




Dell EMC PowerEdge R540

Technical Specifications

Notes, cautions, and warnings

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

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

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

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Dell EMC PowerEdge R540 overview

The PowerEdge R540 is a 2U, dual socket rack system with 8 x 3.5 inch drives or 12 x 3.5 inch drives system and supports up to:

- Two Intel Xeon Processor Scalable Family processors
- 16 DIMM slots
- 14 drives or solid-state drives
- Two redundant power supply units (PSU) or single cabled PSU

 **NOTE:** All instances of SAS, SATA hard drives and SSDs are referred to as drives in this document, unless specified otherwise.

Technical specifications

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

Topics:

- [System dimensions](#)
- [Chassis weight](#)
- [Processor specifications](#)
- [PSU specifications](#)
- [System battery specifications](#)
- [Expansion bus specifications](#)
- [Memory specifications](#)
- [Drive specifications](#)
- [Ports and connectors specifications](#)
- [Video specifications](#)
- [Environmental specifications](#)

System dimensions

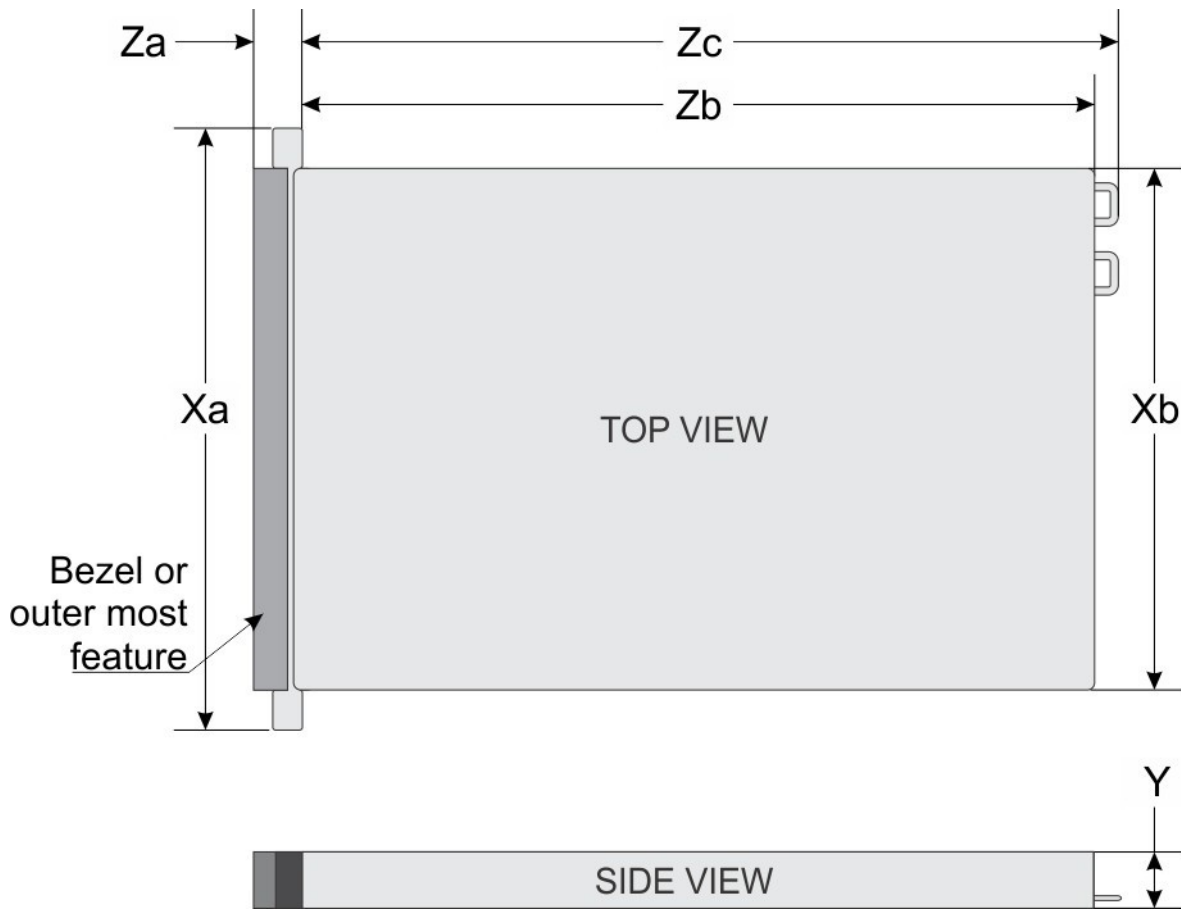


Figure 1. Dimensions of the PowerEdge R540 system

Table 1. Dimensions of the PowerEdge R540 system

Xa	Xb	Y	Za (with bezel)	Za (without bezel)	Zb	Zc
482.0 mm (18.97 inches)	434.0 mm (17.08 inches)	86.8 mm (3.41 inches)	35.84 mm (1.41 inches)	22 mm (0.87 inches)	647.07 mm (25.47 inches)	681.755 mm (26.84 inches)

Chassis weight

Table 2. Chassis weight

System	Maximum weight (with all drives/SSDs)
8 x 3.5 inch	25.4 kg (55.99 lb)
12 x 3.5 inch	29.68 kg (65.43 lb)

Processor specifications

The PowerEdge R540 system supports up to two Intel Xeon Processor Scalable Family processors.

