Hewlett Packard Enterprise

HPE ProLiant Compute DL360 Gen12 Carrier-Grade Conversion Guide

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HPE ProLiant Compute DL360 Gen12 Carrier-Grade Conversion Guide

Abstract

This guide describes procedures for converting the server to a carrier-grade server that is compliant with NEBS level 3 standards. This document is for the person who installs, administers, and troubleshoots servers and storage systems. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels and are familiar with the weight and stability precautions for rack installations.

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Introduction

NOTE

The system is suitable for installation in locations that meet the GR-3108, Class 1, environmental criteria.

This document includes only conversion instructions and product-specific information for the carrier-grade version of the HPE ProLiant Compute DL360 Gen12. Before performing any procedures in this document, review the complete pre-installation and post-installation procedures in the server user guide.

When configured properly, the product will comply with the following criteria:

- SR-3580, Level 3, “NEBS Criteria Levels”
- GR-1089-CORE, “EMC & Electrical Safety”
- GR-63-CORE, “Physical Protections”
- GR-3108-CORE, Class 1, “Outside Plant”
- ETSI EN 300 386, Class A, “EMC"
- ETSI EN 300 019-2-1, Class 1.2, “Storage”
- ETSI EN 300 019-2-2, Class 2.3, “Transportation”
- ETSI EN 300 019-2-3, Class 3.1 & 3.1E, "Stationary Use at Weather protected locations”
- ETSI ETS 300 753, “Acoustic Noise”

Carrier-grade conversion

This chapter describes the procedures and information required to convert the HPE ProLiant Compute DL360 Gen12 to a carrier-grade server.

Subtopics

Carrier-grade conversion requirements
Enabling the extended ambient operating temperature range
Grounding
Network cabling
Power supply information

Carrier-grade conversion requirements

The following items are required to convert the HPE ProLiant Compute DL360 Gen12 to a carrier-grade server:

- All integrated components must be certified as NEBS level 3-compliant.
- High performance fan option (P48908-B21)
- Enable the extended operating temperature range .

Enabling the extended ambient operating temperature range

Enabling the extended ambient operating temperature range

About this task

The carrier-grade conversion process ensures that the system can operate above the required NEBS operating temperature range. To enable this extended operating temperature range, manually set the S10 switch to the ON position.

Subtopics

Setting the system maintenance S10 switch to the ON position
Verifying the system maintenance switch setting
Troubleshooting an incorrect temperature threshold

