Dell EMC PowerEdge R650xs

Technical Specifications

DELLTechnologies

Notes, cautions, and warnings

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

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

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

Contents

Technical specifications

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

Topics:

- Chassis dimensions
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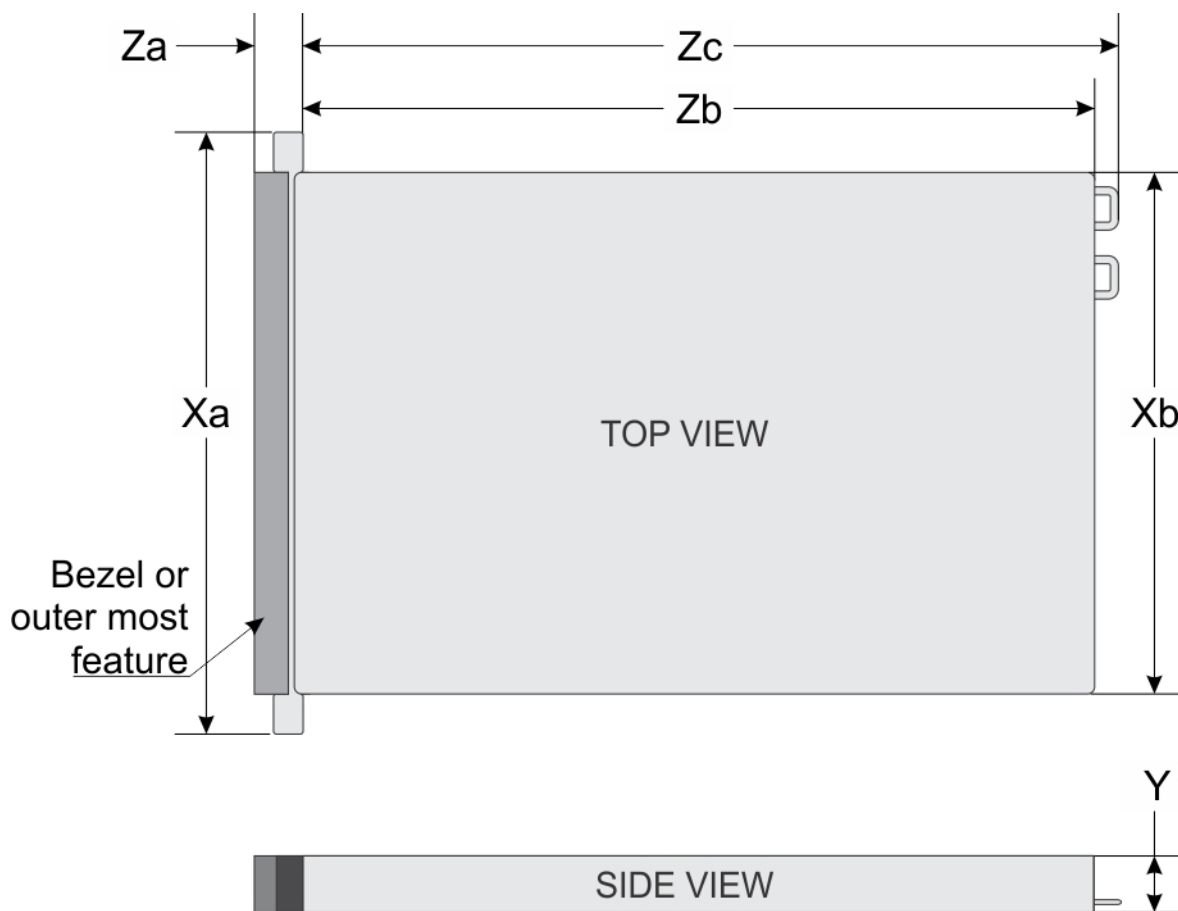- Environmental specifications

