Dell EMC PowerEdge R840

Technical Specifications

Regulatory Model: E49S Series
Regulatory Type: E49S001
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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
- Chassis weight
- Processor specifications
- Supported operating systems
- PSU specifications
- System battery specifications
- Expansion card riser specifications
- Memory specifications
- RAID controller specifications
- Drive specifications
- Ports and connectors specifications
- Video specifications
- Environmental specifications

Chassis dimensions

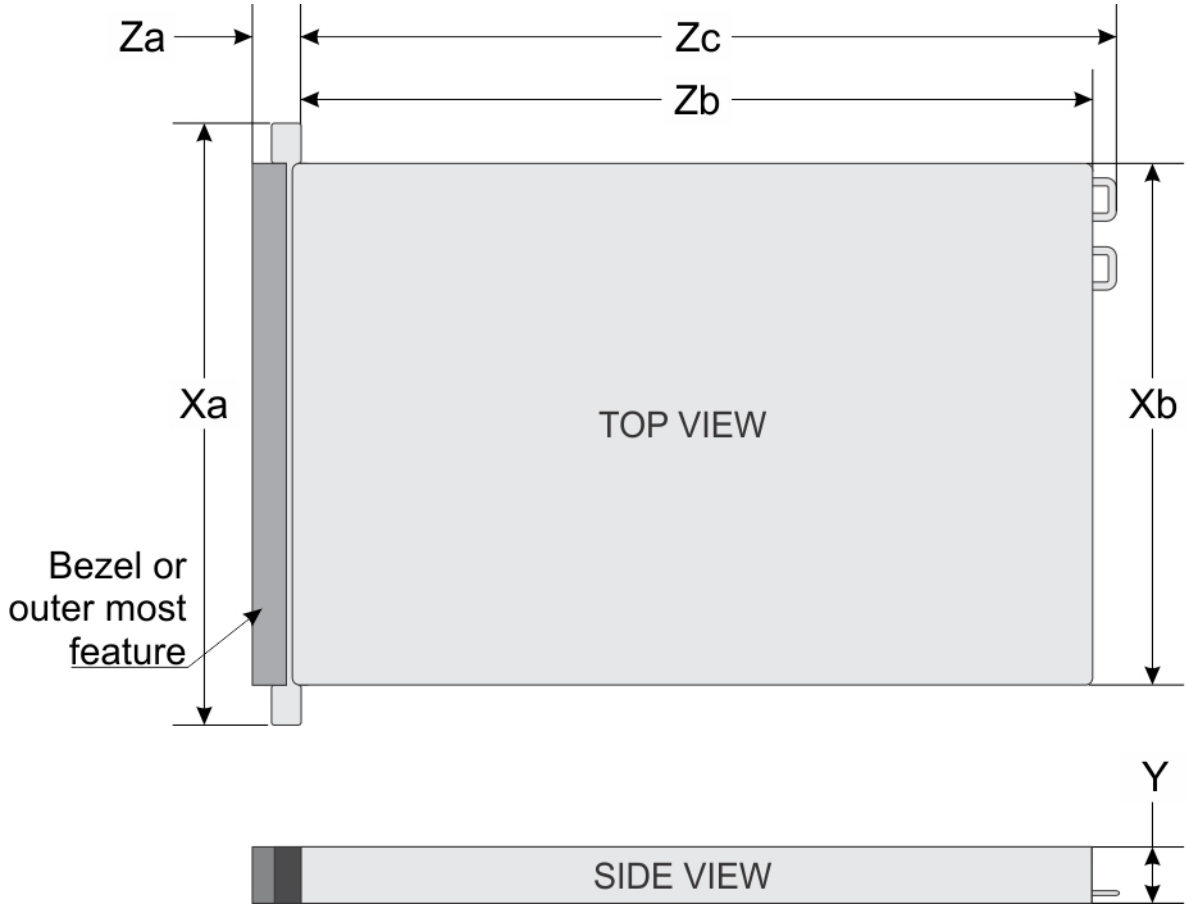

Figure 1. Dimensions of PowerEdge R840 system

Table 1. Dimensions of PowerEdge R840 system

Xa	Xb (without brackets)	Xb (w brackets)	Y	Za (with bezel)	Za (without bezel)	Zb*	Zc (with PSU handle)	Zc (with chassis rear wall handle)
482 mm (18.97 inches)	434 mm (17.08 inches)	444.0 (17.48 inches)	86.8 mm (3.41 inches)	37.84 mm (1.41 inches)	23.9 mm (0.94 inches)	812 mm (31.96 inches)	842 mm (33.14 inches)	902 mm (35.51 inches)

