Table 4. PSU specifications for the system (continued)

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	Peak power	N/A	N/A	Peak power	N/A	Current
					High line/-72 VDC	High line/-72 VDC	High line/ 240 VDC	Low line/-40 VDC	Low line/-40 VDC	
2400 W AC	Platinum	9213 BTU/hr	50/60 Hz	100 - 240 V	4080 W	2400 W	2400 W	2380 W	1400 W	16 - 13.5 A
2400 W Mixed Mode	N/A	9213 BTU/hr	N/A	240 V	2380 W	1400 W	1400 W	1785 W	1050 W	11.2 A

(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 R750 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 fan specifications

Cooling options

The Dell EMC PowerEdge R750 requires various cooling components based on CPU TDP, storage modules, rear drives, GPU, and persistent memory to maintain optimum thermal performance.

The Dell EMC PowerEdge R750 offers two types of cooling options:

- Air cooling
- Processor liquid cooling (optional)

Cooling fan specifications

The Dell EMC PowerEdge R750 system supports up to six standard (STD), high-performance silver grade (HPR SLVR), or high-performance gold grade (HPR GOLD) cooling fans.
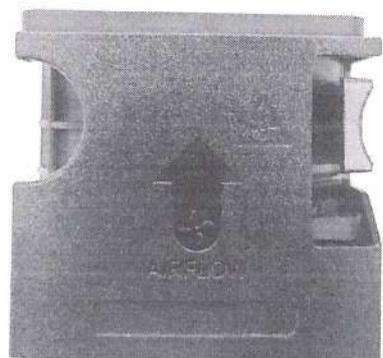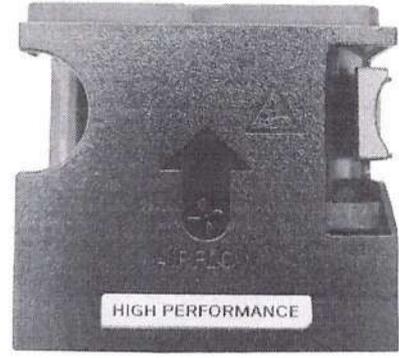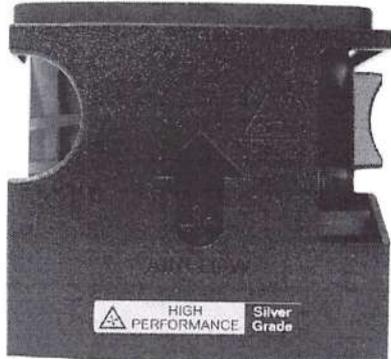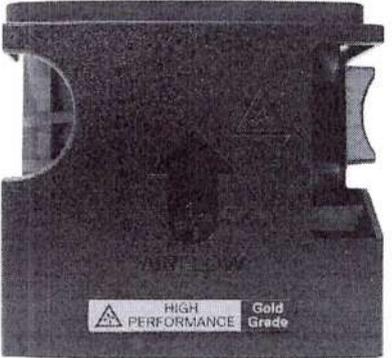
Table 5. Cooling fan specifications

Fan type	Abbreviation	Also known as	Label color	Label image
Standard fan	STD	STD	No label	
High-performance fan (Silver grade) fan	HPR SLVR	HPR	Silver	ⓘ **NOTE:** New cooling fans come with the High-Performance Silver Grade label. While the older cooling fans have the High-Performance label. Figure 2. High performance fan Figure 3. High performance (Silver grade) fan

Table 5. Cooling fan specifications (continued)

Fan type	Abbreviation	Also known as	Label color	Label image
High-performance fan (Gold grade) fan	HPR GOLD	VHPR - Very High Performance	Gold	(i) **NOTE:** New cooling fans come with the High-Performance Gold Grade label. While the older cooling fans have the High-Performance label. Figure 4. Very high performance fan Figure 5. High performance (Gold grade) fan

(i) **NOTE:** Mixing of STD, HPR SLVR, or HPR GOLD fan is not supported.

(i) **NOTE:** The STD, HPR SLVR, or HPR GOLD fan installation depends on the system configuration. For more information about the supported fan configuration or matrix, see Thermal restriction matrix.