Chassis dimensions

Figure 1. Chassis dimensions

Table 1. PowerEdge R650xs Chassis dimensions

Drives	Xa	Xb	Y	Za	Zb	Zc
10 or 8 NVMe drives, 4 SATA/SAS/NVMe drives	482 mm (18.97 inches)	434 mm (17.08 inches)	42.8 mm (1.68 inches)	22 mm (0.86 inches) Without bezel 35.84 mm (1.41 inches) With bezel	677.8 mm (26.68 inches) Ear to PSU surface wall 691.07 mm (27.20 inches) Ear to butterfly L bracket housing	712.95 mm (28.06 inches) Ear to PSU handle without velcro strap
8 SATA/SAS drives, Zero drives	482 mm (18.97 inches)	434 mm (17.08 inches)	42.8 mm (1.68 inches)	22 mm (0.86 inches) Without bezel 35.84 mm (1.41 inches) With bezel	627.03 mm (24.68 inches) Ear to PSU surface wall 640.3 mm (25.20 inches) Ear to butterfly L bracket housing	662.19 mm (26.07 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 R650xs system weight

System configuration	Maximum weight (with all drives/SSDs/bezel)
10 x 2.5-inch NVMe	17.12 Kg (37.74 pound)

Table 2. PowerEdge R650xs system weight (continued)

System configuration	Maximum weight (with all drives/SSDs/bezel)
4 x 3.5-inch	18.62 Kg (41.05 pound)
8 x 2.5-inch SATA/SAS	16.58 Kg (36.55 pound)
8 x 2.5-inch NVMe	17.12 Kg (37.74 pound)

Processor specifications

Table 3. PowerEdge R650xs processor specifications

Supported processor	Number of processors supported
3rd Generation Intel Xeon Scalable processors with up to 32 cores	Up to two

PSU specifications

The PowerEdge R650xs system supports up to two AC or DC power supply units (PSUs).

Table 4. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	AC		DC	Current
					High line 200–240 V	Low line 100–120 V		
1400 W Mixed Mode	Platinum	5406 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1400 W	1050 W	NA	12 A–8 A
	NA	5406 BTU/hr	NA	240 V DC, autoranging	NA	NA	1400 W	6.6 A
1100 W Mixed Mode	Titanium	4299 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1100 W	1050 W	NA	12 A–6.3 A
	NA	4299 BTU/hr	NA	240 V DC, autoranging	NA	NA	1100 W	5.2 A
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

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

(i) **NOTE:** Heat dissipation is calculated using the PSU wattage rating.

> (i) **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 R650xs system supports the following operating systems:

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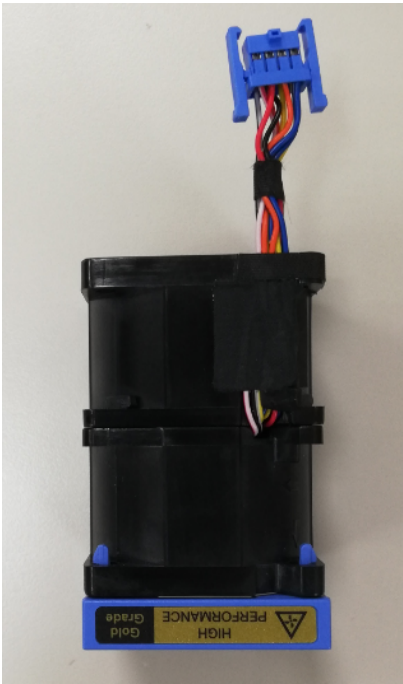- SUSE Linux Enterprise Server
- VMware ESXi

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

Cooling fans specifications

The PowerEdge R650xs system supports up to seven Standard (STD) fans, High performance SLVR fans, or High performance (HPR) gold fans.

> (i) **NOTE:** For more information about the fan support configuration or matrix, see Thermal restriction matrix.