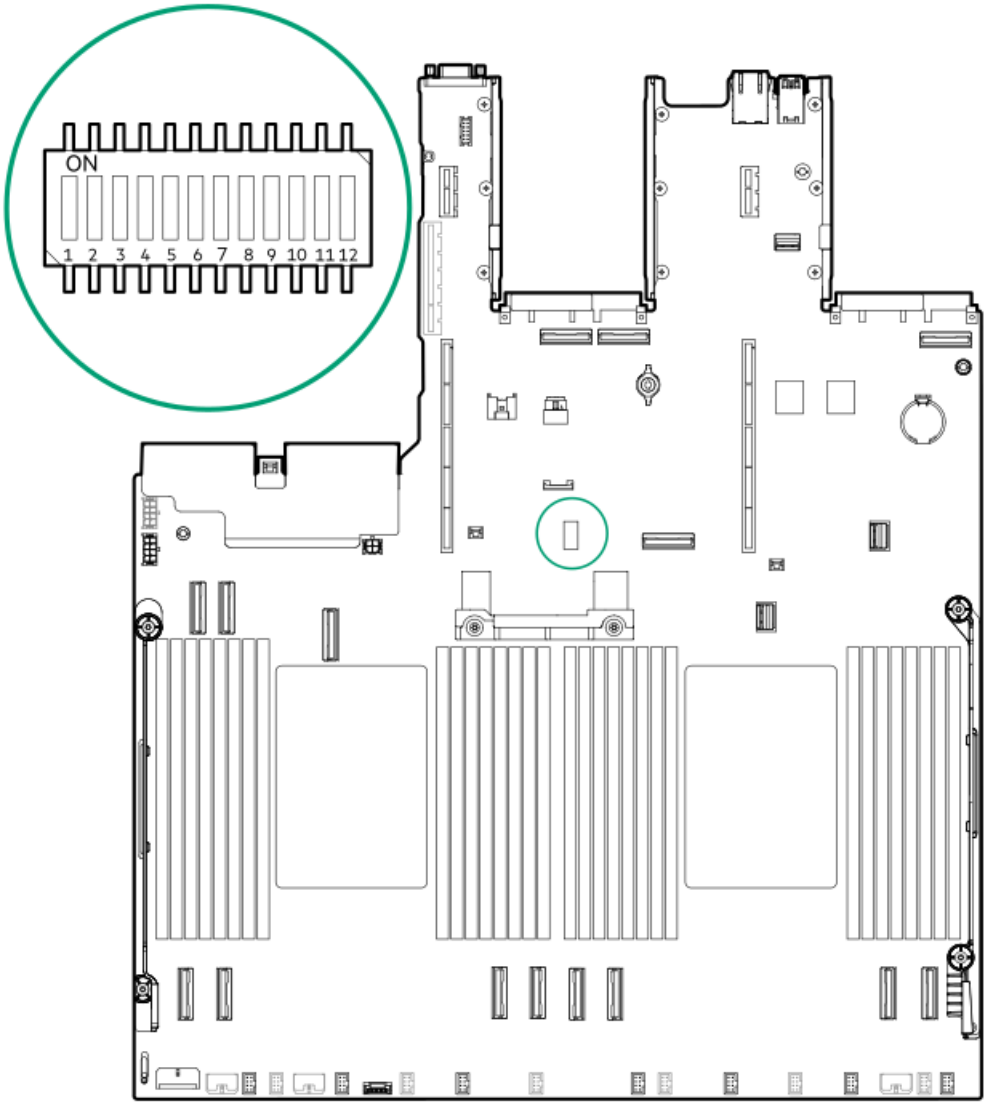
Setting the system maintenance S10 switch to the ON position

Prerequisites

Before you perform this procedure, make sure that you have a small flat-bladed, nonconductive tool available.

Procedure

1. Back up all server data.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove all components that block access to the system maintenance switch.
9. Locate the system maintenance switch on the system board.



10. Take the small flat-bladed, nonconductive tool to change the switch 10 to the ON position.
11. Install the high performance fan.
12. Install all removed components.
13. Install the access panel.
14. Install the server in the rack.
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.
19. Verify the system maintenance switch setting.

Verifying the system maintenance switch setting

Prerequisites

After the switch setting is updated, verify that the system maintenance switch position S10 is in the ON position.

For the instructions in this section, use HPE iLO 7 to verify that the thresholds are correct. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/hpeilodocs-quicklinks**).

Procedure

1. Log in to iLO. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/hpeilodocs-quicklinks**).
2. Select Host on the left navigation bar.
3. Select Hardware > Thermal and cooling.
4. The temperature graph is displayed in the Temperature section.

   If the temperature thresholds of sensor 01-Inlet Ambient appear as shown as following, the switch is set correctly.



Sensor	Location	Coordinates	State	Health	Reading	Caution	Critical
01-Inlet Ambient	Intake	[15 , 1]	Enabled	OK	26C	62C	67C
02-CPU 1 PkgTmp	CPU	[11 , 8]	Enabled	OK	52C	105C	0C
03-CPU 2 PkgTmp	CPU	[4 , 8]	Enabled	OK	54C	105C	0C
04-P1 DIMM 1-8	Memory	[9 , 8]	Enabled	OK	34C	89C	0C
05-P1 DIMM 9-16	Memory	[14 , 8]	Enabled	OK	36C	89C	0C
06-P2 DIMM 1-8	Memory	[2 , 8]	Enabled	OK	36C	89C	0C

Troubleshooting an incorrect temperature threshold

Symptom

If the temperature threshold for the Inlet Ambient sensor is not showing the extended operating temperature value for the server, troubleshoot the temperature threshold.

Solution 1

Cause

The system maintenance S10 switch is not set to the **ON** position.

Action

Open the server and verify that the system maintenance S10 switch is set to the ON position.