PSU specifications

The PowerEdge R540 system supports the following AC or DC power supply units (PSU).

Table 3. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100-240 V AC, autoranging
1100 W DC	Platinum	4416 BTU/hr	50/60 Hz	200-380 V DC, autoranging
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100-240 V AC, autoranging
750 W DC	Platinum	2902 BTU/hr	50/60 Hz	240 V DC
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100-240 V AC, autoranging
450 W AC	Bronze	1871 BTU/hr	50/60 Hz	100-240 V AC, autoranging

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

NOTE: This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 230 V.

System battery specifications

The PowerEdge R540 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion bus specifications

The PowerEdge R540 system supports PCI express (PCIe) generation six expansion cards, which need to be installed on the system board using expansion card risers. The R540 system supports three types of expansion card risers.

Memory specifications

The PowerEdge R540 system supports 16 DDR4 registered DIMM (RDIMMs) slots. Supported memory bus frequencies are 2666 MT/s, 2400 MT/s, 2133 MT/s, and 1866 MT/s.

Table 4. Memory specifications

Memory module sockets	Memory capacity	Minimum RAM	Maximum RAM
Sixteen 288-pin	<ul style="list-style-type: none">8 GB, 16 GB, or 32 GB single rank or dual rank (RDIMMs)	<ul style="list-style-type: none">4 GB with single processor8 GB with dual processors (minimum one memory module per processor)	<ul style="list-style-type: none">Up to 256 GB with a single processorUp to 384 GB with a dual processor

Drive specifications

Drives

The PowerEdge R540 system supports:

- Up to 14 x 3.5 inch drives or 2.5 inch drives with drive adapter, internal, hot swappable SAS, SATA, or Nearline SAS drives or
- Up to 8 x 3.5 inch drives or 2.5 inch drives with drive adapter, internal, hot swappable SATA SSDs

Ports and connectors specifications

USB ports

The PowerEdge R540 system supports:

- USB 2.0-compliant port on the front panel
- USB 3.0-compliant port on the back panel


The following table provides more information about the USB specifications:

Table 5. USB specifications

Front panel	Back panel	Internal USB
<ul style="list-style-type: none">· Two USB 2.0-compliant port· One iDRAC Direct (Micro-AB USB) port	<ul style="list-style-type: none">· Two USB 3.0-compliant port	<ul style="list-style-type: none">· One internal USB 3.0 port

NIC ports

The PowerEdge R540 system supports two Network Interface Controller (NIC) ports on the back panel, which have two 1 Gbps configuration.

 **NOTE:** You can install up to six PCIe add-on NIC cards.

Serial connector

The serial connector connects a serial device to the system. The PowerEdge R540 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

VGA ports

The Video Graphic Array (VGA) port enables you to connect the system to a VGA display. The PowerEdge R540 system supports two 15-pin VGA ports on the front and back panels.

Internal Dual SD Module

The PowerEdge R540 system supports two optional flash memory card slots with an internal dual MicroSD module.

NOTE: One card slot is dedicated for redundancy.

Video specifications

The PowerEdge R540 system supports Matrox G200eR2 graphics card with 16 MB capacity.

Table 6. Supported video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
640x480	60,70	8, 16, 32
800x600	60,75, 85	8, 16, 32
1024x768	60,75, 85	8, 16, 32
1152x864	60,75, 85	8, 16, 32
1280x1024	60,75	8, 16, 32
1440x900	60	8, 16, 32

Environmental specifications

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

Table 7. 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 the Expanded Operating Temperature section.
Maximum temperature gradient (operating and storage)	20°C/h (68°F/h)

Table 8. 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 9. 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 10. Maximum shock specifications

Maximum shock	Specifications
Operating	Six consecutively executed shock pulses in the positive and negative x, y, and z axes of 6 G for up to 11 ms.
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms.

Table 11. Maximum altitude specifications

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

Table 12. Operating temperature derating specifications

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

Particulate and gaseous contamination specifications

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

Table 13. 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: 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.

Particulatecontamination	Specifications
	<p>① NOTE: Air entering the data center must have MERV11 or MERV13 filtration.</p>
Conductive dust	<p>Air must be free of conductive dust, zinc whiskers, or other conductive particles.</p> <p>① NOTE: This condition applies to data center and non-data center environments.</p>
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. <p>① NOTE: This condition applies to data center and non-data center environments.</p>

Table 14. Gaseous contamination specifications

Gaseous contamination	Specifications
Copper coupon corrosion rate	<300 Å/month per Class G1 as defined by ANSI/ISA71.04-1985.
Silver coupon corrosion rate	<200 Å/month as defined by AHSRAETC9.9.

