Dell EMC VxFlex Appliance and VxFlex Ready Node R840

Owner's Guide

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DELL EMC

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Dell EMC
Hopkinton, Massachusetts 01748-9103
1-508-435-1000 In North America 1-866-464-7381
www.DellEMC.com

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Notes, cautions, and warnings

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

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

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

CHAPTER 1

About this guide

This guide provides an overview of the VxFlex Appliance and VxFlex Ready Node R840 system, diagnostic tools, and technical specifications.

Use this guide for information about your system.

- Typographical conventions 8
- Notes, cautions, and warnings 8

Typographical conventions

Dell EMC uses the following type style conventions in this document:

Bold	Used for names of interface elements, such as names of windows, dialog boxes, buttons, fields, tab names, key names, and menu paths (what the user specifically selects or clicks)
Italic	Used for full titles of publications referenced in text
`Monospace`	Used for: • System code • System output, such as an error message or script • Pathnames, filenames, prompts, and syntax • Commands and options
Monospace italic	Used for variables
`Monospace bold`	Used for user input
[ ]	Square brackets enclose optional values
|	Vertical bar indicates alternate selections - the bar means “or”
{ }	Braces enclose content that the user must specify, such as x or y or z
...	Ellipses indicate nonessential information omitted from the example

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.

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CHAPTER 2

System overview

This section provides an overview of the VxFlex Appliance and the VxFlex Ready Node R840.

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R840 system overview

The VxFlex Appliance and VxFlex Ready Node R840 server is a 2U server that supports a maximum of:

- Four Intel Xeon Processor Scalable family (Skylake-EP) processors
- 48 DIMM slots
- Two AC power supply units
- 24 SAS, SATA and up to 24 NVMe drives
- The VxFlex Ready Node also supports a BOSSless configuration.

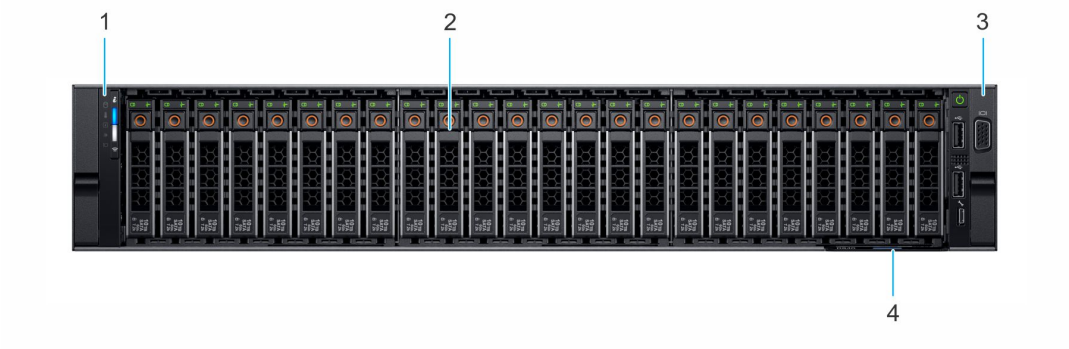
For more information about supported drives, see Technical specifications.

Note: All instances SAS, SATA, or NVMe and are referred to as drives in this document, unless specified otherwise.

Front view of the R840 system

Use this topic to understand the front view of the R840 system.

The following image shows the front view of the R840 system:



1. Left control panel
2. Drives
3. Right control panel
4. Service Tag

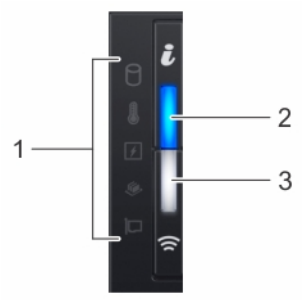
Control panels

This section describes the system's control panels.

Left control panel

The left control panel is explained as follows:

The following image shows the left control panel view with optional iDRAC Quick Sync 2.0 indicator:



1. Status LED indicators
2. System health and system ID indicator
3. iDRAC Quick Sync 2 wireless indicator (optional)

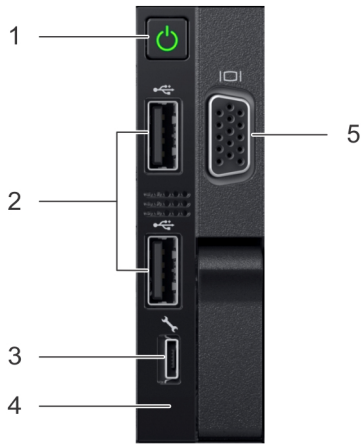
   Note: The iDRAC Quick Sync 2 feature allows you to manage your system using mobile devices. This feature is only available on certain configurations. For more information about the feature, see the *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals.

Note: For more information about the indicator codes, see System diagnostics and indicator codes.

Right control panel view

The right control panel is explained as follows:

The following image shows the right control panel view:



1. Power button
2. USB 2.0 port (2)
3. iDRAC Direct port
4. iDRAC Direct LED
5. VGA port

Note: For more information about the ports, see Technical specifications.

LCD panel

The LCD panel provides system information, status, and error messages to indicate whether the system is functioning correctly or requires attention. The LCD panel can also be used to configure or view the system's iDRAC IP address.

The LCD panel is available only on the optional front bezel. The optional front bezel is hot pluggable.

The statuses and conditions of the LCD panel are outlined here:

- The LCD backlight is white during normal operating conditions.
- When the system needs attention, the LCD backlight turns amber, and displays an error code followed by descriptive text.
  Note: If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is turned on or off.
- When the system turns off and there are no errors, LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.
  If the problem persists, see "Getting help" at the end of this publication.
- The LCD backlight remains off if LCD messaging is turned off using the iDRAC utility, the LCD panel, or other tools.