Table 5. Cooling fan specifications

Fan type	Abbreviation	Also known as	Label color	Label image
High performance (Gold grade) fan	HPR (Gold)	VHP - Very High Performance	Gold	 **Figure 2. High performance (Gold grade) fan**

Table 5. Cooling fan specifications (continued)

Fan type	Abbreviation	Also known as	Label color	Label image
Standard fan	STD	STD	No label	Figure 3. Standard fan
High performance (Silver grade) fan	HPR (SLVR)	HPR	Silver	Figure 4. High performance (Silver grade) fan

System battery specifications

The PowerEdge R650xs system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

The PowerEdge R650xs system supports up to three 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 2 and 3	Riser 2a	Low Profile	Half length	x8 + x8
Slot 3	Riser 2b (SNAPI)	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 R650xs 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	3200 MT/s, 2933 MT/s, 2666 MT/s

Storage controller specifications

The PowerEdge R650xs system supports the following controller cards:

Table 9. Storage controller cards

Internal controllers	External controllers
● PERC H345 ● PERC H745 ● PERC H755 ● PERC H755N ● HBA355i ● S150 ● Boot Optimized Storage Subsystem (BOSS-S1): HWRAID 2 x M.2 SSDs	● HBA355e ● PERC H840

> (i) **NOTE:** The software RAID S150 is supported on either SATA drives with chipset SATA only backplane or NVMe drives in universal slots with processor direct PCIe cable connected backplane.

Drives

The PowerEdge R650xs system supports:
● Up to 10 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) drives
● Up to 4 x 3.5-inch SAS/SATA (HDD/SSD) drives
● Up to 8 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) drives

> (i) **NOTE:** For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at https://www.dell.com/support > **Browse all Products** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Documentation** > **Manuals and Documents**.

Ports and connectors specifications

USB ports specifications

Table 10. PowerEdge R650xs system 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 2.0-compliant port	One	USB 2.0-compliant port	One	Internal USB 3.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0)	One	USB 3.0-compliant ports	One		

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

> (i) **NOTE:** The USB 2.0 specifications provide a 5 V supply on a single wire to power connected USB devices. A unit load is defined as 100 mA in USB 2.0, and 150 mA in USB 3.0. A device may draw a maximum of 5 unit loads (500 mA) from a port in USB 2.0; 6 (900 mA) in USB 3.0.

> (i) **NOTE:** The USB 2.0 interface can provide power to low-power peripherals but must adhere to USB specification. An external power source is required for higher-power peripherals to function, such as external CD/DVD Drives.

NIC port specifications

The PowerEdge R650xs 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	1 GB 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 R650xs 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 R650xs system supports two DB-15 VGA ports, one each on the front and rear panels of the system.

IDSDM

The PowerEdge R650xs 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 R650xs 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. Operational climatic range category A3

Temperature	Specifications
Allowable continuous operations	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	5–40°C (41–104°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 85% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/175 m (1.8°F/574 Ft) above 900 m (2953 Ft)

Table 16. Operational climatic range category A4

Temperature	Specifications
Allowable continuous operations	
Temperature ranges for altitudes <= 900 m (<= 2953 ft)	5–45°C (41–113°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 90% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/125 m (1.8°F/410 Ft) above 900 m (2953 Ft)

Table 17. 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 (i) **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 18. 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 19. 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 20. 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. (i) **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. (i) **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. (i) **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. (i) **NOTE:** This condition applies to data center and non-data center environments.

Table 21. 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

(i) **NOTE:** Maximum corrosive contaminant levels measured at ≤50% relative humidity.

