

# Dell EMC PowerEdge XR12

## Technical Specifications

## 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 specifications
- Ports and connectors specifications
- Video specifications
- Environmental specifications

# Chassis dimensions

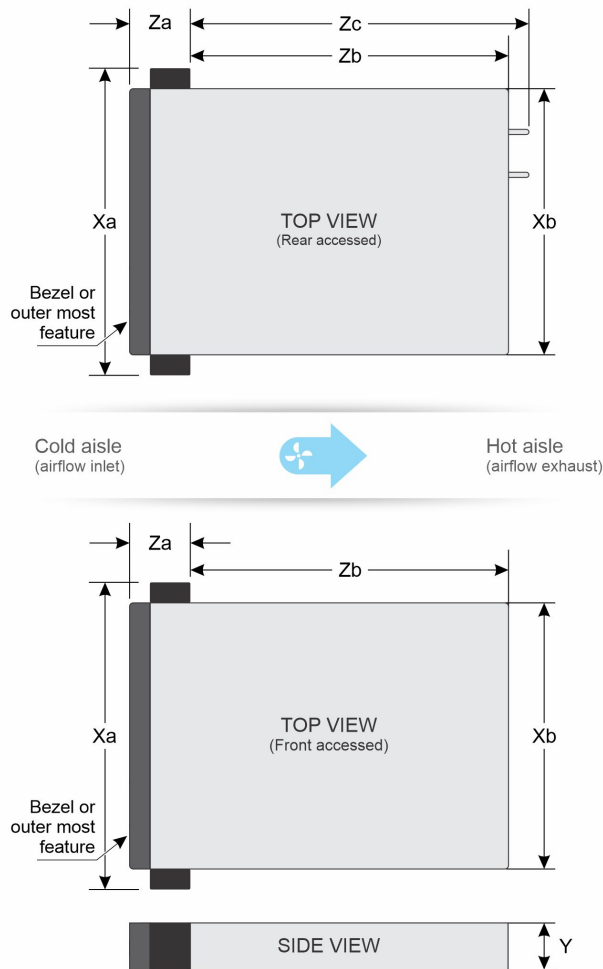


Figure 1. Chassis dimensions

Table 1. Chassis dimensions

Drives	$X_a$	$X_b$	$Y$	$Z_a$	$Z_b$	$Z_c$
6 x 2.5-inch drives for Rear Accessed configuration	482.6 mm (19 inches)	434 mm (17.08 inches)	86.8 mm (3.41 inches)	31 mm (1.22 inches) Without bezel 45.0 mm (1.77 inches) With bezel	400 mm (15.74 inches) Ear to rear wall	432 mm (17 inches) Ear to rear wall
6 x 2.5-inch drives for Front Accessed configuration	482.6 mm (19 inches)	434 mm (17.08 inches)	86.8 mm (3.41 inches)	63 mm (2.48 inches) Without bezel 153 mm (6.02 inches)	400 mm (15.74 inches) Ear to rear wall	N/A

# System weight

**Table 2. PowerEdge XR12 system weight**

System configuration	Maximum weight (with all drives/SSDs/bezel)
6 x 2.5-inch system with Rear Accessed configuration	19.5 kg (43.00 pound)
6 x 2.5-inch system with Front Accessed configuration	20.5 kg (45.2 pound)

# Processor specifications

**Table 3. PowerEdge XR12 processor specifications**

Supported processor	Number of processor supported
3 <sup>rd</sup> Generation Intel Xeon Scalable processor with up to 36 cores	One

# PSU specifications

The PowerEdge XR12 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	5459 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1400 W	1050 W	NA	12 A–8 A
	NA	5459 BTU/hr	NA	240 V DC	NA	NA	1400 W	6.6 A
1100 W	NA	4266 BTU/hr	NA	-48-(-60) V DC, autoranging	NA	NA	1100 W	27 A
800 W Mixed Mode	Platinum	3139 BTU/hr	50/60 Hz	100–240 V AC, autoranging	800 W	800 W	NA	9.2 A–4.7 A
	NA	3139 BTU/hr	NA	240 V DC	NA	NA	800 W	3.8 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 Enterprise Infrastructure Planning Tool available at [Dell.com/ESSA](https://www.dell.com/ESSA).