System battery specifications

The PowerEdge R750 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

The Dell EMC PowerEdge R750 system supports up to six full-height, or eight low-profile riser PCI express (PCIe) Gen 4 expansion cards.

Table 6. Expansion card slots supported on the system board

PCIe slot	With Regular shroud	With GPGPU shroud	R1a	R1b	R1c	R2a	R2b	R3a	R3b	R4a	R4b
Slot 1	Full height-Half length	Full height-Full length	-	x8	x16 (single-width (SW) GPU)	-	-	-	-	-	-
Slot 2	Full height-Half length	Full height-Full length	x16(double-width (DW) GPU)	x8	x16 (SW GPU)	-	-	-	-	-	-
Slot 3	Low profile-Half length	Low profile-Half length	-	-	-	x16	-	-	-	-	-
Slot 3 SNAPI	Low profile-Half length	Low profile-Half length	-	-	-	-	x16	-	-	-	-
Slot 4	Full height-Half length	N/A	-	-	-	-	-	-	x8	-	-
Slot 5	Full height-Half length	Full height-Half length	-	-	-	-	-	x16	x8	-	-
Slot 6	Low profile-Half length	Low profile-Half length	-	-	-	x16	x8	-	-	-	-
Slot 7	Full height-Half length	Full height-Full length	-	-	-	-	-	-	-	x16 (DW GPU)	x8
Slot 8	Full height-Half length	N/A	-	-	-	-	-	-	-	-	x8

⚠ WARNING: Consumer-Grade GPU should not be installed or used in the Enterprise Server products.

Memory specifications

The Dell EMC PowerEdge R750 system supports the following memory specifications for optimized operation.

Table 7. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processor	
			Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
RDIMM	Single rank	8 GB	8 GB	128 GB	16 GB	256 GB

Table 7. Memory specifications (continued)

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processor	
			Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
LRDIMM	Dual rank	16 GB	16 GB	256 GB	32 GB	512 GB
		32 GB	32 GB	512 GB	64 GB	1 TB
		64 GB	64 GB	1 TB	128 GB	2 TB
	Quad rank	128 GB	128 GB	2 TB	256 GB	4 TB
	Octa rank	256 GB	256 GB	4 TB	512 GB	8 TB
Intel Persistent Memory 200 series (BPS)	Dual rank	128 GB	128 GB	1 TB	256 GB	2 TB
		256 GB	256 GB	2 TB	512 GB	4 TB
		512 GB	512 GB	4 TB	1 TB	8 TB

Table 8. Memory module sockets

Memory module sockets	Speed
32, 288-pin	3200 MT/s, 2933 MT/s

Storage controller specifications

The Dell EMC PowerEdge R750 system supports the following controller cards:

Table 9. Storage controller cards for the system

Internal controllers	External controllers
• S150 • PERC H745 • PERC H755 • PERC H755N • PERC H345 • HBA355I • Boot Optimized Storage Subsystem (BOSS-S2): HWRAID 2 x M.2 SSDs 240 GB or 480 GB • Boot Optimized Storage Subsystem (BOSS-S1):HWRAID 2 x M.2 SSDs 240 GB or 480	• PERC H840 • HBA355E

ⓘ 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.

Drive specifications

Drives

The Dell EMC PowerEdge R750 system supports:
- 12 x 3.5-inch hot-swappable SAS or SATA drives
- 8 x 2.5-inch hot-swappable NVMe drives
- 16 x 2.5-inch hot-swappable SAS, SATA, or NVMe drives
- 24 x 2.5-inch hot-swappable SAS, SATA, or NVMe drives
- 2 x 2.5-inch rear hot-swappable SAS, SATA, or NVMe drives
- 4 x 2.5-inch rear hot-swappable SAS, SATA, or NVMe drives

- 0 drive

(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. USB 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
Micro-USB 2.0, iDRAC Direct	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 Dell EMC PowerEdge R750 system supports up to two Network Interface Controller (NIC) ports embedded on the LAN on Motherboard (LOM) and integrated on the optional 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, 10 Gbe x 4, 25 GbE x 2, 25 GbE x 4

Serial connector specifications

The Dell EMC PowerEdge R750 system supports one optional card type serial connector, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant .

The optional serial connector card is installed similar to an expansion card filler bracket.

