


Dell EMC PowerEdge T550

Technical Guide

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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Product overview

Topics:

- [Introduction](#)
- [Product features](#)

Introduction

The Dell™ PowerEdge™ T550 is Dell's latest 2-socket, tower server designed to run complex workloads using highly scalable memory, I/O, and network options. The systems feature the Intel Ice Lake Processor (Socket P+ LGA-4189), up to 16 DIMMs, PCI Express® (PCIe) 4.0 enabled expansion slots, and a choice of network interface technologies to cover NIC. The PowerEdge T550 is a general-purpose platform capable of handling demanding workloads and applications, such as data warehouses, ecommerce, databases, and high-performance computing (HPC).

Product features

The Dell EMC PowerEdge T550 is a two-socket, tower system. It supports up to 16 DDR4 DIMM slot, 24 drives storage capacity, and powered with latest Intel Xeon Scalable processors. The T550 supports complete lifecycle management with the OpenManage portfolio of systems management solutions, including leading remote management with iDRAC9 and Lifecycle Controller.

The Dell EMC PowerEdge T550 is packed with features like:

- Highly optimized air flow design enables tremendous configuration flexibility and industrial leading energy efficiency.
- Support payload data of front PERC, Riser, BOSS S2, backplane, and iDRAC.
- OCP Mezz 3.0 (supported by x8 PCIe lanes).
- Front PERC (fPERC) module with PERC10.5 and PERC11.
- Supports Platinum 600 W AC/DC, Titanium 700 W AC/DC, Platinum 800 W AC/DC, 1100 W AC/DC, 1400 W AC/DC, Titanium1800 W AC/DC and 2400 W AC/DC power supplies.

System features

Topics:

- [Product comparison](#)

Product comparison

Table 1. Product comparison

Features	PowerEdge T550	PowerEdge T640
Processors	Up to two 3 rd Generation Intel Xeon Scalable processors with up to 32 cores per processor	Up to two 2 nd Generation Intel Xeon Scalable processors, up to 28 cores per processor
Memory	DIMM speed <ul style="list-style-type: none"> • Up to 3200 MT/s Memory type <ul style="list-style-type: none"> • RDIMM Memory module slots <ul style="list-style-type: none"> • 16 DDR4 DIMM slots • Supports registered ECC DDR4 DIMM slots only Maximum RAM <ul style="list-style-type: none"> • RDIMM 1 TB 	DIMM speed <ul style="list-style-type: none"> • Up to 2993 MT/s Memory type <ul style="list-style-type: none"> • RDIMM • LRDIMM • NVDIMM Memory module slots <ul style="list-style-type: none"> • 24 DDR4 DIMM slots (12 NVDIMM only) • Supports registered ECC DDR4 DIMM slots only Maximum RAM <ul style="list-style-type: none"> • RDIMM 3 TB • LRDIMM 3 TB • NVDIMM 192 GB
Storage controllers	<ul style="list-style-type: none"> • Internal controllers: PERC H345, PERC H355, PERC H755, H755N, HBA355i • Internal Boot: Internal Dual SD Module or Boot Optimized Storage Subsystem (BOSS-S2): HWRAID 2 x M.2 SSDs or USB • External controller (RAID): PERC H840 • External HBAs (non-RAID): HBA355e • Software RAID: S150 	<ul style="list-style-type: none"> • Internal controllers: PERC H330, H730P, H740P, HBA330 • Internal Boot: Boot Optimized Storage Subsystem (BOSS) - HWRAID 2 x M.2 SSDs 240 GB, 480 GB • External controller (RAID): H840, 12 Gbps SAS HBA • Software RAID: S140
Drive bays	Front bays: <ul style="list-style-type: none"> • Up to 8 x 2.5-inch SAS/SATA (HDD) max 120 TB • 16 x 2.5-inch SAS/SATA (HDD) max 240 TB • 24 x 2.5-inch SAS/SATA (HDD) max 360 TB • 8 x 3.5-inch SAS/SATA (HDD/SAS) max 120 TB • 8 x 3.5-inch SAS/SATA (HDD) + 8 x 2.5-inch NVMe (SSD) max 240 TB 	Front bays: <ul style="list-style-type: none"> • Up to 8 or 18 x 3.5-inch SAS/SATA (HDD/SSD), max 216 TB • Up to 16 x 2.5-inch SAS/SATA (HDD/SSD), max 61 TB • Up to 32 x 2.5-inch SAS/SATA (HDD/SDD), max 122 TB • Up to 16 x 2.5-inch with up to 8 NVMe, SAS/SSD/NVMe (HDD/SDD), max 112 TB
Power supplies	<ul style="list-style-type: none"> • 600 W Platinum 100–240 VAC/ 240 VDC • 700 W Titanium 200–240 VAC/240 VDC • 800 W Platinum 100–240 VAC/ 240 VDC • 1100 W Titanium 100–240 VAC/ 240 VDC 	<ul style="list-style-type: none"> • 495 W Platinum • 750 W 240 HVDC Platinum • 750 W Titanium • 1100 W 380 HVDC Platinum

Table 1. Product comparison (continued)

Features	PowerEdge T550	PowerEdge T640				
	<ul style="list-style-type: none"> 1100 W DC/-(48 - 60) V 1400 W Platinum 100–240 VAC/ 240 VDC 1800 W Titanium 200–240 VAC/240 VDC 2400 W Titanium 200–240 VAC/240 VDC 	<ul style="list-style-type: none"> 1100 W AC Platinum 1100 W 48 VDC Platinum 1600 W AC Platinum 2000 W AC Platinum 2400 W AC Platinum 				
Cooling options	<ul style="list-style-type: none"> Air cooling 	<ul style="list-style-type: none"> Air cooling 				
Fans	Standard (STD) fans/High performance (HPR) Silver fans Up to eight hot swap fans	Up to eight hot swap fans				
Dimension	Height: 459.0 mm (18.07 inches)	Height: 443.5 mm (17.05 inches)				
	Width: 200.0 mm (7.87 inches)	Width: 304.5 mm (12.00 inches)				
	Depth: 680.5 mm (26.79 inches) with bezel	Depth: 692.8 mm (27.03 inches) with bezel				
	663.5 mm (28.12 inches) without bezel	659.9 mm (25.98 inches) without bezel				
Form factor	5U tower server	5U tower server				
Embedded management	<ul style="list-style-type: none"> iDRAC9 iDRAC Direct iDRAC RESTful API with Redfish iDRAC Service Manual Quick Sync 2 wireless module <p>i NOTE: iDRAC Direct and Quick Sync 2 are available only as an upsell on T550.</p>	<ul style="list-style-type: none"> iDRAC9 iDRAC Direct iDRAC Service Module Quick Sync 2 wireless module 				
Bezel	Optional security bezel	Optional LCD bezel or security bezel				
OpenManage software	<ul style="list-style-type: none"> OpenManage Enterprise OpenManage Power Manager plug-in OpenManage SupportAssist plug-in OpenManage Update Manager plug-in 	<ul style="list-style-type: none"> OpenManage Enterprise OpenManage Power Center 				
Mobility	OpenManage Mobile	OpenManage Mobile				
Integrations and connections	<table border="0"> <tr> <td> OpenManage Integrations <ul style="list-style-type: none"> BMC TrueSight Microsoft System Center Red Hat Ansible Modules VMware vCenter and vRealize Operations Manager </td> <td> OpenManage Connections <ul style="list-style-type: none"> IBM Tivoli Netcool/OMNIBus IBM Tivoli Network Manager IP Edition Micro Focus Operations Manager Nagios Core Nagios XI </td> </tr> </table>	OpenManage Integrations <ul style="list-style-type: none"> BMC TrueSight Microsoft System Center Red Hat Ansible Modules VMware vCenter and vRealize Operations Manager 	OpenManage Connections <ul style="list-style-type: none"> IBM Tivoli Netcool/OMNIBus IBM Tivoli Network Manager IP Edition Micro Focus Operations Manager Nagios Core Nagios XI 	<table border="0"> <tr> <td> OpenManage Integrations <ul style="list-style-type: none"> BMC TrueSight Microsoft System Center Red Hat Ansible Modules VMware vCenter </td> <td> <ul style="list-style-type: none"> IBM Tivoli Netcool/OMNIBus IBM Tivoli Network Manager IP Edition Micro Focus Operations Manager Nagios Core Nagios XI </td> </tr> </table>	OpenManage Integrations <ul style="list-style-type: none"> BMC TrueSight Microsoft System Center Red Hat Ansible Modules VMware vCenter 	<ul style="list-style-type: none"> IBM Tivoli Netcool/OMNIBus IBM Tivoli Network Manager IP Edition Micro Focus Operations Manager Nagios Core Nagios XI
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OpenManage Integrations <ul style="list-style-type: none"> BMC TrueSight Microsoft System Center Red Hat Ansible Modules VMware vCenter 	<ul style="list-style-type: none"> IBM Tivoli Netcool/OMNIBus IBM Tivoli Network Manager IP Edition Micro Focus Operations Manager Nagios Core Nagios XI 					
Security	<ul style="list-style-type: none"> Chassis Intrusion Alert Digitally 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 	<ul style="list-style-type: none"> Cryptographically signed firmware Secure Boot Secure Erase Silicon Root of Trust System Lockdown (requires iDRAC9 Enterprise or Datacenter) TPM 1.2/2.0 (optional) 				

Table 1. Product comparison (continued)

Features	PowerEdge T550	PowerEdge T640	
Embedded NIC	2 x 1 GbE LOM	2 x 10 GbE	
Networking options	OCP x16 Mezz 3.0	-	
GPU options	Up to two double wide 300 W, or five single wide 70 W accelerators	Up to four double wide 300 W or eight single wide 150 W accelerators	
Ports	<p>Front ports</p> <p>There are two SKUs:</p> <ul style="list-style-type: none"> ● Base: Status LED only <ul style="list-style-type: none"> ○ 1 x USB 2.0 ○ 1 x USB 3.0 ● Upsell: Status LED only and Quick Sync 2 <ul style="list-style-type: none"> ● 1 x USB 2.0 ● 1 x USB 3.0 ● 1 x iDRAC Direct (Micro-AB USB) port 	<p>Rear ports</p> <ul style="list-style-type: none"> ● 1 x USB 2.0 ● 1 x iDRAC ethernet port ● 1 x USB 3.0 ● 2 x Ethernet ● 1 x VGA 	<p>Front ports</p> <ul style="list-style-type: none"> ● 1 x Dedicated iDRAC micro-USB ● 1 x USB 2.0 ● 1 x USB 3.0 ● 6 x USB 2.0/3.0
	Internal Port: 1 x USB 2.0		
PCIe	3 x PCIe Gen4 slots (all x16) + 1 x PCIe Gen3 slot (x8) + Upsell: up to 2 PCIe x16 DW for GPU	8 x PCIe Gen 3 slots (4 x 8) 8 x Gen 3 slots (4 x 16)	
Operating System and Hypervisors	<ul style="list-style-type: none"> ● Canonical Ubuntu Server LTS ● Citrix Hypervisor ● Windows Server with Hyper-V ● Red Hat Enterprise Linux ● SUSE Linux Enterprise Server ● VMware ESXi <p>For specifications and interoperability details, see Dell EMC Enterprise Operating Systems on Servers, Storage, and Networking page at Dell.com/OSsupport.</p>	<ul style="list-style-type: none"> ● Canonical Ubuntu Server LTS ● Citrix Hypervisor ● Windows Server LTSC with Hyper-V ● Red Hat Enterprise Linux ● SUSE Linux Enterprise Server ● VMware ESXi <p>For specifications and interoperability details, see Dell EMC Enterprise Operating Systems on Servers, Storage, and Networking page at Dell.com/OSsupport.</p>	

Chassis views and features

Topics:

- Front view of the system
- Rear view of the system
- Inside the system
- Quick Resource Locator for PowerEdge T550 system

Front view of the system



Figure 1. Front view of 24 x 2.5-inch drive system

Table 2. Features available on the front of the system





Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .
5	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
6	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
7	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
8	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.



Figure 2. Front view of 16 x 2.5-inch drive system

Table 3. Features available on the front of the system





Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .

Table 3. Features available on the front of the system (continued)

Item	Ports, panels, and slots	Icon	Description
5	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
6	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
7	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
8	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.

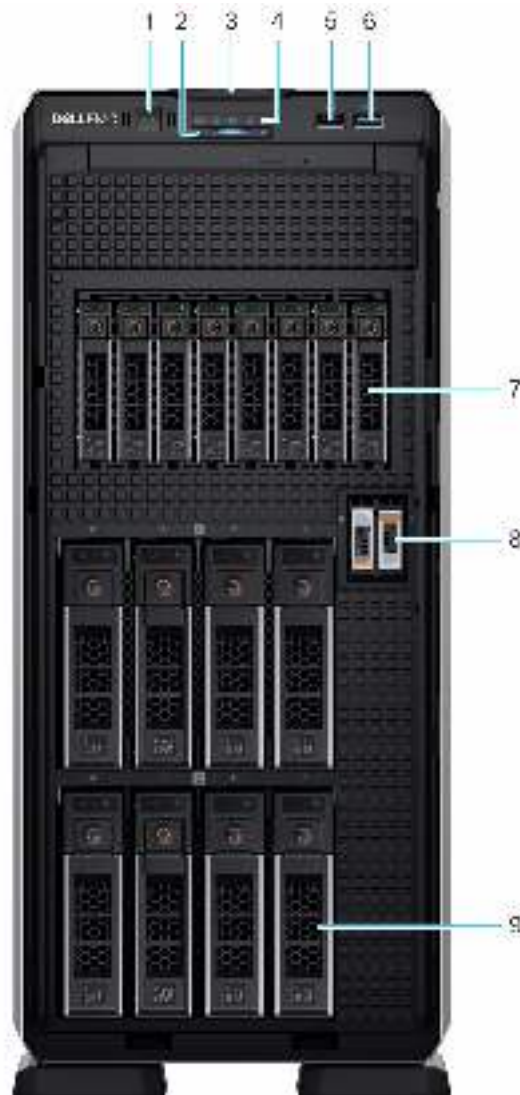


Figure 3. Front view of 8 x 3.5-inch + 8 x 2.5-inch drive system

Table 4. Features available on the front of the system


Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.

Table 4. Features available on the front of the system (continued)




Item	Ports, panels, and slots	Icon	Description
2	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .
5	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
6	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
7	NVMe drives	N/A	Enables you to install NVMe drives that are supported on your system.
8	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
9	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.



Figure 4. Front view of 8 x 3.5-inch drive system

Table 5. Features available on the front of the system



Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .

Table 5. Features available on the front of the system (continued)



Item	Ports, panels, and slots	Icon	Description
5	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
6	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
7	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
8	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.



Figure 5. Front view of 8 x 3.5-inch drive system (upsell configuration)

Table 6. Features available on the front of the system


Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.