* - Zb refers to the nominal rear wall external surface, where the system board I/O connectors are located.

Chassis weight

Table 2. Chassis weight

System	Maximum weight (with all drives/SSDs)
2.5 inch	36.6 kg (80.68 lb)

Processor specifications

The PowerEdge R840 system supports four processors - Intel Xeon Scalable Processor family.

Supported operating systems

The PowerEdge R840 supports the following operating systems:

- Canonical Ubuntu 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.

PSU specifications

The PowerEdge R840 system supports up to two AC or DC power supply units (PSUs).

Table 3. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	High line 200V–240 V	Low line 100 V– 140 V	DC	Current
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	750 W	750 W	NA	10 A-5 A
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200–240 V AC	750 W	NA	NA	5 A
750 W Mixed Mode HVDC (for China only)	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	750 W	750 W	NA	10 A-5 A
	N/A	2891 BTU/hr	N/A	240 V DC, autoranging	NA	NA	750 W	4.5 A

Table 3. PSU specifications (continued)

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	High line 200V–240 V	Low line 100 V– 140 V	DC	Current
750 W Mixed Mode AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC	750 W	750 W	N/A	10 A-5 A
750 W Mixed Mode DC (for China only)	N/A	2891 BTU/hr	50/60 Hz	240 V DC	750 W	N/A	750 W	5 A
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1100 W	1050 W	NA	12 A-6.5 A
1100 W DC	N/A	4416 BTU/hr	N/A	–(48–60) V DC, autoranging	NA	NA	1100 W	32 A
1100 W 10 A-5 A Mixed Mode HVDC (for China and Japan only)	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1100 W	1050 W	NA	12 A-6.5 A
	N/A	4100 BTU/hr	N/A	200–380 V DC, autoranging	NA	NA	1100 W	6.4 A-3.2 A
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1600 W	800 W	NA	10 A
1600 W HLAC	Titanium	5840 BTU/hr	50/60 Hz	200–240 V AC	1600 W	NA	NA	10 A
2000 W AC	Platinum	7500 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2000 W	1000 W	NA	11.5 A
2400 W AC	Platinum	9000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2400 W	1400 W	NA	16 A
2600 W HLAC	Titanium	9500 BTU/hr	50/60 Hz	200–240 V AC	2600 W	NA	NA	15 A

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

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

NOTE: PSUs rated for 1100 W AC or 1100 W Mixed Mode HVDC and higher require high-line voltage (200–240 V AC) to supply their rated capacity.

System battery specifications

The PowerEdge R840 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

The PowerEdge R840 system supports up to six PCI express (PCIe) generation 3 expansion cards that can be installed on the system board and expansion card risers.

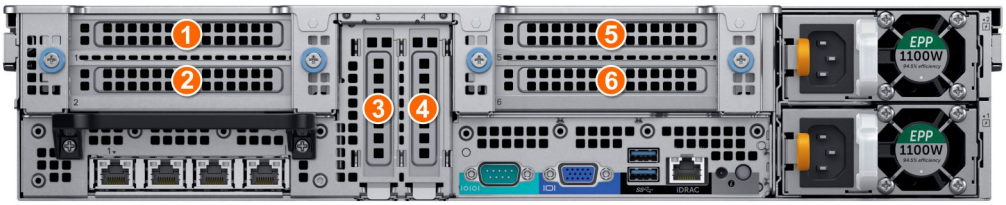

Figure 2. 24 x 2.5-inch drive system

Figure 3. 24 x 2.5-inch + 2 x 2.5-inch (rear) drive system

The following table provides detailed information about the expansion card riser specifications:

