Dell EMC PowerEdge T640

Technical Specifications

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Notes, cautions, and warnings

(i) | **NOTE: A NOTE indicates important information that helps you make better use of your product.**

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

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

Contents

Dell PowerEdge T640 overview

The Dell PowerEdge T640 is a dual-socket, 5U rackable tower server that supports up to:

- Two Intel Xeon Scalable Processor Family processors
- Up to 24 DIMMs (support for DDR4 RDIMM, LR-DIMM) or 12 NVDIMM-N (one DIMM per channel) are supported.
- Support for up to nine PCIe Gen 3 expansion cards, including a dedicated PERC slot
- Up to 4 GPUs
- Two hot swappable power supply units
- Drive configurations up to:
    - 18 x 3.5 inch SAS/SATA/SSD drives
    - 8 x 3.5 inch SAS/SATA/SSD drives
    - 32 x 2.5 inch SAS/SATA/SSDdrives
    - 16 x 2.5 inch SAS/SATA/SSD drives with 8 x NVME drives
    - 16 x 2.5 inch SAS/SATA/SSD drives

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Technical specifications

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

Topics:

Chassis dimensions

Figure 1. Details the dimensions of the T640 system

Table 1. The dimensions of the T640 system

Xa	Xb	Ya	Yb	Yc	Za (with bezel)	Zb	Zc
304.5 mm (11.98 inches)	217.9 mm (8.57 inches)	434.5 mm (17.10 inches)	443.5 mm (17.46 inches)	471.5 mm (18.56 inches)	15 mm (0.59 inches)	659.9 mm (25.98 inches)	692.8 mm (27.27 inches)

Chassis weight

Table 2. Chassis weight

System	Maximum weight (with all hard drives/SSDs)
2.5"x 32	42.36 Kg (93.38 lb)
3.5"x 18	49.65 Kg (109.45 lb)

Processor specifications

The PowerEdge T640 system supports up to two Intel Xeon Processor Scalable Family processors.

The PowerEdge T440 system supports up to two Intel Xeon Processor Scalable Family processors.

PSU specifications

The PowerEdge T640 system supports up to two AC or DC redundant power supply units (PSUs).

Table 3. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	Current
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100–240 V AC, autoranging	6.5 A–3 A
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100–240 V AC, autoranging	10 A–5 A
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200–240 V AC, autoranging	5 A
750 W DC	Platinum	2891 BTU/hr	-	230 V DC, autoranging	10 A–5 A
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100–240 V AC, autoranging	12 A–6.5 A
1100 W DC	Gold	4416 BTU/hr	-	–(48–60) V DC, autoranging	32 A
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	10 A
2000 W AC	Platinum	7500 BTU/hr	50/60 Hz	100–240 V AC, autoranging	11.5 A
2400 W AC	Platinum	9000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	16 A

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

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

(i) **NOTE:** If a system with 24000 W AC PSU operates at low line 100–120 V AC, then the power rating per PSU is derated to 1400 W.

(i) **NOTE:** If a system with 2000 W AC PSU operates at low line 100–120 V AC, then the power rating per PSU is derated to 1000 W.

(i) **NOTE:** If a system with 1600 W AC PSU operates at low line 100–120 V AC, then the power rating per PSU is derated to 800 W.

(i) **NOTE:** If a system with 1100 W AC PSU operates at low line 100–120 V AC, then the power rating per PSU is derated to 1050 W.