Figure 1 LCD panel

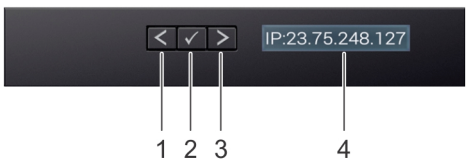


Table 1 LCD panel features

Item	Button or display	Description
1	Left	Moves the cursor back in one-step increments.
2	Select	Selects the menu item that is highlighted by the cursor.
3	Right	Moves the cursor forward in one-step increments. During message scrolling: • Press and hold the right button to increase scrolling speed. • Release the button to stop. **Note:** The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays system information, status, and error messages or iDRAC IP address.

Viewing Home screen

The **Home** screen displays user-configurable information about the system. This screen is displayed during normal system operation when there are no status messages or errors. When the system turns off and there are no errors, LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.

Procedure

1. To view the **Home** screen, press one of the three navigation buttons (Select, Left, or Right).
2. To navigate to the **Home** screen from another menu, complete the following steps:
   a. Press and hold the navigation button till the up arrow is displayed.
   b. Navigate to the **Home** icon using the up arrow .
   c. Select the **Home** icon.
   d. On the **Home** screen, press the **Select** button to enter the main menu.

Setup menu

The **Setup** menu contains the following options:

Note: When you select an option in the **Setup** menu, you must confirm the option before proceeding to the next action.

iDRAC

Select **DHCP** or **Static IP** to configure the network mode. If **Static IP** is selected, the available fields are **IP**, **Subnet (Sub)**, and **Gateway (Gtw)**. Select **Setup DNS** to enable DNS and to view domain addresses. Two separate DNS entries are available.

Set error

Select **SEL** to view LCD error messages in a format that matches the IPMI description in the SEL. This enables you to match an LCD message with an SEL entry.
Select **Simple** to view LCD error messages in a simplified user-friendly description. For information about the event and error messages generated by the system firmware and agents that monitor system components, see the Error Code Lookup page at qrl.dell.com

Set home

Select the default information to be displayed on the **Home** screen. See View menu section for the options and option items that can be set as the default on the **Home** screen.

View menu

The **View** menu contains the following options:

Note: When you select an option in the **View** menu, you must confirm the option before proceeding to the next action.

iDRAC IP

Displays the **IPv4** or **IPv6** addresses for iDRAC9. Addresses include **DNS** (**Primary** and **Secondary**), **Gateway**, **IP**, and **Subnet** (IPv6 does not have Subnet).

MAC

Displays the MAC addresses for **iDRAC**, **iSCSI**, or **Network** devices.

Name

Displays the name of the **Host**, **Model**, or **User String** for the system.

Number

Displays the **Asset tag** or the **Service tag** for the system.

Power

Displays the power output of the system in BTU/hr or Watts. The display format can be configured in the **Set home** submenu of the **Setup** menu.

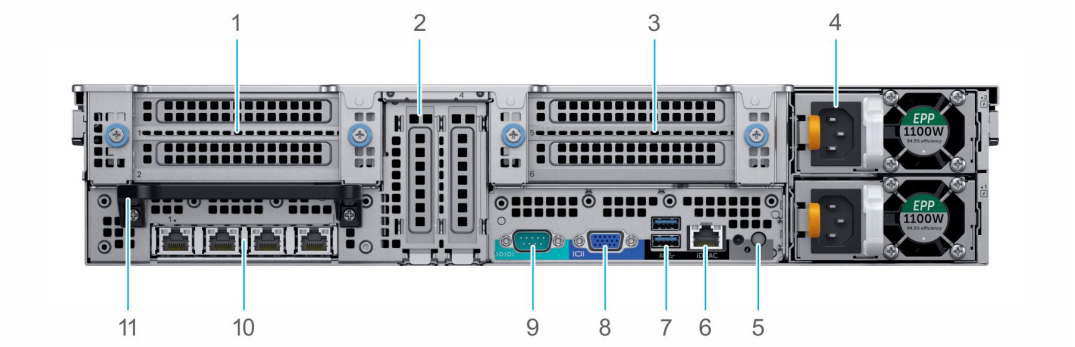
Temperature

Displays the temperature of the system in Celsius or Fahrenheit. The display format can be configured in the **Set home** submenu of the **Setup** menu.

Rear view of the R840 system

The back view displays the features available on the back of the R840 system.

The image below shows the rear view of the R840 system.



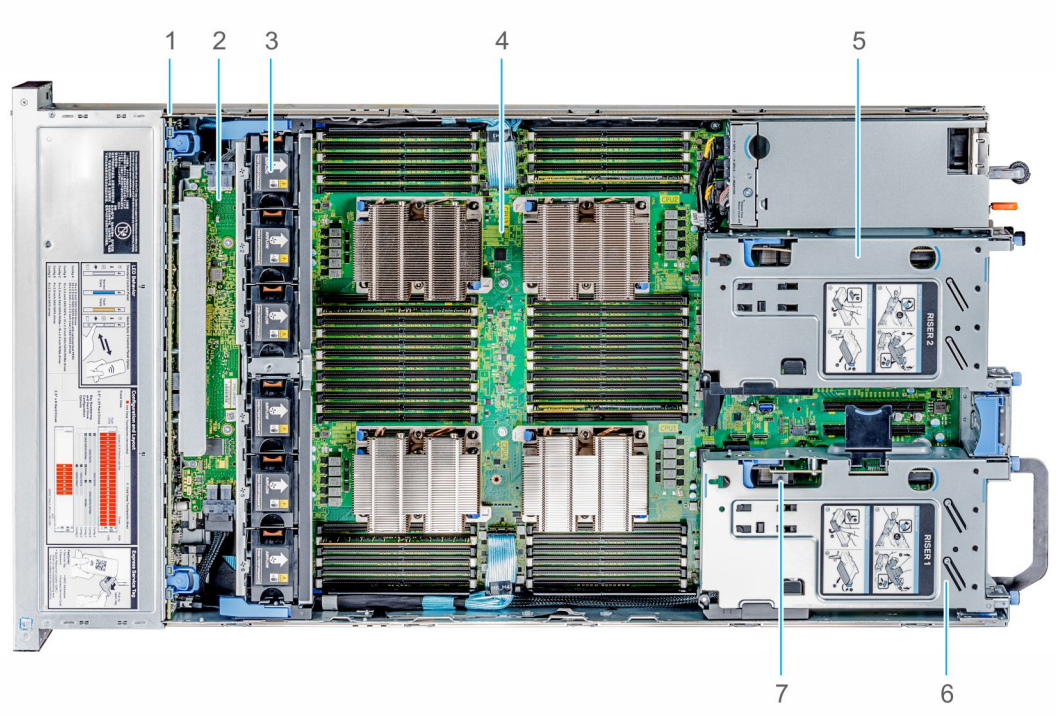
1. Riser 1 - Full-height PCIe expansion card (Slot 1 and 2)
2. Half-height PCIe expansion card slots located on the system board (Slot 3 and 4)
3. Riser 2 -Full-height PCIe expansion card slots (Slot 5 and 6)
4. Power supply units (2)
5. System identification button
6. iDRAC9 dedicated port
7. USB 3.0 ports (2)
8. VGA port
9. Serial port
10. NIC ports (4)
11. Rear handle