# Supported operating systems

The PowerEdge XR12 system supports the following operating systems:

- Canonical Ubuntu Server LTS

- VMware ESXi
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi
- RHEL Realtime

For more information, go to [www.dell.com/ossupport](http://www.dell.com/ossupport).

## Cooling fans specifications

The PowerEdge XR12 system supports six Very High Performance fans and requires all six fans to be installed.

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

## System battery specifications

The PowerEdge XR12 system supports CR 2032 3.0-V lithium coin cell system battery.

## Expansion card riser specifications

The PowerEdge XR12 system supports up to five PCI express (PCIe) Gen 4 expansion cards.

**Table 5. Expansion card slots supported on the system board**

PCIe slot	Risers	PCIe slot height	PCIe slot length	PCIe lane slot width
Slot 2	Riser 2A	Full height	Full length	x16
Slot 1/2	Riser 2B*	Full height	Full length	x8+x8
Slot 3	Riser 1A**	Low Profile	Half Length	x16
Slot 3	Riser 1B*	Low Profile	Half Length	x8
Slot 4	Riser 3A	Full height	Full length	x16
Slot 4/5	Riser 3B*	Full height	Full length	x8+x8

**NOTE:** \* indicates that the PCIe connectors on Riser 1B, Riser 2B, Riser 3B are mechanically x16 slots.

**NOTE:** \*\* indicates that the Riser 1A is supported only on Front Accessed configuration.

**CAUTION:** Do not install GPUs, network cards, or other PCIe devices on your system that are not validated and tested by Dell. Damage caused by unauthorized and invalidated hardware installation will null and void the system warranty.

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

## Memory specifications

The PowerEdge XR12 system supports the following memory specifications for optimized operation:

**Table 6. Memory specifications**


DIMM type	DIMM rank	DIMM capacity	Single processor	
			Minimum RAM	Maximum RAM
RDIMM	Single rank	8 GB	8 GB	64 GB
	Dual rank	16 GB	16 GB	128 GB
		32 GB	32 GB	256 GB
		64 GB	64 GB	512 GB
LRDIMM	Quad rank	128 GB	128 GB	1024 GB
		256 GB	256 GB	2048 GB
Intel Optane PMem 200 Series	Single rank	128 GB	128 GB	512 GB
		256 GB	256 GB	1024 GB

**Table 7. Memory module sockets**

Memory module sockets	Speed
8, 288-pin	3200 MT/s

**Table 8. Supported Intel Optane PMem 200 Series for processor configurations**

Configuration	Description	Memory population rules		
		RDIMMs	LRDIMM	Intel Optane PMem 200 Series
Configuration 1	4 x RDIMMs, 4 x Intel Optane PMem 200 Series	Processor1 {A1, A2, A3, A4}	-	Processor1 {A5, A6, A7, A8}
	4 x LRDIMMs, 4 x Intel Optane PMem 200 Series	-	Processor1 {A1, A2, A3, A4}	Processor1 {A5, A6, A7, A8}
Configuration 2	6 x RDIMMs, 1 x Intel Optane PMem 200 Series	Processor1 {A1, A2, A3, A4, A5, A6}	-	Processor1 {A7}
	6 x LRDIMMs, 1 x Intel Optane PMem 200 Series	-	Processor1 {A1, A2, A3, A4, A5, A6}	Processor1 {A7}

 **NOTE:** Memory DIMM slots are not hot pluggable.

## Storage controller specifications

**Table 9. PowerEdge XR12 storage controller specifications**

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

**NOTE:** \* indicates the H355 will replace H345 from Dec'21.

## Drives specifications

The PowerEdge XR12 system supports 6 x 2.5-inch hot-swappable SAS, SATA, or NVMe SSDs.