System battery specifications

The PowerEdge T640 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion bus specifications

The PowerEdge T640 system supports PCI express (PCIe) generation 3 and 2 expansion cards. The following table describes the supported expansion cards:

Table 4. Supported PCI express generation 3 expansion cards

PCIe Slot	Processor Connection	Height	Length	Link Width	Slot Width
0 (Internal PERC/HBA Slot)	Processor 1	Full Height	Half Length	x8	x8
1 (Gen3)	Processor 1	Full Height	Full Length	x16	x16
2 (Gen3)	Processor 1	Full Height	Full Length	x4	x8
3 (Gen3)	Processor 1	Full Height	Full Length	x16	x16
4 (Gen3)	Processor 2	Full Height	Half Length	x8	x8
5 (Gen3)	Processor 2	Full Height	Full Length	x4	x8
6 (Gen3)	Processor 2	Full Height	Full Length	x16	x16
7 (Gen3)	Processor 2	Full Height	Full Length	x8	x8
8 (Gen3)	Processor 2	Full Height	Full Length	x16	x16

ⓘ NOTE: To use PCIe slots 4, 5, 6, 7, and 8 both the processors must be installed.

ⓘ NOTE: The expansion card slots are not hot-swappable.

Memory specifications

The T640 system supports up to twenty four 288-pins RDIMMS/LRDIMMS or twelve RDIMMS/LRDIMMS and twelve NVDIMM-Ns with speeds of 2666 MT/s, 2400 MT/s and 2133 MT/s with support for memory optimized operation.

Table 5. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Single processor		Dual processors	
			Minimum RAM	Maximum RAM	Minimum RAM	Maximum RAM
LRDIMM	Quad rank	64 GB	64 GB	768 GB	128 GB	1536 GB
	Single rank	8 GB	8 GB	96 GB	16 GB	192 GB
RDIMM	Dual rank	16 GB	16 GB	192 GB	32 GB	384 GB
	Dual rank	32 GB	32 GB	384 GB	64 GB	768 GB
NVDIMM-N	Single rank	16 GB	Not supported with single processor	Not supported with single processor	RDIMM: 192 GB NVDIMM-N: 16 GB	RDIMM: 384 GB NVDIMM-N: 192 GB

ⓘ NOTE: 8 GB RDIMMs and NVDIMM-N must not be mixed.

ⓘ NOTE: A minimum of two processors are required for any configuration that supports NVDIMM-N DIMMs.

Storage controller specifications

The T640 system supports:

- Internal storage controller cards: PowerEdge RAID Controller (PERC) H730P, H740P, H330, HBA330, S140, 12Gbps SAS HBA,and BOSS-S1.
- External storage controller cards: PERC H840 and 12Gbps SAS HBA.

The T440 system supports:

- PowerEdge RAID Controller(PERC) 9: Internal storage controller cards: H330P+, PERC H730P+, HBA330+
- PERC 10: External storage controller cards: H840 and 12 Gbps Ext SAS HBA
- PERC10: Internal storage controller cards: H740P

Drive specifications

Hard drives

The T640 system supports:

Backplane Configuration Options:

- 16 x 2.5 inches SAS, SATA, Near-Line SAS,SSD
- 32 x 2.5 inches SAS, SATA, Near-Line SAS,SSD
- 8 x 3.5 inches SAS, SATA, Near-Line SAS,SSD
- SW RAID on 3.5 inches SAS, SATA, Near-Line SAS,SSD
- 18 x 3.5 inches SAS, SATA, Near-Line SAS,SSD
- 8 x NVMe drive

Internal hard drive bay and hot-plug backplane:

- Up to 8 x3.5 inches SAS, SATA, Near-Line SAS,SSD, NVMe drive drives with optional flex bay
- Up to 18 x3.5 inches SAS, SATA, Near-Line SAS,SSD drives without optional flex bay
- Up to 32 x2.5 inches SAS, SATA, Near-Line SAS,SSD drives with optional flex bay

Optical drive

The T640 system supports one optional slim SATA DVD-ROM drive or DVD +/-RW drive.