Thermal restrictions

Table 22. Thermal restriction matrix for processor and fans

Configu ration / Process or TDP	4 x 3.5-inch configuration with Maximum Ambient Temperature		8 x 2.5-inch SAS/SATA configuration	8 x 2.5-inch NVMe configuration	10 x 2.5-inch SAS/SATA configuration		10 x 2.5-inch NVMe configuration
Rear Storage	Rear 3 LP	1 LP + 2 Rear drives	Rear 3 LP	Rear 3 LP	Rear 3 LP	1 LP + 2 Rear drives	Rear 3 LP
105 W	STD fan STD HSK 40 °C	HPR (Silver) fan STD HSK 35 °C	STD fan STD HSK 40 °C	HPR (Gold) fan STD HSK 45 °C	HPR (Silver) fan STD HSK 40 °C	HPR (Gold) fan STD HSK 35 °C	HPR (Gold) fan STD HSK 45 °C
120 W	STD fan STD HSK 40 °C	HPR (Silver) fan STD HSK 35 °C	STD fan STD HSK 40 °C	HPR (Gold) fan STD HSK 45 °C	HPR (Silver) fan STD HSK 40 °C	HPR (Gold) fan STD HSK 35 °C	HPR (Gold) fan STD HSK 45 °C
135 W	STD fan STD HSK 40 °C	HPR (Silver) fan STD HSK 35 °C	STD fan STD HSK 40 °C	HPR (Gold) fan STD HSK 45 °C	HPR (Silver) fan STD HSK 40 °C	HPR (Gold) fan STD HSK 35 °C	HPR (Gold) fan STD HSK 45 °C
150 W	STD fan STD HSK 40 °C	HPR (Silver) fan STD HSK 35 °C	STD fan STD HSK 40 °C	HPR (Gold) fan STD HSK 40 °C	HPR (Silver) fan STD HSK 40 °C	HPR (Gold) fan STD HSK 35 °C	HPR (Gold) fan STD HSK 40 °C
165 W	STD fan ** STD HSK * 35 °C	HPR (Silver) fan STD HSK * 35 °C	STD fan ** STD HSK * 35 °C	HPR (Gold) fan STD HSK * 40 °C	HPR (Silver) fan*** STD HSK * 40 °C	HPR (Gold) fan STD HSK * 35 °C	HPR f(Gold) an STD HSK * 40 °C
185 W / 190 W	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C
205 W	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C
220 W	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Silver) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C	HPR (Gold) fan HPR HSK 35 °C

(i) **NOTE:**

* For Intel 165 W 8 core 3.6 GHz QXRQ processor, HPR HSK is required. For all the other 165 W processor, use STD HSK.

** For Intel 165 W 8 core 3.6 GHz QXRQ processor, use HPR Silver fan (HPR) for the SKU with ** marked.

*** For Intel 165W 8 core 3.6 GHz QXRQ processor, use HPR Gold fan (VHP) for the SKU with *** marked.

**** HDD Blank is required for empty HDD slot.

Table 23. Label reference

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

Other Thermal restrictions

- 10 x 2.5-inch NVMe configuration requires HPR (Gold) fan. 7 fans are required for dual processor configuration.
- DIMM blank is not required.
- 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 24. Thermal restriction matrix for processor and configurations

Parameters		Configurations		
Front storage		2 x 3.5-inch SAS/SATA configuration	4 x 2.5-inch NVMe configuration	6 x 3.5-inch SAS/SATA configuration
Fan type and quantity		HPR (Silver) fan x 7	HPR (Gold) fan x 7	HPR (Gold) fan x 7
Rear configuration		OCP, PCIe slot 1 only	OCP, BOSS, PCIe slot1 and slot 3	OCP, BOSS, PCIe slot1, slot 2 and slot 3
Processor TDP	250 W	HPR HSK	HPR HSK	HPR HSK
	270 W	HPR HSK	HPR HSK	HPR HSK
Maximum Ambient Temperature		35°C	35°C	35°C

(i) **NOTE:** DIMM blank is not required.

Thermal Restriction for ASHRAE A2/A3/A4

Table 25. 4 x3 .5-inch SAS/SATA and 8 x 2.5-inch SAS/SATA and No BP Configuration

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) 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 processor TDP >165 W - HPR Silver fan is required for config with RM 8 x 2.5-inch SAS/SATA only support processor TDP <=220W 4 x 3.5-inch config CPU TDP > 220 W SM only support 2 x 3.5-inch at HDD#0, HDD#1 and HDD Blank 2 are required at HDD#2 and HDD#3. 4x3.5 config CPU TDP > 220W, RIO support PCIe1 and OCP only. (No BOSS1.0, PCIe2 and PCIe3)	- Not support processor TDP > 150 W - Not support BOSS M.2 Module - Not support Non-Dell qualified peripheral cards and Channel devices (FW) cards - Not support NIC consuming power >= 25 W. - Not Support Config with RM - Not support OCP transfer rate >25 G or cooling tier > 10 - Optic Cable with spec 85°C is required.	A4 environment not support