Note: For more information about the ports and connectors, see Technical specifications .

Inside the system

Components that are hot swappable have orange touch points and the components that are not hot swappable have blue touch points.

The following image shows the inside the system without rear drive cage.



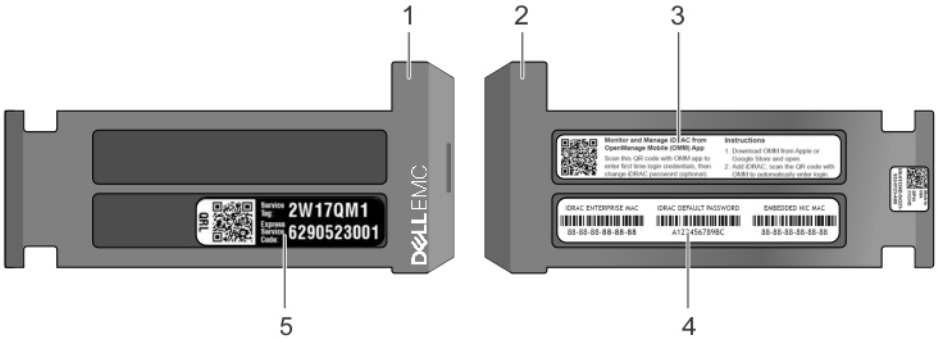
1. Drive backplane
2. SAS Expander board (not supported)
3. Cooling fans (6)
4. System board
5. Full-height expansion card Riser 2
6. Full-height expansion card Riser 1
7. Intrusion switch

Locating the Service Tag of your system

You can identify your system using the unique Express Service Code and Service Tag. Pull out the information tag in the front of the system to view the Express Service Code and Service Tag. Alternatively, the information may be on a sticker on the chassis of the system.

The mini Enterprise Service Tag (EST) is found on the back of the system. This information is used by Dell EMC to route support calls to the appropriate personnel.

Figure 2 Service Tag



1. Information tag (top view)
2. Information tag (bottom view)
3. OpenManage Mobile (OMM) label (optional)
4. iDRAC MAC address and iDRAC secure password label

   Note: If you have opted for secure default access to iDRAC, the iDRAC secure default password is available on the back of the system Information tag. This section of label will be blank, if you have not opted for secure default access to iDRAC, then the default user name and password are root and Scaleio123, respectively.
5. Service Tag

CHAPTER 3

Technical specifications

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

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- Chassis weight 18
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- Memory specifications 21
- Storage controller specifications 21
- Drive specifications 21
- Ports and connector specifications 21
- Video specifications 22
- Environmental specifications 23

Chassis dimensions

This topic provides details of the dimensions of the R840 system:

Figure 3 R840 server dimensions

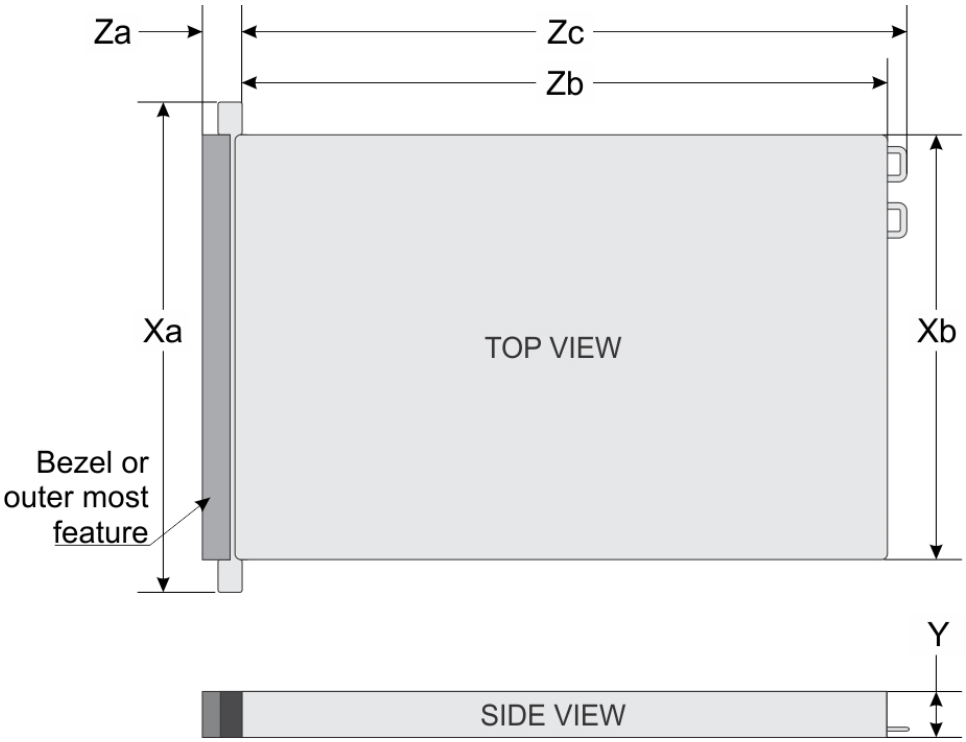


Table 2 R840 server dimensions

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

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

Chassis weight

The following table shows the maximum weight of the R840 server chassis:

Table 3 Chassis weight

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

Processor specifications

The R840 system supports four processors from the Intel Xeon Scalable Processor family.