VGA ports specifications

The Dell EMC PowerEdge R750 system supports One DB-15 VGA port one each on the front and back (optional for liquid cooling) panels.

IDSDM (optional)

The Dell EMC PowerEdge R750 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

(i) NOTE: One IDSDM card slot is dedicated for redundancy.

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

Video specifications

The Dell EMC PowerEdge R750 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

Table 13. Supported 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

(i) NOTE: For additional information about environmental certifications, refer to the *Product Environmental Datasheet* located with the Manuals & Documents 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 (33.8°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 (33.8°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 (33.8°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 (-104 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	0.21 G_{rms} at 5 Hz to 500 Hz for 10 minutes (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.

Thermal restriction matrix

Table 20. Label reference

Label	Description
STD	Standard
HPR	High performance
HSK	Heat sink
LP	Low profile
FH	Full height
DW	Double Wide
BPS	Intel Persistent Memory 200 series (BPS)
DPC	DIMM per channel

Table 21. Processor and heat sink matrix

Heat sink	Processor TDP
1U STD HSK	≤ 165 W (for non-GPU)
T-Type HSK	For all TDP with GPU, and 256 GB LRDIMM configurations
2U HPR HSK	>165 W (for non-GPU configurations)

Table 22. Thermal restriction matrix with ≤64 GB RDIMM (Non-GPU)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
CPU TDP/cTDP	105 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	120 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	125 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	135 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	140 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	150 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	165 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	STD fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	185 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	30°C
	195 W	STD fan	STD fan	STD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	205 W	STD fan	STD fan	STD fan	HPR GOLD fan	HPR GOLD fan	HPR GOLD fan	HPR SLVR fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C
	225 W	STD fan	STD fan	STD fan	HPR GOLD fan	HPR GOLD fan	HPR GOLD fan	HPR SLVR fan	HPR GOLD fan	HPR SLVR fan	HPR SLVR fan	HPR SLVR fan	35°C

Table 22. Thermal restriction matrix with ≤64 GB RDIMM (Non-GPU) (continued)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
	230 W											HPR SLVR fan*	30°C
	235 W											HPR SLVR fan*	30°C
	240 W											HPR SLVR fan*	30°C
	250 W											HPR SLVR fan*	30°C
	265 W	STD fan	HPR SLVR fan							HPR SLVR fan*			30°C
	270 W	STD fan	HPR SLVR fan							HPR SLVR fan*			30°C

ⓘ NOTE: * Supported ambient temperature is 30°C.

Table 23. Thermal restriction matrix with 128 GB LRDIMM (Non-GPU)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.4-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drive	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
CPU TDP/cTDP	105 W	STD fan	HPR SLVR fan		HPR SLVR fan			HPR SLVR fan	HPR GOLD fan	HPR SLVR fan		HPR SLVR fan*	35°C
	120 W												35°C
	125 W												35°C
	135 W												35°C
	140 W												35°C
	150 W												35°C
	165 W												35°C

Table 23. Thermal restriction matrix with 128 GB LRDIMM (Non-GPU) (continued)

Configuration	8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.4-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drive	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
185 W												30°C
195 W									HPR SLVR fan*			30°C
205 W												30°C
225 W												30°C
230 W					HPR GOLD fan						Not supported	30°C
235 W												30°C
240 W												30°C
250 W												30°C
265 W	STD fan	HPR SLVR fan							Not supported			30°C
270 W	STD fan	HPR SLVR fan										30°C

ⓘ NOTE: * Supported ambient temperature is 30°C.

Table 24. Thermal restriction matrix with 256 GB LRDIMM (Non-GPU)

Configuration	8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
CPU TDP/cTDP 105 W												35°C
120 W												35°C
125 W												35°C
135 W		1DPC/2DPC			1DPC			1DPC	Not supported			35°C
140W												35°C
150 W												35°C
165 W												35°C
185 W												30°C

Table 24. Thermal restriction matrix with 256 GB LRDIMM (Non-GPU) (continued)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
	195 W												30°C
	205 W												30°C
	225 W												30°C
	230 W												30°C
	235 W												30°C
	240 W												30°C
	250 W												30°C
	265 W												30°C
	270 W												30°C

(i) NOTE: For all CPU TDP (105 W- 270 W) request HPR GOLD fan, T-Type HSK and processor HSK blank for 2.5-inch configurations.