Ports and connectors specifications

USB ports

The T640 system supports:

- USB 2.0 compliant ports and USB 3.0 compliant ports on the front and back panel
- Internal USB 3.0 compliant port

The following table provides more information about the USB specifications:

Table 6. USB specifications

System	Front panel	Back panel	Internal
PowerEdge T640	• One USB 2.0 compliant port and one USB 3.0 compliant port • One iDRAC USB MGMT port (USB2.0)	• Six USB ports • Four USB 3.0 compliant ports • Two USB 2.0 compliant ports	One USB 3.0 compliant port

NIC ports

The PowerEdge T640 system supports two onboard Network Interface Controller (NIC) ports on the back panel, which is available in the following NIC configurations:

• Two 10 Gbps

VGA ports

The Video Graphic Array (VGA) port enables you to connect the system to a VGA display. The T640 system supports two 15-pin VGA ports on the front and back panels.

ⓘ NOTE: **The front VGA port is available only with the rack configuration.**

Serial connector

The T640 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

Internal Dual SD Module with vFlash card

The T640 system supports Internal Dual SD module (IDSDM) and vFlash card. In 14th generation of PowerEdge servers, IDSDM and vFlash card are combined into a single card module, and are available in anyone of these configurations:

• vFlash
• vFlash and IDSDM

The IDSDM/vFlash card sits in the back of the system, in a Dell-proprietary slot. IDSDM/vFlash card supports three micro SD cards (two cards for IDSDM and one card for vFlash). Micro SD cards capacity for IDSDM are 16/32/64 GB while for vFlash the microSD card capacity is 16 GB.

ⓘ NOTE:
The IDSDM supports only Micro SD cards.

Video specifications

The T640 system supports integrated Matrox G200eW3 graphics controller with 16 MB of video frame buffer.

Table 7. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

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

Environmental specifications

ⓘ **NOTE:** **For additional information about environmental measurements for specific system configurations, see Dell.com/ environmental_datasheets.**

Table 8. Temperature specifications

Temperature	Specifications
Storage	−40°C to 65°C (−40°F to 149°F)
Continuous operation (for altitude less than 950 m or 3117 ft)	10°C to 35°C (50°F to 95°F) with no direct sunlight on the equipment.
Fresh air	For information about fresh air, see Expanded Operating Temperature section.
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

Table 9. Relative humidity specifications

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

Table 10. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 G_{rms} at 5 Hz to 350 Hz (all operation orientations).
Storage	1.88 G_{rms} at 10 Hz to 500 Hz for 15 min (all six sides tested).

Table 11. Maximum shock specifications

Maximum vibration	Specifications
Operating	Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 40 G for up to 2.3 ms.of 31G for up to 2.6 ms.
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms.

Table 12. Maximum altitude specifications

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

Table 13. Operating temperature de-rating specifications

Operating temperature de-rating	Specifications
Up to 35ºC (95ºF)	Maximum temperature is reduced by 1ºC/300 m (1ºF/547 ft) above 950 m (3,117 ft).
35ºC to 40ºC (95ºF to 104ºF)	Maximum temperature is reduced by 1ºC/175 m (1ºF/319 ft) above 950 m (3,117 ft).
40ºC to 45ºC (104ºF to 113ºF)	Maximum temperature is reduced by 1ºC/125 m (1ºF/228 ft) above 950 m (3,117 ft).

Standard operating temperature

Table 14. Standard operating temperature specifications

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

Expanded operating temperature

Table 15. Expanded operating temperature specifications

Expanded operating temperature	Specifications
Continuous operation	5ºC to 40ºC at 5% to 85% RH with 29ºC dew point.
	ⓘ NOTE: Outside the standard operating temperature (10ºC to 35ºC), the system can operate continuously in temperatures as low as 5ºC and as high as 40ºC.

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Expanded operating temperature	Specifications
	For temperatures between 35ºC and 40ºC, de-rate maximum allowable temperature by 1ºC per 175 m above 950 m (1ºF per 319 ft).
≤ 1% of annual operating hours	−5ºC to 45ºC at 5% to 90% RH with 29ºC dew point.
	ⓘ NOTE: Outside the standard operating temperature (10ºC to 35ºC), the system can operate down to −5ºC or up to 45ºC for a maximum of 1% of its annual operating hours.
	For temperatures between 40ºC and 45ºC,de-rate maximum allowable temperature by 1ºC per 125 m above 950 m (1ºF per 228 ft).