Table 25. 4 x3 .5-inch SAS/SATA and 8 x 2.5-inch SAS/SATA and No BP Configuration

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) 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)
- The Following OCP3.0 NIC only support optic cable with thermal Spec 85ºC and power <=1.2 W - Intel Columbiaville DP 25GbE SFP28 in 8 x 2.5-inch SAS/SATA config. only - Broadcom Thor QP 25G SFP28 in both Configs. - Mellanox CX5 DP 25GbE SFP28 in both configs. - Solarflare Medford2 DP 25GbE SFP28 in both configs. - Channel Devices Intel Columbiaville DP 25GbE in 4 x 3.5-inch SAS/SATA config. only (8 x 2.5-inch SAS/SATA do not support channel devices) - PCIe NIC: Solarflare Medford2 DP 25GbE SFP28 only support optic cable with thermal Spec 8 5C and power <=1.2W in 8 x 2.5-inch SAS/SATA config. only - The Following PCIe NIC only support optic cable with thermal Spec 85ºC and power <=2.5 W - Mellanox CX6 DP 100GbE QSFP56 in both configs. - Channel Devices Intel Columbiaville DP 100GbE in 4 x 3.5-inch SAS/SATA config. only (8 x 2.5-inch SAS/SATA do not support channel devices) - Channel Devices Mellanox CX6 100GbE in 4 x 3.5-inch SAS/SATA config. only (8 x 2.5-inch SAS/SATA do not support channel devices - PCIe SSD: Intel P4800X 750G and 375G could only support in PCIe slot2 and PCIe slot3 in 4 x 3.5-inch configs. No restriction in 8 x 2.5-inch SAS/SATA config - The following NVMe /SAS/SATA could not be support in Rear Module. - Samsung PM1735 Capacities > 6.4 TB - Samsung PM1733 Capacities > 7.68 TB - Kioxia CM6 all capacities. - Kioxia PM6 SAS all capacities	Two PSUs are required. System performance may be reduced in the event of a PSU failure	

Table 26. 10 x 2.5-inch NVMe and 8 x 2.5-inch NVMe configuration

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) All options supported unless otherwise noted.	Dell EMC PowerEdge Server Extended Inlietient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Inlietient 45°C Operating Support (ASHRAE A4 compliant)
- HPR Gold fan is required for processor TDP >165W. - HPR Gold fan is required for with RM config. 10 x 2.5-inch SAS/SATA config processor TDP >220W SM only support 6x2.5SAS/SATA at HDD#0~ HDD#5 and SM blank x 2 are required at HDD#6 ~HDD#9. - With RM Config do not support processor TDP >220 W - The Following OCP 3.0 NIC only support optic cable with thermal Spec 85°C and power <=1.2W ○ Broadcom Thor QP 25G SFP28 ○ Solarflare Medford2 DP 25GbE SFP28 in both configs. - The Following PCIe NIC only support optic cable with thermal Spec 85C and power <=2.5W ○ Channel Devices Intel Columbiaville DP 100GbE - The following NVMe /SAS/SATA could not be support in Rear Module. ○ Samsung PM1735 Capacities > 6.4 TB ○ Samsung PM1733 Capacities > 7.68 TB ○ Kioxia CM6 all capacities. ○ Kioxia PM6 SAS all capacities	- Not support CPU TDP > 165W - Not support BOSS M.2 Module - Not support Non-Dell qualified peripheral cards and Channel devices (FW) cards - Not support NIC consuming power >= 25W. - Not Support Config with RM - Not support OCP transfer rate >25 G or cooling tier > 10 - Optic Cable with spec 85°C is required. - Two PSUs are required. System performance may be reduced in the event of a PSU failure	A4 environment not Support