**NOTE:** NVMe drives are not supported for Front Accessed configurations with Riser 1A.

## Ports and connectors specifications

### USB ports specifications

**Table 10. PowerEdge XR12 USB ports specifications for Rear Accessed configuration**

Front		Rear		Internal	
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-compliant port for iDRAC Direct	One	USB 3.0-compliant ports	One		

**Table 11. PowerEdge XR12 USB ports specifications for Front Accessed configuration**

Front		Internal	
USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	Two	Internal USB 3.0-compliant port	One
USB 3.0-compliant ports	One		
Micro-USB 2.0-compliant port for iDRAC Direct	One		

**NOTE:** Internal USB port is available on Riser 1B and USB memory key is supported..

**NOTE:** USB memory key is not supported on Riser 1A.

### GPU specifications

The PowerEdge XR12 system supports up two 70 W or 150 W (Single Width/ Full Height/ Full Length) GPU or two 300 W (Double Width/ Full Height/ Full Length) GPU based on riser configuration.

### Serial connector specifications

The PowerEdge XR12 system supports one 9-pin connector Data Terminal Equipment (DTE) 16550-compliant serial connector located on the rear of the Rear Accessed configuration and on the front of the Front Accessed configuration.

### NIC port specifications

The PowerEdge XR12 system supports 4 embedded LOM ports that provide 4x 25GbE SFP+. These ports support 10GbE and 25GbE.

There is also a dedicated iDRAC management port that supports 1GbE.

## VGA port specification

The PowerEdge XR12 system supports one DB-15 Video Graphics Array (VGA) port on the rear of the Rear Accessed configuration and one DB-15 VGA port on the front of the Front Accessed configuration.

## Video specifications


The PowerEdge XR12 system supports integrated Matrox G200 graphics controller with 16 MB of video frame buffer.

**Table 12. 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

The PowerEdge XR12 system operates in these environmental categories: ASHRAE A2/A3/A4 and Rugged.

 **NOTE:** For additional information about environmental certifications, see the Product Environmental Datasheet that is located with the Documentation > Regulatory Information on [www.dell.com/support/home](http://www.dell.com/support/home).

**Table 13. Continuous operation specifications for ASHRAE A2**

	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	10–35°C (50–95°F) with no direct sunlight on the equipment
Humidity percent range (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 14. Continuous operation specifications for ASHRAE A3**

	Allowable continuous operations
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–40°C (41–104°F) with no direct sunlight on the equipment
Humidity percent range (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 15. Continuous operation specifications for ASHRAE A4**

	<b>Allowable continuous operations</b>
Temperature range for altitudes <= 900 m (<= 2953 ft)	5–45°C (41–113°F) with no direct sunlight on the equipment
Humidity percent range (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 16. Continuous operation specifications for Rugged**

	<b>Allowable continuous operations</b>
Temperature range for altitudes <= 900 m (<= 2953 ft)	(-5)–55°C (23–131°F) with no direct sunlight on the equipment
Humidity percent range (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/80 m (1.8°F/410 Ft) above 900 m (2953 Ft).

**Table 17. Common environmental specifications for ASHRAE A2, A3, A4, and Rugged**

	<b>Allowable continuous operations</b>
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 (41°F in 15 minutes), 5°C in an hour* (41°F in an hour) for tape <i>i</i> <b>NOTE:</b> * - Per ASHRAE thermal guidelines for tape hardware, these are not instantaneous rates of temperature change.
Non-operational temperature limits	-40°C to 65°C (-104°F 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 for the system**

<b>Maximum vibration</b>	<b>Specifications</b>
Operating	MIL-STD-810H, Method 514.8, 1.04 Grms, 2-500 Hz, Random Vibration, Figure 514.8D-11
Storage	<ul style="list-style-type: none"> <li>• MIL-STD-810H, Method 514.8, Category 4, Figure 514.8C-2, 5 -500 Hz, 60 minutes/axis</li> <li>• MIL-STD-810H, Method 514.8, Category 24, Figure 514.8E-1, 20-2000 Hz, 60 minutes/axis</li> </ul>