Solution 2

Cause

The system maintenance S10 switch is already set to the **ON** position but the current BIOS configuration settings prevent the display of the correct temperature threshold.

Action

1. Restore the server to its default manufacturing settings. Do one of the following:

   IMPORTANT

   Restoring the server default manufacturing settings resets all BIOS configuration settings to their default manufacturing values. This process deletes all UEFI nonvolatile variables, such as the boot configuration, Secure Boot security keys, and configured date and time settings. To save a custom default configuration to use during a later system restore, use the User Default Options setting in the UEFI System Utilities (**F9**). For more information, see the UEFI user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/hpeuefisystemutilities-quicklinks**).

   - Open the server and toggle the S6 switch to the **ON** position.
   - In the iLO web interface, select iLO Settings > Troubleshoot > System Diagnostics > Restore Default Manufacturing Settings.

     For more information, see the iLO user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/hpeilodocs-quicklinks**).

2. After restoring the server to its default manufacturing settings, check that the extended operating temperature range is now enabled.

Grounding

This carrier-grade product is intended for use in both common bonding networks and isolated bonding networks. Grounding must comply with local, national, and other applicable government codes and regulations. Dedicated safety grounds are implemented on both the AC and DC versions of this product. The AC version uses a standard three wire cord that includes a safety ground for each power supply. The DC version has a dedicated ground screw on each power supply.

WARNING

To ensure the safety ground, at least one power supply with an appropriately terminated ground lead must be installed at all times.

To ensure an adequate ground connection, mating surfaces should be cleaned to a bright metal finish and an antioxidant applied before connections are made.

Network cabling

Intrabuilding connections for ProLiant Compute DL-series carrier-grade servers require the use of shielded cables grounded on both ends.

CAUTION

The intrabuilding ports of the equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. Do not metallically connect the intrabuilding ports of the equipment to interfaces that connect to the outside plant cabling (OSP) or its wiring. The intrabuilding ports are designed for use as intrabuilding interfaces only: Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4. These intrabuilding interfaces require isolation from exposed OSP cabling. Added primary protectors are not sufficient protection to connect these interfaces metallically to OSP wiring.

Power supply information

Depending on the installed options and the regional location where the server was purchased, the server can be configured with different power supply units. For more information on available power supply options, see the product QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/quickspecs**).

For detailed power supply specifications, see the QuickSpecs on the **Hewlett Packard Enterprise website**.

Required hardware option

The high performance fan option is required to complete the carrier grade conversion.