Table 6. Features available on the front of the system (continued)





Item	Ports, panels, and slots	Icon	Description
2	iDRAC Quick Sync 2 wireless indicator (optional)	N/A	Quick Sync 2 (wireless): Indicates a Quick Sync enabled system. The Quick Sync feature is optional. This feature allows management of the system by using mobile devices called as OpenManage Mobile (OMM) feature. Using iDRAC Quick Sync 2 with OpenManage Mobile (OMM) aggregates hardware or firmware inventory and various system level diagnostic and error information that can be used in troubleshooting the system. For more information, see the iDRAC User's Guide available at https://www.dell.com/idracmanuals NOTE: The iDRAC Quick Sync 2 indicator is available only on certain configurations.
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .
5	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
6	iDRAC Direct port (Micro-AB USB)		The iDRAC Direct port (Micro-AB USB) enables you to access the iDRAC direct Micro-AB USB features. For more information, see the https://www.dell.com/idracmanuals . NOTE: You can configure iDRAC Direct by using a USB to micro USB (type AB) cable, which you can connect to your laptop or tablet. Cable length should not exceed 3 feet (0.91 meters). Performance could be affected by cable quality.
7	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
8	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
9	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
10	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.



Figure 6. Front view of 8 x 2.5-inch drive system

Table 7. Features available on the front of the system





Item	Ports, panels, and slots	Icon	Description
1	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. NOTE: Press the power button to gracefully shut down an ACPI-compliant operating system.
2	System health and ID indicator		Indicates the status of the system. For more information about System health and system ID indicator codes, see the www.dell.com/poweredgemanuals .
3	Information tag	N/A	The Information tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, then the Information tag also contains the iDRAC secure default password.
4	Status LED indicators	N/A	Enables you to identify any failed hardware components. There are up to five status LEDs and an overall system health LED bar. For more information about Status LED indicators, see the www.dell.com/poweredgemanuals .

Table 7. Features available on the front of the system (continued)

Item	Ports, panels, and slots	Icon	Description
5	USB 2.0 port		The USB ports are 4-pin, 2.0-compliant. These ports enable you to connect USB devices to the system.
6	USB 3.0 port		The USB ports are 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
7	BOSS S2 module (optional)	N/A	This slot supports the BOSS S2 module.
8	Drive	N/A	Enables you to install SAS/SATA drives that are supported on your system.

NOTE: For more information, see the *Dell EMC PowerEdge T550 Technical Specifications* on the product documentation page.

Rear view of the system

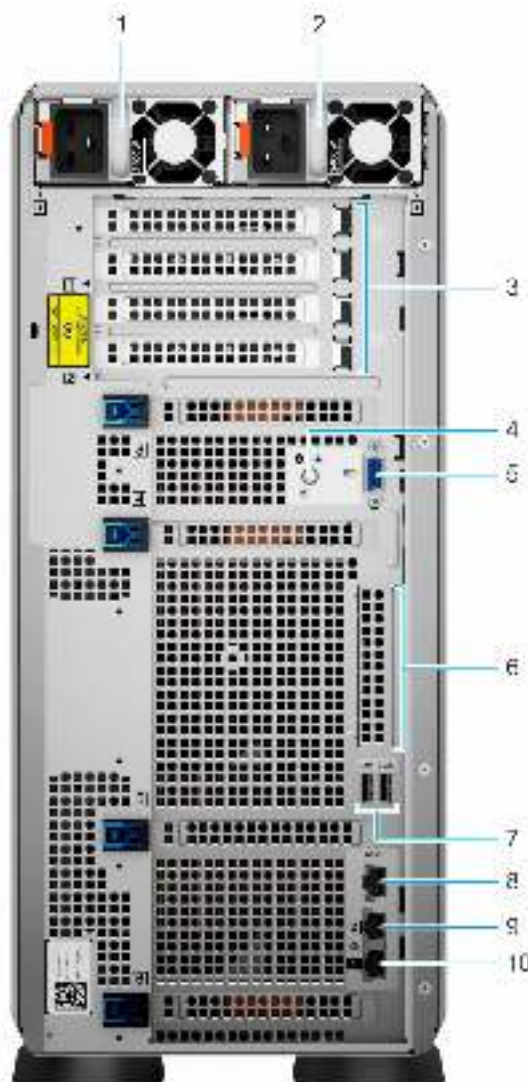







Figure 7. Rear view of the system

Table 8. Rear view of the system

Item	Ports, panels, or slots	Icon	Description
1	Power supply unit (PSU 1)	N/A	This is the primary PSU of the system. For more information about the PSU configurations, see www.dell.com/poweredgemanuals .
2	Power supply unit (PSU 2)	N/A	This PSU provides redundancy to the system. For more information about the PSU configurations, see www.dell.com/poweredgemanuals .
3	PCIe expansion card slots (4)	N/A	Enables you to connect PCI Express expansion cards.
4	System identification button		<p>Press the system ID button:</p> <ul style="list-style-type: none"> To locate a particular system within a rack. To turn the system ID on or off. <p>To reset iDRAC, press and hold the button for 16 seconds.</p> <p>NOTE:</p> <ul style="list-style-type: none"> To reset iDRAC using system ID, ensure that the system ID button is enabled in the iDRAC setup. If the system stops responding during POST, press and hold the system ID button (for more than five seconds) to enter the BIOS progress mode.
5	VGA port		Enables you to connect a display device to the system.
6	OCP NIC port (optional)	N/A	This port supports OCP 3.0. The NIC ports are integrated on the OCP card which is connected to the system board
7	USB ports (2)		These ports are USB Type A compliant.
8	iDRAC dedicated port	iDRAC	This RJ-45 port enables you to remotely access iDRAC. For more information, see the iDRAC User's Guide at www.dell.com/poweredgemanuals .
9	NIC ports (2)		The NIC ports that are integrated on the system board provide network connectivity. These NIC ports can also be shared with iDRAC when iDRAC network settings is set to shared mode.
10	NIC ports (1)		The NIC ports that are integrated on the system board provide network connectivity. These NIC ports can also be shared with iDRAC when iDRAC network settings is set to shared mode.

NOTE: For more information, see the *Dell EMC PowerEdge T550 Technical Specifications* on the product documentation page.

Inside the system

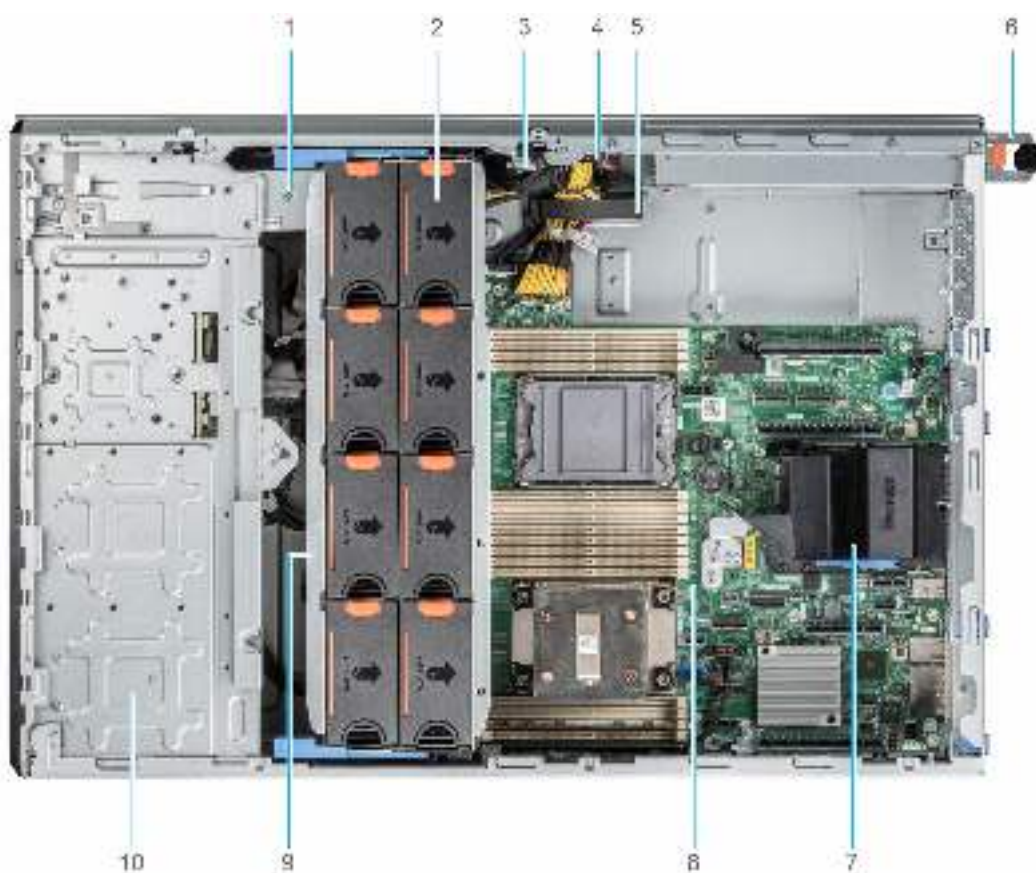


Figure 8. Inside the system for 24 x 2.5-inch configuration

- | | |
|-------------------------|---------------------------|
| 1. Tape backup unit | 2. Cooling fan |
| 3. Intrusion switch | 4. Power interposer board |
| 5. Cable retention clip | 6. PSU 1 |
| 7. OCP air shroud | 8. System board |
| 9. Cooling fan cage | 10. 2.5-inch drive bay |

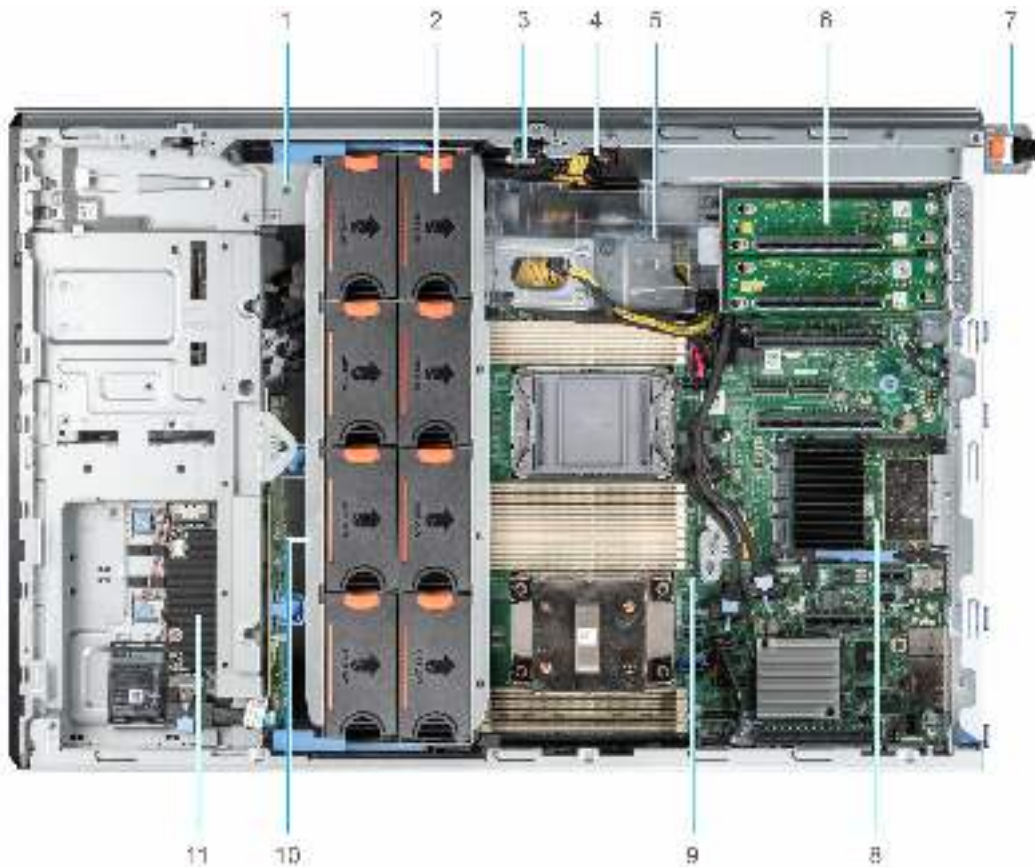


Figure 9. Inside the system for 8 x 3.5-inch + 8 x 2.5-inch configuration

- | | |
|-----------------------|---------------------------|
| 1. Tape backup unit | 2. Cooling fan |
| 3. Intrusion switch | 4. Power interposer board |
| 5. GPU card holder | 6. GPU riser |
| 7. PSU 1 | 8. OCP card |
| 9. System board | 10. Cooling fan cage |
| 11. Front PERC module | |

Quick Resource Locator for PowerEdge T550 system



Figure 10. Quick Resource Locator for PowerEdge T550 system

Processor



Topics:

- [Processor features](#)

Processor features

The 3rd Generation Xeon® Scalable Processors stack is the next generation data center processor offering with the latest features, increased performance, and incremental memory options. This latest generation Xeon Scalable processor supports usages from entry designs that are based on Intel Xeon Silver processors to advanced capabilities offered in new Intel Xeon Platinum processor.

The following lists the features and functions that are in the upcoming 3rd Generation Intel® Xeon Scalable Processor offering:

- Faster UPI with 3 Intel Ultra Path Interconnect (Intel UPI) at 11.2 GT/s (supported in gold and platinum options)
- More, faster I/O with PCI Express 4 and up to 64 lanes (per socket) at 16 GT/s
- Enhanced Memory Performance with support for up to 3200 MT/s DIMMs
- Increased memory capacity with up to eight channels and up to 256 GB DDR4 DIMM support

Supported processors

Table 9. Supported processors

Tier	Proc	Clock Speed (GHz)	Cache (M)	UPI (GT/s)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	BPS Enabled	TDP
Gold	6338	2	36	11.2	32	64	Turbo	3200	6 TB	Y	205 W
Gold	6338T	2.1	48	11.2	32	64	Turbo	3200	6 TB	Y	165 W
Gold	6326	2.8	24	11.2	16	32	Turbo	3200	6 TB	Y	185 W
Gold	6314U	2.3	48	11.2	32	64	Turbo	3200	6 TB	Y	205 W
Gold	6312U	2.4	36	11.2	24	48	Turbo	3200	6 TB	Y	185 W
Gold	5320	2.2	39	11.2	26	52	Turbo	2933	6 TB	Y	185 W
Gold	5320T	2.1	30	11.2	20	40	Turbo	2933	6 TB	Y	150 W
Gold	5318S	2	36	11.2	24	48	Turbo	2933	6 TB	Y	165 W
Gold	5317	2.8	18	11.2	12	24	Turbo	2933	6 TB	Y	150 W
Silver	4316	2.3	30	10.4	20	40	Turbo	2666	6 TB	N	150 W
Silver	4314	2.3	24	10.4	16	32	Turbo	2666	6 TB	Y	135 W
Silver	4310	2.1	18	10.4	12	24	Turbo	2666	6 TB	N	120 W

Table 9. Supported processors (continued)

Tier	Proc	Clock Speed (GHz)	Cache (M)	UPI (GT/s)	Cores	Threads	Turbo	Memory Speed (MT/s)	Memory Capacity	BPS Enabled	TDP
Silver	4310T	2.3	15	10.4	10	20	Turbo	2666	6 TB	N	105 W
Silver	4309Y	2.6	12	10.4	8	16	Turbo	2666	6 TB	N	105 W
Platinum	8352M	2.3	48	11.2	32	64	Turbo	3200	6 TB	Y	185 W

Memory

Topics:

- Supported memory

Supported memory

The table below lists the memory technologies supported by the platform.