Table 4. Expansion card riser specifications

PCIe slot	Riser	Processor connection	Height	Length	Slot width
1	X8 PCIe Riser 1	Processor 1	Full height	Half length	x8
2	X16 PCIe Riser 1	Processor 1	Full height	Full length	x16
	X8 PCIe Riser 1	Processor 1	Full height	Half length	x8
3	On the system board	Processor 1	Low profile	Half length	x16
4	On the system board	Processor 2	Low profile	Half length	x16
5	X8 PCIe Riser 2	Processor 2	Full height	Half length	x8
6	X16 PCIe Riser 2	Processor 2	Full height	Full length	x16
	X8 PCIe Riser 2	Processor 2	Full height	Half length	x8

Memory specifications

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Table 5. Memory specifications

Memory module sockets	DIMM type	DIMM rank	DIMM capacity	Dual processors		Quad processors	
				Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
48 288-pins	LRDIMM	Octal rank	256 GB	512 GB	6144 GB	1024 GB	12.288 TB
	LRDIMM	Octal rank	128 GB	256 GB	3072 GB	512 GB	6144 GB
	LRDIMM	Quad rank	64 GB	128 GB	1536 GB	256 GB	3072 GB
	RDIMM	Dual rank	64 GB	128 GB	1536 GB	256 GB	3072 GB
	RDIMM	Dual rank	32 GB	64 GB	768 GB	128 GB	1536 GB
	RDIMM	Dual rank	16 GB	32 GB	384 GB	64 GB	768 GB
	RDIMM	Single rank	8 GB	16 GB	192 GB	32 GB	384 GB
	NVDIMM-N	Single rank	16 GB	RDIMM: 192 GB	RDIMM: 384 GB	RDIMM: 384 GB	RDIMM: 1152 GB
				NVDIMM-N: 16 GB	NVDIMM-N: 192 GB	NVDIMM-N: 16 GB	NVDIMM-N: 192 GB
	PMem	N/A	128 GB	RDIMM: 192 GB	LRDIMM: 1536 GB	RDIMM: 384 GB	LRDIMM: 3072 GB
				PMem: 1536 GB	PMem: 1536 GB	PMem: 248 GB	PMem: 3072 GB
		N/A	256 GB	RDIMM: 384 GB	LRDIMM: 1536 GB	RDIMM: 384 GB	LRDIMM: 3072 GB
				PMem: 2048 GB	PMem: 3072 GB	PMem: 4096 GB	PMem: 6144 GB
		N/A	512 GB	RDIMM: 384 GB	LRDIMM: 1536 GB	RDIMM: 768 GB	LRDIMM: 3072 GB
				PMem: 4096 GB	PMem: 6144 GB	PMem: 8192 GB	PMem: 12,288 GB

NOTE: Do not mix 8 GB RDIMMs and 16 GB NVDIMM-Ns.

NOTE: Do not mix 64 GB LRDIMMs, 128 GB LRDIMMs and 256 GB LRDIMMs.

NOTE: 256GB does not support GPU configuration.

NOTE: 256GB LRDIMMs only support 8x 2.5" Chassis at 30°C ambient temperature.

Table 6. DIMM blank population rules

Processor configuration	Processor 1	Processor 2	Processor 3	Processor 4
Dual processor	Required	Required	Not required	Not required
Quad processor	Required	Required	Required	Required

PMem and 256GB LRDIMM Thermal Restrictions

Table 7. PMem Thermal Restrictions

PMem Support	V2 Air-shroud	V1 Air-shroud
8x 2.5-inch SAS/SATA	35C ambient temperature support, 30C ambient temperature with 256GB LRDIMMs	30C ambient temperature support, not supported with 256GB LRDIMMs
8x 2.5-inch NVMe	35C ambient temperature support, 30C ambient temperature with 256GB LRDIMMs	Not supported
24x 2.5-inch SAS/SATA or NVMe	30C ambient temperature support, not supported with 256GB LRDIMMs	Not supported

NOTE: PMem does not support GPU configuration.