(i) NOTE: For CPU TDP >165 W and riser configuration 1, 2, 3, or 4 supports maximum of four PCIe cards in Riser 1 or 2. This restriction is applicable for 8 x 2.5-inch NVMe, 16 x 2.5-inch SAS/SATA and 16 x 2.5-inch NVMe system configurations.

Table 25. Thermal restriction matrix with BPS + ≤128 GB DIMM (Non-GPU)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
CPU TDP/ cTDP	105 W												35°C
	120 W												35°C
	125 W												35°C
	135 W				HPR GOLD fan					Not supported			35°C
	140 W												35°C
	150 W												35°C
	165 W												35°C

Table 25. Thermal restriction matrix with BPS + ≤128 GB DIMM (Non-GPU) (continued)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
	185 W												30°C
	195 W												35°C
	205 W												35°C
	225 W												35°C
	230 W												35°C
	235 W												35°C
	240 W												35°C
	250 W												35°C
	265 W												35°C
	270 W												35°C

Table 26. Thermal restriction matrix with BPS + 256 GB LRDIMM(Non-GPU)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
CPU TDP/ cTDP	105 W												30°C
	120 W												30°C
	125 W												30°C
	135 W												30°C
	140 W					HPR GOLD fan					Not supported		30°C
	150 W												30°C
	165 W												30°C
	185 W												
	195 W												30°C
	205 W												

Table 26. Thermal restriction matrix with BPS + 256 GB LRDIMM(Non-GPU) (continued)

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA			16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA			Ambient temperature
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	No Rear Drives	No Rear Drives	No Rear Drives	2 x Rear 2.5-inch, no rear fan	4 x Rear 2.5-inch with fan	
⋮	225 W												
	230 W												
	235 W												
	240 W												
	250 W												
	265 W												
	270 W												30°C

(i) NOTE: For all CPU TDP (105 W- 270 W) request HPR GOLD fan, T-Type HSK and processor HSK blank for 2.5-inch configurations.

Table 27. Thermal restriction with ≤128 GB DIMM (GPU)

Configuration (Front storage)	Fan type	CPU TDP/ cTDP	GPU (Ambient temperature)							
			A100 (80G)	A100	A40 (max 2)	A30	A10	M10 (max 2)	T4 (max 6)
8 x 2.5-inch NVMe	HPR SLVR fan	270 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C
16 x 2.5-inch SAS	HPR GOLD fan	270 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C
16 x 2.5-inch NVMe	HPR GOLD fan	270 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C
24 x 2.5-inch SAS	HPR GOLD fan	270 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C
16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	HPR GOLD fan	270 W	35°C	35°C	35°C	35°C	35°C	35°C	30°C

Table 27. Thermal restriction with ≤128 GB DIMM (GPU) (continued)

Configuration (Front storage)	Fan type	CPU TDP/ cTDP	GPU (Ambient temperature)						
			A100 (80G)	A100	A40 (max 2)	A30	A10	M10 (max 2)	T4 (max 6)
24 x 2.5-inch NVMe	HPR GOLD fan	270 W	30°C	35°C	30°C	30°C	35°C	35°C	30°C

(i) NOTE: GPU cards are not supported in 12 x 3.5-inch drive and rear drive configuration systems.

(i) NOTE: All GPU cards require 1U T-type HSK and GPU shroud.

(i) NOTE: T4 GPU is not supported on riser 2 in 8 x 3.5-inch configuration

Table 28. Thermal restriction with BPS + ≤128 GB DIMM (GPU)

Configuration (Front storage)	Fan type	CPU TDP/ cTDP	GPU (Ambient temperature)						
			A100 (80G)	A100	A30	A10	T4 (max 4)	M10 (max 2)	A40 (max 2)
8 x 2.5-inch NVMe	HPR GOLD fan	270 W	30°C	30°C	30°C	30°C	30°C	30°C	30°C
16 x 2.5-inch SAS	HPR GOLD fan	270 W	30°C	30°C	30°C	30°C	30°C	30°C	30°C
16 x 2.5-inch NVMe	HPR GOLD fan	270 W	30°C	30°C	30°C	30°C	30°C	30°C	30°C
24 x 2.5-inch SAS	HPR GOLD fan	270 W	Not supported				30°C	Not supported	
16 x 2.5-inch SAS + 8 x 2.5-inch NVMe	HPR GOLD fan	270 W					30°C		
24 x 2.5-inch NVMe	HPR GOLD fan	270 W					30°C		

(i) NOTE: GPU cards are not supported in 12 x 3.5-inch drive and rear drive configuration systems.