PSU specifications

The R840 system supports up to two AC or DC power supply units (PSUs). The following table describes the specifications for the supported power supplies.

Table 4 PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage	High line 200V–240 V	Low line 100 V– 140 V	DC	Current
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	1600 W	800 W	NA	10 A
2000 W AC	Platinum	7500 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2000 W	1000 W	NA	11.5 A
2400 W AC	Platinum	9000 BTU/hr	50/60 Hz	100–240 V AC, autoranging	2400 W	1400 W	NA	16 A

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

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

System battery specifications

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

Expansion card riser specifications

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

Figure 4 PCIe slot numbers on 24 x 2:5-inch drive R840 server

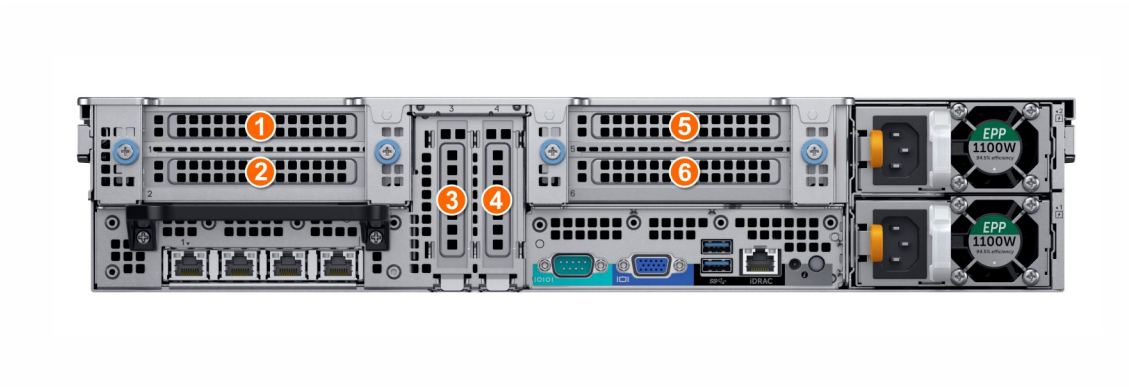


Table 5 Expansion card riser specifications for R840 system

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

Memory specifications

R840 servers support up to 48 288-pins RDIMMs, LRDIMMs, and NVDIMM-Ns supported with speeds of 2933 MT/s, 2667 MT/s, 2400 MT/s, and 2100 MT/s with support for memory optimized operation.

Table 6 memory specifications for the R840 system

DIMM type	DIMM rank	DIMM capacity	Quad processors	
			Minimum RAM	Maximum RAM
LRDIMM (VxFlex Ready Node only)	Octal rank	128 GB	512 GB	6144 GB
RDIMM	Dual rank	32 GB	128 GB	1536 GB
RDIMM	Dual rank	16 GB	64 GB	768 GB
RDIMM	Single rank	8 GB	32 GB	384 GB

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

Storage controller specifications

R840 servers support the following internal storage controller cards:

- Internal storage controller cards: HBA330, and Boot Optimized Server Storage (BOSS-S1)

Drive specifications

R840 servers support SAS, SATA, or NVMe drives.

Table 7 Supported drive options

Chassis options	Configurations
Eight-drive chassis VxFlex Ready Node only	Up to eight 2.5-inch SAS/SATA front-accessible drives in slots 0–7 Up to eight 2.5-inch SATA front-accessible drives in slots 0–7
Twenty-four drive chassis	Up to twenty-four 2.5-inch SAS/SATA front-accessible drives in slots 0–23 Up to twenty-four 2.5-inch NVMe front-accessible drives in slots 0–23

Ports and connector specifications

The R840 system supports the following ports and connectors:

USB ports

The R840 servers support both USB 2.0-compliant and USB 3.0-compliant ports.

Note: The internal USB is not supported on R840.

The following table provides more information about the USB specifications.

Table 8 USB specifications

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

NIC ports

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

Table 9 Supported NICs

NICs	VxFlex Appliance	VxFlex Ready Node
Intel X550 2 Port 10 Gb Base-T + I350 2 Port 1 Gb Base-T, rNDC		X
Intel X710 DP 10 Gb DA/SFP+, + I350 DP 1 Gb Ethernet, Network Daughter Card	X	X
Mellanox ConnectX-4 Lx Dual Port 25 GbE DA/SFP rNDC	X	X
Intel X550 Dual Port 10G Base-T Adapter, Full Height		X
Intel X550 Dual Port 10G Base-T Adapter, Low Profile		X
Mellanox ConnectX-4 Lx Dual Port 25 GbE DA/SFP Network Adapter, Full Height	X	X
Mellanox ConnectX-4 Lx Dual Port 25 GbE DA/SFP Network Adapter, Low Profile	X	X
Mellanox ConnectX-4 Dual Port 100 GbE QSFP28 PCIe Adapter, FH		X
Mellanox ConnectX-4 Dual Port 100 GbE QSFP28 PCIe Adapter, LP		X

VGA ports

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

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

Video specifications

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

The following table describes the supported video resolution options.