RAID controller specifications

The PowerEdge R840 system supports:

- Internal storage controller cards: PowerEdge RAID Controller (PERC) H330, H350, PERC H730P, H740P, H750, HBA330, HBA350i, HBA350 and Boot Optimized Server Storage (BOSS-S1)
- External storage controller cards: S140, 12 Gbps SAS HBA, including HBA355e

Drive specifications

Drives

The PowerEdge R840 system supports SAS, SATA, Nearline SAS hard drives/SSDs, or NVMe drives.

Table 8. Supported drive options for PowerEdge R840 system

Chassis options	Configurations
Eight hard drive chassis	Up to eight 2.5-inch SAS/SATA front accessible drives in slots 0–7 Up to eight 2.5-inch SATA front accessible drives in slots 0–7
Twenty-four drive chassis	Up to twenty-four 2.5-inch SAS/SATA front accessible drives in slots 0–23 Up to twelve 2.5-inch SAS/SATA front accessible drives in slots 0–11 + twelve SAS/SATA/NVMe front accessible drives in slots 12–23 Up to twenty-four 2.5-inch NVMe front accessible drives in slots 0–23
Twenty four front + two rear drive chassis	Up to twenty-four 2.5 inch SAS/SATA front accessible drives in slots 0–23 + up to two 2.5-inch SAS/SATA rear accessible drives

Optical drives

The PowerEdge R840 system supports one optional slim SATA DVD-ROM drive or DVD +/-RW drive.

NOTE: DVD devices support only data.

Tape drives

The PowerEdge R840 system supports external tape backup devices.

NOTE: The PowerEdge R840 system does not support internal tape drives.

Supported external tape drives:

- External RD1000 USB
- External LTO-5, LTO-6,LTO-7, and 6 Gb SAS tape drives
- 114X rack mount chassis with LTO-5, LTO-6, and LTO-7, 6 Gb SAS tape drives
- TL1000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL2000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL2000 with LTO-5, LTO-6, and LTO-7 8 Gb FC tape drives
- TL4000 with LTO-5, LTO-6, and LTO-7 6 Gb SAS tape drives
- TL4000 with LTO-5, LTO-6, and LTO-7 8 Gb FC tape drives
- ML6000 with LTO-5, LTO-6, 6 Gb SAS tape drives
- ML6000 with LTO-5, LTO-6, LTO-7 8 Gb FC tape drives

Ports and connectors specifications

USB ports

The PowerEdge R840 system supports both USB 2.0-compliant ports and USB 3.0-compliant ports:

The following table provides more information about the USB specifications:

Table 9. USB specifications

Front panel	Back panel	Internal USB
• Two USB 2.0-compliant ports • One micro USB 2.0-compliant port for iDRAC Direct **NOTE:** The micro USB 2.0 compliant port can only be used as an iDRAC Direct or a management port. • One optional USB 3.0-compliant port	• Two USB 3.0-compliant ports	• One internal USB 3.0-compliant port

NIC ports

The PowerEdge R840 system supports up to four Network Interface Controller (NIC) ports that are integrated on the network daughter card (NDC), and are available in the following configurations:

- Four RJ-45 ports that support 10 Mbps, 100 Mbps, and 1000 Mbps
- Four RJ-45 ports that support 100 M, 1 G, and 10 Gbps
- Four RJ-45 ports, where two ports support maximum of 10 G and the other two ports maximum of 1 G
- Two RJ-45 ports that support up to 1 Gbps and 2 SFP+ ports that support up to 10 Gbps
- Four SFP+ ports that support up to 10 Gbps
- Two SFP28 ports that support up to 25 Gbps

VGA ports

The Video Graphic Array (VGA) port enables you to connect the system to a VGA display.

The PowerEdge R840 system supports two 15-pin VGA ports, one each, on the front and back of the system.

Serial connector

The serial connector on the rear of system for serial device connection and console redirection.