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

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

Expanded operating temperature restrictions

- Do not perform a cold startup below 5ºC.
- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- 165 W/12 core and higher wattage processor (Thermal Design Power (TDP)>165 W) are not supported.
- Six hot-swappable fans (STD fans) are required.
- Fan redundancy is not supported.
- 18 x 3.5 inch drive configuration is not supported.
- NVMe drives are not supported.
- Redundant power supply unit is required.

    ⓘ NOTE: PSU failure is not supported.
- NVDIMM-Ns are not supported.
- GPUs are not supported.
- Tape backup unit is not supported.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25 W are not supported (cooling tier =7 or above).

Particulate and gaseous contamination specifications

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

Table 16. 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.
	ⓘ NOTE: The ISO Class 8 condition applies to data center environments only. This air filtration requirement does not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor.

Particulate contamination	Specifications
	ⓘ NOTE: **Air entering the data center must have MERV11 or MERV13 filtration.**
Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles.
	ⓘ NOTE: **This condition applies to data center and non-data center environments.**
Corrosive dust	• Air must be free of corrosive dust. • Residual dust present in the air must have a deliquescent point less than 60% relative humidity.
	ⓘ NOTE: **This condition applies to data center and non-data center environments.**

Table 17. 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.

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

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Documentation resources

This section provides information about the documentation resources for your system.

Table 18. Additional documentation resources for your system

Task	Document	Location
Setting up your system	For more information about installing and securing the system into a rack, see the rack documentation included with your rack solution.	Dell.com/dssmanualsDell.com/poweredgemanuals
	For information about installing the system into a rack, see the Rack documentation included with your rack solution or the *Getting Started Guide* document that is shipped with your system.	
	For information about installing the system into a rack, see the Rack documentation included with the *Getting Started With Your System* document that is shipped with your system.	
	For information about installing the system into the enclosure, see the *Getting Started Guide* document that is shipped with your system.	
	For information about setting up and turning on the system, see the *Getting Started Guide* document that is shipped with your system.	Dell.com/poweredgemanuals Dell.com/dssmanuals
Configuring your system	For information about the iDRAC features, configuring and logging in to iDRAC, and managing your system remotely, see the Integrated Dell Remote Access Controller User's Guide.	Dell.com/idracmanuals
	For information about installing the operating system, see the operating system documentation.	Dell.com/operatingsystemmanuals
	For information about understanding Remote Access Controller Admin (RACADM) subcommands and supported RACADM interfaces, see the RACADM Command Line Reference Guide for iDRAC.	Dell.com/idracmanuals
	For information about updating drivers and firmware, see the Methods to download firmware and drivers section in this document.	To download drivers: Dell.com/support/drivers
Managing your system	For information about systems management software offered by Dell, see the Dell OpenManage Systems Management Overview Guide.	Dell.com/openmanagemanuals
	For information about setting up, using, and troubleshooting OpenManage, see the Dell OpenManage Server Administrator User's Guide.	Dell.com/openmanagemanuals