(i) NOTE: All GPU cards require 1U T-type HSK and GPU shroud.

(i) NOTE: T4 GPU card is not supported in Riser 2 slots.

Other restrictions for air cooling configurations

- Kioxia CM6/CD6 NVMeSSD are not supported on rear drive module.
- Samsung 1733v2/1735v2 NVMeSSD are not supported on 12 x 3.5-inch rear drive module.
- ICX XCC Platinum 8368Q 270W-38C CPU in air cooling system is not supported.
- 25 Gb and above PCIe or OCP cards require high temperature (85°C) active optics cable.
- Requires 2U-HPR HSK(8F34X) to support "ICX HCC Gold 6334 165W-8C CPU" in non-GPU configuration.
- Requires HPR GOLD fan to support BOSS-S1 on 2.5-inch configuration and not supported on 3.5-inch configuration.

Thermal restriction for liquid cooling systems

Table 29. Thermal restriction matrix for liquid cooling systems

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA	16 x 2.5-inch + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives
Memory	8 GB RDIMM	STD fan[1]	STD fan[3]	STD fan[1]	STD fan[2]	STD fan[1]	STD fan[1]	HPR SLVR fan[2]
	16 GB RDIMM							
	32 GB RDIMM							
	64 GB RDIMM							
	128 GB LRDIMM		STD fan[1]		STD fan[1]			HPR SLVR fan[1]
	256 GB LRDIMM	HPR GOLD fan[1]					Not supported	Not supported
BPS + RDIMM or LRDIMM	8 GB RDIMM	HPR GOLD fan[1]						Not supported
	16 GB RDIMM							
	32 GB RDIMM							
	64 GB RDIMM							
	128 GB LRDIMM							
	256 GB LRDIMM							
GPU + ≤128 GB DIMM	A100 (max 2)	HPR SLVR fan[1]	HPR GOLD fan[1]					Not supported
	T4 (max 6)							
	M10 (max 2)							
	A40 (max 2)							
GPU + 256 GB LRDIMM	A100 (max 2)	HPR GOLD fan[1]			Not supported			

Configuration		8 x 2.5-inch NVMe	16 x 2.5-inch SAS/SATA	16 x 2.5-inch NVMe	24 x 2.5-inch SAS/SATA	16 x 2.5-inch + 8 x 2.5-inch NVMe	24 x 2.5-inch NVMe	12 x 3.5-inch SAS/SATA
Rear storage		No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives	No Rear Drives
	T4 (max 6)					HPR GOLD fan[4]		Not supported
	M10 (max 2)					Not supported		
	A40 (max 2)							
GPU + BPS + ≤128 GB DIMM	A100 (max 2)	HPR GOLD fan[4]						Not supported
	T4 (max 6)							
	M10 (max 2)							
	A40 (max 2)							
GPU + BPS + 256 GB LRDIMM	A100 (max 2)	HPR GOLD fan[4]		Not supported				
	T4 (max 6)							
	M10 (max 2)							
	A40 (max 2)							

(i) NOTE: [1] for ASHRAE A2 category (35°C), [2] for ASHRAE A3 category (40°C), [3] for ASHRAE A4 (45°C) and [4] for ASHRAE A2 category with 30°C ambient temperature restriction.

(i) NOTE: Liquid cooling is not supported on rear drive configurations.

(i) NOTE: DIMM blank is not required for liquid cooling configurations.

(i) NOTE: All the configuration are required to have six fans installed.

Other restriction for liquid cooling configurations

- 25 Gb and above PCIe or OCP cards require high temperature (85°C) active optics cable.