Table 10. Supported memory technologies

Feature	T550 (DDR4)
DIMM Type	RDIMM
Transfer Speed	2933 MT/s and 3200 MT/s
Voltage	1.2 V (DDR4)

The following table lists the supported DIMMs for the T550 at launch. For the latest information about supported DIMMs, see the Memory NDA Deck. For information about memory configuration, see the *Dell EMC PowerEdge T550 Installation and Service Manual* at www.dell.com/poweredgemanuals.

Table 11. Memory specifications

DIMM type	DIMM rank	DIMM capacity		DIMM Rated Voltage and supported speed	Speed	
		Single Processor	Dual Processor		Single Processor	Dual Processor
RDIMM	Single rank	8 GB	16 GB	DDR4 (1.2 V), 3200	3200	2933
		16 GB	32 GB	DDR4 (1.2 V), 3200	3200	2933
	Dual rank	16 GB	32 GB	DDR4 (1.2 V), 3200	3200	2933
		32 GB	64 GB	DDR4 (1.2 V), 3200	3200	2933

Table 12. Memory module sockets

Memory module sockets	Speed
16, 288-pin	3200 MT/s, 2933 MT/s

Topics:

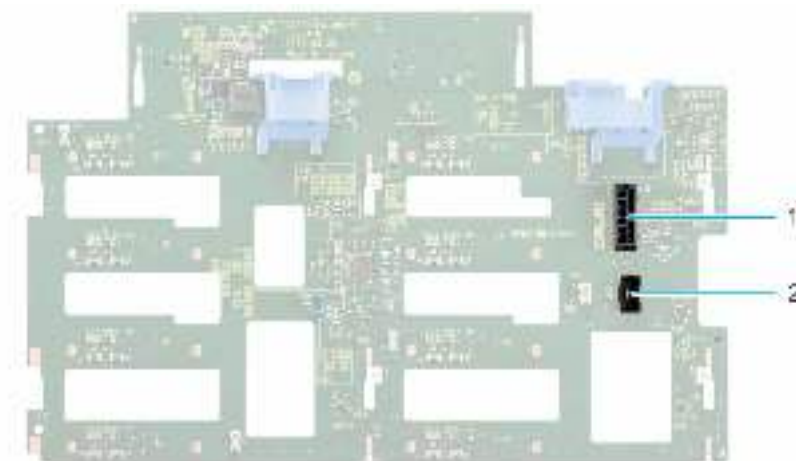
- Drive backplane
- PERC Controller
- Storage

Drive backplane

Depending on your system configuration, the drive backplanes supported are listed here:

Table 13. Supported backplane options

System	Supported drives options
PowerEdge T550	8 x 2.5-inch SAS/SATA backplane
	8 x 3.5-inch SAS/SATA backplane

**Figure 11. 3.5-inch drive backplane**

1. BP_PWR_1
2. BP_SIG

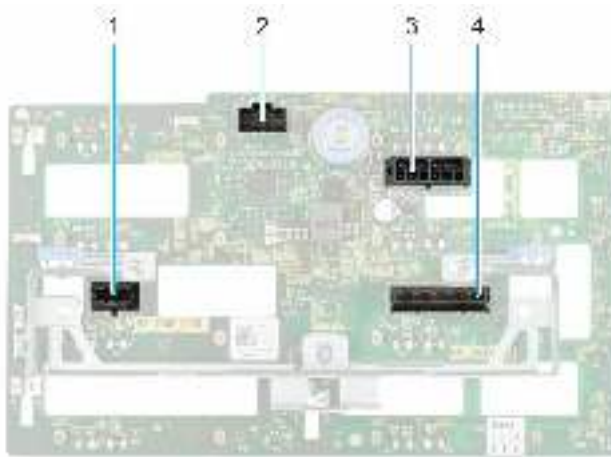


Figure 12. 2.5-inch drive backplane

- | | |
|----------------|-----------|
| 1. BP_PWR_CTRL | 2. BP_SIG |
| 3. BP_PWR_1 | 4. BP_DST |

PERC Controller

The Dell EMC PowerEdge RAID Controller (PERC) family of enterprise-class controllers is designed for enhanced performance, increased reliability, and fault tolerance. PERC controller also simplifies management - providing a powerful, easy-to-manage way to create a robust infrastructure and help maximize system uptime.

Table 14. Supported PERC controllers

Performance level	Description
Entry	S150 (SATA) SW RAID SATA
Value	H355, H345, HBA355i, HBA355e
Value Performance	H755, H755N
Premium performance	H840

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.

Storage

Table 15. Supported Drives - SAS, SATA and NVMe

Form Factor	Type	Speed	Rotational Speed	Capacities
2.5-inch	SATA SSD	6 Gb	N/A	480 GB, 960 GB, 1.92 TB, 3.84 TB
	SAS	12 Gb	10 K	600 GB, 1.2 TB, 2.4 TB
	SAS	12 Gb	15 K	900 GB
	SAS SSD	12 Gb	N/A	480 GB, 800 GB, 960 GB, 1.6 TB, 1.92 TB, 3.84 TB, 6.4 TB, 7.68 TB

Table 15. Supported Drives - SAS, SATA and NVMe (continued)

Form Factor	Type	Speed	Rotational Speed	Capacities
2.5-inch (U.2)	NVMe SSD	Gen4	N/A	960 GB, 1.6 TB, 1.92 TB, 3.2 TB, 3.84 TB, 6.4 TB, 7.68 TB
	NVMe SSD	Gen3	N/A	375 GB, 400 GB, 750 GB, 800 GB, 960 GB, 1.6 TB, 1.92 TB, 3.2 TB, 3.84 TB, 6.4 TB, 7.68 TB
3.5-inch	SATA	6 Gb	7.2 K	2 TB, 4 TB, 8 TB, 12 TB, 16 TB
	SAS	12 Gb	7.2 K	2 TB, 4 TB, 8 TB, 12 TB, 16TB
M.2	SATA SSD	6 GB	N/A	240 GB, 480 GB
uSD	N/A	N/A	uSD	16 GB, 32 GB, 64 GB

Networking and PCIe

Topics:

- [Overview](#)
- [OCP 3.0 support](#)
- [Expansion card installation guidelines](#)


Overview

PowerEdge offers a wide variety of options to get information moving to and from our servers. Industry best technologies are chosen, and systems management features are added by our partners to firmware to tie in with iDRAC. These adapters are rigorously validated for worry-free, fully supported use in Dell servers.

The [PowerEdge Server Adapter Matrix](#) posted to knowledge portal is the central repository for PowerEdge NIC, HBA and HCA information. The matrix covers:

- Part Numbers, Tied SKUs and Customer Kits
- Server Compatibility and Support
- Optics and Cable Support
- Systems Management
- Adapter Features
- Spec Sheet Links

This document is updated as changes happen, so be sure to bookmark it rather than downloading an offline copy to stay with the latest information.

 **NOTE:** This is a direct download link to an .XLSX and may not open in a tab as expected depending on your browser.

OCP 3.0 support

Table 16. OCP 3.0 feature list

Feature	OCP 3.0
Form factor	SFF
PCIe Gen	Gen4
Max PCIe width	x16
Max no.of ports	4
Port type	BT/SFP/SFP+/SFP28/SFP56
Max port speed	100 GbE
NC-SI	Yes
SNAPI	Yes
WoL	Yes
Power consumption	15 W - 150 W

Supported OCP cards

Table 17. Supported OCP

Form Factor	Vendor	Port type	Port speed	Port count
OCP 3.0	Intel	SFP+	10 GbE	2
OCP 3.0	Broadcom	BT	1 GbE	4
OCP 3.0	Broadcom	BT	10 GbE	2
OCP 3.0	Broadcom	SFP28	25 GbE	2
OCP 3.0	Broadcom	SFP28	25 GbE	4
OCP 3.0	Broadcom	SFP+	10 GbE	2
OCP 3.0	QLogic	BT	10 GbE	2
OCP 3.0	QLogic	SFP+	10 GbE	2
OCP 3.0	QLogic	SFP28	25 GbE	2
OCP 3.0	Intel	BT	1 GbE	4
OCP 3.0	Intel	BT	10 GbE	2
OCP 3.0	Intel	SFP+	10 GbE	4
OCP 3.0	Intel	SFP28	25 GbE	2
OCP 3.0	SolarFlare	SFP28	25 GbE	2
OCP 3.0	SolarFlare	SFP28	25 GbE	2

OCP NIC 3.0 vs. rack Network Daughter Card comparisons

Table 18. OCP 3.0, 2.0, and rNDC NIC comparison

Form Factor	Dell rNDC	OCP 2.0 (LOM Mezz)	OCP 3.0	Notes
PCIe Gen	Gen 3	Gen 3	Gen 4	Supported OCP3 are SFF (small form factor)
Max PCIe Lanes	x8	Up to x16	Up to x16	See server slot priority matrix
Shared LOM	Yes	Yes	Yes	This is iDRAC port redirect
Aux Power	Yes	Yes	Yes	Used for Shared LOM

OCP form factors



Figure 13. OCP 3.0 small card form factor (LS)

Table 19. OCP 3.0 Feature List

Features	OCP 3.0
Form factor	SFF and LFF
PCIe Gen	Gen4
Max PCIe width	X16
Max of ports	4
Port type	BT/SFP/SFP+/SFP28/SFP56
Max port speed	100Gbe
NC-SI	Yes
SNAPI	Yes
WoL	Yes
Power consumption	15 W — 150 W

Expansion card installation guidelines

Table 20. Supported riser configurations

Configuration Type	Riser configuration	Processors	x16 Processor 1 Slot 1 (FHFL)	x16 Processor 2 Slot 2 (FHFL)	x16 Processor 2 Slot 3 (FHFL)	x16 Processor 2 Slot 4 (FHHL)	X4 PCH Slot 5 (FHHL)	x16 Processor 1 Slot 6 (FHHL)
C0	N/A	2	0	0	1	1	1	1
C0-1	N/A	1	0	0	0	0	1	1
C1	1 x GPU riser	2	1	0	1	1	1	1
C1-1	1 x GPU riser	1	1	0	0	0	1	1
C2	2 x GPU riser	2	1	1	1	1	1	1

Table 21. Configuration type C0

Card Type	Slot priority	Maximum number of cards
FPERC 10.15 H345	Internal	2
PERC/HBA 10.15G H745	Internal	2
FPERC 11 H755N	Internal	1
FPERC 11 H755	Internal	2
FPERC HBA11 HBA355i	Internal	2
FPERC 11 H355	Internal	2
NIC 25 Gb: Broadcom, Intel, Mellanox	4, 6, 3	3
HBA: FC16: Qlogic, Avago	4, 6, 3	3
NIC 10 Gb: Broadcom, Intel	4, 6, 3	3
NIC 1 Gb: Broadcom, Intel	4, 6, 3, 5	4
OCP 25 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 10 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 1 Gb: Broadcom, Intel, Mellanox	Internal	1
BOSS S2: Inventec	Internal	1
PCIe SSD Gen3: Intel	4, 6, 3, 5	4
PCIe SSD Gen4: Samsung	4, 6, 3	3
GPU: Nvidia T4	4, 6, 3	3
Serial port module: Inventec	5	1
Foxconn external adapter H840	4, 6, 3	3
Foxconn external adapter HBA355e	4, 6, 3	3
aPERC HBA11 HBA355i	6	1

Table 22. Configuration type C0-1

Card Type	Slot priority	Maximum number of cards
FPERC 10.15 H345	Internal	2
PERC/HBA 10.15G H745	Internal	2
FPERC 11 H755N	Internal	1
FPERC 11 H755	Internal	2
FPERC HBA11 HBA355i	Internal	2
FPERC 11 H355	Internal	2
NIC 25 Gb: Broadcom, Intel, Mellanox	6	1

Table 22. Configuration type C0-1 (continued)

Card Type	Slot priority	Maximum number of cards
HBA: FC16: Qlogic, Avago	6	1
NIC 10 Gb: Broadcom, Intel	6	1
NIC 1 Gb: Broadcom, Intel	6, 5	2
OCP 25 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 10 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 1 Gb: Broadcom, Intel, Mellanox	Internal	1
BOSS S2: Inventec	Internal	1
PCIe SSD Gen3: Intel	6, 5	2
PCIe SSD Gen4: Samsung	6, 5	2
GPU: Nvidia T4	6	1
Serial port module: Inventec	5	1
Foxconn external adapter H840	4, 6, 3	3
Foxconn external adapter HBA355e	4, 6, 3	3
aPERC HBA11 HBA355i	6	1

Table 23. Configuration type C1

Card Type	Slot priority	Maximum number of cards
FPERC 10.15 H345	Internal	2
PERC/HBA 10.15G H745	Internal	2
FPERC 11 H755N	Internal	1
FPERC 11 H755	Internal	2
FPERC HBA11 HBA355i	Internal	2
FPERC 11 H355	Internal	2
NIC 25 Gb: Broadcom, Intel, Mellanox	1, 4, 6, 3	4
HBA: FC16: Qlogic, Avago	1, 4, 6, 3	4
NIC 10 Gb: Broadcom, Intel	1, 4, 6, 3	4
NIC 1 Gb: Broadcom, Intel	1, 4, 6, 3, 5	5
OCP 25 Gb: Broadcom, Intel, Mellanox	Internal	1

Table 23. Configuration type C1 (continued)

Card Type	Slot priority	Maximum number of cards
OCP 10 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 1 Gb: Broadcom, Intel, Mellanox	Internal	1
BOSS S2: Inventec	Internal	1
PCIe SSD Gen3: Intel	1, 4, 6, 3, 5	5
PCIe SSD Gen4: Samsung	1, 4, 6, 3	4
GPU: Nvidia A10, A30, A40	1	1
GPU: Nvidia T4	1, 4, 6, 3	4
Serial port module: Inventec	5	1
Foxconn external adapter H840	1, 4, 6, 3	4
Foxconn external adapter HBA355e	1, 4, 6, 3	4
Foxconn external adapter HBA355e	6	1