Task	Document	Location
	For information about installing, using, and troubleshooting Dell OpenManage Essentials, see the Dell OpenManage Essentials User's Guide.	Dell.com/openmanagemanuals
	For information about installing and using Dell SupportAssist, see the Dell EMC SupportAssist Enterprise User's Guide.	Dell.com/serviceabilitytools
	For understanding the features of Dell Lifecycle Controller, see the Dell Lifecycle Controller User's Guide.	Dell.com/idracmanuals
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	Dell.com/openmanagemanuals
	For information about viewing inventory, performing configuration and monitoring tasks, remotely turning on or off servers, and enabling alerts for events on servers and components using the Dell Chassis Management Controller (CMC), see the CMC User's Guide.	Dell.com/cmcmanuals
Working with the Dell PowerEdge RAID controllers	For information about understanding the features of the Dell PowerEdge RAID controllers (PERC), Software RAID controllers, or BOSS card and deploying the cards, see the Storage controller documentation.	Dell.com/storagecontrollermanuals
Understanding event and error messages	For information about checking the event and error messages generated by the system firmware and agents that monitor system components, see the Dell Event and Error Messages Reference Guide.	Dell.com/openmanagemanuals > OpenManage software
Fan Control Board firmware update and Set Chassis Type procedure	For information about updating the Fan Control Board firmware and setting the chassis type to accommodate either PowerEdge C6320 or PowerEdge C6320p sleds in the PowerEdge C6300 enclosure, see the Fan Control Board firmware update and Set Chassis Type procedure section in this document.	Dell.com/poweredgemanuals
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	Dell.com/poweredgemanuals

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Getting help

Topics:

- Receiving automated support with SupportAssist
- Contacting Dell
- Documentation feedback
- Accessing system information by using QRL

Receiving automated support with SupportAssist

Dell SupportAssist is an optional Dell Services offering that automates technical support for your Dell server, storage, and networking devices. By installing and setting up a SupportAssist application in your IT environment, you can receive the following benefits:

- **Automated issue detection** — SupportAssist monitors your Dell devices and automatically detects hardware issues, both proactively and predictively.
- **Automated case creation** — When an issue is detected, SupportAssist automatically opens a support case with Dell Technical Support.
- **Automated diagnostic collection** — SupportAssist automatically collects system state information from your devices and uploads it securely to Dell. This information is used by Dell Technical Support to troubleshoot the issue.
- **Proactive contact** — A Dell Technical Support agent contacts you about the support case and helps you resolve the issue.

The available benefits vary depending on the Dell Service entitlement purchased for your device. For more information about SupportAssist, go to Dell.com/SupportAssist.

Contacting Dell

Dell provides several online and telephone based support and service options. If you do not have an active internet connection, you can find contact information about your purchase invoice, packing slip, bill, or Dell product catalog. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical assistance, or customer service issues:

1   Go to Dell.com/support.
2   Select your country from the drop-down menu on the lower right corner of the page.
3   For customized support:
    a   Enter your system Service Tag in the **Enter your Service Tag** field.
    b   Click **Submit**.
        The support page that lists the various support categories is displayed.
4   For general support:
    a   Select your product category.
    b   Select your product segment.
    c   Select your product.
        The support page that lists the various support categories is displayed.
5   For contact details of Dell Global Technical Support:
    a   Click Global Technical Support.
    b   The **Contact Technical Support** page is displayed with details to call, chat, or e-mail the Dell Global Technical Support team.

Documentation feedback

You can rate the documentation or write your feedback on any of our Dell documentation pages and click **Send Feedback** to send your feedback.

Accessing system information by using QRL

You can use the Quick Resource Locator (QRL) to get immediate access to the information about your system.The QRL is located on the top of the system cover.

Prerequisites

Ensure that your smartphone or tablet has the QR code scanner installed.

The QRL includes the following information about your system:

- How-to videos
- Reference materials, including the Owner's Manual, LCD diagnostics, and mechanical overview
- Your system service tag to quickly access your specific hardware configuration and warranty information
- A direct link to Dell to contact technical assistance and sales teams

Steps

1   Go to **Dell.com/QRL** and navigate to your specific product or
2   Use your smartphone or tablet to scan the model-specific Quick Resource (QR) code on your Dell PowerEdge system or in the Quick Resource Locator section.
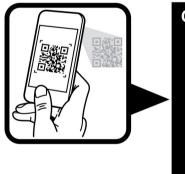
Quick Resource Locator for PowerEdge T640

Figure 2. Quick Resource Locator for PowerEdge T640

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