	35°C

- Processor blank is required for single processor configuration.
- Two fan blanks are required to be installed on fan slot 1 and fan slot 2 for 5 fans configuration.

Table 21. Label reference

Label	Description
LP	Low Profile
HPR (SLVR)	High performance (silver grade)
HPR	High Performance
HSK	Heat sink

NOTE: DIMM blank is not required.

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

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) **NOTE:** All options supported unless otherwise noted.	Dell EMC PowerEdge Server Extended Inletient 40 ° C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Inletient 45 ° C Operating Support (ASHRAE A4 compliant)
• HPR Silver Fan is required for CPU >165 W • The following OCP3.0 NIC only support optic cable with thermal Spec 85 °C and power <=1.2 W Intel Columbiaville DP 25 GbE SFP28 in 8x2.5-inch SAS/SATA configuration only Broadcom Thor QP 25 G SFP28 in both configurations. Mellanox CX5 DP 25 GbE SFP28 in both configurations. Solarflare Medford2 DP 25 GbE SFP28 in both configurations. • The following PCIe NIC only support optic cable with thermal spec 85°C and power <= 1.2 W:	• Processor TDP lesser than 150 W are not supported. • BOSS M.2 is not supported. • Non-Dell qualified peripheral cards are not supported. • NIC consuming power >= 25 W. Example: CX6 card is not supported. • Configuration with RM is not supported. • OCP transfer rate >25 G or cooling tier > 10 is not supported. • Optic cable with spec 85 °C power < 1.2 W is required.	• Does not support A4 environment.

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

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) **NOTE:** All options supported unless otherwise noted.	Dell EMC PowerEdge Server Extended Inletient 40 ° C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Inletient 45 ° C Operating Support (ASHRAE A4 compliant)
○ Solarflare Medford2 DP 25 GbE SFP28 in 8x2.5-inch SAS/SATA configuration. ○ Broadcom 100 G 2P QSF in both configurations. ○ Mellanox CX6 DP 25 G SFP28 in both configurations. ● The following PCIe NIC only support optic cable with thermal spec 85°C and power <= 2.5 W ○ Mellanox CX6 DP 100 GbE in both configurations ○ Intel Columbiaville 100 G 2P Q28 in both configurations ● PCIe SSD: Intel P4800X 750 G and 375 G are only supported in PCIe slot2 and PCIe slot3 in 4x3.5-inch configuration. No restriction in 8x2.5-inch SAS/SATA configuration.	● Two PSUs are required. System performance may be reduced in the event of a PSU failure.	