Video resolution options

Table 10 Supported video resolution options

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

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

Environmental specifications

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

When the system is in continuous operation (for altitude less than 950 m or 3117 ft), the temperature specification ranges 10 °C–35°C (50–95°F) with no direct sunlight on the equipment. When the system is not in operation, the temperature specification is –40 °C–65°C (–40–149°F). For more information about fresh air, see the Expanded Operating Temperature section. The Maximum temperature gradient for both operation and nonoperational systems is 20°C/h (36°F/h). Information about fresh air specification is described in the Expanded Operating Temperature section.

Table 11 Temperature specifications

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

For a nonoperational system, the ambient relative humidity ranges from 5% to 95% with 33°C (91°F) maximum dew point. Atmosphere must be noncondensing at all times. For an operational system, the ambient relative humidity ranges from 10% to 80% with 29°C (84.2°F) maximum dew point.

Table 12 Relative humidity specifications

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

Table 12 Relative humidity specifications (continued)

Relative humidity	Specifications
Operating	10% to 80% RH with 29°C (84.2°F) maximum dew point.

The maximum vibration specification of an operational system is 0.26 Grms at 5 Hz to 350 Hz (all operation orientations).The maximum vibration specification of a nonoperational system is 1.88 Grms at 10 Hz to 500 Hz for 15 min (all six sides tested).

Table 13 Maximum vibration specifications

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

The maximum shock specification of an operational system is six consecutively executed shock pulses in the positive and negative x, y, and z axes of 40 G for up to 2.3 ms. The maximum shock specification of a nonoperational system is 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 14 Maximum shock pulse specifications

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

The maximum altitude specification for an operational system is 3048 m (10,000 ft). The maximum altitude specification for a nonoperational system is 12,000 m (39,370 ft).

Table 15 Maximum altitude specifications

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

If the operating temperature of a system is up to 35°C (95°F), the maximum temperature is reduced by 1°C/300 m (1°F/547 ft) above 950 m (3,117 ft). If the operating temperature of a system is 35 °C–40 °C (95 °F–104 °F), the maximum temperature is reduced by 1°C/175 m (1°F/319 ft) above 950 m (3,117 ft). If the operating temperature of a system is 40 °C–45 °C (104–113 °F), the maximum temperature is reduced by 1°C/125 m (1°F/228 ft) above 950 m (3,117 ft).

Table 16 Operating temperature derating specification

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

Table 16 Operating temperature derating specification (continued)

Operating temperature derating	Specifications
40–45 °C (104 °F–113 °F)	Maximum temperature is reduced by 1°C/125 m (1°F/228 ft), above 950 m (3,117 ft).

Standard operating temperature

The standard operating temperature for altitude less than 950 m or 3117 ft ranges 10 °C–35°C with no direct sunlight on the equipment.

Note: The 2.5-inch hard drive chassis supports a maximum of 145 W processors.

Table 17 Standard operating temperature specifications

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

Expanded operating temperature

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

Table 18 Expanded operating temperature specifications

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

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

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

Expanded operating temperature restrictions

- Do not perform cold start below 5°C due to hard drive constraints.
- Apache Pass DIMM, NVDIMM, PCIe SSD, and NVMe are not supported.
- LRDIMM >32 GB is not supported in x4 sockets configuration.
- Rear installed drives and GPU configuration are not supported.
- Redundant power supplies are required.
- Non Dell EMC qualified peripheral cards and /or peripheral cards greater than 25 W are not supported.
- Intel FPGA is not supported.
- 205 W SKUs, 200W/18C, 165W/12C, and 150W_8C processor are not supported on all x4 socket processor configurations.
- 165 W SKUs, 130W/8C, 115W/6C, and 105W_4C are not supported on the x4 socket processor configurations except front x8 inch SAS/SATA drives configurations.

Ambient temperature limitations

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

The following table lists configurations that require an ambient temperature of less than 35°C.

Note: For all processor updates, see the Firmware documentation.

Table 19 Configuration-based ambient temperature restrictions

R840 configurations		**Backplane**	**24 x 2.5 inch SAS/ SATA (Expander)**	**24 x 2.5-inch NVMe (Expander)**
R840 configurations		**No. Of processors supported**	**4**	**4**
		Processor heat sink	**1U**	**1U**
		No. Of GPUs supported	**>1DW/SW GPU**	**>1DW/SW GPU**
Supported processor	**Processor Thermal Design Power (TDP)**	**Core count**	**Ambient support**	**Ambient support**
Intel Xeon Platinum 8180	205 W	28	C30	C30
Intel Xeon Platinum 8176	165 W	28	C30	C30
Intel Xeon Platinum 8170	165 W	26	C30	C30
Intel Xeon Gold 6150	165 W	18	C30	C30
Intel Xeon Gold 6134	130 W	8	C30	C30
Intel Xeon Platinum 8164	150 W	26	C30	C30
Intel Xeon Platinum 8160	150 W	24	C30	C30
Intel Xeon Gold 6148	150 W	20	C30	C30

Table 19 Configuration-based ambient temperature restrictions (continued)

R840 configurations		Backplane	24 x 2.5 inch SAS/ SATA (Expander)	24 x 2.5-inch NVMe (Expander)
Intel Xeon Gold 6142	150 W	16	C30	C30
Intel Xeon Gold 6136	150 W	12	C30	C30
Intel Xeon Platinum 8158	150 W	12	C30	C30
Intel Xeon Gold 6152	140 W	22	C30	C30
Intel Xeon Gold 6140	140 W	18	C30	C30
Intel Xeon Gold 6132	140 W	14	C30	C30
Intel Xeon Gold 6138	125 W	20	C30	C30
Intel Xeon Gold 6130	125 W	16	C30	C30
Intel Xeon Platinum 8153	125 W	16	C30	C30
Intel Xeon Gold 6126	125 W	12	C30	C30

The following table lists configurations that require an ambient temperature of less than 35°C.