Table 27. 10 x 2.5-inch NVMe storage configuration

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) All options supported unless otherwise noted.	Dell EMC PowerEdge Server Extended Inlietient 40°C Operating Support (ASHRAE A3 compliant)	Dell EMC PowerEdge Server Extended Inlietient 45°C Operating Support (ASHRAE A4 compliant)
- HPR Gold fan is required 10 x 2.5-inch NVMe config processor TDP > 220 W SM only support 4x2.5 NVMe at HDD#0~ HDD#3 and SM Blank x 3 are required at HDD#4 ~HDD#9. 10 x 2.5-inch NVMe config processor TD P >220W, RIO do not support PCIe2 8 x 2.5-inch NVMe config do not support processor TDP >220W - The Following OCP 3.0 NIC only support optic cable with thermal Spec 85°C and power <=1.2 W ○ Broadcom Thor QP 25G SFP28 ○ Solarflare Medford2 DP 25GbE SFP28 in both configs.	- Not support processor TDP > 165W - Not support BOSS M.2 Module - Not support Non-Dell qualified peripheral cards and Channel devices (FW) cards - Not support NIC consuming power >= 25W. - Not Support Config with RM - Not support OCP transfer rate >25 G or cooling tier > 10 - Optic Cable with spec 85°C is required. - Two PSUs are required. System performance may be reduced in the event of a PSU failure	- Not support processor TDP > 135 W - Not support BOSS M.2 Module - Not support Non-Dell qualified peripheral cards and Channel devices (FW) cards - Not support NIC consuming power >= 25 W. - Not Support Config with RM - Not support OCP transfer rate >25 G or cooling tier > 10 - Optic Cable with spec 85°C is required. - Two PSUs are required. System performance may be reduced in the event of a PSU failure

Table 27. 10 x 2.5-inch NVMe storage configuration

Dell EMC PowerEdge Server Standard Operating Support (ASHRAE A2 compliant) 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)
● The Following PCIe NIC only support optic cable with thermal Spec 85C and power <=2.5 W ● ○ Channel Devices Intel Columbiaville DP 100GbE		

Table 28. Thermal Solution Configuration

Configurations	Rear drive configurations	Processor (TDP)	Fan type	Heat sink type	Air Shroud	Memory Blank	Processor Blank	Fan Counts	Fan Blank
4 x 3.5-inch drives	without rear drives	TDP <= 165 W	**STD fan	*STD HSK	Yes	No	Only required on processor 2 for 1 processor Configuration	7 x fans for 2 processors Configuration 5 x fans for 1 processors Configuration	Only required on fan Slot 1 and slot 2 for 1 processor configuration
		165 W < TDP <= 220 W	HPR Silver Fan (HPR)	HPR HSK					
	with rear dries	TDP <= 165 W	HPR Silver Fan (HPR)	*STD HSK					
		165 W < TDP <= 220 W		HPR HSK					
8 x 2.5-inch SAS/SATA drives	without rear drives	TDP <= 165 W	**STD fan	*STD HSK					
		165 W < TDP <= 220 W	HPR Silver Fan (HPR)	HPR HSK					
10 x 2.5-inch SAS/SATA drives	without rear drives	TDP <= 165 W	***HPR Silver Fan (HPR)	*STD HSK					
		165 W < TDP <= 220 W	HPR Gold Fan (VHP)	HPR HSK					
	with rear dries	TDP <= 165 W	HPR Gold Fan (VHP)	*STD HSK					
		165 W < TDP <= 220 W		HPR HSK					
8 and 10 x 2.5-inch NVMe drives	without rear drives	TDP <= 165 W	HPR Gold Fan (VHP)	*STD HSK					
		165 W < TDP <= 220 W		HPR HSK					
No Backplane	without rear drives	TDP <= 165 W	**STD fan	*STD HSK					
		165 W < TDP <= 220 W	HPR Silver Fan (HPR)	HPR HSK					

ⓘ **NOTE:**

* For Intel 165 W 8 core 3.6 GHz QXRQ processor, HPR HSK is required. For all the other 165 W processor, use STD HSK.

** For Intel 165 W 8 core 3.6 GHz QXRQ processor, use HPR Silver fan (HPR) for the SKU with ** marked.

*** For Intel 165W 8 core 3.6 GHz QXRQ processor, use HPR Gold fan (VHP) for the SKU with *** marked.