Subtopics

Installing the high performance fan

Installing the high performance fan

About this task

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

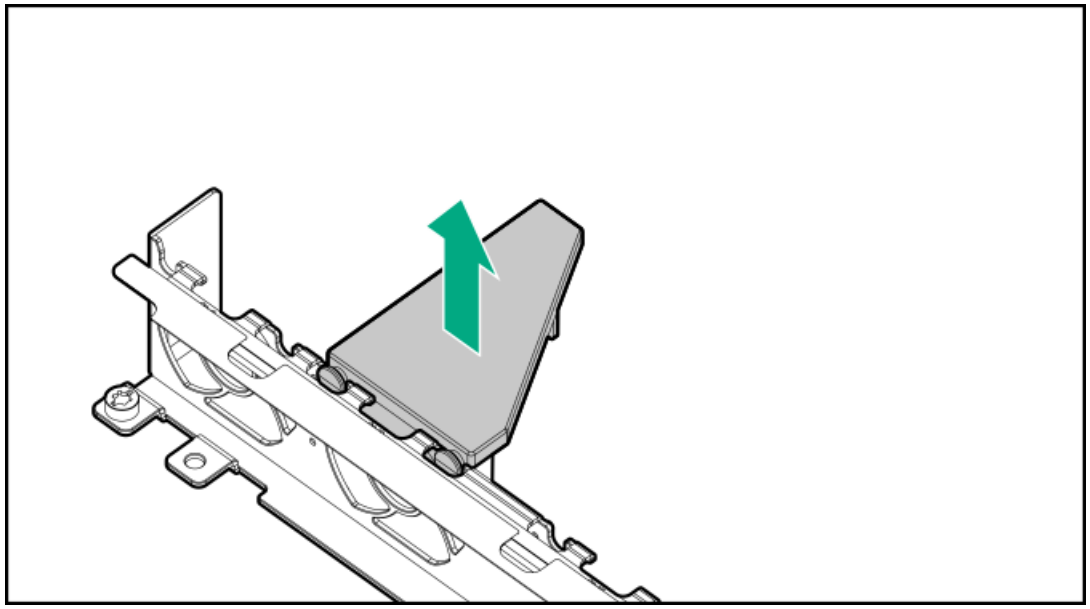
IMPORTANT

Do not mix standard and high performance fans in the same server.

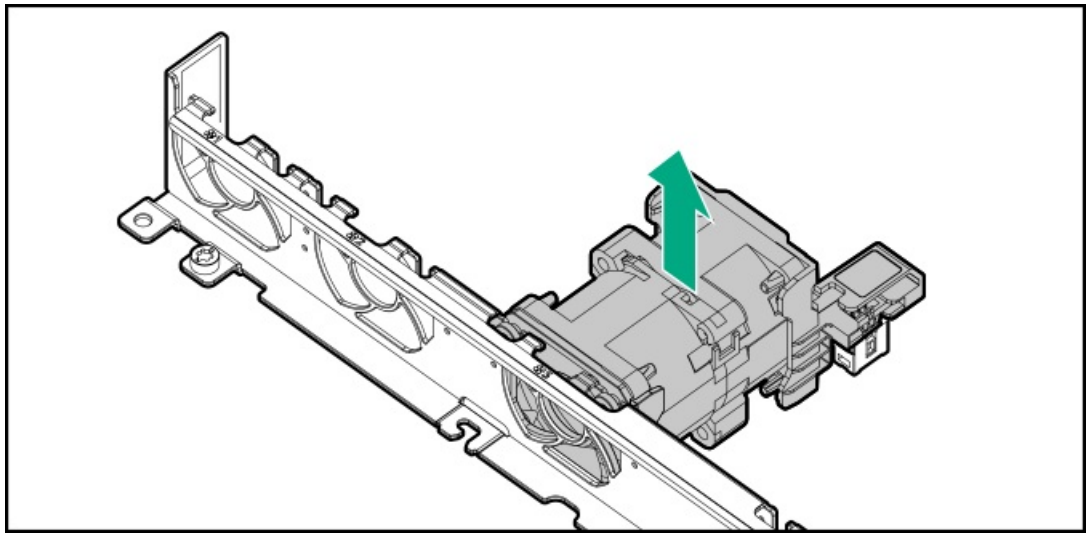
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Remove the access panel.