① **NOTE:** Maximum corrosive contaminant levels measured at ≤50% relative humidity.

Standard operating temperature

Table 15. Standard operating temperature specifications

Standard operating temperature	Specifications
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.

Expanded operating temperature

Table 16. Expanded operating temperature specifications

Expanded operating temperature	Specifications
Continuous operation	<p>5°C to 40°C at 5% to 85% RH with 29°C dew point.</p> <p>① NOTE: Outside the standard operating temperature (10°C to 40°C), the system can operate continuously in temperatures as low as 5°C and as high as 40°C.</p> <p>For temperatures between 35°C and 40°C, de-rate maximum allowable temperature by 1°C per 1.75 m above 950 m (1°F per 31.9 ft).</p>
≤ 1% of annual operating hours	-5°C to 45°C at 5% to 90% RH with 29°C dew point.

NOTE: Outside the standard operating temperature (10°C to 40°C), the system can operate down to -5°C or up to 45°C for a maximum of 1% of its annual operating hours.

For temperatures between 40°C and 45°C, de-rate maximum allowable temperature by 1°C per 1.25 m above 950 m (1°F 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 may be reported on the bezel's LCD panel and in the System Event Log.

Expanded operating temperature restrictions

- Do not perform a cold startup below 5°C.
- The operating temperature specified is for a maximum altitude of 3050 m (10,000 ft).
- Redundant power supply configuration is required.
- AEP DIMM is not supported.
- GPGPU card is not supported.
- Rear drive configuration is not supported.
- 1.2x3.5 inch SM configuration with CPU 140W/130W/115W/105W_4C is not supported.
- LRDIMM is not supported.
- Non-Dell qualified peripheral cards and/or peripheral cards greater than 25W are not supported.
- Tape backup unit (TBU) is not supported.

Thermal restriction matrix

Table 17. Thermal restriction matrix for R540

Storage configuration	Front	8 drive	12 drive	12 drive	
	Rear	NA	NA	2 drive	
Fan type		Standard fan	Standard fan	High performance fan	
CPU heat sink type		1.5U heat sink	1.5U heat sink	1U heat sink	
Processor TDP (W) number	Core count	Ambient = 35°C	Ambient = 35°C	Ambient = 30°C	Ambient = 30°C
Intel Xenon Gold 125 6138	20	Yes	Yes	Yes	Yes
Intel Xenon Gold 125 6130	16	Yes	Yes	Yes	Yes
Intel Xenon Gold 125 6126	12	Yes	Yes	Yes	Yes
Intel Xenon Gold 115 6128	6	Yes	No	Yes	Yes

Intel Xenon Gold 5122	105	4	Yes	No	Yes	Yes
Intel Xenon Gold 5115	85	10	Yes	Yes	Yes	Yes
Intel Xenon Silver 4116	85	12	Yes	Yes	Yes	Yes
Intel Xenon Silver 4114	85	10	Yes	Yes	Yes	Yes
Intel Xenon Silver 4110	85	8	Yes	Yes	Yes	Yes
Intel Xenon Bronze 3106	85	8	Yes	Yes	Yes	Yes
Intel Xenon Bronze 3104	85	6	Yes	Yes	Yes	Yes
Intel Xenon Silver 4112	85	4	Yes	Yes	Yes	Yes

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 racksolution.	Dell.com/poweredgemanuals
	For information about setting up and turning on the system, see the <i>Getting Started Guide</i> document that is shipped with your system.	Dell.com/poweredgemanuals
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
Managing your system	For information about updating drivers and firmware, see the <i>Methods to download firmware and drivers</i> section in this document.	To download drivers: Dell.com/support/drivers
	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
	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

Task	Document	Location
	For information about partner programs enterprise systems management, see the OpenManage Connections Enterprise Systems Management documents.	Dell.com/openmanagemanuals
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
Troubleshooting your system	For information about identifying and troubleshooting the PowerEdge server issues, see the Server Troubleshooting Guide.	Dell.com/poweredgemanuals

Getting help

Topics:

- [Contacting Dell](#)
- [Documentation feedback](#)
- [Accessing system information by using QRL](#)
- [Receiving automated support with 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.

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 R540

Quick Resource Locator for PowerEdge R540



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.

Appendix. Supported processors for R540

CPU	Cores	Speed(GHz)	Memory Speed	TDP(W)	threads
Bronze3104	6	1.7	2133	85	6
Bronze3106	8	1.7	2133	85	8
Silver4108	8	1.8	2400	85	16
Silver4110	8	2.1	2400	85	16
Silver4112	4	2.6	2400	85	8
Silver4114	10	2.2	2400	85	20
Silver4116	12	2.1	2400	85	24
Gold5118	12	2.3	2400	105	24
Gold5120	14	2.2	2400	105	28
Gold5122	4	3.6	2666	105	8
Gold6126	12	2.6	2666	125	24
Gold6130	16	2.1	2666	125	32
Gold6138	20	2	2666	125	40