Table 20 Configuration-based ambient temperature restrictions

R840 configurations		Backplane	24 x 2.5 inch SAS/ SATA (Expander)	24 x 2.5-inch NVMe (Expander)
R840 configurations		No. Of processors supported	4	4
		Processor heat sink	1U	1U
		No. Of GPUs supported	Non-GPU	Non-GPU
Supported processor	Processor Thermal Design Power (TDP)	Core count	Ambient support	Ambient support
Intel Xeon Platinum 8180	205 W	28	C30	C30
Intel Xeon Platinum 8168	205 W	24	C30	C30
Intel Xeon Gold 6154	200 W	18	C30	C30
Intel Xeon Gold 6146	165 W	12	C30	C30
Intel Xeon Gold 6144	150 W	8	C30	C30
Intel Xeon Platinum 8176	165W	28	C35	C30
Intel Xeon Platinum 8170	165 W	26	C35	C30
Intel Xeon Gold 6150	165 W	18	C35	C30
Intel Xeon Gold 6134	130 W	8	C35	C35
Intel Xeon Platinum 8164	150 W	4	C35	C35
Intel Xeon Platinum 8160	150 W	26	C35	C35

Table 20 Configuration-based ambient temperature restrictions (continued)

R840 configurations		Backplane	24 x 2.5 inch SAS/ SATA (Expander)	24 x 2.5-inch NVMe (Expander)
Intel Xeon Gold 6148	150 W	24	C35	C35
Intel Xeon Gold 6142	150 W	20	C35	C35
Intel Xeon Gold 6136	150W	16	C35	C35
Intel Xeon Platinum 8158	150 W	12	C35	C35
Intel Xeon Gold 6152	140 W	12	C35	C35
Intel Xeon Gold 6140	140 W	22	C35	C35
Intel Xeon Gold 6132	140 W	18	C35	C35
Intel Xeon Gold 6138	125 W	20	C35	C35
Intel Xeon Gold 6130	125 W	14	C35	C35
Intel Xeon Platinum 8153	125 W	20	C35	C35
Intel Xeon Gold 6126	125 W	16	C35	C35

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any damages to the IT equipment and/or, or both failure from particulates and gaseous contamination. If the levels of particulates or gaseous pollution exceed the specified limitations and result in equipment damage or failure, you must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.
Air filtration specification: Data center air filtration as defined by ISO Class 8 per ISO 14644-1 should have a 95% upper confidence limit. Note: This condition applies only to data center environments. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor. Note: Air entering the data center must have MERV11 or MERV13 filtration. Conductive dust specification: Air must be free of conductive dust, zinc whiskers, or other conductive particles. Note: This condition applies to data center and nondata center environments. Corrosive dust specification: 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 21 Particulate contamination specifications

Particulate contamination	Specifications
Air Filtration	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit. **Note:** This condition applies to data center environments only. Air filtration requirements do not apply to IT equipment designed to be used outside a data center, in environments such as an office or factory floor. **Note:** Air entering the data center must have MERV11 or MERV13 filtration.

Table 21 Particulate contamination specifications (continued)

Particulate contamination	Specifications
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.

The copper coupon corrosion rate is <300 Å/month per Class G1 as defined by ANSI/ISA71.04-1985. The silver coupon corrosion rate is <200 Å/month as defined by AHSRAE TC9.9.

Table 22 Gaseous contamination specifications

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

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

CHAPTER 4

System diagnostics and indicator codes

This section explains the system diagnostics and indicator codes for your system.

- Indicator codes 32
- Using system diagnostics 39

Indicator codes

The diagnostic indicators on the system front panel display system status during system startup and assist you in diagnosing system health.

Status LED indicators

The status indicators display solid amber if any error occurs on the system.

Table 23 Status LED indicators and descriptions

Icon	Description	Condition	Corrective action
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate Online Diagnostics test. Restart the system and run embedded diagnostics (ePSA).
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed. If the problem persists, see Getting help on page 43.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the LED on the PSU. Reseat the PSU. If the problem persists, see Getting help on page 43.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module. If the problem persists, see Getting help on page 43.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers for the PCIe card. Reinstall the card. If the problem persists, see Getting help on page 43.

System health and system ID indicator codes

The system health and system ID indicator is located on the left control panel of your system.

Figure 5 System health and system ID indicators

Table 24 System health and system ID indicator codes

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is turned on, the system is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode. If the problem persists, see Getting help on page 43.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log or the LCD panel, if available on the bezel, for specific error messages.

iDRAC Quick Sync 2 indicator codes

The iDRAC Quick Sync 2 module (optional) is located on the left control panel of your system.

Figure 6 iDRAC Quick Sync 2 indicators

Table 25 iDRAC Quick Sync 2 indicators and descriptions

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Off (default state)	Indicates that the iDRAC Quick Sync 2 feature is turned off. Press the iDRAC Quick Sync 2 button to turn on the iDRAC Quick Sync 2 feature.	If the LED fails to turn on, reseat the left control panel flex cable and check. If the problem persists, see "Getting help."
Solid white	Indicates that iDRAC Quick Sync 2 is ready to communicate. Press the iDRAC Quick Sync 2 button to turn off.	If the LED fails to turn off, restart the system. If the problem persists, see Getting help on page 43.
Blinks white rapidly	Indicates data transfer activity.	If the indicator continues to blink indefinitely, see Getting help on page 43.
Blinks white slowly	Indicates that firmware update is in progress.	If the indicator continues to blink indefinitely, see Getting help on page 43.
Blinks white five times rapidly and then turns off	Indicates that the iDRAC Quick Sync 2 feature is disabled.	Check if iDRAC Quick Sync 2 feature is configured to be disabled by iDRAC. If the problem persists, see Getting help on page 43. For more information, see *Integrated Dell Remote Access Controller User's Guide* at www.dell.com/idracmanuals or *Dell OpenManage Server Administrator User's Guide* atwww.dell.com/openmanagemanuals .