The PowerEdge R840 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

IDSDM or vFlash module

The PowerEdge R840 system supports optional Internal Dual SD module (IDSDM) or vFlash module. In 14th generation of PowerEdge servers, IDSDM or vFlash module is combined into a single card module, and are available in these configurations:

- vFlash or
- vFlash and IDSDM

The IDSDM or vFlash module is located in a slot on the back of the system. The module supports three microSD cards; two cards for IDSDM and one card for vFlash. The following capacities are supported:

- IDSDM: 16 GB, 32 GB, 64 GB
- vFlash: 16 GB

NOTE: There are two dip switches on the IDSDM or vFlash module for write-protection.

NOTE: One IDSDM card slot is dedicated for redundancy.

NOTE: Use Dell branded microSD cards associated with the IDSDM or vFlash configured systems.

Video specifications

R840 servers support the integrated Matrox G200eW3 graphics controller with 16 MB of video frame buffer.

The following table describes the supported video resolution options.

Table 10. Supported video resolution options

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

NOTE: 1920 x 1080 and 1920 x 1200 resolutions are supported only in reduced blanking mode.

Environmental specifications

NOTE: For additional information about environmental certifications, see the *Product Environmental Datasheet* located with the Manuals & Documents at Dell.com/poweredgemanuals.

Table 11. Temperature specifications

Temperature	Specifications
Storage	–40–65°C (–40 °F–149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10–35°C (50 °F–95°F) with no direct sunlight on the equipment
Maximum temperature gradient (operating and storage)	20°C/h (36°F/h)

Table 12. Relative humidity specifications

Relative humidity	Specifications
Storage	5% to 95% RH with 33°C (91°F) maximum dew point. Atmosphere must be noncondensing at all times.
Operating	10% to 80% RH with 29°C (84.2°F) maximum dew point.

Table 13. 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 14. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 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 up to 2 ms.

Table 15. Maximum altitude specifications

Maximum altitude	Specifications
Operating	3048 m (10,000 ft)
Storage	12,000 m (39,370 ft)

Table 16. Operating temperature derating specification

Operating temperature derating	Specifications
Up to 35°C (95°F)	Maximum temperature is reduced by 1°C/300 m (1°F/547 ft), above 950 m (3,117 ft).
35–40 °C (95–104 °F)	Maximum temperature is reduced by 1°C/175 m (1°F/319 ft), above 950 m (3,117 ft).
40–45 °C (104 °F–113 °F)	Maximum temperature is reduced by 1°C/125 m (1°F/228 ft), above 950 m (3,117 ft).

Standard operating temperature

Table 17. Standard operating temperature specifications

Standard operating temperature	Specifications
Continuous operation (for altitude less than 950 m or 3117 ft)	10 °C–35°C (50 °F–95°F) with no direct sunlight on the equipment.

Expanded operating temperature

Table 18. Expanded operating temperature specifications

Expanded operating temperature	Specifications
Continuous operation	5 °C–40°C at 5% to 85% RH with 29°C dew point. **NOTE:** Outside the standard operating temperature (10 °C–35°C), the system can operate continuously in temperatures as low as 5°C and as high as 40°C. For temperatures 35 °C – 40°C, derate maximum allowable temperature by 1°C per 175 m (1°F per 319 ft.) above 950 m (3,1171 ft.).
≤ 1% of annual operating hours	–5 °C–45°C at 5% to 90% RH with 29°C dew point. **NOTE:** Outside the standard operating temperature (10 °C–35°C), the system can operate down to –5°C or up to 45°C for a maximum of 1% of its annual operating hours. For temperatures 40 °C – 45°C, derate maximum allowable temperature by 1°C per 125 m (1°F per 228 ft.) above 950 m (3.117 ft.).

NOTE: When operating in the expanded temperature range, the performance of the system may be impacted.

NOTE: When operating in the expanded temperature range, ambient temperature warnings may be reported on the LCD panel and in the System Event Log.