Shroud, heat sink, and riser cage restriction

Table 30. Restrictions with shroud, heat sink, and riser cage

PCIe card type	Form factor	Fan	Processor heat sink	Shroud	Riser cage
GPU	FL	Configuration dependency	T-type (1U-EXT)	GPU shroud	long
	HL				short
Non-GPU	FL				long
					short
					long
	HL		1U-STD or 2U-HPR	STD shroud	short

Thermal air restrictions

ASHRAE A3 environment for air cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- PCIe SSD is not supported.
- BPS, 128 GB or greater capacity DIMMs are not supported.
- GPU and FPGA are not supported.
- Processor TDP greater than 165 W are not supported.
- HPR SLVR fans are required.
- Front storage is not supported in 12x3.5-inch SAS configuration.
- Rear drives are not supported.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.
- OCP 3.0 card is supported with 85°C active optic cable.
- BOSS 1.5 card is supported.

ASHRAE A4 environment for air cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- PCIe SSD is not supported.
- BPS, 128 GB or greater capacity DIMMs are not supported.
- GPU and FPGA are not supported.
- Processor TDP greater than 120 W are not supported.
- HPR SLVR fans are required.
- Front storage is not supported in 12x3.5-inch SAS configuration.
- Rear drives are not supported.
- BOSS 1.5 is not supported.
- OCP 3.0 card is supported with 85°C active optic cable and cards tier ≤4.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.

ASHRAE A3 environment for liquid cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- PCIe SSD is not supported.
- BPS, 128 GB or greater capacity DIMMs are not supported.
- GPU and FPGA are not supported.
- Rear drives are not supported.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.
- OCP 3.0 card is supported with 85°C active optic cable.
- BOSS 1.5 card is supported.

ASHRAE A4 environment for liquid cooling configuration

- Two PSUs are required in redundant mode. If there is PSU failure, system performance may be reduced.
- PCIe SSD is not supported.
- BPS, 128 GB or greater capacity DIMMs are not supported.
- GPU and FPGA are not supported.
- Front storage is not supported in 12x3.5-inch SAS configuration.
- Rear drives are not supported.
- BOSS 1.5 is not supported.
- OCP 3.0 card is supported with 85°C active optic cable and cards tier ≤4.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported.

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any equipment damage or failure from particulate and gaseous contamination. If the levels of particulate or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you may need to rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 31. 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: The ISO Class 8 condition applies to data center environments only. This air filtration requirement does 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 32. 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.

Dell EMC PowerEdge R750

General purpose server optimized to address the most demanding workloads

The Dell EMC PowerEdge R750, is a full-featured enterprise server, delivering outstanding performance for the most demanding workloads.

Innovate at scale with challenging and emerging workloads

The Dell EMC PowerEdge R750, powered by the 3rd Generation Intel® Xeon® Scalable processors is a rack server to address application performance and acceleration. The PowerEdge R750, is a dual-socket/2U rack server that delivers outstanding performance for the most demanding workloads. It supports 8 channels of memory per CPU, and up to 32 DDR4 DIMMs @ 3200 MT/s speeds. In addition, to address substantial throughput improvements the PowerEdge R750 supports PCIe Gen 4 and up to 24 NVMe drives with improved air-cooling features and optional Direct Liquid Cooling to support increasing power and thermal requirements. This makes the PowerEdge R750 an ideal server for data center standardization on a wide range of workloads including; Database and Analytics, High-performance computing (HPC), Traditional corporate IT, Virtual Desktop Infrastructure, and AI/ML environments that require performance, extensive storage and GPU support.

Increase efficiency and accelerate operations with autonomous collaboration

The Dell EMC OpenManage systems management portfolio tames the complexity of managing and securing IT infrastructure. Using Dell Technologies' intuitive end-to-end tools, IT can deliver a secure, integrated experience by reducing process and information silos in order to focus on growing the business. The Dell EMC OpenManage portfolio is the key to your innovation engine, unlocking the tools and automation that help you scale, manage, and protect your technology environment.

- Built-in telemetry streaming, thermal management, and RESTful API with Redfish offer streamlined visibility and control for better server management
- Intelligent automation lets you enable cooperation between human actions and system capabilities for added productivity
- Integrated change management capabilities for update planning and seamless, zero-touch configuration and implementation
- Full-stack management integration with Microsoft, VMware, ServiceNow, Ansible and many other tools

Protect your data assets and infrastructure with proactive resilience

The Dell EMC PowerEdge R750 server is designed with a cyber-resilient architecture, integrating security deeply into every phase in the lifecycle, from design to retirement.