Table 25 iDRAC Quick Sync 2 indicators and descriptions (continued)

iDRAC Quick Sync 2 indicator code	Condition	Corrective action
Solid amber	Indicates that the system is in fail-safe mode.	Restart the system. If the problem persists, see Getting help on page 43.
Blinking amber	Indicates that the iDRAC Quick Sync 2 hardware is not responding properly.	Restart the system. If the problem persists, see Getting help on page 43.

iDRAC Direct LED indicator codes

The iDRAC Direct LED indicator lights up to indicate that the port is connected and is being used as a part of the iDRAC subsystem.

You can configure iDRAC Direct by using a USB-to-micro USB (type AB) cable, which you can connect to your laptop or tablet. The following table describes iDRAC Direct activity when the iDRAC Direct port is active:

Note: The internal USB is not supported on VxFlex appliance R840.

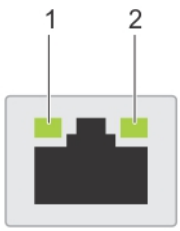
Table 26 iDRAC Direct LED indicator codes

iDRAC Direct LED indicator code	Condition
Solid green for two seconds	Indicates that the laptop or tablet is connected.
Flashing green (on for two seconds and off for two seconds)	Indicates that the laptop or tablet connected is recognized.
Turns off	Indicates that the laptop or tablet is unplugged.

NIC indicator codes

Each NIC on the back of the system has indicators that provide information about the activity and link status. The activity LED indicator indicates if data is flowing through the NIC, and the link LED indicator indicates the speed of the connected network.

Figure 7 NIC indicator codes



1. Link LED indicator
2. Activity LED indicator

The NIC indicators table describes different NIC indicator codes and condition of the connectivity.

Table 27 NIC indicator codes

Status	Condition
Link and activity indicators are off.	The NIC is not connected to the network.
Link indicator is green, and activity indicator is blinking green.	The NIC is connected to a valid network at its maximum port speed, and data is being sent or received.
Link indicator is amber, and activity indicator is blinking green.	The NIC is connected to a valid network at less than its maximum port speed, and data is being sent or received.
Link indicator is green, and activity indicator is off.	The NIC is connected to a valid network at its maximum port speed, and data is not being sent or received.
Link indicator is amber, and activity indicator is off.	The NIC is connected to a valid network at less than its maximum port speed, and data is not being sent or received.
Link indicator is blinking green, and activity is off.	NIC identify is enabled through the NIC configuration utility.

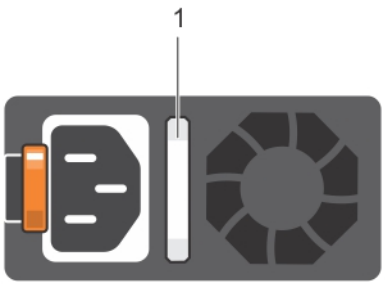
Power supply unit indicator codes

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator. The DC PSUs have an LED that serves as an indicator. The indicator shows whether power is present or a power fault has occurred.

For more information about the PSU specifications, see the technical specifications for your system.

For information about the event and error messages generated during POST, see the Dell Event and Error Messages Reference Guide at www.dell.com/openmanagemanuals.

Figure 8 AC PSU status indicator



1. AC PSU status indicator/handle

Table 28 AC PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU, and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected to the PSU.

Table 28 AC PSU status indicator codes (continued)

Power indicator codes	Condition
Blinking green	When the firmware of the PSU is being updated, the PSU handle blinks green. CAUTION Do not disconnect the power cable, or unplug the PSU when updating firmware. If a firmware update is interrupted, the PSUs do not function.
Blinking green and turns off	When hot-plugging a PSU, the PSU handle blinks green five times at a rate of 4 Hz and turns off. This indicates a PSU mismatch regarding efficiency, feature set, health status, or supported voltage. CAUTION If two PSUs are installed, both the PSUs must have the same type of label; for example, the Extended Power Performance (EPP) label. Mixing PSUs from previous generations of systems based on PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition, or failure to turn on the system. CAUTION When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a high output configuration to a low output configuration or conversely, you must turn off the system. AC PSUs support both 240 V and 120 V input voltages except for Titanium PSUs, which support only 240 V. When two identical PSUs receive different input voltages, they can output different wattages and trigger a mismatch. CAUTION If two PSUs are used, they must be of the same type and have the same maximum output power. CAUTION Combining AC and DC PSUs is not supported and triggers a mismatch.

Figure 9 DC PSU status indicator

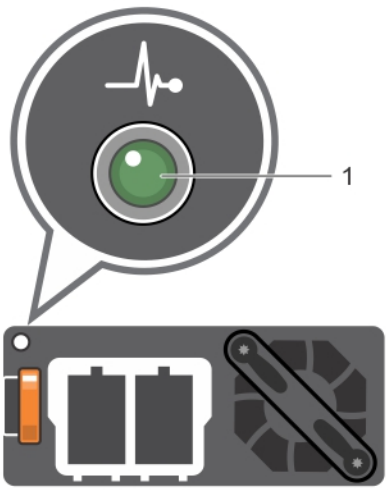


Figure 9 DC PSU status indicator (continued)

1. DC PSU status indicator

Table 29 DC PSU status indicator codes

Power indicator codes	Condition
Green	A valid power source is connected to the PSU, and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected to the PSU.
Blinking green	When hot-plugging a PSU, the PSU indicator blinks green. This indicates that there is a PSU mismatch regarding efficiency, feature set, health status, or supported voltage. CAUTION If two PSUs are installed, both the PSUs must have the same type of label; for example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of systems based on PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition, or failure to turn on the system. CAUTION When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a High Output configuration to a Low Output configuration or conversely, you must turn off the system. CAUTION If two PSUs are used, they must be of the same type and have the same maximum output power. CAUTION Combining AC and DC PSUs is not supported and triggers a mismatch.

Drive indicator codes

The LEDs on the drive carrier indicate the state of each drive. Each drive carrier in your system has two LEDs: an activity LED (green) and a status LED (bicolor, green/amber). The activity LED flashes whenever the drive is accessed. The status LED indicator indicates the power condition of the drive.