**Table 19. Maximum shock pulse specifications for the system**

<b>Maximum shock pulse</b>	<b>Specifications</b>
Operating	<ul style="list-style-type: none"> <li>• MIL-STD-810H, Method 516.8, Procedure I, 11ms, 20G</li> <li>• MIL-STD-810H, Method 516.8, Procedure I, 11ms, 40G (SSD),</li> </ul>
Operating (Navy)	MIL-DTL-901E, Grade A, Class 2, Type A, in approved military transit case
Storage	<ul style="list-style-type: none"> <li>• MIL-STD-810H, Method 516.8, Procedures I, 11 ms, 40G (with SSD).</li> <li>• MIL-STD-810H, Method 516.8, Procedures I, 11 ms, 40G</li> </ul>

## Particulate and gaseous contamination specifications

The following table defines the limitations that prevent any equipment damage or 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>i</i> <b>NOTE:</b> 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>i</i> <b>NOTE:</b> 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>i</i> <b>NOTE:</b> This condition applies to data center and non-data center environments.
Corrosive dust	<ul style="list-style-type: none"> <li>Air must be free of corrosive dust.</li> <li>Residual dust present in the air must have a deliquescent point less than 60% relative humidity.</li> </ul> <i>i</i> <b>NOTE:</b> 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.

## Rugged certifications and specifications

The PowerEdge XR12 support the rugged environment space for temperatures up to 55°C through custom configurations. These configurations are geared for the Telecom (or Telco) and Military industries and hence meet industry-specific standards in addition to the maximum temperature requirement of 55°C. The Telco configurations will be tested to the NEBS requirements outlined in the GR-63 and GR-1089 Telcordia specifications. The Military configurations will be tested to: MIL-STD-810H, MIL-DTL-901E and MIL-STD-461G.

**Table 22. Rugged certifications and specifications**

Certifications	Specifications
<b>Operational Temperature</b>	-5°C to 55°C 55°C continuous operation per MIL810H Method 501.7 Proc II -5°C continuous operation per MIL 810H Method 502.7 Proc II
<b>Operational Shock</b>	MIL-STD-810H, Method 516.8, Procedure I, 11ms, 40 G (SSD)
<b>Operational Shock (Navy)</b>	MIL-DTL-901E, Grade A, Class 2, Type A, in approved military transit case

**Table 22. Rugged certifications and specifications (continued)**

<b>Certifications</b>	<b>Specifications</b>
<b>Non-Operational Shock</b>	MIL-STD-810H, Method 516.8, Procedures V, 11 ms, 40 G (with SSD)
<b>Operational Vibration</b>	MIL-STD-810H, Method 514.8, 1.04 Grms, 2-500Hz, Random Vibration, Figure 514.8D-11 with SSD
<b>Non-Operational Vibration</b>	MIL-STD-810H, Method 514.8, Category 4, Figure 514.8C-2, 5-500 Hz, 60 minutes/axis with SSD MIL-STD-810H, Method 514.8, Category 24, Figure 514.8E-1, 20-2000 Hz, 60 minutes/axis with SSD
<b>Operational Altitude</b>	MIL-STD-810H, Method 500.6, Proc.II (Operational, Air carriage) 15,000 ft for 1 hour after stabilization
<b>Non-Operational Altitude</b>	MIL-STD-810H, Method 500.6, Proc. I (Storage, Air transport), 40 Kft for 1 hour after stabilization
<b>Conductive/Radiative Immunity</b>	MIL-STD-461G
<b>Sand and Dust (tested with filtered bezel)</b>	MIL-STD-810H, Method 510.7, Procedure I, Blowing dust at 25°C for 6 hours , and an additional 6 hours at 49°C (Climatic Category A1) MIL-STD-810H, Method 510.7, Procedure II, Blowing sand at 49°C (Climatic Category A1), wind velocity of 29 m/s, sand concentration of 2.2 g/m <sup>3</sup> , 6 hours
<b>NEBS Level 3</b>	GR-63-CORE and GR-1089-CORE