Table 24. Configuration type C1-1

Card Type	Slot priority	Maximum number of cards
FPERC 10.15 H345	Internal	2
PERC/HBA 10.15G H745	Internal	2
FPERC 11 H755N	Internal	1
FPERC 11 H755	Internal	2
FPERC HBA11 HBA355i	Internal	2
FPERC 11 H355	Internal	2
NIC 25 Gb: Broadcom, Intel, Mellanox	1, 6	2
HBA: FC16: Qlogic, Avago	1, 6	2
NIC 10 Gb: Broadcom, Intel	1, 6	2
NIC 1 Gb: Broadcom, Intel	1, 6, 5	3
OCP 25 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 10 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 1 Gb: Broadcom, Intel, Mellanox	Internal	1
BOSS S2: Inventec	Internal	1
PCIe SSD Gen3: Intel	1, 6, 5	3

Table 24. Configuration type C1-1 (continued)

Card Type	Slot priority	Maximum number of cards
PCIe SSD Gen4: Samsung	1, 6	2
GPU: Nvidia A10, A30, A40	1	1
GPU: Nvidia T4	1, 6	2
Serial port module: Inventec	5	1
Foxconn external adapter H840	1, 6	2
Foxconn external adapter HBA355e	1, 6	2
aPERC HBA11 HBA355i	6	1

Table 25. Configuration type C2

Card Type	Slot priority	Maximum number of cards
FPERC 10.15 H345	Internal	2
PERC/HBA 10.15G H745	Internal	2
FPERC 11 H755N	Internal	1
FPERC 11 H755	Internal	2
FPERC HBA11 HBA355i	Internal	2
FPERC 11 H355	Internal	2
NIC 25 Gb: Broadcom, Intel, Mellanox	1, 2, 4, 6, 3	5
HBA: FC16: Qlogic, Avago	1, 2, 4, 6, 3	5
NIC 10 Gb: Broadcom, Intel	1, 2, 4, 6, 3	5
NIC 1 Gb: Broadcom, Intel	1, 2, 4, 6, 3, 5	6
OCP 25 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 10 Gb: Broadcom, Intel, Mellanox	Internal	1
OCP 1 Gb: Broadcom, Intel, Mellanox	Internal	1
BOSS S2: Inventec	Internal	1
PCIe SSD Gen3: Intel	1, 2, 4, 6, 3, 5	6
PCIe SSD Gen4: Samsung	1, 2, 4, 6, 3	5
GPU: Nvidia A10, A30, A40	1, 2	2
GPU: Nvidia T4	1, 2, 4, 6, 3	5
Serial port module: Inventec	5	1

Table 25. Configuration type C2 (continued)

Card Type	Slot priority	Maximum number of cards
Foxconn external adapter H840	1, 2, 4, 6, 3	5
Foxconn external adapter HBA355e	1, 2, 4, 6, 3	5
aPERC HBA11 HBA355i	6	1

Power, thermal, and acoustics

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption. The table below lists the tools and technologies Dell offers to lower power consumption and increase energy efficiency.

Topics:

- [Power](#)
- [Thermal](#)
- [Acoustics](#)

Power

Table 26. Power tools and technologies

Feature	Description
Power Supply Units(PSU) portfolio	Dell's PSU portfolio includes intelligent features such as dynamically optimizing efficiency while maintaining availability and redundancy. Find additional information in the Power supply units section.
Tools for right sizing	Enterprise Infrastructure Planning Tool (EIPT) is a tool that can help you determine the most efficient configuration possible. With Dell's EIPT, you can calculate the power consumption of your hardware, power infrastructure, and storage at a given workload. Learn more at www.dell.com/calc .
Industry Compliance	Dell's servers are compliant with all relevant industry certifications and guide lines, including 80 PLUS, Climate Savers and ENERGY STAR.
Power monitoring accuracy	PSU power monitoring improvements include: <ul style="list-style-type: none"> • Dell's power monitoring accuracy is currently 1%, whereas the industry standard is 5% • More accurate reporting of power • Better performance under a power cap
Power capping	Use Dell's systems management to set the power cap limit for your systems to limit the output of a PSU and reduce system power consumption. Dell is the first hardware vendor to leverage Intel Node Manager for circuit-breaker fast capping.
Systems Management	iDRAC Enterprise and Datacenter provides server-level management that monitors, reports and controls power consumption at the processor, memory and system level. Dell OpenManage Power Center delivers group power management at the rack, row, and data center level for servers, power distribution units, and uninterruptible power supplies.
Active power management	Intel Node Manager is an embedded technology that provides individual server-level power reporting and power limiting functionality. Dell offers a complete power management solution comprised of Intel Node Manager accessed through Dell iDRAC9 Datacenter and OpenManage Power Center that allows policy-based management of power and thermal at the individual server, rack, and data center level. Hot spare reduces power consumption of redundant power supplies. Thermal control off a speed optimizes the thermal settings for your environment to reduce fan consumption and lower system power consumption. Idle power enables Dell servers to run as efficiently when idle as when at full workload.
Fresh Air cooling	Refer to ASHRAE A3/A4 Thermal Restriction.

Table 26. Power tools and technologies (continued)

Feature	Description
Rack infrastructure	<p>Dell offers some of the industry's highest-efficiency power infrastructure solutions, including:</p> <ul style="list-style-type: none"> • Power distribution units (PDUs) • Uninterruptible power supplies (UPSs) • Energy Smart containment rack enclosures <p>Find additional information at: https://www.delltechnologies.com/en-us/servers/power-and-cooling.htm.</p>

PSU specifications

The PowerEdge T550 system supports up to two AC power supply units (PSUs).

Table 27. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	AC		DC	Current
					High line 200–240 V	Low line 100–120 V		
600 W Mixed Mode	Platinum	2250 BTU/hr	50/60 Hz	100 - 240 V, autoranging	600 W	600 W	N/A	7.1 A - 3.6 A
	N/A	2250 BTU/hr	N/A	240 V DC	N/A	N/A	600 W	2.9 A
800 W Mixed Mode	Platinum	3000 BTU/hr	50/60 Hz	100 - 240 V, autoranging	800 W	800 W	N/A	9.2 A - 4.7 A
	N/A	3000 BTU/hr	N/A	240 V DC	N/A	N/A	800 W	3.8 A
1100 W DC	N/A	4265 BTU/hr	N/A	-48 VDC – -60 VDC	N/A	N/A	1100 W	27 A
1100 W Mixed Mode	Titanium	4,125 BTU/hr	50/60 Hz	100 - 240 V	1100 W	1050 W	N/A	12 A - 6.3 A
	N/A	4,125 BTU/hr	N/A	240 V DC	N/A	N/A	1100 W	5.2 A
1400 W Mixed Mode	Platinum	5250 BTU/hr	50/60 Hz	100 - 240 V	1400 W	1050 W	N/A	12 A - 8 A
	N/A	5250 BTU/hr	N/A	240 V DC	N/A	N/A	1400 W	6.6 A
2400 W Mixed Mode	Platinum	9000 BTU/hr	50/60 Hz	100 - 240 V	2400 W	1400 W	N/A	16 A - 13.5 A
	N/A	9000 BTU/hr	N/A	240 V DC	N/A	N/A	2400 W	11.2 A

Table 27. PSU specifications (continued)

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	AC		DC	Current
					High line 200–240 V	Low line 100–120 V		
700 W Mixed Mode	Titanium	2,625 BTU/hr	50/60 Hz	200–240 V AC	700 W	NA	NA	4.1 A
	NA	2,625 BTU/hr	NA	240 V DC	NA	NA	700 W	3.4 A
1800 W Mixed Mode	Titanium	6,000 BTU/hr	50/60 Hz	200–240 V AC	1800 W	NA	NA	10 A
	NA	6000 BTU/hr	NA	240 V DC	NA	NA	1800 W	8.2 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 Enterprise Infrastructure Planning Tool available at Dell.com/calc.

Thermal

PowerEdge servers have an extensive collection of sensors that automatically track thermal activity, which helps regulate temperature thereby reducing server noise and power consumption.

Thermal design

Thermal management of the platform helps deliver high performance with the right amount of cooling to components, while maintaining the lowest fan speeds possible. This is done across a wide range of ambient temperatures from 10°C to 35°C (50°F to 95°F) and to extended ambient temperature ranges.

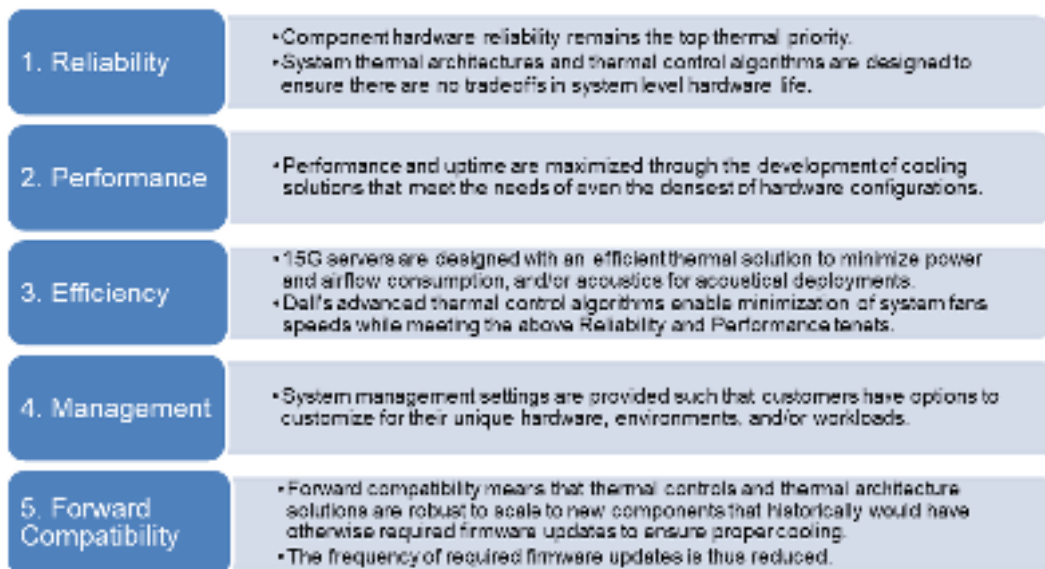


Figure 14. Thermal design characteristics

The thermal design of the PowerEdge T550 reflects the following:

- Optimized thermal design: The system layout is architected for optimum thermal design.
- System component placement and layout are designed to provide maximum airflow coverage to critical components with minimum expense of fan power.
- Comprehensive thermal management: The thermal control system regulates the fan speed based on several different responses from all system-component temperature sensors, as well as inventory for system configurations. Temperature monitoring includes components such as processors, DIMMs, chipset, the inlet air ambient, hard disk drives, and OCP.
- Open and closed loop thermal fan speed control: Open loop thermal control uses system configuration to determine fan speed based on inlet air ambient temperature. Closed loop thermal control method uses feedback temperatures to dynamically determine proper fan speeds.
- User-configurable settings: With the understanding and realization that every customer has unique set of circumstances or expectations from the system, in this generation of servers, we have introduced limited user- configurable settings residing in the iDRAC BIOS setup screen. For more information, see the Dell EMC PowerEdge T550 Installation and Service Manual at www.dell.com/poweredgemanuals and "Advanced Thermal Control: Optimizing across Environments and Power Goals" on Dell.com.
- Cooling redundancy: The T550 with >4 fans allows N+1 fan redundancy, allowing continuous operation with one fan failure in the system.
- Environmental Specifications: The optimized thermal management makes the T550 reliable under a wide range of operating environments.

Acoustics

Acoustical design

Dell EMC PowerEdge delivers sound quality and smooth transient response in addition to sound power levels and sound pressure levels oriented to deployment environments.

Sound quality describes how disturbing or pleasing a person finds a sound, as a function of a variety of psycho-acoustical metrics and thresholds. Tone prominence is one such metric.

Transient response refers to how sound changes with time.

Sound power level, sound pressure level and loudness refer to amplitude of sound.

A reference for comparison to sound pressure levels and loudness for familiar noise sources is given in the table below.

Table 28. Acoustical Reference Points and Output Comparisons

Value measured at your ears		Equivalent familiar noise experience
LpA, dBA, re 20µPa	Loudness, sones	
90	80	Loud concert
75	40	Data center, vacuum cleaner, voice must be elevated to be heard
60	10	Conversation levels
45	4	Whispering, open office layout, normal living room
35	2	Quiet office
30	1	Quiet library
20	0	Recording studio

For more information about PowerEdge acoustical design and metrics, see [Understanding Acoustical Data and Causes of Sound in Dell Enterprise Products](#).

PowerEdge acoustical specifications

For more information on acoustical specifications, see ENG0019663. (See the category definitions.)

Dell typically categorizes servers in five categories of acoustically acceptable usage:

- Category 1: Table-top in Office Environment
- Category 2: Floor-standing in Office Environment
- Category 3: General Use Space
- Category 4: Attended Data Center
- Category 5: Unattended Data Center

Category 1: Floor-standing in Office Environment

When Dell determines that a specific Enterprise product is to be used on a table-top in office environment, for example, on a desk around a seated user’s head height, then the acoustical specification of the following table applies. Small, light-weight towers are examples of these types of products.

Table 29. Dell Enterprise Category 1, “Table-top in Office Environment” acoustical specification category.

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set fan speeds representative) for Idle at 28° C & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
Sound Power	LWA,m, B	≤ 4.2	≤ 4.7	≤ 5.0	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 35	≤ 35	≤ 35	Report

Table 29. Dell Enterprise Category 1, “Table-top in Office Environment” acoustical specification category. (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set fan speeds representative) for Idle at 28° C & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
and Rear Microphone	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	Transients	<ul style="list-style-type: none"> Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: <ul style="list-style-type: none"> Max. {ΔLpA} < 3.0 dB Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15 dB. Startup behavior <ul style="list-style-type: none"> Report Startup behavior re. AC0159 Startup must proceed smoothly, that is, no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” 			N/A
Any	Other	<p>No rattles, squeaks, or unexpected noises</p> <p>Sound should be “even” around the EUT (one side should not be dramatically louder than another)</p> <p>Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC.</p> <p>Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform.</p>			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 2: Floor-standing in Office Environment

When Dell determines that a specific Enterprise product is to be used primarily when it is sitting on the floor, that is, next to a user’s feet, then the acoustical specification in the table below applies. Noise from the product should not annoy or otherwise interfere with the user’s thoughts or speech, for example, on the telephone.

Table 30. Dell Enterprise Category 2, “Floor-standing in Office Environment” acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set fan speeds representative) for Idle at 28° C & 35° C Ambient, and for 100% loading and maximum configuration, at 35° C Ambient
Sound Power	LWA,m, B	≤ 4.9	≤ 5.1	≤ 5.4	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 35	≤ 35	≤ 35	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	Transients	<ul style="list-style-type: none"> Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: <ul style="list-style-type: none"> Max. {ΔLpA} < 3.0 dB Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15 dB. Startup behavior <ul style="list-style-type: none"> Report Startup behavior re. AC0159 Startup must proceed smoothly, that is, no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” 			N/A
Any	Other	<ul style="list-style-type: none"> No rattles, squeaks, or unexpected noises Sound should be “even” around the EUT (one side should not be dramatically louder than another) Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC. Specific operating conditions are defined in “Configurations and Configuration Dependencies” for each platform. 			
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 3: General Use Space

When Dell determines that a specific Enterprise product is to be predominantly used in a general use space, then the acoustical specification of the table below applies. These products could be found in laboratories, schools, restaurants, open office space layouts, small ventilated closets, etc., though not in close proximity to any particular person nor in quantities greater than a few in any location. People within proximity of a few of these products should not experience any impact to speech intelligibility or annoyance from the noise of the product. A rack product sitting on a table in a common area is an example.