- Operate your workloads on a secure platform anchored by cryptographically trusted booting and silicon root of trust
- Maintain server firmware safety with digitally signed firmware packages
- Prevent unauthorized configuration or firmware change with system lockdown
- Securely and quickly wipe all data from storage media, including hard drives, SSDs and system memory with System Erase

PowerEdge R750

The Dell EMC PowerEdge R750 offers compelling performance, high-speed memory and capacity, I/O bandwidth and storage to address data requirements – Ideal for:

- Traditional corporate IT
- Database and Analytics
- Virtual Desktop Infrastructure
- AI/ML and HPC

Feature	Technical Specifications
Processor	Up to two 3rd Generation Intel Xeon Scalable processors, with up to 40 cores per processor
Memory	• 32 DDR4 DIMM slots, supports RDIMM 2 TB max or LRDIMM 8 TB max, speeds up to 3200 MT/s • Up to 16 Intel Persistent Memory 200 series (BPS) slots, 8 TB max • Supports registered ECC DDR4 DIMMs only
Storage controllers	• Internal controllers: PERC H745, HBA355I, S150, H345, H755, H755N • Boot Optimized Storage Subsystem (BOSS-S2): HW RAID 2 x M.2 SSDs 240 GB or 480 GB • Boot Optimized Storage Subsystem (BOSS-S1) HW RAID 2 x M.2 SSDs 240 GB or 480 GB • External PERC (RAID): PERC H840, HBA355E
Drive Bays	Front bays: • Up to 12 x 3.5-inch SAS/SATA (HDD/SSD) max 192 TB • Up to 8 x 2.5-inch NVMe (SSD) max 122.88 TB • Up to 16 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 245.76 TB • Up to 24 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 368.84 TB Rear bays: • Up to 2 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 30.72 TB • Up to 4 x 2.5-inch SAS/SATA/NVMe (HDD/SSD) max 61.44 TB
Power Supplies	• 800 W Platinum AC/240 mixed mode • 1100 W Titanium AC/240 mixed mode • 1400 W Platinum AC/240 mixed mode • 2400 W Platinum AC/240 mixed mode
Cooling Options	Air cooling, optional processor liquid cooling
Fans	• Standard fan/High performance SLVR fan/High performance GOLD fan • Up to six hot plug fans
Dimensions	• Height – 86.8 mm (3.41 inches) • Width – 482 mm (18.97 inches) • Depth – 758.3 mm (29.85 inches) - without bezel 772.14 mm (30.39 inches) - with bezel
Form Factor	2U rack server
Embedded Management	• iDRAC9 • iDRAC Service Module • iDRAC Direct • Quick Sync 2 wireless module
Bezel	Optional LCD bezel or security bezel
OpenManage Software	• OpenManage Enterprise • OpenManage Power Manager plugin • OpenManage SupportAssist plugin • OpenManage Update Manager plugin
Mobility	OpenManage Mobile
Integrations and Connections	OpenManage Integrations • BMC Truesight • Microsoft System Center • Red Hat Ansible Modules • VMware vCenter and vRealize Operations Manager OpenManage Connections • IBM Tivoli Netcool/OMNIbus • IBM Tivoli Network Manager IP Edition • Micro Focus Operations Manager • Nagios Core • Nagios XI
Security	• Cryptographically signed firmware • Secure Boot • Secure Erase • Silicon Root of Trust • System Lockdown (requires iDRAC9 Enterprise or Datacenter) • TPM 1.2/2.0 FIPS, CC-TCG certified, TPM 2.0 China NationZ
Embedded NIC	2 x 1 GbE LOM
Network Options	1 x OCP 3.0 (x8 PCIe lanes)
GPU Options	Up to two double-width 300 W, or four single-width 150 W, or six single-width 75 W accelerators
Ports	Front Ports • 1 x Dedicated iDRAC Direct micro-USB • 1 x USB 2.0 • 1 x VGA Rear Ports • 1 x USB 2.0 • 1 x Serial (optional) • 1 x USB 3.0 • 2 x RJ-45 • 1 x VGA (optional for liquid cooling configuration) Internal Ports • 1 x USB 3.0
PCIe	Up to 8 x PCIe Gen4 slots (up to 6 x16) with support for SNAP I/O modules
Operating System and Hypervisors	• Canonical Ubuntu Server LTS • Citrix Hypervisor • Microsoft Windows Server with Hyper-V • Red Hat Enterprise Linux • SUSE Linux Enterprise Server • VMware ESXi For specifications and interoperability details, see Dell.com/OSsupport.
OEM-ready version available	From bezel to BIOS to packaging, your servers can look and feel as if they were designed and built by you. For more information, visit Dell.com/OEM.