6. Remove any fan blanks.

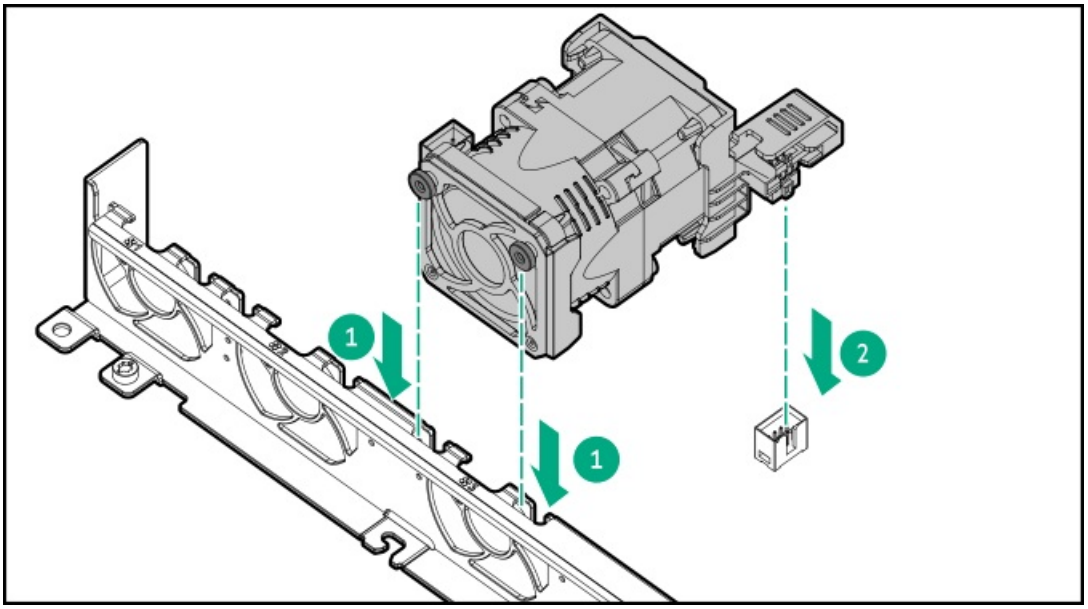


7. Remove the standard fans.



8. Install the high performance fans.

   Make sure that the fan is firmly seated on its system board connector.



9. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the fan.
10. Install the access panel.
11. Install the server in the rack.
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

Rack installation support

IMPORTANT

For this server, cage nuts for the seismic rack must be installed in the appropriate locations, and the rack mount kit should be installed following the procedure for threaded round-hole racks described in the server user guide.

IMPORTANT

For this server, the server must be secured in the rack using the captive screws located behind the quick release levers on each side of the server.

For information on the installation of the HPE ProLiant Compute DL360 Gen12 using the commercial rack mount kit, see the server user guide on the Hewlett Packard Enterprise website: **https://www.hpe.com/info/dl360gen12-ug**.

Operations

Subtopics

Electrostatic discharge
Rack warnings and cautions

Server warnings and cautions
Server data backup
Pre-installation and post-installation procedures
Hardware component replacement

Electrostatic discharge

Be aware of the precautions you must follow when setting up the system or handling components. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the system or component.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:
  - Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
  - Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
  - Use conductive field service tools.
  - Use a portable field service kit with a folding static-dissipating work mat.

  If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Rack warnings and cautions

WARNING

When all components are removed, the server weighs 14.87 kg (32.71 lb). When all components are installed, the server can weigh up to 21.38 kg (47.04 lb).

Before configuring your rack solution, be sure to check the rack manufacturer weight limits and specifications. Failure to do so can result in physical injury or damage to the equipment and the facility.

WARNING

The server is heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The server weighs more than 14.87 kg (32.71 lb), so at least two people must lift the server into the rack together. An additional person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack.
- Adequately stabilized the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

WARNING

To reduce the risk of personal injury or damage to the equipment, be sure that:

- The rack has anti-tip measures in place. Such measures include floor-bolting, anti-tip feet, ballast, or a combination as specified by the rack manufacturer and applicable codes.
- The leveling jacks (feet) are extended to the floor.
- The full weight of the rack rests on the leveling jacks (feet).
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple rack installations.

WARNING

To reduce the risk of personal injury or equipment damage when unloading a rack:

- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and might become unstable when being moved on its casters.
- Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

CAUTION

Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

CAUTION

Before installing the server in a rack, be sure to properly scope the limitations of the rack. Before proceeding with the installation, consider the following:

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the server.
- Be sure sufficient clearance exists for cabling, installation and removal of the server, and movement of the rack doors.

Server warnings and cautions

WARNING

To reduce the risk of personal injury, electric shock, or damage to the equipment, disconnect the power cord to remove power from the server. Pressing the Power On/Standby button does not shut off system power completely. Portions of the power supply and some internal circuitry remain active until AC power is removed.

WARNING

To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

WARNING

To reduce the risk of fire or burns after removing the energy pack:

- Do not disassemble, crush, or puncture the energy pack.
- Do not short external contacts.
- Do not dispose of the energy pack in fire or water.
- Do not expose the energy pack to low air pressure as it might lead to explosion or leakage of flammable liquid or gas.
- Do not expose the energy pack to temperatures higher than 60°C (140°F).

After power is disconnected, battery voltage might still be present for 1s to 160s.

CAUTION

Protect the server from power fluctuations and temporary interruptions with a regulating UPS. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the server in operation during a power failure.

CAUTION

To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

CAUTION

To avoid data loss, Hewlett Packard Enterprise recommends that you back up all server data before installing or removing a hardware option, or performing a server maintenance or troubleshooting procedure.