Table 31. Dell Enterprise Category 3, “General Use” acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set air mover speeds representative) for Idle at 28° C & 35° C Ambient and for 100% loading and maximum configuration, at 35° C Ambient
Sound Power	LWA,m, B	≤ 5.2	≤ 5.5	≤ 5.8	Report
Sound Quality (both positions must meet limits): Front Binaural HEAD and Rear Microphone	Tones, Hz, dB	No prominent tones per criteria D.10.6 and D.10.8 of ECMA-74			Report tones
	Tonality, tu	≤ 0.35	≤ 0.35	≤ 0.35	Report
	Dell Modulation, %	≤ 40	≤ 40	≤ 40	Report
	Loudness, sones	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report
Front Binaural HEAD	Transients	<ul style="list-style-type: none"> ● Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: <ul style="list-style-type: none"> ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” ● Report Acoustical Jump (see AC0159) during air mover speed transition from Idle to Operating Mode. ● Startup behavior <ul style="list-style-type: none"> ○ Report Startup behavior re. AC0159 ○ Startup must proceed smoothly, that is, no sudden or large jumps, and air mover speed during startup must not exceed 50% of its maximum ● Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” 			N/A
Any	Other	<p>No rattles, squeaks, or unexpected noises</p> <p>Sound should be “even” around the EUT (one side should not be dramatically louder than another)</p> <p>Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC.</p> <p>Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform.</p>			

Table 31. Dell Enterprise Category 3, “General Use” acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)			
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set air mover speeds representative) for Idle at 28° C & 35° C Ambient and for 100% loading and maximum configuration, at 35° C Ambient
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 4: Attended Data Center

When Dell determines that a specific Enterprise product is to be predominantly used in an attended data center, then the acoustical specification of the table applies. The phrase “attended data center” is used to mean a space in which many (from tens to 1000s) of Enterprise products are deployed in proximity (that is, in the same room) to personnel whose speech (perhaps with raised voices) is expected to be intelligible over the data center noise. Hearing protection or hearing monitoring programs are not expected in these areas. Examples in this category include monolithic rack products. When Dell determines that a specific Enterprise product is to be predominantly used in a general use space, then the acoustical specification of the above table applies. These products could be found in laboratories, schools, restaurants, open office space layouts, small ventilated closets, etc., though not in close proximity to any particular person nor in quantities greater than a few in any location. People within proximity of a few of these products should not experience any impact to speech intelligibility or annoyance from the noise of the product. A rack product sitting on a table in a common area is an example.

Table 32. Dell Enterprise Category 4, “Attended Data Center” acoustical specification category.

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (that is, set fan speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set fan speeds representative) for Idle at 28° C & 35° C Ambient	
Sound Power	LWA,m, B	Report	≤ 6.9	≤ 7.1	Report	≤ 8.5
Front Binaural HEAD	Tones, Hz, dB	Report	< 15 dB	< 15 dB	Report	< 20 dB
	Tonality, tu	Report	Report	Report	Report	Report
	Dell Modulation, %	Report	Report	Report	Report	Report
	Loudness, sones	Report	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report	Report

Table 32. Dell Enterprise Category 4, “Attended Data Center” acoustical specification category. (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (that is, set fan speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set fan speeds representative) for Idle at 28° C & 35° C Ambient	
	Transients	<ul style="list-style-type: none"> ● Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: <ul style="list-style-type: none"> ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” ○ Acoustical Jump (see AC0159), during air mover speed transition from Idle to Operating Mode must be ≤ 15 dB. ○ Startup behavior <ul style="list-style-type: none"> ■ Report Startup behavior re. AC0159 ■ Startup must proceed smoothly, that is, no sudden or large jumps, and fan speed during startup must not exceed 50% of its maximum ∞ Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” 				N/A
Any	Other	<p>No rattles, squeaks, or unexpected noises</p> <p>Sound should be “even” around the EUT (one side should not be dramatically louder than another)</p> <p>Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC.</p> <p>Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform.</p>				
Sound Pressure	LpA-reported, dBA	Report for all mics	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Category 5: Unattended Data Center

When Dell determines that a specific Enterprise product is to be predominantly used in an unattended data center (and not blades or blade enclosures; these have their own category), then the acoustical specification in the table below applies. The phrase “unattended data center” is used to mean a space in which many (from tens to 1000s) of Enterprise products are deployed together, its own heating and cooling systems condition the space, and operators or servicers of equipment enter generally only to deploy, service, or decommission equipment. Hearing protection or hearing monitoring programs may be expected (per government or company guidelines) in these areas. Examples in this category include monolithic rack products.

Table 33. Dell Enterprise Category 5, “Unattended Data Center” acoustical specification category

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (that is, set air mover speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set air mover speeds representative) for Idle at 28° C & 35° C Ambient	
Sound Power	LWA,m, B	Report	≤ 7.5	≤ 7.7	Report	≤ 8.7
Front Binaural HEAD	Tones, Hz, dB	Report	< 15 dB	< 15 dB	Report	< 20 dB
	Tonality, tu	Report	Report	Report	Report	Report
	Dell Modulation, %	Report	Report	Report	Report	Report
	Loudness, sones	Report	Report	Report	Report	Report
	LpA-single point, dBA	Report	Report	Report	Report	Report
Front Binaural HEAD	Transients	<ul style="list-style-type: none"> • Oscillation (see AC0159), if observed, during 20-minute steady-state observation, must adhere to the following two criteria: <ul style="list-style-type: none"> ○ Max. {ΔLpA} < 3.0 dB ○ Event count < 3 for “1.5 dB < ΔLpA < 3.0 dB” • Report Acoustical Jump (see AC0159) during air mover speed transition from Idle to Operating Mode. • Startup behavior <ul style="list-style-type: none"> ○ Report Startup behavior re. AC0159 ○ Startup must proceed smoothly, that is, no sudden or large jumps, and air mover speed during startup must not exceed 50% of its maximum • Transient inputs: Report time-history sound pressure levels re AC0159 “Train of Step Functions on Processor” 			N/A	
Any	Other	<p>No rattles, squeaks, or unexpected noises</p> <p>Sound should be “even” around the EUT (one side should not be dramatically louder than another)</p> <p>Unless otherwise specified, the “default” thermal-related settings shall be selected for BIOS and iDRAC.</p> <p>Specific operating conditions will be defined in “Configurations & Configuration Dependencies” for each platform.</p>				

Table 33. Dell Enterprise Category 5, “Unattended Data Center” acoustical specification category (continued)

Measurement Position re AC0158	Metric, re AC0159	Test Modes, re AC0159 (note must be in steady state, see AC0159, except where noted below)				Simulate (that is, set air mover speeds representative) for 100% loading and maximum configuration, at 35° C Ambient
		Standby in 23±2° C Ambient	Idle in 23±2° C Ambient	Operating in 23±2° C Ambient – if not otherwise specified in the program’s configuration document, then processor and hard drive operating modes are required	Simulate (that is, set air mover speeds representative) for Idle at 28° C & 35° C Ambient	
Sound Pressure	LpA-reported, dBA, re AC0158 and program configuration document	Report for all mics	Report for all mics	Report for all mics	Report for all mics	Report for all mics

Acoustical performance

Dell EMC PowerEdge T550 is a tower server appropriate for attended data center environment. However, lower acoustical output is attainable with proper hardware or software configurations.

Table 34. Hardware and software configurations for lower acoustical output

Configuration	Minimum	Basic	Mainstream	Feature Rich	Hilltop
Processor Type	Intel Xeon Scalable processor	Intel Xeon Scalable processor	Intel Xeon Scalable processor	Intel Xeon Scalable processor	Intel Xeon Scalable processor
Processor TDP	105 W / 10C	120 W / 12C	150 W / 24C	185 W / 32C	205 W / 32C
Processor Quantity	1	1	1	2	2
RDIMM Memory	8 GB DDR4	16 GB DDR4	16 GB DDR4	32 GB DDR4	32 GB DDR4
Memory Quantity	1	2	4	8	16
Backplane Type	8 x 3.5-inch BP	8 x 3.5-inch BP	8 x 2.5-inch BP	8 x 2.5-inch BP + 8 x 2.5-inch BP	8 x 2.5-inch BP + 8 x 2.5-inch BP
HDD Type	3.5-inch 7.2K RPM SATA	3.5-inch 7.2K RPM NL-SAS	2.5-inch 10K RPM SAS	2.5-inch 10K RPM SAS	2.5-inch 10K RPM SAS
HDD Quantity	2	4	8	16	16
PSU Type	800 W	800 W	1400 W	1400 W	2400 W
PSU Quantity	1	2	2	2	2
BOSS	N/A	BOSS 1.5	BOSS 1.5	BOSS 1.5	BOSS 1.5
OCP	N/A	N/A	N/A	Dual Port 10GbE	Dual Port 25GbE
PCI 1	N/A	N/A	N/A	N/A	300 W DW GPU
PCI 2	N/A	N/A	N/A	N/A	300 W DW GPU

Table 34. Hardware and software configurations for lower acoustical output (continued)

Configuration	Minimum	Basic	Mainstream	Feature Rich	Hilltop
PCI 3	N/A	N/A	Dual Port 10GbE NIC	N/A	N/A
Front PERC	PERC H345, H355	PERC H745P	PERC H745P	PERC H745P	PERC H745P
LOM Card	1 Gb	1 Gb	1 Gb	1 Gb	1 Gb

Table 35. Acoustical performance of T550 acoustical configurations

Configuration	Minimum	Basic	Mainstream	Feature Rich	Hilltop	
Acoustical Performance: Idle/ Operating @ 25 °C Ambient						
L _{WA,m} (B)	Idle	4.3	4.4	4.8	4.9	5.7
	Operating	4.4	4.7	4.9	5.3	8.6
K _v (B)	Idle	0.4	0.4	0.4	0.4	0.4
	Operating	0.4	0.4	0.4	0.4	0.4
L _{pA,m} (dB)	Idle	35	36	40	41	43
	Operating	36	41	41	45	72
Prominent tones	No prominent tones in Idle and Operating					
Acoustical Performance: Idle @ 28 °C Ambient						
L _{WA,m} (B)	5	5	5.1	5.3	6.1	
K _v (B)	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	42	42	43	45	47	
Acoustical Performance: Max. Loading @ 35 °C Ambient						
L _{WA,m} (B)	6.2	6.4	7.4	6.1	8.6	
K _v (B)	0.4	0.4	0.4	0.4	0.4	
L _{pA,m} (dB)	59	61	71	58	72	

L_{WA,m}: The declared mean A-weighted sound power level (L_{WA}) is calculated per section 5.2 of ISO 9296 (2017) with data collected using the methods described in ISO 7779 (2010). Data presented here may not be fully compliant with ISO 7779.

L_{pA,m}: The declared mean A-weighted emission sound pressure level is at the bystander position per section 5.3 of ISO 9296 (2017) and measured using methods described in ISO 7779 (2010). The system is placed on standard test table and in a 24U rack enclosure, 25cm above a reflective floor. Data presented here may not be fully compliant with ISO 7779.

Prominent tones: Criteria of D.6 and D.11 of ECMA-74 (17th ed., Dec. 2019) are followed to determine if discrete tones are prominent and to report them, if so.

Idle mode: The steady-state condition in which the server is energized but not operating any intended function.

Operating mode: The maximum of the steady state acoustical output at 50% of CPU TDP or active HDDs or 100% of GPU per C.9.3.2 in ECMA-74 (17th ed., Dec. 2019).

PowerEdge T550 acoustical dependencies

Some product features impact acoustical server output more than others. The following features are considered strong drivers of acoustical response, thus configurations or operating conditions that include these features may increase air mover speed and acoustical output of the server:

- Ambient temperature: Dell EMC evaluates the acoustical performance of servers in a 23±2°C environment. Ambient temperatures in excess of 25°C will have higher acoustical output and may experience larger fluctuations between state changes.
- Processor thermal design power (TDP): higher wattage processors may require more airflow to cool under load and thus increase the potential acoustical output of the system.

- Storage type: NVME SSD consumes more power than SAS/SATA drives, and will pre-heat down-stream components (e.g., Processor, DIMM), and hence requires higher fan speeds and hence higher acoustical outputs.
- **System thermal profile** selection in BIOS or iDRAC GUI:
 - **Default Thermal Profile**, generally provides a lower air mover speed thus lower acoustical output than those of other thermal profiles.
 - Maximum Performance (Performance Optimized) will result in higher acoustical output
 - Sound Cap, for products that support the feature, will limit the maximum acoustical output of the system by sacrificing some processor performance.
- PCIe cards: When 25Gb NIC card or GPU card $\geq 75W$ is installed, the acoustical outputs will be higher in both idle and operating conditions.

Methods to reduce acoustical output of the T550

Although the T550 is designed for use in data centers, some users may prefer to use it in a quieter setting. The following is a list of means to do so.

i **NOTE:** Usually, the idle air mover speed of the system cannot be lowered without changing the configuration of the system, and in some cases, even a configuration change may not reduce idle air mover speeds.

- Reduce ambient temperature: Lowering the ambient temperature allows the system to cool components more efficiently than at higher ambient temperatures.
- Set target in Third-party PCIe card options: Dell EMC provides airflow customization for third-party PCIe adapters that are installed in PowerEdge platforms. If automatic cooling response is above desired levels (LFM) based on the card specifications, a different LFM target can be set using PCIe Airflow Settings options in iDRAC UI.
- Replace third-party PCI cards with similar Dell supported temperature-controlled cards, if available. Dell EMC works diligently with card vendors to validate and develop PCI cards to meet Dell EMC's exacting standards for thermal performance.

Supported Operating Systems

The PowerEdge T550 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®

Links to specific OS versions and editions, certification matrices, Hardware Compatibility Lists (HCL) portal, and Hypervisor support are available at [Dell EMC Enterprise Operating Systems](#).