Recommended support and services

Dell ProSupport Plus for critical systems or Dell ProSupport for premium hardware and software support for your PowerEdge solution. Consulting and deployment offerings are also available. Contact your Dell representative today for more information. Availability and terms of Dell Services vary by region. For more information, visit Dell.com/ServiceDescriptions.

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Dell EMC PowerEdge R750

Technical Guide

DELLTechnologies

Notes, cautions, and warnings

(i) **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

System overview

The Dell EMC™ PowerEdge™ R750 is Dell EMC's latest 2U 2-socket designed to run complex workloads using highly scalable memory, I/O, and network options. The system features the 3rd Generation Intel® Xeon® Processor Scalable family, with up to 32 DDR4 DIMMs, up to 8 PCI Express® Gen4 enabled expansion slots, and a choice of embedded NIC technologies.

Topics:

* Key workloads
* New technologies

Key workloads

The R750 is high performance, general purpose platform that is ready to run any workload found within a customer's datacenter. The following table lists some of these workloads and the situations wherein the R750 is a good fit.

Table 1. Key workloads

Workload	PowerEdge R750 is best for...
General Data Center Standardization	Customers with a wide range of workloads requiring a single server model to handle them all. Flexible configuration options allow these to match the performance needed for the most demanding workloads
Virtualization & Cloud Applications	High density virtualization Cloud-native applications High performance local storage requirements
Virtual Desktop Infrastructure	VDI deployments requiring high performance GPUs Medium-large local storage capacity
Database & Analytics	Large traditional or in-memory databases Medium-large local storage capacity Persistent memory
High-Performance Computing	HPC that requires large memory capacity High performance CPU support GPU assistance
Software Defined Storage build-out	High performance SDS node Large local storage capacity Persistent memory

New technologies

Table 2. New Technologies

Technology	Detailed Description
3rd Generation Intel® Xeon® Processor Scalable Family	Consult the Processor section for specific SKU details.
	10nm process technology
	3x Intel® Ultra Path Interconnect (UPI) per CPU at 10.4GT/s or 11.2GT/s
	64 PCIe Gen4 lanes at 16GT/s
	Up to 40 cores per socket
	Up to 3.6 GHz
	Max TDP: 270W
3200 MT/s DDR4 Memory	Max 16 DIMMs per CPU
	Supports DDR4 RDIMM, LRDIMM, 3DS DIMM and with ECC up to 3200MT/s
Persistent Memory	Supports DDR4 Intel Optane Persistent Memory 200 Series up to 3200 MT/s, max 8x 512GB Intel Optane Persistent Memory 200 Series DIMMs per CPU.
Flex IO	LOM board, 2x1Gb with BCM5720 LAN controller
	STD Rear IO with 1Gb Dedicated Management Network Port, USB3.0x1, USB2.0x1 and VGA port
	Serial Port Option with STD Rear IO board.
	OCP Mezz 3.0 (supported by x8 PCIe lanes)
	LC Rear IO with 1Gb Dedicated Management Network Port, USB3.0x1, USB2.0x1.
	Serial Port or VGA Port Option with LC Rear IO board.
Dedicated PERC	Front Storage module PERC with Front PERC10.5 & PERC11
Software RAID	OS RAID / S150
Power Supplies	60mm / 86mm dimension is the new PSU form factor on 15G design
	Platinum 800W mixed mode
	Titanium 1100W mixed mode
	-48 - (-60) V 1100 W DC
	Platinum 1400W mixed mode
	2400W mixed mode