## Thermal restriction matrix

**Table 23. Thermal restriction matrix for processor and fans**

<b>Configuration / Processor TDP</b>	<b>Front and Rear Accessed configuration with filtered bezel</b>	<b>Maximum Ambient Temperature</b>
105 W	VHP fan Ext. HSK	55°C
120 W	VHP fan Ext. HSK	55°C
135 W	VHP fan Ext. HSK	55°C
140 W	VHP fan Ext. HSK	55°C
150 W	VHP fan Ext. HSK	55°C
165 W	VHP fan Ext. HSK	35°C
185 W	VHP fan Ext. HSK	35°C
205 W	VHP fan Ext. HSK	35°C
225 W	VHP fan	35°C

**Table 23. Thermal restriction matrix for processor and fans (continued)**

Configuration / Processor TDP	Front and Rear Accessed configuration with filtered bezel	Maximum Ambient Temperature
	Ext. HSK	

**NOTE:** A few specific processors having TDP greater than 150 W, can support ambient temperature greater than 35°C.

**Table 24. Label reference**

Label	Description
VHP fan	Very High Performance fan
Ext.	Extended
HSK	Heat sink

**Table 25. Thermal restriction matrix for GPUs**

	Rear Accessed Configuration	Front Accessed Configuration
GPU	Maximum Ambient Temperature	Maximum Ambient Temperature
Nvidia T4	50C	55C
Nvidia A40	35C	35C
Nvidia A100	35C	35C
Nvidia A10	45C	50C
Nvidia A30	35C	35C
Nvidia A2	50C	55C
Nvidia A100 80GB	50C	50C

### Thermal restriction for ASHRAE A3 for Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported except for the following list:
  - 6334, 8 core, 165W
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
  - 6338N, 32 core, 185W
- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 is not supported.
- High temperature spec 85°C active optics cables are required.
- PERC adapter with battery is not supported except for H755.
- NVMe drive is not supported.

### Thermal restriction for ASHRAE A4 for Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported except for the following list:
  - 6334, 8 core, 165W
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
  - 6338N, 32 core, 185W

- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 is not supported.
- High temperature spec 85°C active optics cables are required.
- PERC adapter with battery is not supported.
- NVMe drive is not supported.

## Thermal restriction for Rugged for Rear Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported except for the following list:
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Two PSUs are required in redundant mode. System performance may be reduced in the event of a PSU failure.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 is not supported.
- High temperature spec 85°C active optics cables are required.
- PERC adapter with battery is not supported.
- NVMe drive is not supported.

## Thermal restriction for ASHRAE A3 for Front Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported except for the following list:
  - 6334, 8 core, 165W
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
  - 6338N, 32 core, 185W
- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 greater than 480 GB is not supported.
- NVMe drive is not supported.

## Thermal restriction for ASHRAE A4 for Front Accessed configuration

- Do not perform a cold startup below 5°C
- Processor TDP greater than 150 W are not supported except for the following list:
  - 6334, 8 core, 165W
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
  - 6338N, 32 core, 185W
- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 greater than 480 GB is not supported.
- NVMe drive is not supported.

## Thermal restriction for Rugged for Front Accessed configuration

- Do not perform a cold startup below 5°C

- Processor TDP greater than 150 W are not supported except for the following list:
  - 6338T, 24 core, 165W
  - 6330N, 28 core, 165W
  - 6338N, 32 core, 185W
- 128 GB or greater capacity DIMMs and Intel Optane PMem 200 Series are not supported.
- Non-Dell qualified peripheral cards are not supported.
- PCIe SSD is not supported.
- BOSS M.2 greater than 480 GB is not supported.
- NVMe drive is not supported.
- PERC adapter with battery is not supported except for H755.

## Other Thermal Restrictions

- DIMM blanks are required on empty slots.
- HDD blanks are required on empty slots.
- PCIe blank is required on empty slot 3.
- Processor TDP greater than 150 W are not supported for Riser 1A configuration except for 6338N, 32 core, 185W processor.