Dell EMC OpenManage systems management

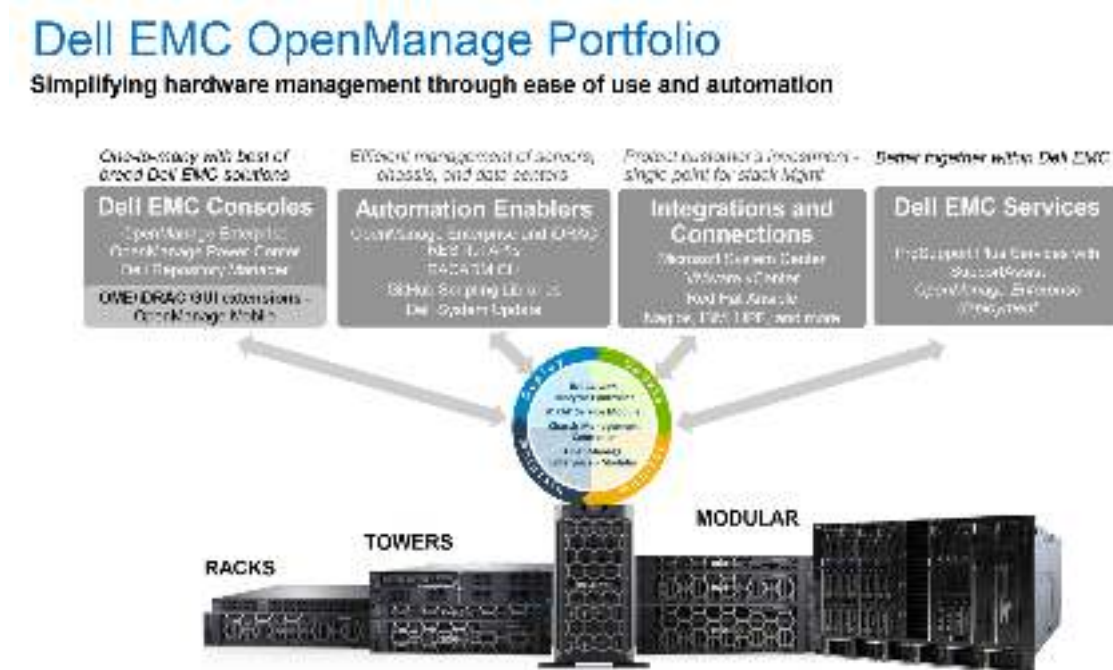


Figure 15. Dell EMC OpenManage Portfolio

Dell EMC delivers management solutions that help IT Administrators effectively deploy, update, monitor, and manage IT assets. OpenManage solutions and tools enable you to quickly respond to problems by helping them to manage Dell EMC servers effectively and efficiently; in physical, virtual, local, and remote environments, operating in-band, and out-of-band (agent-free). The OpenManage portfolio includes innovative embedded management tools such as the integrated Dell Remote Access Controller (iDRAC), Chassis Management Controller and Consoles like OpenManage Enterprise, OpenManage Power Manager plug in, and tools like Repository Manager.

Dell EMC has developed comprehensive systems management solutions based on open standards and has integrated with management consoles that can perform advanced management of Dell hardware. Dell EMC has connected or integrated the advanced management capabilities of Dell hardware into offerings from the industry's top systems management vendors and frameworks such as Ansible, thus making Dell EMC platforms easy to deploy, update, monitor, and manage.

The key tools for managing Dell EMC PowerEdge servers are iDRAC and the one-to-many OpenManage Enterprise console. OpenManage Enterprise helps the system administrators in complete lifecycle management of multiple generations of PowerEdge servers. Other tools such as Repository Manager, which enables simple yet comprehensive change management.

OpenManage tools integrate with systems management framework from other vendors such as VMware, Microsoft, Ansible, and ServiceNow. This enables you to use the skills of the IT staff to efficiently manage Dell EMC PowerEdge servers.

Topics:

- [Server and Chassis Managers](#)
- [Dell EMC consoles](#)
- [Automation Enablers](#)
- [Integration with third-party consoles](#)
- [Connections for third-party consoles](#)
- [Dell EMC Update Utilities](#)
- [Dell resources](#)

Server and Chassis Managers

- Integrated Dell Remote Access Controller (iDRAC)
- iDRAC Service Module (iSM)

Dell EMC consoles

- Dell EMC OpenManage Enterprise
- Dell EMC Repository Manager (DRM)
- Dell EMC OpenManage Enterprise Power Manager plugin to OpenManage Enterprise
- Dell EMC OpenManage Mobile (OMM)

Automation Enablers

- OpenManage Ansible Modules
- iDRAC RESTful APIs (Redfish)
- Standards-based APIs (Python, PowerShell)
- RACADM Command Line Interface (CLI)
- GitHub Scripting Libraries

Integration with third-party consoles

- Dell EMC OpenManage Integrations with Microsoft System Center
- Dell EMC OpenManage Integration for VMware vCenter (OMIVV)
- Dell EMC OpenManage Ansible Modules
- Dell EMC OpenManage Integration with ServiceNow

Connections for third-party consoles

- Micro Focus and other HPE tools
- OpenManage Connection for IBM Tivoli
- OpenManage Plug-in for Nagios Core and XI

Dell EMC Update Utilities


- Dell System Update (DSU)
- Dell EMC Repository Manager (DRM)
- Dell EMC Update Packages (DUP)
- Dell EMC Server Update Utility (SUU)
- Dell EMC Platform Specific Bootable ISO (PSBI)

Dell resources

For additional information about white papers, videos, blogs, forums, technical material, tools, usage examples, and other information, go to the OpenManage page at <https://www.dell.com/openmanagemanuals> or the following product pages:

Table 36. Dell resources

Resource	Location
Integrated Dell Remote Access Controller (iDRAC)	https://www.dell.com/idracmanuals
iDRAC Service Module (iSM)	https://www.dell.com/support/kbdoc/000178050/
OpenManage Ansible Modules	https://www.dell.com/support/kbdoc/000177308/
OpenManage Essentials (OME)	https://www.dell.com/support/kbdoc/000175879/
OpenManage Mobile (OMM)	https://www.dell.com/support/kbdoc/000176046
OpenManage Integration for VMware vCenter (OMIVV)	https://www.dell.com/support/kbdoc/000176981/
OpenManage Integration for Microsoft System Center (OMIMSSC)	https://www.dell.com/support/kbdoc/000147399
Dell EMC Repository Manager (DRM)	https://www.dell.com/support/kbdoc/000177083
Dell EMC System Update (DSU)	https://www.dell.com/support/kbdoc/000130590
Dell EMC Platform Specific Bootable ISO (PSBI)	Dell.com/support/article/sln296511
Dell EMC Chassis Management Controller (CMC)	www.dell.com/support/article/sln311283
OpenManage Connections for Partner Consoles	https://www.dell.com/support/kbdoc/000146912
OpenManage Enterprise Power Manager	https://www.dell.com/support/kbdoc/000176254
OpenManage Integration with ServiceNow (OMISNOW)	Dell.com/support/article/sln317784

 **NOTE:** Features may vary by server. Please refer to the product page on <https://www.dell.com/manuals> for details.

Appendix A. Additional specifications

Topics:

- Chassis dimensions
- System weight
- Video specifications
- USB ports specifications
- Environmental specifications

Chassis dimensions

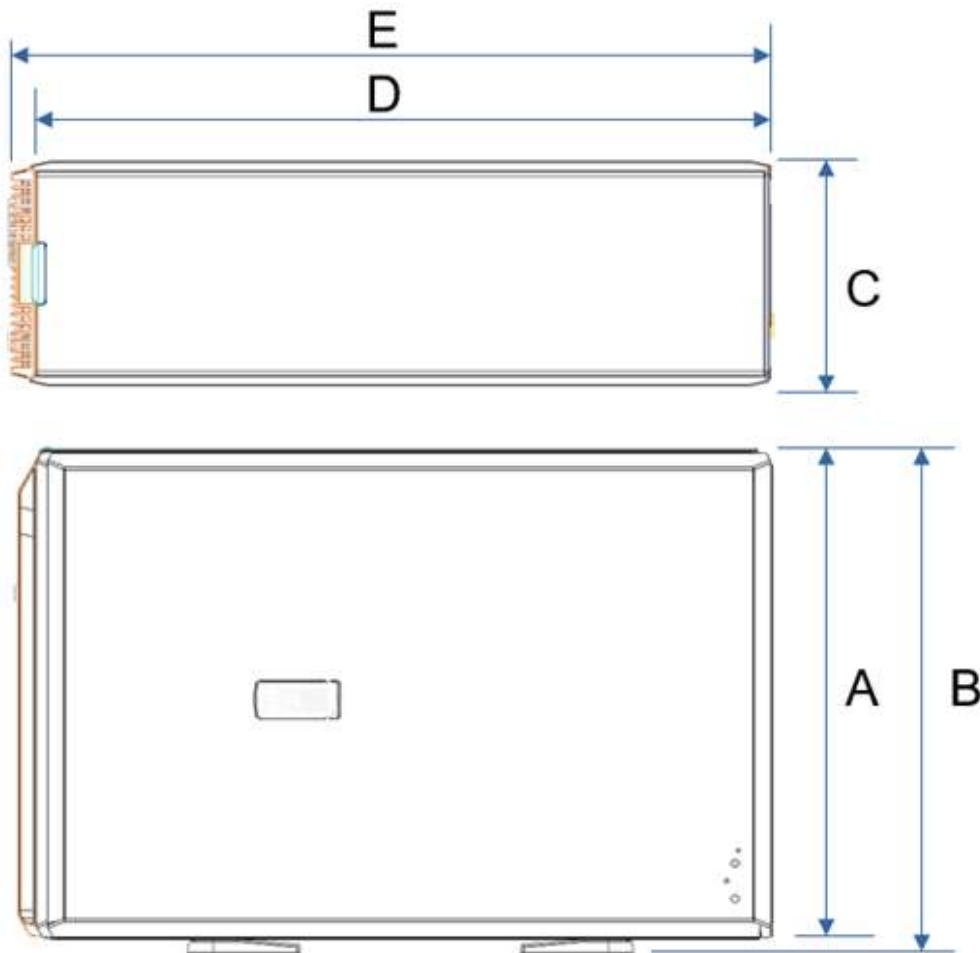


Figure 16. Chassis dimensions

Table 37. Chassis dimension for the system

Drives	A	B	C	D	E (with Bezel)
24 x 2.5-inch / 8 x 3.5-inch + 8 x 2.5-inch NVMe	446.0 mm (17.60 inches)	459.0 mm (18.07 inches)	200.0 mm (7.87 inches)	663.5 mm (26.12 inches)	680.5 mm (26.79 inches)

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

System weight

Table 38. System weight of the PowerEdge T550 system

System configuration	Maximum weight (with all drives/SSDs)
8 x 3.5-inch + 8 x 2.5-inch NVMe	44.48 kg (98.06 pound)
24 x 2.5-inch SAS/SATA	44.1 kg (97.22 pound)

Video specifications

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

Table 39. Supported rear 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

USB ports specifications

Table 40. USB specifications

Front		Rear	
USB port type	No. of ports	USB port type	No. of ports
USB 2.0-compliant port	One	USB 3.0-compliant port	One
USB 3.0-compliant port	One	USB 2.0-compliant port	One
iDRAC Direct port (Micro-AB USB 2.0-compliant port)	One		

NOTE: The front micro USB 2.0 compliant port is only available for the upsell configuration.

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

Environmental specifications

- 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 41. 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 42. 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 80% 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 43. 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 80% 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)

- NOTE:** Certain system hardware configurations may require operating temperatures to be less than 28°C. For more information, see the Thermal air restrictions section.

Table 44. Shared requirements across all categories

Temperature	Specifications
Allowable continuous operations	

Table 44. Shared requirements across all categories (continued)

Temperature	Specifications
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> 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 45. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.21 G _{rms} at 5 Hz to 500 Hz (all operation orientations)
Storage	1.88 G _{rms} at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 46. 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 47. Thermal restriction matrix

Drive Configuration	Processor	Fans	CPU TDP	Fan redundancy	CPU HSK		GPU support		TBU support	CPU blank	Fan blank	Note	GPU riser configuration	
					TDP>150 W	TDP<=150 W	GPU<=75 W	GPU>75 W						
8 x 3.5	1	STD x3	<=185	No, upsell option to STDx6	HPR HSK	STD HSK	No	No	No	Yes	Yes at Fan 2 location	Fan 1/3/4	Riser 0, 1	
	1	STD x6	<=220	Yes			No	No	No	Yes		Fan 1/3/4/5/7/8	Riser 0, 1	
	1	HPR x3	<=220	No, upsell option to HPRx6			Yes	No	No	Yes		Fan 1/3/4	No	
	1	HPR x5*	<=220	Yes			Yes/No	No	Yes	Yes		Fan 1/3/4/7/8 (GPU riser 1 and 2 not supported)	No	
	1	HPR x6	<=220	Yes			Yes	Yes	No	Yes		Fan 1/3/4/5/7/8	Yes	
	2	STD x4	<=185	No, upsell option to STDx8			No	No	No	No		No	NA	Riser 0, 1
	2	STD x8	<=220	Yes			No	No	No	No		NA	Riser 0, 1	
	2	HPR x4	<=220	No, upsell option to HPRx8			Yes	No	No	No		NA	No	
	2	HPR x7*	<=220	TBD			Yes/No	No	Yes	No		Fan 1/2/3/4/6/7/8 i NOTE: GPU riser 1 and 2 not supported	No	
	2	HPR x8	<=220	Yes			Yes	Yes	No	No		NA	Yes	
8 x 2.5 16 x 2.5 24 x 2.5	1 or 2	STD x4	<=185	No, upsell option to STDx8	HPR HSK	STD HSK	No	No	No	Yes for 1 processor	No	NA	Riser 0, 1	
	1 or 2	STD x8	<=220	Yes			No	No	No		NA	Riser 0, 1		

Table 47. Thermal restriction matrix (continued)

Drive Configuration	Processor	Fans	CPU TDP	Fan redundancy	CPU HSK		GPU support		TBU support	CPU blank	Fan blank	Note	GPU riser configuration
					TDP>150 W	TDP<=150 W	GPU<=75 W	GPU>75 W					
	1 or 2	HPR x4	<=220	No, upsell option to STDx8			Yes	No	No			NA	No
	1 or 2	HPR x7*	<=220	Yes			Yes/No	No	Yes			Fan 1/2/3/4/6/7/8 NOTE: GPU riser 1 and 2 not supported	No
	1 or 2	HPR x8	<=220	Yes			Yes	Yes	No			NA	Yes
8 x 3.5 + 8 x 2.5 (NVMe)	1 or 2	HPR x4	<=220	No, upsell option to HPRx8	HPR HSK	STD HSK	Yes	No	No	Yes for 1 processor	No	NA	No or Riser 0, 1, 2
	1 or 2	HPR x7*	<=220	Yes			Yes/No	No	Yes			Fan 1/2/3/4/6/7/8 NOTE: GPU riser 1 and 2 not supported	No
	1 or 2	HPR x8	<=220	Yes			Yes	Yes	No			NA	Yes

- NOTE:** OCP shroud are required for all drive configurations, even if the OCP card is not installed.
- NOTE:** DIMM blanks are required for CPU TDP>185 W, but are not required for CPU TDP<=185 W.
- NOTE:** GPU blank is required at GPU riser slot 2, when a GPU>75 W is installed at GPU riser slot 1.
- NOTE:** HDD blanks are required for empty HDD slots.
- NOTE:** *x5 and x7 fan count is applicable only for TBU configuration. Systems without TBU should not use x5 and x7 fan counts. For TBU configuration, ambient temperature is < 35C.
- NOTE:** When GPU is selected, HPR fan must be required.
- NOTE:** GPU>75W must require fan redundancy (Fan quantity = 6 or 8).
- NOTE:** GPU>75 W does not support TBU.
- NOTE:** STD fans can also be upgraded to HPR fans.