Figure 10 Drive indicators on the drive and the mid drive tray backplane

1. Drive activity LED indicator
2. Drive status LED indicator
3. Drive capacity label

Note: If the drive is in the Advanced Host Controller Interface (AHCI) mode, the status LED indicator does not turn on.

Table 30 Drive indicator codes

Drive status indicator code	Condition
Flashes green twice per second	Identifying drive or preparing for removal.
Off	Drive ready for removal. **Note:** The drive status indicator remains off until all drives are initialized after the system is turned on. Drives are not ready for removal during this time.
Flashes green, amber, and then turns off	Predicted drive failure.
Flashes amber four times per second	Drive failed.
Flashes green slowly	Drive rebuilding.
Solid green	Drive online.
Flashes green for three seconds, amber for three seconds, and then turns off after six seconds	Rebuild stopped.

Using system diagnostics

If you experience a problem with your system, run the system diagnostics before contacting Dell EMC for technical assistance. The purpose of running system diagnostics is to test your system hardware without using additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use the diagnostics results to help you solve the problem.

Dell Embedded System Diagnostics

The Embedded System Diagnostics provides a set of options for particular device groups or devices.

Also known as Enhanced Pre-boot System Assessment (ePSA) diagnostics, Embedded System Diagnostics allows you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

Running Embedded System Diagnostics from Boot Manager

If your system does not boot., run the Embedded System Diagnostics (ePSA).

Procedure

1. While the system is booting, press F11.
2. Use the keyboard arrows to select **System Utilities** > **Launch Diagnostics**.

Results

The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

Running Embedded System Diagnostics from the Dell Lifecycle Controller

Perform the following steps to run the Embedded System Diagnostics from the Dell Lifecycle Controller.

Procedure

1. While the system is booting, press F10.
2. Select **Hardware Diagnostics** > **Run Hardware Diagnostics**.

   The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

Results

The **ePSA Pre-boot System Assessment** window is displayed, listing all devices detected in the system. The diagnostics starts executing the tests on all the detected devices.

System diagnostic controls

Configuration

Displays the configuration and status information of all detected devices.

Results

Displays the results of all tests that are run.

System health

Provides the current overview of the system performance.

Event log

Displays a time-stamped log of the results of all tests run on the system. This is displayed if at least one event description is recorded.

CHAPTER 5

Reference material

This section contains additional information that may be required for the procedures described in this document.

- Trusted Platform Module.....42

Trusted Platform Module

The Trusted Platform Module (TPM) is a dedicated microprocessor designed to secure hardware by integrating cryptographic keys into devices. Software can use a TPM to authenticate hardware devices.

Because each TPM chip contains a unique and secret RSA key embedded during the TPM's manufacture, the TPM is capable of performing platform authentication.

The TPM must be replaced only while installing a new system board.

Upgrading the Trusted Platform Module

Before you begin

- Follow all safety guidelines.
- Ensure that your operating system supports the version of the TPM being installed.
- Ensure that you download and install the latest BIOS firmware on your system.
- Ensure that the BIOS is configured to enable UEFI boot mode.

About this task

CAUTION If you are using the Trusted Platform Module (TPM) with an encryption key, you may be prompted to create a recovery key during program or System Setup. Ensure that you create and safely store this recovery key. If you replace this system board, you must supply the recovery key when you restart your system or program before you can access the encrypted data on your hard drives.

CAUTION After the TPM plug-in module is installed, it is cryptographically bound to that specific system board. Any attempt to remove an installed TPM plug-in module breaks the cryptographic binding, the removed TPM cannot be reinstalled or installed on another system board.

Initialize the TPM for BitLocker users

Procedure

1. Initialize the TPM.

   For more information, see https://technet.microsoft.com/en-us/library/cc753140.aspx.

   The **TPM Status** changes to **Enabled, Activated**.

Initialize the TPM 1.2 for TXT users

Procedure

1. While booting the system, press F2 to enter System Setup.
2. In the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
3. From the **TPM Security** option, select **On with Pre-boot Measurements**.
4. From the **TPM Command** option, select **Activate**.
5. Save the settings.
6. Restart the system.
7. Enter **System Setup** again.
8. On the **System Setup Main Menu** screen, click **System BIOS** > **System Security Settings**.
9. From the **Intel TXT** option, select **On**.

CHAPTER 6

Getting help

This section explains the different resources available for getting help for your system.

- Contacting Dell EMC 44
- Secure Remote Services 44
- Recycling or End-of-Life service information 44

Contacting Dell EMC

Use this topic to learn how to contact Dell EMC.

About this task

Dell EMC provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell EMC for sales, technical support, or customer service issues use the steps in this task.

Note: If you do not have an active internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell EMC product catalog.

Procedure

1. Go to **https://dell.com/support/incidents-online/contactus**.
2. For customized support:
   a. Type your system **Service Tag** in the **Service Tag** box.
   b. Click **Submit**.
3. 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.

Secure Remote Services

Secure Remote Services (formerly ESRS) is a secure, two-way connection between Dell EMC products and Dell EMC Customer Support that helps customers avoid and resolve issues up to 73 percent faster. It is completely virtual and offers flexibility for enterprise environments of any size.

Key benefits

- Proactive wellness monitoring and issue prevention
- Automated issue detection, notification and case creation for quicker uptime
- Predictive analytics-based recommendations through MyService360 and product consoles

The Secure Remote Services lifeline is a heartbeat that pulses outbound from the Secure Remote Services gateway to Dell EMC Customer Service in 30-second intervals, providing Dell EMC with connectivity status as well as the status of each product. The heartbeat ensures continuous monitoring, notification, and if necessary, proactive remote troubleshooting to ensure high availability of your products. As a result, you will experience faster resolution and greater uptime.

Recycling or End-of-Life service information

Take back and recycling services are offered for this product in certain countries.

If you want to dispose of system components, visit Dell.com/recyclingworldwide and select the relevant country.