CAUTION

Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

Server data backup

To avoid data loss, make sure to back up all server data before installing or removing a hardware option, performing a server maintenance,

or a troubleshooting procedure.

Server data in this context refers to information that may be required to return the system to a normal operating environment after completing a hardware maintenance or troubleshooting procedure. This information may include:

- User data files
- User account names and passwords
- Application settings and passwords
- Component drivers and firmware
- TPM recovery key/password
- BIOS configuration settings—Use the backup and restore function in UEFI System Utilities. For more information, see the UEFI user guide (**https://www.hpe.com/support/hpeuefisystemutilities-quicklinks**).
  - Custom default system settings
  - Security passwords including those required for power-on and BIOS admin access, persistent memory, and Server Configuration Lock (for HPE Trusted Supply Chain servers)
  - Server serial number and the product ID
- iLO-related data—Use the iLO backup and restore function. For more information, see the iLO user guide (**https://www.hpe.com/support/hpeilodocs-quicklinks**).
  - iLO license
  - Customer iLO user name, password, and DNS name
  - iLO configuration settings

Pre-installation and post-installation procedures

This document includes only procedures specific to carrier-grade conversion. Before performing the procedures described in this document, make sure that you have reviewed the complete pre-installation and post-installation procedures in the server user guide (**https://www.hpe.com/info/dl360gen12-ug**).

Hardware component replacement

If a power supply or a fan failure occurs, replace the failed component. These hardware components are hot-pluggable and can be replaced within five minutes.

For detailed hardware replacement procedures, see the HPE ProLiant Compute DL360 Gen12 Maintenance and Service Guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/dl360gen12-msg**).

Safety, warranty, and regulatory information

Subtopics

Regulatory information
Warranty information

Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

https://www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

https://www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

https://www.hpe.com/info/environment

Subtopics

Notices for Eurasian Economic Union
Turkey RoHS material content declaration
Ukraine RoHS material content declaration

Notices for Eurasian Economic Union

Manufacturer and Local Representative Information

Manufacturer information:

Hewlett Packard Enterprise Company, 1701 E Mossy Oaks Road, Spring, TX 77389 U.S.

Local representative information Russian:

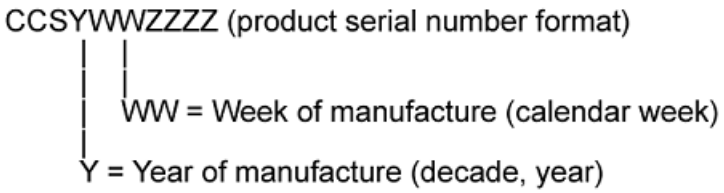
- **Russia**
  ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

Local representative information Kazakh:

- **Russia**
  ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандык ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.



If you need help identifying the manufacturing date, contact **tre@hpe.com**.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

To view the warranty information for your product, see the **warranty check tool**.

Websites

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

https://www.hpe.com/storage/spock

Technical papers and analyst reports

https://www.hpe.com/us/en/resource-library

For additional websites, see Support and other resources.

Support and other resources

Subtopics

Accessing Hewlett Packard Enterprise Support
Accessing updates
Customer self repair

Remote support
Documentation feedback

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  https://www.hpe.com/info/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  https://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  https://www.hpe.com/support/hpesc

  My HPE Software Center

  https://www.hpe.com/software/hpesoftwarecenter

- To subscribe to eNewsletters and alerts:

  https://www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:

  https://www.hpe.com/support/AccessToSupportMaterials

IMPORTANT

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Account set up with relevant entitlements.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR.

For more information about CSR, contact your local service provider.

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which initiates a fast and accurate resolution based on the service level of your product. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

HPE Get Connected

https://www.hpe.com/services/getconnected

HPE Tech Care Service

https://www.hpe.com/services/techcare

HPE Complete Care Service

https://www.hpe.com/services/completecare

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, click the Feedback button on the page of an opened document on the Hewlett Packard Enterprise Support Center portal (**https://www.hpe.com/support/hpesc**). Use this feature to send any errors, suggestions, or comments. This process captures all document information.