Thermal matrix for all configurations

Table 48. Thermal matrix for all configurations

-		8x, 16x, 24x 2.5-inch SAS/SATA Configuration 1				8x 3.5-inch Configuration 2				8x 3.5-inch + 8x 2.5-inch NVMe Configuration 3	
Fan		STDx4	STDx8	HPRx4	HPRx7 x8	STDx3 x4	STDx6 x8	HPRx3 x4	HPRx5 x6 x7 x8	HPRx4	HPRx7 x8
Fan redundancy		No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Maximum DIMM power		12 W	12 W	12 W	12 W	12 W	12 W	12 W	12 W	12 W	12 W
CPU TDP	105 W	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK
	120 W	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK
	125 W	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK
	135 W	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK
	150 W	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK	STD HSK
	165 W	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK
	185 W	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK
	205 W	Not supporte d	HPR HSK	HPR HSK	HPR HSK	Not supporte d	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK
	220 W	Not supporte d	HPR HSK	HPR HSK	HPR HSK	Not supporte d	HPR HSK	HPR HSK	HPR HSK	HPR HSK	HPR HSK

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 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 49. 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> 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>i</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>i</i> NOTE: This condition applies to data center and non-data center environments.
Corrosive dust	<ul style="list-style-type: none"> Air must be free of corrosive dust. Residual dust present in the air must have a deliquescent point less than 60% relative humidity. <i>i</i> NOTE: This condition applies to data center and non-data center environments.

Table 50. 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 air restrictions

Thermal air restrictions for different configurations

Table 51. 8 x 3.5-inch drive configuration

Standard Operating Support (ASHRAE A2 compliant)	Extended ambient 40° C Operating Support (ASHRAE A3 compliant)	Extended ambient 45° C Operating Support (ASHRAE A4 compliant)
<i>i</i> NOTE: All options supported unless otherwise noted.		
<ul style="list-style-type: none"> 3x or 4x STD fans support only processor with TDP≤185W With STD fans, the following OCP 3.0 and NIC support only optic cable with thermal spec 85C and power <=1.2 W 	<ul style="list-style-type: none"> 3x or 4x STD fans configurations not supported. 6x or 8x STD fans configurations with processor TDP > 120 W is not supported. TBU not supported. 	<ul style="list-style-type: none"> STD fans configurations are not supported. 3x or 4x HPR fans configurations with CPU TDP > 165 W are not supported. TBU not supported.

Table 51. 8 x 3.5-inch drive configuration

Standard Operating Support (ASHRAE A2 compliant) <i>i</i> NOTE: All options supported unless otherwise noted.	Extended ambient 40° C Operating Support (ASHRAE A3 compliant)	Extended ambient 45° C Operating Support (ASHRAE A4 compliant)
<ul style="list-style-type: none"> ○ Broadcom OCP 3.0 QP 25G SFP28 ○ Broadcom PCIe QP 25G ○ NVIDIA CX6-LX PCIe Dual Port 25G SFP28 at slot 6 	<ul style="list-style-type: none"> ● Non-Dell qualified peripheral cards and Channel devices (FW) cards not supported. ● NIC consuming power >= 25 W not supported. For example: CX6 card. ● OCP transfer rate > 25G or cooling tier>10 is not supported. ● Optic cable with spec 85C is required. ● Two PSUs are required. System performance may be reduced in the event of a PSU failure. 	<ul style="list-style-type: none"> ● BOSS M.2 module not supported. ● Non-Dell qualified peripheral cards and Channel devices (FW) cards are not supported. ● NIC consuming power >= 25 W. For example: CX6 card. ● OCP transfer rate >25G or cooling tier > 10 not supported. ● Optic cable with spec 85C is required. ● Two PSUs are required. System performance may be reduced in the event of a PSU failure.

Table 52. 8 x 2.5-inch, 16 x 2.5-inch, 24 x 2.5-inch drive configuration

Standard Operating Support (ASHRAE A2 compliant)	Extended ambient 40° C Operating Support (ASHRAE A3 compliant)	Extended ambient 45° C Operating Support (ASHRAE A4 compliant)
<ul style="list-style-type: none"> ● 4x STD fans support only processor with TDP<=185W ● With STD fans, the following OCP 3.0 and NIC support only optic cable with thermal Spec 85C and power <=1.2 W <ul style="list-style-type: none"> ○ Broadcom OCP 3.0 QP 25G SFP28 ○ Broadcom PCIe QP 25G ○ NVIDIA CX6-LX PCIe Dual Port 25G SFP28 at slot 6 	<ul style="list-style-type: none"> ● 4x STD fans configurations not supported. ● 8x STD fans configurations with CPU TDP > 120 W is not supported. ● TBU not supported. ● Non-Dell qualified peripheral cards and Channel devices (FW) cards are not supported. ● NIC consuming power >= 25 W not supported. For example: CX6 card. ● OCP transfer rate > 25G or cooling tier > 10 not supported. ● Optic cable with spec 85C is required. ● Two PSUs are required. System performance may be reduced in the event of a PSU failure. 	<ul style="list-style-type: none"> ● STD fans configurations are not supported. ● 4x HPR fans configurations with processor TDP > 165 W are not supported. ● TBU not supported. ● BOSS M.2 module is not supported. ● Non-Dell qualified peripheral cards and Channel devices (FW) cards are not supported. ● NIC consuming power >= 25 W. For example: CX6 card. ● OCP transfer rate >25G or cooling tier > 10 not supported. ● Optic cable with spec 85C is required. ● Two PSUs are required. System performance may be reduced in the event of a PSU failure.

Table 53. 8 x 3.5-inch x 8 x NVMe drive configuration

Standard Operating Support (ASHRAE A2 compliant)	Extended ambient 40° C Operating Support (ASHRAE A3 compliant)	Extended ambient 45° C Operating Support (ASHRAE A4 compliant)
<p>HPR fans are required.</p>	<ul style="list-style-type: none"> ● TBU not supported. ● Non-Dell qualified peripheral cards and Channel devices (FW) cards are not supported. ● NIC consuming power >= 25 W not supported. For example: CX6 card. ● OCP transfer rate > 25G or cooling tier > 10 not supported. ● Optic cable with spec 85C is required. 	<ul style="list-style-type: none"> ● 4x HPR fans configurations with CPU TDP > 165 W are not supported. ● TBU not supported. ● BOSS M.2 module is not supported. ● Non-Dell qualified peripheral cards and Channel devices (FW) cards are not supported. ● NIC consuming power >= 25 W. For example: CX6 card. ● OCP transfer rate >25G or cooling tier > 10 not supported.

Table 53. 8 x 3.5-inch x 8 x NVMe drive configuration

Standard Operating Support (ASHRAE A2 compliant)	Extended ambient 40° C Operating Support (ASHRAE A3 compliant)	Extended ambient 45° C Operating Support (ASHRAE A4 compliant)
	<ul style="list-style-type: none">• Two PSUs are required. System performance may be reduced in the event of a PSU failure.	<ul style="list-style-type: none">• Optic cable with spec 85C is required.• Two PSUs are required. System performance may be reduced in the event of a PSU failure.

Appendix B. Standards compliance

The system conforms to the following industry standards.

Table 54. Industry standard documents

Standard	URL for information and specifications
ACPI Advance Configuration and Power Interface Specification, v2.0c	https://uefi.org/specsandtesttools
Ethernet IEEE 802.3-2005	https://standards.ieee.org/
HDG Hardware Design Guide Version 3.0 for Microsoft Windows Server	microsoft.com/whdc/system/platform/pcdesign/desguide/serverdg.msp
IPMI Intelligent Platform Management Interface, v2.0	intel.com/design/servers/ipmi
DDR4 Memory DDR4 SDRAM Specification	jedec.org/standards-documents/docs/jesd79-4.pdf
PCI Express PCI Express Base Specification Rev. 2.0 and 3.0	pcisig.com/specifications/pciexpress
PMBus Power System Management Protocol Specification, v1.2	http://pmbus.org/Assets/PDFS/Public/PMBus_Specification_Part_1_Rev_1-1_20070205.pdf
SAS Serial Attached SCSI, v1.1	http://www.t10.org/
SATA Serial ATA Rev. 2.6; SATA II, SATA 1.0a Extensions, Rev. 1.2	sata-io.org
SMBIOS System Management BIOS Reference Specification, v2.7	dmtf.org/standards/smbios
TPM Trusted Platform Module Specification, v1.2 and v2.0	trustedcomputinggroup.org
UEFI Unified Extensible Firmware Interface Specification, v2.1	uefi.org/specifications
USB Universal Serial Bus Specification, Rev. 2.0	usb.org/developers/docs

Appendix C Additional resources

Table 55. Additional resources

Resource	Description of contents	Location
Installation and Service Manual	This manual, available in PDF format, provides the following information: <ul style="list-style-type: none"> • Chassis features • System Setup program • System messages • System codes and indicators • System BIOS • Remove and replace procedures • Troubleshooting • Diagnostics • Jumpers and connectors 	Dell.com/Support/Manuals
Getting Started Guide	This guide ships with the system, and is also available in PDF format. This guide provides the following information: <ul style="list-style-type: none"> • Initial setup steps • Key system features • Technical specifications 	Dell.com/Support/Manuals
Rack Installation Instructions	This document ships with the rack kits, and provides instructions for installing a server in a rack.	Dell.com/Support/Manuals
Information Update	This document ships with the system, is also available in PDF format online, and provides information on system updates.	Dell.com/Support/Manuals
System Information Label	The system information label documents the system board layout and system jumper settings. Text is minimized due to space limitations and translation considerations. The label size is standardized across platforms.	Inside the system chassis cover
Quick Resource Locator (QRL)	This code on the chassis can be scanned by a phone application to access additional information and resources for the server, including videos, reference materials, service tag information, and Dell EMC contact information.	Inside the system chassis cover
Energy Smart Solution Advisor (ESSA)	The Dell EMC online ESSA enables easier and more meaningful estimates to help you determine the most efficient configuration possible. Use ESSA to calculate the power consumption of your hardware, power infrastructure, and storage.	Dell.com/calc

Appendix D. Support and Deployment Services

Dell EMC Global Services include a wide, customizable range of service choices to simplify the assessment, design, implementation, management and maintenance of your IT environment and to help you transition from platform to platform. Depending on your current business requirements and the level of service you want, we can provide you with factory, on-site, remote, modular and specialized services that fit your needs and budget. We'll help you with a little or a lot - your choice - and provide you with access to our global resources.

Topics:

- [Deployment Services](#)
- [Dell Technologies Consulting Services](#)


Deployment Services

Dell EMC ProDeploy Enterprise Suite

ProDeploy Enterprise Suite gets your server out of the box and into optimized production—fast. Our elite deployment engineers with broad and deep experience utilizing best-in-class processes along with our established global scale can help you around the clock and around the globe. From simple to the most complex server installations and software integration, we take the guess work and risk out of deploying your new server technology.

		Basic Deployment	ProDeploy	ProDeploy Plus
Pre-deployment	Single point of contact for project management	-	●	In-region
	Site readiness review	-	●	■
	Implementation planning	-	●	●
	SAM engagement for ProSupport Plus entitled devices	-	-	●
Deployment	Deployment service hours	Business hours	24x7	24x7
	Remote guidance for hardware installation or	Onsite	Remote or Onsite	Onsite
	Onsite hardware installation and packaging material removal	-	Remote	Onsite
	Install and configure system software	-	●	●
	Install support software and connect with Dell Technologies	-	●	●
Project documentation with knowledge transfer	-	●	●	
Post-deployment	Deployment verification	-	●	●
	Configuration data transfer to Dell EMC technical support	-	●	■
	30-days of post-deployment configuration assistance	-	●	●
	Training credits for Dell EMC Education Services	-	-	●

Figure 17. ProDeploy Enterprise Suite capabilities

 **NOTE:** Hardware installation not applicable on selected software products.

Dell EMC ProDeploy Plus

From beginning to end, ProDeploy Plus provides the skill and scale needed to successfully execute demanding deployments in today's complex IT environments. Certified Dell EMC experts start with extensive environmental assessments and detailed migration planning and recommendations. Software installation includes set up of most versions of Dell EMC SupportAssist and

OpenManage system management utilities. Post-deployment configuration assistance, testing, and product orientation services are also available.

Dell EMC ProDeploy

ProDeploy provides full service installation and configuration of both server hardware and system software by certified deployment engineers including set up of leading operating systems and hypervisors as well as most versions of Dell EMC SupportAssist and OpenManage system management utilities. To prepare for the deployment, we conduct a site readiness review and implementation planning exercise. System testing, validation, and full project documentation with knowledge transfer complete the process.

Dell EMC ProDeploy for HPC

HPC deployments require specialists that understand that cutting edge is yesterday's news. Dell EMC deploys the world 's fastest systems and understands the nuances that make them perform. ProDeploy for HPC provides:

- Global team of dedicated HPC specialists
- Proven track record, thousands of successful HPC deployments
- Design validation, benchmarking, and product orientation

ProDeploy for HPC

Get more out of your cluster starting Day One

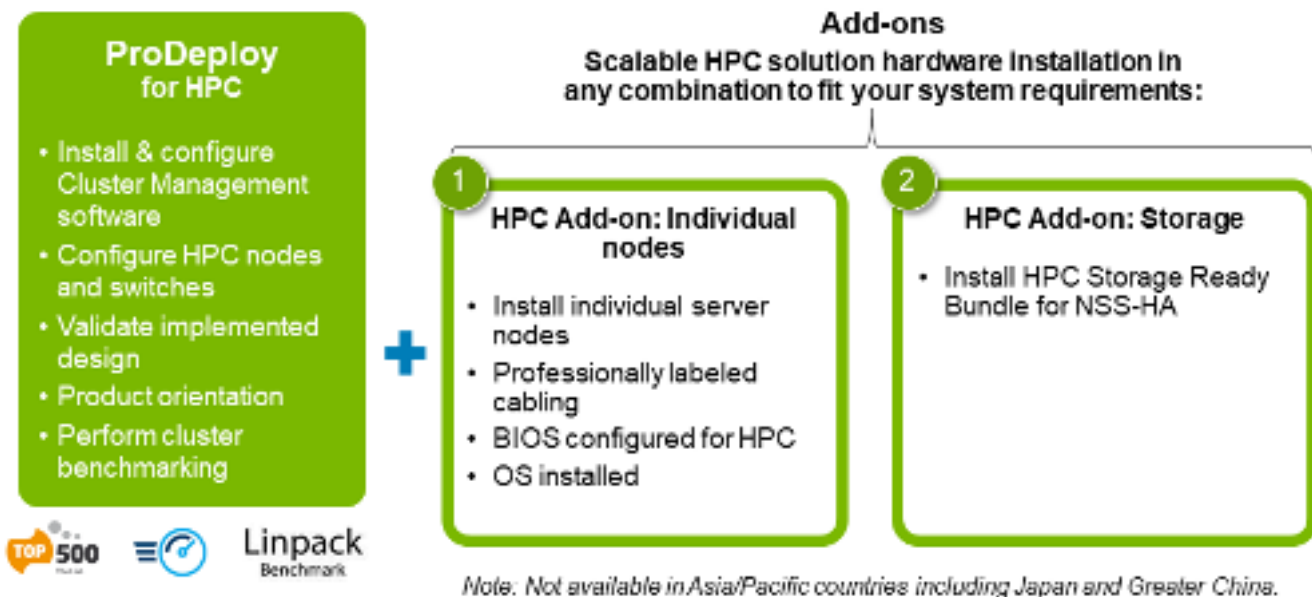


Figure 18. Dell EMC ProDeploy for HPC

Dell EMC Basic Deployment

Basic Deployment delivers worry-free professional installation by experienced technicians who know Dell EMC servers inside and out.