Expanded operating temperature restrictions

- The operating temperature is specified for a maximum altitude of 950 m for Fresh Air Cooling.
- Do not perform cold start below 5°C due to hard drive constraints.
- Apache Pass DIMM, NVDIMM, PCIe SSD, and NVMe are not supported.
- Tape Backup Unit (TBU) is not supported in Fresh Air.
- LRDIMM >32 GB is not supported in x4 sockets configuration.
- DCPMMs are not supported.
- Rear installed drives and GPU configuration are not supported.
- Redundant power supplies are required.
- Non Dell qualified peripheral cards and /or peripheral cards greater than 25 W are not supported.
- Intel FPGA is not supported.
- 205 W SKUs, 200W/18C, 165W/12C, and 150W_8C processor are not supported on all x4 socket processor configurations.
- 165 W SKUs, 130W/8C, 115W/6C, and 105W_4C are not supported on the x4 socket processor configurations except front x8 inch SAS/SATA drives configurations.

Ambient temperature limitations

NOTE: The ambient temperature limit must be adhered to ensure proper cooling and to avoid excess processor throttling, which may impact system performance.

Table 19. Configuration-based ambient temperature restrictions with GPGPU

TDP(W)	R840 • 8 x 2.5 inch SAS/SATA • 2 x CPU • 2 x GPGPU			R840 • 8 x 2.5 inch SAS/SATA • 4 x CPU • 2 x GPGPU			R840 • 24 x 2.5 inch SAS/SATA • 2 x CPU • 2 x GPGPU			R840 • 24 x 2.5 inch SAS/SATA • 4 x CPU • 2 x GPGPU			R840 • 24 x 2.5 inch NVme • 4 x CPU • 2 x GPGPU		
	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30
205	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
200	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
165 (Gold 6146)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
150 (Gold 6144 and 6244)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
150 (Gold 6240Y)	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y
165	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
150	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
140	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
130 (Gold 6134)	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
125	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
115 (Gold 6128)	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
115	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
105(Gold 5122 and 8156)	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
105(Gold 5222 and 8256)	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
105	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
100	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
85	N	Y	Y	N	Y	Y	N	Y	Y	N	N	Y	N	N	Y
70	N	Y	Y	N	Y	Y	N	Y	Y	N	N	N	N	N	N

N= Not Supported

Y= Supported

Table 20. Configuration-based ambient temperature restrictions with PCIe

TDP(W)	R840 • 8 x 2.5 inch SAS/SATA • 2 x CPU • 6 x PCIe			R840 • 8 x 2.5 inch SAS/SATA • 4 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch SAS/SATA • 2 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch SAS/SATA • 4 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch NVMe • 4 x CPU • 6 x PCIe		
	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30
205	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y
200	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y

Table 20. Configuration-based ambient temperature restrictions with PCIe (continued)

TDP(W)	R840 • 8 x 2.5 inch SAS/SATA • 2 x CPU • 6 x PCIe			R840 • 8 x 2.5 inch SAS/SATA • 4 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch SAS/SATA • 2 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch SAS/SATA • 4 x CPU • 6 x PCIe			R840 • 24 x 2.5 inch NVMe • 4 x CPU • 6 x PCIe		
	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30	C40E45	35	30
165 (Gold 6146)	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y
150 (Gold 6144 and 6244)	Y	Y	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y
150 (Gold 6240Y)	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
165	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
150	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
140	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
130 (Gold 6134)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
125	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
115 (Gold 6128)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
115	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
105(Gold 5122 and 8156)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
105(Gold 5222 and 8256)	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y
105	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
100	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
85	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
70	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y

N=Not Supported

Y=Supported

NOTE: C40E45 = Continuous operating temperature at 40°C, and Excursion temperature at 45°C.

Particulate and gaseous contamination specifications

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

Table 21. 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.

Table 21. Particulate contamination specifications (continued)

Particulate contamination	Specifications
	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 22. Gaseous contamination specifications

Gaseous contamination	Specifications
Copper Coupon Corrosion	<300 Å/month per Class G1 as defined by ANSI/ ISA71.04-1985.
Silver Coupon Corrosion	<200 Å/month as defined by AHSRAE TC9.9.

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