Dell EMC Server Configuration Services

With Dell EMC Rack Integration and other Dell EMC PowerEdge Server Configuration Services, you save time by receiving your systems racked, cabled, tested, and ready to integrate into the data center. Dell EMC staff pre-configure RAID, BIOS and iDRAC settings, install system images, and even install third-party hardware and software.

For more information, see [Server Configuration Services](#).

Dell EMC Residency Services

Residency Services helps customers transition to new capabilities quickly with the assistance of on-site or remote Dell EMC experts whose priorities and time you control. Residency experts can provide post implementation management and knowledge transfer related to a new technology acquisition or day-to-day operational management of the IT infrastructure.

Dell EMC Data Migration Service

Protect your business and data with our single point of contact to manage your data migration project. Your project manager will work with our experienced team of experts to create a plan using industry-leading tools and proven processes based on global best practices to migrate your existing files and data so your business system get up and running quickly and smoothly.

Support Services

ProSupport Enterprise Suite

With the ProSupport Enterprise Suite, we can help you keep your operation running smoothly, so you can focus on running your business. We will help you maintain peak performance and availability of your most essential workloads. ProSupport Enterprise Suite is a suite of support services that enable you to build the solution that is right for your organization. Choose support models based on how you use technology and where you want to allocate resources. From the desktop to the data center, address everyday IT challenges, such as unplanned downtime, mission-critical needs, data and asset protection, support planning, resource allocation, software application management and more. Optimize your IT resources by choosing the right support model.

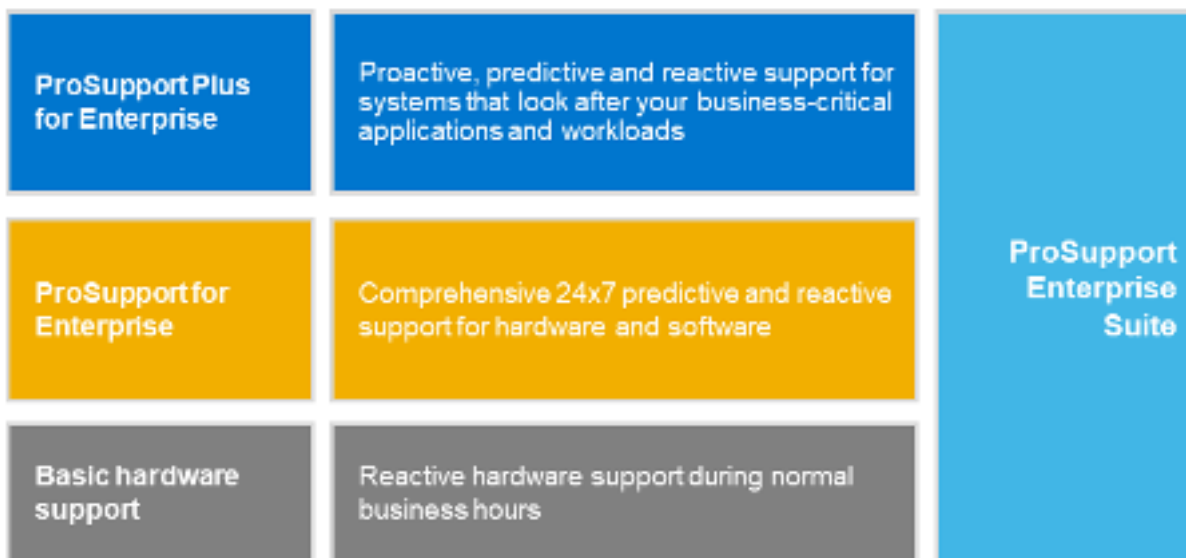


Figure 19. ProSupport Enterprise Suite

Dell EMC ProSupport Plus for Enterprise

When you purchase your PowerEdge server, we recommend ProSupport Plus, our proactive and preventative support service for your business-critical systems. ProSupport Plus provides you with all the benefits of ProSupport, plus the following:

- An assigned Services Account Manager who knows your business and your environment
- Immediate advanced troubleshooting from an engineer who understands your PowerEdge server
- Personalized, preventive recommendations based on analysis of support trends and best practices from across the Dell Technologies infrastructure solutions customer base to reduce support issues and improve performance
- Predictive analysis for issue prevention and optimization enabled by SupportAssist
- Proactive monitoring, issue detection, notification, and automated case creation for accelerated issue resolution enabled by SupportAssist
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect

Dell EMC ProSupport for Enterprise

Our ProSupport service offers highly trained experts around the clock and around the globe to address your IT needs. We help minimize disruptions and maximize availability of PowerEdge server workloads with:

- 24x7 support through phone, chat and online
- Predictive, automated tools and innovative technology
- A central point of accountability for all hardware and software issues
- Collaborative 3rd party support
- Hypervisor, operating system and application support
- Consistent experience regardless of where you are located or what language you speak
- Optional onsite parts and labor response options including next business day or four-hour mission critical

NOTE: Subject to service offer country availability.

Enterprise Support Services Feature Comparison

	Basic	ProSupport	ProSupport Plus
Remote technical support	9x5	24x7	24x7
Covered products	Hardware	Hardware Software	Hardware Software
Onsite hardware support	Next business day	Next business day or 4hr mission critical	Next business day or 4 hr mission critical
3 rd party collaborative assistance		●	●
Automated issue detection & proactive case creation		●	●
Self-service case initiation and management		●	●
Access to software updates		●	●
Priority access to specialized support experts			●
3 rd party software support			●
Assigned Services Account Manager			●
Personalized assessments and recommendations			●
Semiannual systems maintenance			●

Availability and terms of Dell Technologies services may vary by region and by product. For more information, please visit our Service Description page at [dell.com](#).

Figure 20. Dell EMC Enterprise Support model

Dell EMC ProSupport One for Data Center

ProSupport One for Data Center offers flexible site-wide support for large and distributed data centers with more than 1,000 assets. This offering is built on standard ProSupport components that leverage our global scale but are tailored to your company's needs. While not for everyone, this service option offers a truly unique solution for Dell Technologies largest customers with the most complex environments.

- Team of assigned Services Account Managers with remote, on-site options
- Assigned ProSupport One technical and field engineers who are trained on your environment and configurations
- On-demand reporting and analytics-based recommendations enabled by SupportAssist and TechDirect
- Flexible on-site support and parts options that fit your operational model
- A tailored support plan and training for your operations staff

Dell EMC ProSupport for HPC

ProSupport Add-on for HPC

Delivering a true end-to-end support experience across your HPC environment

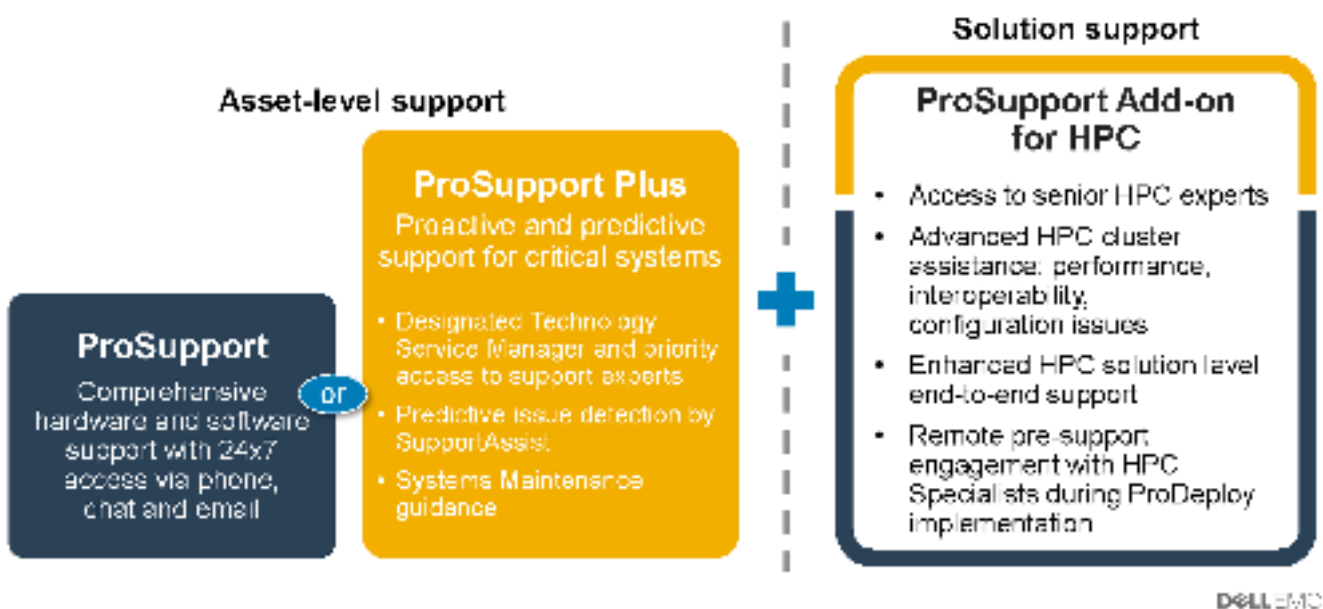


Figure 21. Dell EMC ProSupport for HPC

Support Technologies

Powering your support experience with predictive, data-driven technologies.

Dell EMC SupportAssist

The best time to solve a problem is before it happens. The automated proactive and predictive technology SupportAssist helps reduce steps and time to resolution, often detecting issues before they become a crisis. Benefits include:

- Value—SupportAssist is available to all customers at no additional charge
- Improve productivity—replace manual, high-effort routines with automated support
- Accelerate time to resolution—receive issue alerts, automatic case creation, and proactive contact from Dell EMC experts
- Gain insight and control—optimize enterprise devices with on-demand ProSupport Plus reporting in TechDirect, and get predictive issue detection before the problem starts

NOTE: SupportAssist is included with all support plans, but features vary based on service level agreement.

	Basic Hardware Warranty	ProSupport	ProSupport Plus
Automated issue detection and system state information collection	•	•	•
Proactive, automated case creation and notification		•	•
Predictive issue detection for failure prevention			•
Recommendation reporting available on-demand in TechDirect			•

Figure 22. SupportAssist model

Get started at Dell.com/SupportAssist

Dell EMC TechDirect

Boost IT team productivity when supporting Dell EMC systems. With over 1.4 million self-dispatches processed each year, TechDirect has proven its effectiveness as a support tool. You can:

- Self-dispatch replacement parts
- Request technical support
- Integrate APIs into your help desk

Or, access all your Dell EMC certification and authorization requirements. Train your staff on Dell EMC products, as TechDirect allows you to:

- Download study guides
- Schedule certification and authorization exams
- View transcripts of completed courses and exams

Register at techdirect.dell.

Dell Technologies Consulting Services

Our expert consultants help you transform faster, and quickly achieve business outcomes for the high value workloads Dell EMC PowerEdge systems can handle.

From strategy to full-scale implementation, Dell Technologies Consulting can help you determine how to execute your IT, workforce, or application transformation.

We use prescriptive approaches and proven methodologies combined with Dell Technologies' portfolio and partner ecosystem to help you achieve real business outcomes. From multi-cloud, applications, DevOps, and infrastructure transformations, to business resiliency, data center modernization, analytics, workforce collaboration, and user experiences—we're here to help.

Dell EMC Remote Consulting Services

When you are in the final stages of your PowerEdge server implementation, you can rely on Dell EMC Remote Consulting Services and our certified technical experts to help you optimize your configuration with best practices for your software, virtualization, server, storage, networking, and systems management.

Dell Financial Services (DFS)

Dell Financial Services is a global provider of innovative payment and consumption solutions for hardware, software and services, allowing organizations to align and scale the cost of IT solutions with technology consumption and budget availability. DFS supports all customers, from consumers to small businesses up to the largest global corporations.

Why leverage Payment Solutions from DFS?

- **Optimize Payment Solutions** - Tailor one or more of our solutions to your needs and grow the business.
- **Ease Budget Constraints** - Reduce capital expenses and free up budgets with flexible payment solutions.
- **Increase Efficiency** - Flexible payment transactions allow your infrastructure to grow when needed without relying on a fixed, capital budget.

Topics:

- [Flex On Demand \(FOD\)](#)
- [Flex On Demand for PowerEdge Servers](#)

Flex On Demand (FOD)

- Flex On Demand (FOD) is a metered payment solution for Dell EMC storage, data protection, hyperconverged infrastructure, servers, converged infrastructure and the Dell Technologies Cloud Platform.
- With Flex On Demand, the technology is metered - at a component level - based on how much a specific technology is used.
- You are able to choose your committed or baseline capacity and pay for it at an agreed upon rate each month. When capacity requirements increase above the baseline capacity level, buffer capacity can be utilized at the same rate.
- With Flex On Demand, you can scale up and down within the available buffer capacity and easily manage unpredictable growth, workload bursts, and temporary changes in IT infrastructure requirements.

Flex On Demand for PowerEdge Servers

Flex On Demand gives you unprecedented levels of flexibility in how you consume our technology, allowing you to elastically scale up or down to meet your needs.

Who could benefit from a Flex On Demand consumption model?

Flex On Demand could benefit customers looking to:

- Conserve cashflow
- Achieve predictable payments when usage is variable
- Increase business agility by having immediate access to buffer capacity
- Shift technology spending from a capital expenditure to an ongoing operating expense

Dell EMC PowerEdge servers and Flex On Demand combine the industry's best-selling servers with innovative consumption-based payment programs. It allows you to improve economics, increase flexibility and embrace choice:

- **Improve Economics** - Pay for server resources based on actual hourly usage and avoid the costs of over-provisioning so you can achieve public cloud economics in the data center.
- **Increase Flexibility** - Respond quickly to new service requests, workload fluctuations and changes driven by the business to improve IT flexibility.
- **Embrace Choice** - Choose the infrastructure that's configured to your requirements and payment schedule that works for you.